NOVA SCOTIA
Environment

NOVA SCOTIA GROUNDWATER OBSERVATION WELL NETWORK

2015 REPORT

Prepared: August 2015

TABLE OF CONTENTS

PAGE NO.

APPENDICES

EXECUTIVE SUMMARY

The Nova Scotia Groundwater Observation Well Network was established in 1965 to monitor groundwater levels across the province. The network currently monitors both groundwater levels and groundwater quality and the results are used to: manage groundwater resources; assess drought conditions; evaluate the impact of human activities on groundwater; and, evaluate long-term groundwater trends. One well was added to the Network during 2012 and two wells added in 2013. However, also in 2013 one well was discontinued from the Network, bringing the total number of active wells from 41 to 40 by the end of 2014.

The observation wells are monitored with dataloggers that record water levels and groundwater temperature every hour. Data is then transferred by telemetry, or manual download, for storage on a central computer. The number of years of groundwater level data available at each observation well ranges from one to 48 years. Groundwater samples are collected from the wells periodically and tested for a number of parameters, including: general chemistry, metals, pesticides, volatile organic compounds (VOCs), tritium and perchlorate.

The groundwater level monitoring results indicate that 14 of 41 (now 40) observation wells exhibit groundwater level trends, with 6 having small upward trends and 8 having small downward trends, measured over the entire monitoring period. The downward trends tend to be larger than the upward trends, however, the size of the trends in most cases is relatively small (i.e., overall water level changes of less than 1 m). Some of the observation wells with downward trends are located in, or near, municipal wellfields and water level declines in these wells may be associated with wellfield pumping.

The results indicate that 10 of the 41 wells (now 40) exceeded health-based drinking water guidelines in the most recent sampling event. The parameters that exceeded health-based guidelines include: arsenic (5 wells), fluoride (2 wells), lead (1 well), nitrate (1 well) and uranium (2 wells). Most of these exceedances (including arsenic, fluoride and uranium) are associated with naturally-occurring dissolved minerals that are known to occur in groundwater in certain areas of the province. The nitrate exceedance was observed at a well located in an agricultural area, and is likely to be caused by human activity.

Nineteen of 40 wells exceeded aesthetic drinking water guidelines (or other non-health related guidelines), including the following parameters: manganese (at 14 wells), iron (8 wells), turbidity (6 wells), pH (5 wells), chloride (1 well), colour (1 well) and total dissolved solids (1 well). The majority of these parameters are representative of naturally occurring water quality problems that are commonly encountered in water wells in Nova Scotia and elsewhere. Chloride was detected above background levels at five wells. The data suggests that two of these wells have been impacted by road salt, two have been impacted by sea water intrusion, and one has been impacted by naturally-occurring geologic formation salt.

The water quality results show that none of the observation wells exceeded drinking water guidelines for VOCs or pesticides. However, one VOC (toluene) was detected at low levels (i.e., 2 ug/L) in two of the observation wells. These wells are located beside roads and, therefore, the toluene may be due to gasoline runoff from roads. No pesticides were detected in any of the observation wells.

Of the 17 observation wells tested for tritium, 13 wells contained either recent water (recharged after 1952) or a mix of recent and old water (recharged before and after 1952). Only four of the 17 wells tested for tritium contained purely old water (recharged before1952). These results suggest that most of the wells draw water from aquifers that are recharged relatively quickly. This is encouraging from a water quantity point of view because the aquifers are being regularly replenished with new water, however it also indicates that the aquifers are vulnerable to contaminants released at the surface that can be carried into the aquifer relatively quickly. This emphasizes the importance of source water protection in the province to ensure that groundwater is kept clean.

ACKNOWLEDGMENTS

This report was prepared by staff at Nova Scotia Environment including: Gordon Check, Alan Tattrie and Charlie Williams. Both the report and the operation of the Nova Scotia Groundwater Observation Well Network have benefitted from the valuable input of many dedicated individuals. In particular, we gratefully acknowledge the cooperation of the many property owners with observation wells located on their properties. Their continued participation in the program is vital to the success of the network. In addition, staff from the Hydrogeological Program at the Nova Scotia Department of Natural Resources, including both John Drage and Gavin Kennedy, have made significant contributions to the planning, expansion and operation of the network.

1.0 INTRODUCTION

The Nova Scotia Groundwater Observation Well Network was established in 1965 to monitor groundwater levels across the province. The size of the Network has varied over the years, however, at the beginning of 2015 the network included 40 observation wells. One well was added to the Network during 2012 and two wells added in 2013. However, also in 2013 one well was discontinued from the Network, bringing the total number of active wells from 41 to 40 by the end of 2014. The Network is operated by Nova Scotia Environment (NSE) and is used for monitoring both groundwater levels and groundwater quality. The monitoring results are used to help manage groundwater resources, assess drought conditions, evaluate the impact of human activities on groundwater and evaluate long-term groundwater trends. This report presents the monitoring results chronologically to the end of 2014.

1.1 Historical Background

When the observation well network was initially established in 1965, it consisted of wells that were installed as part of the International Hydrologic Decade (1965-1974) and as part of regional groundwater resource evaluation studies undertaken in Nova Scotia during the 1960's and 1970's. Most of these wells were constructed specifically for observation purposes or drilled as test holes and then converted to observation wells. During the 1970's and 80's the network continued to expand until it included as many as 40 active wells, but many of these were abandoned in the 1990's. By 2003, the network consisted of 11 active wells.

After 2003, the network began expanding again. Three wells were added between 2003 and 2005, bringing the total number of wells to 14. Ten observation wells were added to the network in 2006, bringing the total number of wells to 24. All of the wells added to the network up to the end of 2006 were existing wells that were once part of the historic network, but were no longer being actively monitored. In 2007, two new observation wells were drilled and one existing inactive observation well was added back into the network. For the two wells drilled in 2007, water level monitoring began in May of 2008. Therefore, the total number of observation wells being monitored by the end of 2007 was 25. In 2008, three new observation wells were drilled and a former provincial park water supply well was converted to an observation well, bringing the total number of wells to 31 by the end of 2008. In 2009, four former provincial park water supply wells

were converted to observation wells and one well was dropped from the network due to damage during site redevelopment and from vandalism, bringing the total number of active wells to 35 by the end of 2009. In 2010, one well, drilled as a part of a sea water intrusion project by St. Francis Xavier University, was added as an observation well and one former municipal test well, completed by the Village of St. Peters, was converted to an observation well, bringing the total number of wells to 37 by the end of 2010. In 2011, another former provincial park water supply well was converted to an observation well, bringing the total number of active wells to 38 by the end of 2011. In 2012 one well was added in a provincial park and in 2013 two wells were added, also in provincial parks. Also in 2013, one well was discontinued due to a property sale, with access to the well no longer provided to Nova Scotia Environment by the new property owner. By the end of 2014, the network consisted of 40 observation wells.

Up until the 1990's, groundwater levels in each well were monitored using mechanical Stevens F Type chart recorders, which recorded water level changes on a paper chart that was retrieved from the field on a monthly or quarterly basis. In the late 1990's the chart recorders began to be replaced with electronic dataloggers and in 2003 an initiative began to equip the entire network with telemetric dataloggers, which are capable of transmitting the monitoring results by cell phone to a central computer. Currently, the telemetry system is inoperative and upgrades are planned for 2015.

Seven reports have been previously published on the network:

- “Groundwater Hydrographs in Nova Scotia 1965-1981" (McIntosh, 1984);
- “Nova Scotia Groundwater Observation Well Network - 2007 Report” (NS Environment and Labour, 2007);
- “Nova Scotia Groundwater Observation Well Network - 2008 Report” (NS Environment, 2008);
- “Nova Scotia Groundwater Observation Well Network - 2009 Report” (NS Environment, 2009);
- “Nova Scotia Groundwater Observation Well Network - 2010 Report” (NS Environment, 2010); and
- “Nova Scotia Groundwater Observation Well Network - 2011 Report” (NS Environment, 2011);
- “Nova Scotia Groundwater Observation Well Network - 2012 Report” (NS Environment, 2012).

This report provides documentation of the Nova Scotia Groundwater Observation Well Network for the period 2012 to the end of 2014.

In 2006, a web page was launched to provide public access to the network's results. The website can be found at: http://novascotia.ca/nse/groundwater/groundwaternetworkwells.asp

The webpage is updated with new groundwater level data on an approximately bi-annual basis. The majority of the historical hard copy water level data has been digitized and is available in spreadsheet format on the above referenced webpage.

1.2 Activities Completed 2012-2014

In mid-2012, monitoring began in a new observation well drilled at Rainbow Haven Provincial Park (087) the previous year (2011). In 2013, monitoring began in two former provincial park water supply drilled wells at Maitland (088) and Simms Settlement (089).

Monitoring equipment was removed from the discontinued Margaree (064) well in February 2013.

No water quality sampling was carried out during this period.

1.3 Description of the Current Network

As of December 31st, 2014 the observation well network consisted of 40 wells. The wells are listed in Table 1.1 and the well locations are shown in Figure 1.1. As shown in Table 1.1, the number of years since monitoring began at each well is variable, but ranges from 1 year to 48 years and can be summarized as follows: wells with more than 40 years of data (6 wells); 30 years (6 wells); 20 years (11 wells); 5 years (11 wells); and less than 5 years (6 wells). Note that these figures do not necessarily reflect the number of years of monitoring data available for each well because there are data gaps in the records.

Currently, all of the observation wells in the network have dataloggers that record water levels and temperature every hour. Previously installed telemetric systems in some of the wells that transmitted data by cell phone to a central computer were no longer operative by 2014. At the end

of 2014, all of the observation wells relied on manual field access to retrieve data from the dataloggers. Currently, it is planned to install new telemetry units in some of the wells during 2015.

Groundwater samples are collected from the wells periodically and tested for a number of parameters, including general chemistry, metals, pesticides, volatile organic compounds, tritium and perchlorate. The wells are sampled at approximately two to five year intervals to monitor for changes in water quality. Most of the wells in the network have been sampled at least once; however, some wells have not been sampled due to technical limitations (such as old floats associated with former Stevens chart recorders that have become lodged in the well casing) or are due to be sampled (i.e. newer wells).

Note that the observation wells listed in Table 1.1 are typically named based on the nearest town or water body and the observation well number that is assigned to the well when it is added to the network. For example, “Truro (014)” is located in Truro and its network well ID number is 014. The three-digit observation well ID numbers have been in use since the network was developed in 1965. They are unique and are not reused, even after a well has been abandoned. Some of the observation wells in this report have been renamed since the initial 1984 network report in order to adhere to a consistent naming protocol. For example, “Truro (014)” was originally named “Truro 421" in the 1984 network report. The “421" was originally included in the well name because it was called “Department of Mines Test Hole 421" at the time of drilling. Because some of the original well names have changed, readers who wish to compare historical results from the 1984 network report with this report should cross-reference wells using the three-digit observation well ID number.

Table 1.1: Wells in the NS Groundwater Observation Well Network (as of Dec. 31, 2014)

No.	Well Name	Well ID#	County	Year Monitoring Started	Years Since Monitoring Began
1	Greenwood (003)	003	Kings	1966	48
2	Fraser Brook (004)	004	Colchester	1966	48
3	Wilmot (005)	005	Annapolis	1966	48
4	Murray Siding (007)	007	Colchester	1967	47
5	Wolfville (010)	010	Kings	1969	45
6	Truro (014)	014	Colchester	1971	43
7	Monastery (028)	028	Antigonish	1976	38
8	Point Aconi (030)	030	Cape Breton	1976	38
9	Lawrencetown (043)	043	Halifax	1978	36
10	Durham (045)	045	Pictou	1979	35
11	Kentville (048)	048	Kings	1980	34
12	Sydney (050)	050	Cape Breton	1984	30
13	North Grant (054)	054	Antigonish	1987	27
14	Stillwater (055)	055	Guysborough	1987	27
15	Sheet Harbour (056)	056	Halifax	1987	27
16	Hayden Lake (059)	059	Shelburne	1988	26
17	Meteghan (060)	060	Digby	1987	27
18	Annapolis Royal (062)	062	Digby	1990	24
19	Hebron (063)	063	Yarmouth	1990	24
20	Ingonish (065)	065	Victoria	1990	24
21	Debert (068)	068	Colchester	1993	21
22	Dalem Lake (069)	069	Victoria	1992	22
23	Amherst (071)	071	Cumberland	1993	21
24	Kelley River (073)	073	Cumberland	2006	8
25	Atlanta (074)	074	Kings	2008	6

No.	Well Name	Well ID#	County	Year Monitoring Started	Years Since Monitoring Began
26	Sheffield Mills (075)	075	Kings	2008	6
27	Fall River (076)	076	Halifax	2008	6
28	West Northfield (077)	077	Lunenburg	2008	6
29	Musquodoboit Harbour (078)	078	Halifax	2008	6
30	Lewis Lake (079)	079	Halifax	2008	6
31	Arisaig (080)	080	Antigonish	2009	5
32	Coldbrook (081)	081	Kings	2009	5
33	Long Point (082)	082	Inverness	2009	5
34	Tatamagouche (083)	083	Colchester	2009	5
35	Pugwash (084)	084	Cumberland	2010	4
36	St. Peters (085)	085	Richmond	2010	4
37	Smileys Park (086)	086	Hants	2011	3
38	Rainbow Haven (087)	087	Halifax	2012	2
39	Maitland (088)	088	Lunenburg	2013	1
40	Simms Settlement (089)	089	Lunenburg	2013	1

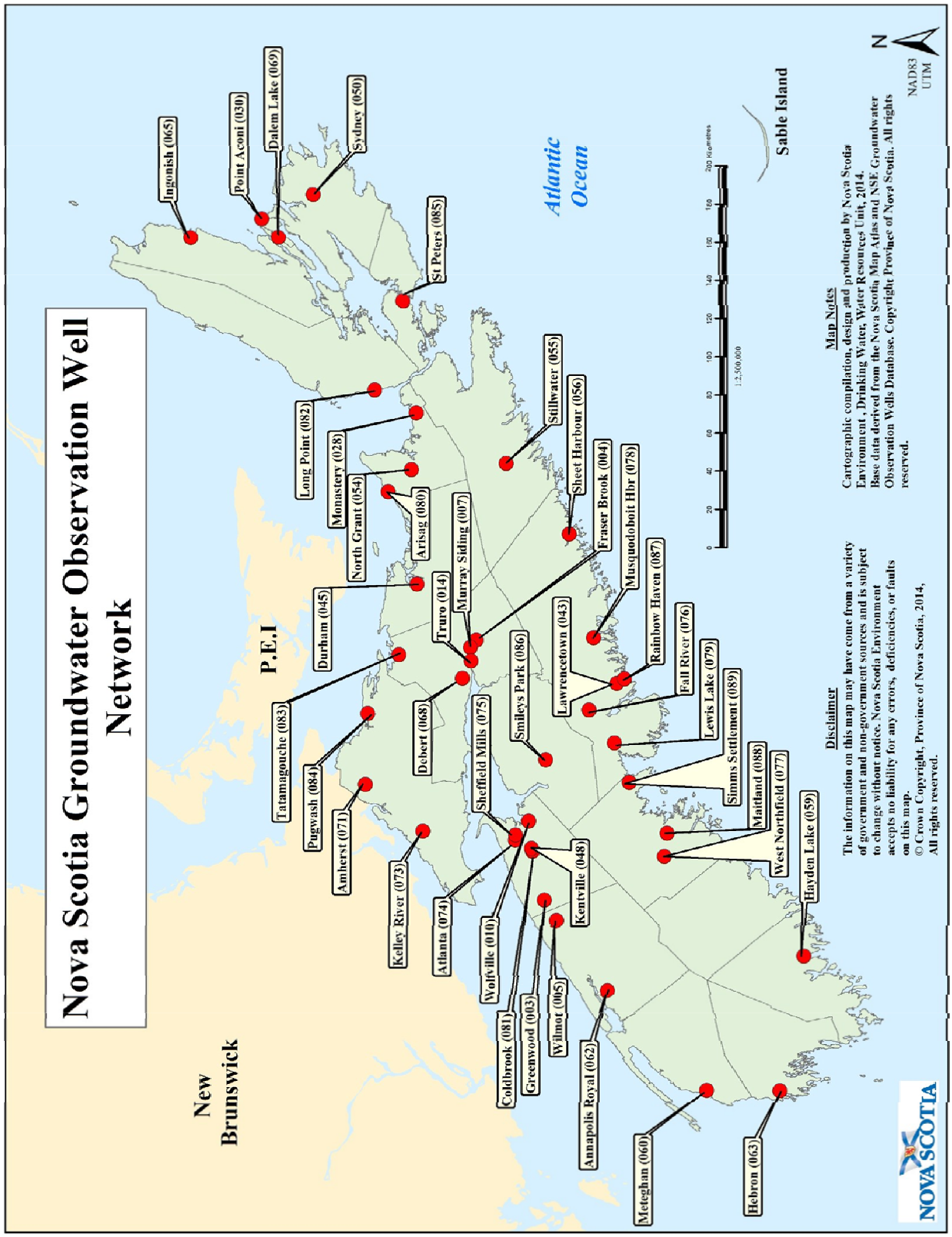


Figure 1.1: Map of Observation Well Locations (as of Dec. 31, 2014)

2.0 METHODS

2.1 Groundwater Level Monitoring

2.1.1 Field Methods

Each observation well in the network is equipped with a pressure transducer, temperature sensor and electronic datalogger that records water levels and water temperature every hour. There is also a second pressure transducer located above the water in each well that monitors atmospheric pressure so the water level measurements can be adjusted for atmospheric pressure changes. Some wells are also equipped with telemetric systems that transmit the monitoring data by cell phone to a central computer system once a week.

The wells are visited approximately every six months for field verification of the water level data and to change the telemetric system batteries. Water levels are verified in the field with a manual electronic water level tape.

After the raw water level data is collected, it goes through several adjustments before being added to the spreadsheet database. Data corrections are applied if the field measurement differs from the pressure transducer readings by more than 2.1 cm, which is the reported accuracy of the pressure transducers. If corrections are necessary, they are made by applying a linear adjustment between two field verified water levels. Next, the hourly water level data is averaged to obtain a single average daily water level for each day. Finally, the water level data are converted to a water level elevation (relative to mean sea level) using the elevation of the top of the well casing.

Temperature data has been recorded from the dataloggers since about 2004-2005 and on. Temperature data is measured hourly and has no adjustments or corrections applied.

2.1.2 Data Assessment Methods

The water levels at each well were assessed for changes and long-term trends for the entire period on record, up to the end of 2014. The water level assessments were carried out by visual inspection of the water level graphs and through statistical analysis. The Mann-Kendall trend test (Gilbert, 1987) was used to determine if there was a trend in the water level data (i.e. upward trend, downward trend or no trend) for the period ending in 2014. This test is one of the most commonly

used statistical methods to evaluate trends in environmental data and has been used in other studies in Nova Scotia to assess groundwater level trends (Rivard et al., 2012). The rate of annual change at each well was determined using the Sen's slope estimator (Gilbert, 1987), a commonly-used linear slope estimator in environmental statistics.

The results of the statistical trend analyses are presented in Appendix E. Trend analyses were only completed for wells with 10 or more "usable" years of data. A year was considered usable if groundwater level data were available for at least 75% of the days in the year. For a water level trend (increasing or decreasing) to be considered valid, the Mann-Kendall analyses should indicate a "confidence level" of at least 90%. The confidence level however does not provide information that relates to the potential size of the trend, the Sens slope estimator must be used for this. Note that the trend analyses provided in this report relate to the entire period of monitoring for an individual well and therefore do not reflect other selected timeframes.

If groundwater level changes or trends were identified, possible reasons for the change or trend were evaluated. Several factors can cause groundwater levels to fluctuate. The most common causes of groundwater level changes in Nova Scotia include: precipitation, seasonal variations, groundwater pumping and tidal effects. Each of these factors is discussed in further detail in the following paragraphs.

Fluctuations Due to Precipitation

Precipitation, such as rainfall or melting snow, will either run off into streams and other surface water bodies, be intercepted by vegetation, or seep into the ground. The portion that seeps into the ground is known as groundwater recharge. Groundwater recharge is difficult to measure, however, it has been estimated that recharge rates in Nova Scotia typically range from about 8 to 25% of precipitation. Groundwater recharge causes the groundwater levels in an aquifer to rise, although there is usually a delay between the precipitation event and when the groundwater level rises. The amount of precipitation and groundwater recharge varies throughout the province. Nova Scotia weather stations show the following mean annual total precipitations at selected locations between 1981 and 2010: Greenwood 1117 mm, Halifax 1396 mm, Sydney 1517 mm, and Yarmouth 1293 mm (Environment Canada, 2015).

Long-term trends in precipitation due to climate change can result in corresponding trends in

groundwater levels. In cases where observation wells showed a significant groundwater level trend, the nearest climate station data was also evaluated for precipitation trends to assess whether or not climate change could be affecting groundwater levels. Historical and projected climate data for Nova Scotia can be found on the Nova Scotia Environment Climate Change Portal website at: http://climatechange.novascotia.ca/climate-data

Seasonal Fluctuations

In Nova Scotia, the spring and fall tend to have the highest amounts of precipitation and the summers tend to be drier. This seasonal variation is reflected in groundwater levels in the province's aquifers, which usually have higher water levels in the spring and lower levels in the summer. The lower groundwater levels in the late months of summer are the result of several factors, including: decreased precipitation, increased evaporation and the increased interception of water by vegetation. The typical seasonal variation in groundwater levels in Nova Scotia aquifers is usually less than about three metres.

Season fluctuations in groundwater levels in Nova Scotia can often be observed in the three typical patterns they produce in observation well hydrographs. These usually include two wet seasons (spring and fall) with rising groundwater levels, and a dry season in the summer with declining groundwater levels, as described below:

1. Spring Recharge - rising groundwater levels between March and May due to spring rainfall and melting snowpack. Maximum groundwater levels usually occur during this period.

2. Fall Recharge - rising groundwater levels between October and December due to fall precipitation.

3. Summer Recession - declining groundwater levels beginning in June and reaching minimum levels in September. Winter conditions of snowfall and frost can also limit recharge, resulting in a minor groundwater level recession in February.

Groundwater Pumping

The removal of water from an aquifer, by a well or wellfield, results in the lowering of the water

level in the well and the surrounding aquifer. The lowering of groundwater levels as a result of pumping is referred to as drawdown. The amount of drawdown depends on how much is being pumped, the distance from the pumping well, and the characteristics of the aquifer (e.g., transmissivity, storativity, aquifer boundaries). In Nova Scotia, large wellfields in bedrock aquifers have been observed to cause groundwater drawdown in wells as far away as two to three kilometres.

Tidal Fluctuations

Aquifers and wells near the ocean can experience tidal fluctuations. Even though the water in a well may be fresh, the water level may rise and fall with the tide. The amount of water level fluctuation (i.e., amplitude) depends on the distance between the well and the ocean and aquifer properties. There is also a delay (i.e., time lag) between the rise or drop in the tide and the corresponding rise or drop in the well.

2.2 Groundwater Quality Monitoring

2.2.1 Field Methods

The observation wells have been tested in prior years for various chemical parameters including: general chemistry, metals, volatile organic compounds (VOC), pesticides, tritium and perchlorate. The general chemistry, metals, VOC and pesticides analyses were carried out at Maxxam Analytics in Bedford, NS; the tritium analyses were carried out at the Environmental Isotope Laboratory, University of Waterloo, Waterloo, ON; and, the perchlorate analyses were carried out by the National Water Research Institute in Burlington, ON.

Groundwater samples were collected using either a disposable bailer or a submersible pump that was cleaned after each sample was collected. Prior to collecting the samples each well was purged by either removing three well volumes, or by purging until electrical conductivity (EC) and temperature (T) became stable, based on the following approach: 1) begin to purge the well; 2) record the EC and T values after purging 0.5 well volumes; 3) repeat EC and T measurements after purging 1 well volume; 4) continue purging and recording EC and T values at 0.5 well volume intervals until EC and T values are within 10% of previous values. If a well was pumped completely dry, purging was considered complete.

The groundwater samples were collected into laboratory supplied bottles, stored in a chilled cooler and delivered to the laboratory within the specified holding times. Samples for general chemistry and metals were filtered in the field using 0.45 micron filters. Samples collected for metals were also preserved in the field using nitric acid.

2.2.2 Data Assessment Methods

The groundwater sample results for general chemistry, metals, VOCs and pesticides were assessed by comparing the results to the Canadian Drinking Water Quality Guidelines (Health Canada, 2012). Tritium and perchlorate results were assessed separately, as described in the paragraphs below. Note that the observation wells in the network are not used for drinking water, however, the drinking water guidelines are the most commonly used guidelines applied to water wells and they provide a useful reference point to judge the general water quality at each well.

Tritium is a short-lived isotope of hydrogen with a half-life of 12.43 years that is commonly used to assess the relative age of groundwater and how vulnerable an aquifer is to contamination (Clark and Fritz, 1997). During the 1950's, hydrogen bomb testing caused tritium levels to become elevated above naturally-occurring background levels in the earth's atmosphere. The elevated tritium levels are picked up by precipitation and carried into aquifers as the precipitation infiltrates in to the ground. Groundwater with tritium levels of less than 1.0 Tritium Units (TU) is considered relatively old, being recharged before hydrogen bomb testing began in 1952. Groundwater with more than 5.0 TU is considered to be predominantly recent water, being recharged after 1952 (Clark and Fritz, 1997). Groundwater with tritium levels between 1.0 and 5.0 TU is considered to be a mix of recent and old water.

Water wells with tritium levels less than 1.0 TU are considered to be recharged by older water and, therefore, are not as vulnerable to contamination as other wells. Water wells that contain recent water, or a mix of recent and old water, are more vulnerable to contamination because rapid recharge allows contaminants to move relatively quickly from the ground surface into the aquifer. Many of the wells in the observation well network have short casing lengths (i.e., less than seven metres) and long open-hole intervals that allow both shallow and deep groundwater to enter the well and, therefore, it is likely that these wells will contain a mix of recent and old water. This type of well construction is similar to the majority of water wells in Nova Scotia, which have a minimum casing length of 6.1 m, as required by the NS Well Construction Regulations.

Perchlorate is a groundwater contaminant that has received significant attention since 1997 when it was found in several water supplies in the United States. It is a compound consisting of one chlorine and four oxygen atoms that can exist as the solid salt of ammonium, potassium, or other metals, and it readily dissolves in water to produce the perchlorate ion (ClO_4^-). Perchlorate has been used in products such as rocket fuels, munitions, explosives, fireworks, road flares, fertilizers and air bag inflation systems. It can also occur naturally at low levels in the environment.

Recent sampling has detected the presence of very low levels of perchlorate in some Canadian drinking water sources (Health Canada, 2007). Groundwater samples from the Nova Scotia Observation Well Network were tested for perchlorate in 2004 and 2005 in order to evaluate the occurrence of perchlorate in Nova Scotia groundwater. There is currently no national drinking water guideline for perchlorate in Canada, however, Health Canada recommends a guidance value of 6 ug/L. Therefore, the perchlorate results from the observation well network were assessed by comparison to the recommended Health Canada value of 6 ug/L. The perchlorate results are provided in Appendix C and are discussed in further detail in previous annual reports on the Groundwater Observation Well Network (see NSEL, 2007).

In observation wells where elevated chloride levels were detected, an assessment of the possible source of salt was carried out by calculating the bromide (Br) to chloride (Cl) ratio. Wells were considered to have elevated chloride levels if chloride concentrations exceeded typical background levels for groundwater in coastal areas of Nova Scotia (i.e., <50 mg/L). A commonly used guide for distinguishing salt sources in Nova Scotia is to calculate the ratio of Br(mg/L)/Cl(mg/L) x 10,000, and compare the result to the following three ranges:

1. Ratio <10 indicates road salt or halite brine;
2. Ratio >10 indicates formation brines; and
3. Ratio = 35 indicates a sea water influence.

3.0 RESULTS

This section presents the monitoring results for each observation well. Please refer to the appendices for well logs, groundwater level graphs, groundwater chemistry tables, groundwater temperature graphs, trend analysis details, well location maps and site photographs.

3.1 Greenwood (003)

Well Description

The Greenwood (003) observation well is located near Greenwood, Kings County. It was constructed in 1966 as part of a regional groundwater resource evaluation project (Trescott, 1968) and was originally named “Nova Scotia Department of Mines Test Hole 88". The well is completed in an overburden aquifer comprised of outwash sand. It is 7.6 m deep and has 6.6 m of casing. The well location and construction information is shown in Table 3.1 and the well log is provided in Appendix A.

Table 3.1: Greenwood (003) Well Construction Information

Well Name	Greenwood (003)
Observation Well ID Number	003
NSE Well Log Number	661225
County	Kings
Nearest Community	Greenwood
UTM - Easting (m)	350680
UTM - Northing (m)	4985498
Year Monitoring Started	1966
Casing Depth (m, bgs)	6.6
Well Depth (m, bgs)	7.6
Elevation - top of casing (m, asl)	24.15
Geologic Unit	Pleistocene Outwash
Aquifer Material	Overburden - sand

Notes: bgs = below ground surface; asl = above sea level

The location of the Greenwood (003) observation well is shown in Figure F.1a, Appendix F. It is situated in a rural area where land use is primarily agricultural or undeveloped. The well is located in a wooded area behind a house (see Figure F.1b), with all other development at least a kilometre away. The nearest water well is a private well located approximately 120 m away.

Monitoring Results - Water Levels

The water level graphs for Greenwood (003) are shown in Figure B.1, Appendix B. This well has been monitored since 1966 and water levels have remained relatively consistent. The average depth to water is approximately 2.2 m below top of casing and the annual water level fluctuation is approximately 0.7 m. There is no visually obvious long-term water level trend, however, a statistical trend analysis (Appendix E) indicates that there is a slight upward trend, equivalent to approximately 0.3 cm/year.

The 2014 water levels generally fluctuated within the typical range for this well, for the majority of the year. The average water level elevation in 2014 was 21.91 m above sea level.

Monitoring Results - Water Chemistry and Temperature

The Greenwood (003) well was sampled in 2005, 2008 and 2011. Water chemistry results are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded; however, all samples exceeded aesthetic drinking water guidelines for turbidity, iron and manganese and the 2005 and 2008 samples did not meet pH guidelines. The elevated turbidity levels are expected due to the high iron and manganese concentrations. Note that the ion balance error reported in the general chemistry analysis exceeds the generally acceptable level of 5% and, therefore, these results should be viewed with caution. VOCs, pesticides and perchlorate were not detected at the Greenwood (003) well. The tritium level in this well was 5.76 TU, indicating that the water in this well is relatively recent (i.e., recharged after 1952).

Temperature data in the Greenwood (003) well has been recorded since about 2005. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.18^{o}C, with annual fluctuations between 5.41^{o}C and 10.40^{o}C.

3.2 Fraser Brook (004)

Well Description

The Fraser Brook (004) observation well is located near Lower Harmony, Colchester County. It was constructed in 1966 as part of a water resources study (Hennigar, 1966) that was carried out under the International Hydrologic Decade Program. It was originally named “Test Hole 100" and was one in a series of test wells installed in the Fraser Brook watershed.

The well is completed in siltstone. It is 18.3 m deep and the casing extends to a depth of 9.3 m. Well location and construction information is provided in Table 3.2 and the well log is provided in Appendix A. A 24-hour pump test conducted at this well indicated a transmissivity of 4.8 m^2/day and a safe yield of 42 m^3/day (6.5 igpm) (McIntosh, 1984).

Table 3.2: Fraser Brook (004) Well Construction Information

Well Name	Fraser Brook (004)
Observation Well ID Number	004
NSE Well Log Number	661226
County	Colchester
Nearest Community	Lower Harmony
UTM - Easting	486889
UTM - Northing	5021100
Year Monitoring Started	1966
Casing Depth (m, bgs)	9.3
Well Depth (m, bgs)	18.3
Elevation - top of casing (m, asl)	109.27
Geologic Unit	Canso Group
Aquifer Material	Bedrock - siltstone

Notes: bgs = below ground surface; asl = above sea level

The location of the Fraser Brook (004) observation well is shown in Figure F.2a, Appendix F. It is situated in a rural area where land use is primarily agricultural or undeveloped. The well was located in a wooded area (see Figure F.2b), however, in 2005 the majority of the trees were removed due to damage sustained during Hurricane Juan in 2003. The nearest water well is a domestic well, located approximately 1,000 m away.

Monitoring Results - Water Levels

The water level graphs for Fraser Brook (004) are shown in Figure B.2, Appendix B. This well has been monitored since 1966. The average depth to water in this well is about 4.3 m below top of casing. There is no visually obvious long-term water level trend, however, the statistical trend analysis (Appendix E) indicates that there is a slight upward trend of about 0.2 cm/year.

The 2014water levels generally fluctuated within the typical range for this well. The average water level elevation at this well in 2014 was 104.96 m above sea level, with an annual water level fluctuation of approximately 1.0 m.

Monitoring Results - Water Chemistry and Temperature

The Fraser Brook (004) well was not sampled in 2011. Water chemistry results from 2004 and 2008 are presented in Appendix C. The results indicate that arsenic exceeded the drinking water guideline in both water samples. No other parameters exceeded guidelines at this well. VOCs, pesticides and perchlorate were not detected. This well has not been tested for tritium.

Temperature data in the Fraser Brook (004) well has been recorded since about 2004. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 7.27^{o}C, with annual fluctuations between 5.59^{o}C and 8.88^{o}C.

3.3 Wilmot (005)

Well Description

The Wilmot (005) observation well is located in Wilmot, Annapolis County. It was constructed May 1966 as part of a regional groundwater resource evaluation project (Trescott, 1968) and was originally named “Nova Scotia Department of Mines Test Hole 51". The well is completed in an overburden aquifer comprising outwash gravel. It is 18.3 m deep and the casing depth extends to 6.4 m. The surficial geology of the area was classified as a stream alluvium deposit of the Quaternary Period. The alluvium deposit consisted of several feet of clay overlying fine to coarse gravel.

Table 3.3: Wilmot (005) Well Construction Information

Well Name	Wilmot (005)
Observation Well ID Number	005
NSE Well Log Number	661267
County	Annapolis
Nearest Community	Wilmot
UTM - Easting	340015
UTM - Northing	4979368
Year Monitoring Started	1966
Casing Depth (m, bgs)	6.4
Well Depth (m, bgs)	18.3
Elevation - top of casing (m, asl)	9.0
Geologic Unit	Pleistocene Outwash
Aquifer Material	Overburden - gravel

Notes: bgs = below ground surface; asl = above sea level

Well location and construction information is provided in Table 3.3 and the well log is provided in Appendix A. A 26 hour pumping test conducted at a nearby wellfield situated in a similar

geological unit indicated a transmissivity of 621 m^2/day and storativity of 1.9 x 10^{-3} (McIntosh, 1984).

The location of the Wilmot (005) observation well is shown in Figure F.3a, Appendix F. The well site, shown in Figure F.3b, is located south-west of Wilmot. It is situated in an actively farmed field, 100 m east of Baynard Road. South of the site, is a wooded area extending 75 m to the Annapolis River, where a hydrometric station measures surface water flow as part of the Canada/Nova Scotia Hydrometric Program. The nearest water well is a domestic well located approximately 150 m away.

Monitoring Results - Water Levels

The historical water level graphs for Wilmot (005) are shown in Figure B.3, Appendix B. This well has been monitored since 1966. The average depth to water in this well is about 2.0 m below top of casing. There is no visually obvious long-term water level trend, however, the statistical trend analysis (Appendix E) indicates that there is a slight upward trend, equivalent to 0.4 cm/year.

The 2014 water levels generally fluctuated within the typical range for this well, but had historical highs in January, April and December. The average water level elevation in 2014 was 7.01 m above sea level and the annual water level fluctuation was approximately 2.7 m.

Monitoring Results - Water Chemistry and Temperature

The Wilmot (005) well was sampled in 2006 and 2010 and the water chemistry results are presented in Appendix C. The results indicate that health-based drinking water guidelines were exceeded for nitrate in both 2006 and 2010. The aesthetic guidelines were exceeded for turbidity in 2006 only; turbidity results in 2010 were within the aesthetic guidelines. VOCs were not detected in both 2006 and 2010. This well was tested for pesticides in 2010. Pesticides were not detected. This well has not been tested for either perchlorate or tritium.

Temperature data in the Wilmot (005) well has been recorded since about 2006. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.14^{o}C, with annual fluctuations between 5.57^{o}C and 10.70^{o}C.

3.4 Murray Siding (007)

Well Description

The Murray Siding (007) observation well is located off Old Court House Branch Road near the community of Murray Siding, Colchester County. It was constructed August 1967 as part of a regional groundwater resource evaluation project (Hennigar, 1972) and was originally named "Nova Scotia Department of Mines Test Hole 191". The well is completed in a sandstone bedrock aquifer and is 8.5 m deep with 7.9 m of casing. Well location and construction information is provided in Table 3.4 and the well log is provided in Appendix A. This well was used as an observation well for an 80 hour pumping test conducted at a pumping well located approximately 100 m away. The results indicated a transmissivity of 672 m^2/day and storativity of 8.7 x 10^{-2} (McIntosh, 1984).

Table 3.4: Murray Siding (007) Well Construction Information

Well Name	Murray Siding (007)
Observation Well ID Number	007
NSE Well Log Number	671074
County	Colchester
Nearest Community	Murray Siding
UTM - Easting	483114
UTM - Northing	5024186
Year Monitoring Started	1967
Casing Depth (m, bgs)	7.9
Well Depth (m, bgs)	8.5
Elevation - top of casing (m, asl)	25.32
Geologic Unit	Wolfville Formation
Aquifer Material	Bedrock - sedimentary

Notes: bgs = below ground surface; asl = above sea level

The location of the Murray Siding (007) observation well is shown in Figure F.4a, Appendix F, and a photograph of the well is shown in Figure F.4b.The well is located in a residential area where the residents obtain their water supplies from domestic drilled wells.

Monitoring Results - Water Levels

The water level graphs for Murray Siding (007) are shown in Figure B.4, Appendix B. This well has been monitored since August 1967 with data gaps in the monitoring record occurring in 1968-1969, 1976-1979, and 2001-2009. The Murray Siding well was brought back into the observation well network in December 2009 and water level monitoring resumed in January 2010.

The average water level elevation from 1967 to 2001 was 21.64 m above sea level and the average depth to water was approximately 3.68 m below top of casing. Visual inspection of the water level graph indicates there was a downward trend between 1985 and 2000, however, water levels appear to have recovered since monitoring resumed in 2010. The statistical trend analysis for this well (Appendix E), based on the entire period of record, indicates that there is a slight downward trend of 0.6 cm/year.

The 2014 water levels generally fluctuated within the typical range for this well. In 2014, the average water level elevation was 21.68 m above sea level and the annual water level fluctuation was approximately 1.7 m.

Monitoring Results - Water Chemistry and Temperature

The Murray Siding (007) well was sampled in 2011 and the water chemistry results are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded. Aesthetic guidelines were exceeded for iron and manganese. VOCs and pesticides were not detected. This well has not been tested for either perchlorate or tritium.

Temperature data in the Murray Siding (007) well has been recorded since about 2010. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.99^{o}C, with annual fluctuations between 5.37^{o}C and 12.80^{o}C.

3.5 Wolfville (010)

Well Description

The Wolfville (010) observation well is located in Wolfville, Kings County. It was constructed in December 1968 as part of a regional groundwater resource evaluation project (Trescott, 1969) and was originally named “Nova Scotia Department of Mines Test Hole 398". This well has also been referred to as the “Wolfville 2" observation well. The well is completed in a sandstone aquifer. It is 17.7 m deep and penetrates 7.0 m into the bedrock. The casing depth extends to 22.7 m. Well location and construction information is provided in Table 3.5 and the well log is provided in Appendix A. A 29-day pump test was conducted at this well in 1969. The results indicated a transmissivity of 695 m^2/day and storativity of $3x10^{-2}$ (McIntosh, 1984).

Table 3.5: Wolfville (010) Well Construction Information

Well Name	Wolfville (010)
Observation Well ID Number	010
NSE Well Log Number	681252
County	Kings
Nearest Community	Wolfville
UTM - Easting	392093
UTM - Northing	4993838
Year Monitoring Started	1969
Casing Depth (m, bgs)	22.7
Well Depth (m, bgs)	24.1
Elevation - top of casing (m, asl)	5.20
Geologic Unit	Wolfville Formation
Aquifer Material	Bedrock - sandstone

Notes: bgs = below ground surface; asl = above sea level

The location of the Wolfville (010) observation well is shown in Figure F.5a. The well is situated in a park within a residential area (see Figure F.5b). Land use in the vicinity of the well is urban. The wellfield for the Town of Wolfville, comprised of two pumping wells, is located approximately 750 m away.

Monitoring Results - Water Levels

The water level graphs for Wolfville (010) are shown in Figure B.5, Appendix B. This well has been monitored since 1969, with breaks in data collection between 1974-1979 and 1994-1998. Water levels appear to have been relatively stable with perhaps a slightly decline up until 2009. Since 2009, however, there has been a visual increasing trend. From 1970 to 1975, the average water level elevation was approximately 1.1 m above sea level and the annual water level fluctuation was about 2.0 m. Between 1980 and 2009, water levels at some points during the year dropped as low as 1.0 m below sea level, however, since 2010 the average water level has been approximately 1.4 m above sea level. The average depth to water in this well is now approximately 3.4 m below top of casing.

The statistical trend analysis for this well (Appendix E) indicates that there is no identifiable statistical trend during the period of monitoring. Note that this trend analysis is based on the entire period of record and, therefore, it does not identify sub-trends. However, during the past 5 years there is visual evidence of an increasing trend. The reason for this change has not been identified. This observation well may be influenced to some degree by changes in pumping at the Town of Wolfville's production wells, which are located about 750 m away.

The 2014 water levels generally remained at, or above, the higher end of the typical range for this well for the majority of the year. The average water level in 2014 was 1.84 m above sea level, with an annual fluctuation of approximately 1.3 m.

Monitoring Results - Water Chemistry and Temperature

The Wolfville (010) well was sampled in 2004 and 2008 and the chemistry results are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded; however, turbidity, iron and manganese were above aesthetic drinking water guidelines in the 2008 sample. The elevated turbidity levels are expected to be associated with the high iron and manganese concentrations. The iron and manganese levels from the 2008 sample have increased

by approximately two orders of magnitude compared to the 2004 sample results. The reason for this increase has not been determined. VOCs, pesticides and perchlorate were not detected in this well.

The chloride level in this well was 78 mg/L in 2004 and 87 mg/L in 2008. Although these levels do not exceed the aesthetic objective of 250 mg/L, they are elevated above the typical background level for groundwater in coastal Nova Scotia (<50 mg/L). For the 2004 sample results, the bromide/chloride ratio for this well was <10 (i.e., 0.06 mg/L/ 78mg/L x 10,000 =7.7). For the 2008 sample results, the bromide/chloride ratio for this well was 9.2. Both of these results indicate that the source of the chloride is road salt. Please see Section 2.2.4 for a discussion of how this ratio is used to assess salt sources.

The tritium level in this well was 4.7 TU (+/- 0.4), indicating that the water in this well is either a mix of old and recent water (i.e., recharge occurred before and after 1952) or is recent (i.e., recharged occurred after 1952).

Temperature data in the Wolfville (010) well has been recorded since about 2005. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 9.36^{o}C, with annual fluctuations between 5.88^{o}C and 13.56^{o}C.

3.6 Truro (014)

Well Description

The Truro (014) observation well is located in Truro, Colchester County. It was constructed in November 1970 as part of a regional groundwater resource evaluation project (Hennigar, 1972) and was originally named “Nova Scotia Department of Mines Test Hole 421". It has also been referred to as the “Truro 421" observation well. The well is 91.4 m deep, penetrates 80.8 m into bedrock and the casing depth extends to 18.3 m. It is completed in a sandstone aquifer. Well location and construction information is provided in Table 3.6 and the well log is provided in Appendix A.

Table 3.6: Truro (014) Well Construction Information

Well Name	Truro (014)
Observation Well ID Number	014
NSE Well Log Number	701431
County	Colchester
Nearest Community	Truro
UTM - Easting	476052
UTM - Northing	5023778
Year Monitoring Started	1971
Casing Depth (m, bgs)	18.3
Well Depth (m, bgs)	91.4
Elevation - top of casing (m, asl)	9.83
Geologic Unit	Wolfville Formation
Aquifer Material	Bedrock - sandstone

Notes: bgs = below ground surface; asl = above sea level

The location of the Truro (014) observation well is shown in Figure F.6a, Appendix F, and a site photograph is shown in Figure F.5b. It is situated in an urban area where the surrounding land is

predominantly developed. The well is located within the Town of Truro Public Works yard and is adjacent to a golf course, several businesses and residences. The area is serviced by a municipal water supply and there are no other known water wells in the immediate vicinity.

Monitoring Results - Water Levels

The water level graphs for Truro (014) are shown in Figure B.6, Appendix B. This well has been monitored since 1971. The groundwater levels appear to have decreased slightly between 1971 and 1991. There is a data gap between 1991 and 2002 when no monitoring was carried out at this well; however, sometime after 1991 the groundwater levels in this well increased and have remained relatively consistent since 2003 when monitoring began again. The trend analysis for this well (Appendix E) indicates there is an upward trend present when averaged over the entire monitoring period, equivalent to approximately 2.5 cm/year. However, it should be noted that since 2004 there has been relative stability in water level trends at this well.

This observation well is located within a kilometre of a municipal water supply well that was decommissioned in1994,

The water level elevation between 1971 and 1991 ranged from about 6.5 to 7.5 m above sea level and the annual water level fluctuation was approximately 1.5 m. From 2003 to 2010, the average water level elevation was higher at 7.9 m above sea level, with an annual water level fluctuation was about 1.2 m. The depth to water in this well has varied from approximately 1.3 m to 2.5 m below top of casing.

The 2014 water levels in this well were near its historical highs for the majority of the year. The average water level during 2014 was 7.84 m, with an annual water level fluctuation of approximately 0.9 m.

Monitoring Results - Water Chemistry and Temperature

The Truro (014) well has not been sampled due to a partial blockage of the casing, caused by an old float device from a Stevens chart recorder that is lodged in the well. Therefore, chemistry data are not available.

Temperature data in the Truro (014) well has been recorded since about 2004. A graph of the daily

average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.85ºC, with annual fluctuations between 3.84ºC and 14.57ºC.

3.7 Monastery (028)

Well Description

The Monastery (028) observation well is located near Monastery, Antigonish County. The well was installed in January 1974 as part of a groundwater resource evaluation study (Strait of Canso Natural Environment Committee, 1975) and was originally named "Nova Scotia Department of Mines Test Hole 449". The well is completed in a sandstone aquifer. It is 158 m deep and the casing depth is unknown. Well location and construction information is provided in Table 3.7 and the well log is provided in Appendix A. A 50-hour pumping test was conducted at this well in 1974, indicating a transmissivity of 9.8 m^2/day and a 20-year safe yield of 439 m^3/day (67 igpm) (McIntosh, 1984).

Table 3.7: Monastery (028) Well Construction Information

Well Name	Monastery (028)
Observation Well ID Number	028
NSE Well Log Number	742420
County	Antigonish
Nearest Community	Monastery
UTM - Easting	606083
UTM - Northing	5052489
Year Monitoring Started	1976
Casing Depth (m, bgs)	NA
Well Depth (m, bgs)	158
Elevation - top of casing (m, asl)	23.12
Geologic Unit	Canso Group
Aquifer Material	Bedrock - sandstone

Notes: bgs = below ground surface; asl = above sea level

The location of the Monastery (028) well is shown in Figure F.7a, Appendix F. It is situated in a rural area where land use is primarily agricultural. The well is located at the end of a hayfield (see Figure F.7b), approximately 1,000 m from the ocean. The nearest water well is a domestic well located approximately 230 m away.

Monitoring Results - Water Levels

The water level graphs for Monastery (028) are shown in Figure B.7, Appendix B. This well has been monitored since 1979 and the average water level elevation has decreased from about 15.5 m (between 1979 and 1987) to approximately 13.5 m in 2006. The annual water level fluctuation also decreased over the same period from about 1.5 m to 1.0 m. However, the water level in this well rebounded to its 1980s elevation after the well was purged during a sampling event in December 2006. The water level then slowly declined again until it rebounded once more during a sampling event in December 2008. It is suspected that the decline in water levels at this well during the 1990s and early 2000s may have been due to a slow decline in well efficiency, perhaps caused by biofouling. The sampling process involves pumping water from the well, which may temporarily rehabilitate the well and allow water levels to rebound.

The trend analysis (Appendix E) indicates there is a downward trend present, equivalent to 3.9 cm/year. The depth to water in this well has varied from approximately 6.4 m to 11.0 m below top of casing.

The 2014 water levels in this well were near its historical lows for the majority of the year. The average water level in 2014 was 13.12 m above sea level, with a water level fluctuation of approximately 1.2 m.

Monitoring Results - Water Chemistry and Temperature

The Monastery (028) well was sampled in 2006 and 2008, and the results are presented in Appendix C. The results indicate that no drinking water guidelines were exceeded in either of the samples. VOCs, pesticides and perchlorate were not detected.

The tritium level in this well was 0.94 TU (+/- 0.17), indicating that the water is relatively old (i.e., recharge occurred before 1952).

Temperature data in the Monastery (028) well has been recorded since about 2003. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.16^{o}C, with annual fluctuations between 7.81^{o}C and 8.42^{o}C.

3.8 Point Aconi (030)

Well Description

The Point Aconi (030) observation well is located near Point Aconi, Cape Breton County. It was constructed in August 1976 to monitor groundwater levels at the Prince Mine, located about 2 km away. The well is completed in a sandstone aquifer. It is 30.5 m deep, penetrates 26.2 m into the bedrock and the casing depth extends to 12.8 m. Well location and construction information is provided in Table 3.8 and the well log is provided in Appendix A.

The location of the Point Aconi (030) well is shown in Figure F.8a, Appendix F, and a site photograph is shown in Figure F.8b. It is situated in an urban area where the land use is primarily residential. There are several residences located within 300 m of the well, one of which is immediately adjacent to the well. The nearest water well is a domestic well located approximately 18 m away.

Table 3.8: Point Aconi (030) Well Construction Information

Well Name	Point Aconi (030)
Observation Well ID Number	030
NSE Well Log Number	761408
County	Cape Breton
Nearest Community	Point Aconi
UTM - Easting	707986
UTM - Northing	5133152
Year Monitoring Started	1976
Casing Depth (m, bgs)	12.8
Well Depth (m, bgs)	30.5
Elevation - top of casing (m, asl)	29.97
Geologic Unit	Inverness Formation
Aquifer Material	Bedrock - sandstone

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Point Aconi (030) are shown in Figure B.8, Appendix B. This well has been monitored since 1976. The average water level elevation at the Point Aconi (030) well is 26.34 m above sea level and the annual water level fluctuation is about 5.94 m. The depth to water in this well is approximately 3.6 m below top of casing. There is no visually obvious long-term water level trend in this well but statistical trend analysis (Appendix E) indicates a decreasing trend at a rate of 1.7 cm/year.

The 2014 water levels fluctuated in this well at times near or above historical highs (winter/spring) and at other times near or below historical lows (summer/fall). The average water level in 2014 was 26.34 m above sea level, with a water level fluctuation of approximately 7.3 m.

Monitoring Results - Water Chemistry and Temperature

The Point Aconi (030) well was sampled in 2005 and 2008. Water chemistry results are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded. Manganese was above the aesthetic drinking water guideline in the 2005 sample but was below the guideline in the 2008 sample. VOCs, pesticides and perchlorate were not detected.

The tritium level in this well was 3.62 TU (+/- 0.34), indicating that the water in this well is a mix of old and recent water (i.e., recharge occurred before and after 1952).

Temperature data in the Point Aconi (030) well has been recorded since about 2003. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.45^{o}C, with annual fluctuations between 4.23^{o}C and 13.70^{o}C.

3.9 Lawrencetown (043)

Well Description

The Lawrencetown (043) observation well is located near Upper Lawrencetown, Halifax County. It was constructed in March 1977 as part of a saltwater intrusion investigation in the Lawrencetown area (Cross, 1980) and was originally named “Nova Scotia Department of the Environment, Test Hole L3". It has also been referred to as the “Lawrencetown L3" observation well. Three other test wells were drilled near this well (i.e., Lawrencetown L1, L2 and L4) but were decommissioned in August 1994 by sealing the entire length of the wells with alternating layers of bentonite and sand.

Table 3.9: Lawrencetown (043) Well Construction Information

Well Name	Lawrencetown (043)
Observation Well ID Number	043
NSE Well Log Number	771538
County	Halifax
Nearest Community	Upper Lawrencetown
UTM - Easting	464172
UTM - Northing	4947712
Year Monitoring Started	1978
Casing Depth (m, bgs)	44.2
Well Depth (m, bgs)	53
Elevation - top of casing (m, asl)	4.73
Geologic Unit	Goldenville Formation
Aquifer Material	Bedrock - quartzite

Notes: bgs = below ground surface; asl = above sea level

The Lawrencetown (043) well is completed in a fractured bedrock aquifer comprised of quartzite. It is 53.0 m deep, penetrates 49.4 m into the bedrock and the casing depth extends to 44.2 m. Well location and construction information is provided in Table 3.9 and the well log is provided in

Appendix A. A 1.5-hour pump test was conducted at this well in 1977 and the results indicated a transmissivity of 2.8 m^2/day a safe yield rate of 95 m^3/day (14.5 igpm) (McIntosh, 1984).

The location of the Lawrencetown (043) observation well is shown in Figure F.9a, Appendix F. It is situated in a rural area where land use is primarily residential. The well is located within 100 m of the ocean (see Figure F.9b) and there are two domestic wells nearby, both located approximately 50 m away.

Monitoring Results - Water Levels

The water level graphs for Lawrencetown (043) are shown in Figure B.9, Appendix B. This well has been monitored since 1978, although a data gap exists for the ten year period from 1992 to 2002. A visual inspection of the historical water level graph indicates that water levels have declined by approximately 1.0 m since monitoring began. The decline is expected to be caused by the increased use of a nearby domestic well located 50 m away. The statistical trend analysis for this well (Appendix E) indicates there is a downward trend present, equivalent to approximately 1.9 cm/year.

The average water level elevation at the Lawrencetown (043) well for the monitoring period 1978-1992 was approximately 3.6 m above sea level and the annual water level fluctuation was about 0.6 m. Between 2002 and 2009, the average water level declined to approximately 2.89 m above sea level, with a 1.26 m average annual fluctuation. During this time period, the average depth to water in this well has varied from 1.61 m to 2.07 m below top of casing, and the hourly water level data shows tidal fluctuations of approximately 0.3 m. There is also a daily drawdown and subsequent recovery of approximately 0.8 m at this well, which likely reflects domestic water use patterns associated with a nearby domestic well.

The 2014 water levels fluctuated within the lower end of the typical historical range for this well. In 2014 the average water level elevation was 2.87 m above sea level and the annual water level fluctuation was approximately 1.1 m.

Monitoring Results - Water Chemistry and Temperature

The Lawrencetown (043) well was sampled in 2004, 2008 and 2011. The chemistry results are presented in Appendix C. The results indicate that arsenic concentrations exceeded the health-

based drinking water guideline in all samples. VOCs and pesticides were not detected. Tritium results reported from a previous study (Bottomley, 1983) were non-detect, indicating this water is relatively old (i.e., recharged prior to 1952).

It should also be noted that the chloride level in this well (150 mg/L in 2004, 180 mg/L in 2008 and 170 mg/L in 2011) is elevated above the typical background level for groundwater in coastal Nova Scotia (<50 mg/L), although it is below the aesthetic objective of 250 mg/L. The ocean is less than 100 m from this well and, therefore, the elevated chloride level is likely due to seawater influence. The bromide/chloride ratio at this well also indicates a seawater influence. The bromide/chloride ratio at this well was 35 (i.e., 0.53 mg/L/150 mg/L x 10,000 = 35). Please see Section 2.2.4 for a discussion of how this ratio is used to assess salt sources.

Temperature data in the Lawrencetown (043) well has been recorded since about 2004. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.54^{o}C, with annual fluctuations between 5.82^{o}C and 11.28^{o}C.

3.10 Durham (045)

Well Description

The Durham (045) observation well is located near Durham, Pictou County. It was constructed in July 1978 as part of a regional groundwater resource evaluation project (Gibb and McMullin, 1980) and was originally named "Nova Scotia Department of the Environment Test Hole Durham 3". The well is completed in a sandstone and shale aquifer. It is 75.3 m deep, penetrates 69.2 m into the bedrock and the casing depth is unknown. Well location and construction information is provided in Table 3.10 and the well log is provided in Appendix A. A 72-hour pump test was conducted at this well in 1978, indicating a transmissivity of 14 m^2/day and storativity of 3.2 x 10^{-4} (McIntosh, 1984).

Table 3.10: Durham (045) Well Construction Information

Well Name	Durham (045)
Observation Well ID Number	045
NSE Well Log Number	782683
County	Pictou
Nearest Community	Durham
UTM - Easting	516224
UTM - Northing	5052105
Year Monitoring Started	1979
Casing Depth (m, bgs)	NA
Well Depth (m, bgs)	75.3
Elevation - top of casing (m, asl)	14.88
Geologic Unit	Boss Point Formation
Aquifer Material	Bedrock - sandstone/shale

Notes: bgs = below ground surface; asl = above sea level

The location of the Durham (045) observation well is shown in Figure F.10a, Appendix F. It is situated in a rural area, where the land use is primarily agricultural. The well is located in a wooded

area, about 3 m from the edge of a hayfield. The nearest water well is a domestic well located approximately 500 m away.

Monitoring Results - Water Levels

The water level graphs for Durham (045) are shown in Figure B.10, Appendix B. This well has been monitored since 1979. The water levels appear to have risen slightly since monitoring began and the amount of annual water level fluctuation has varied throughout the monitoring period. The statistical trend analysis for this well (Appendix E) indicates there is a small upward trend present, equivalent to approximately1.5 cm/year. The typical average depth to water in this well ranges between 3 m and 4 m below top of casing.

From 1979 to 1989 the average water level elevation was approximately 11.0 m above sea level, then from 1989 to 2004 average water levels rose slightly, to approximately 11.6 m above sea level. Since 2004 the average water levels have decreased by approximately 0.7 m.

The 2014 water levels fluctuated within the typical historical range for this well. The average water level in 2014 was 11.43 m above sea level and the annual water level fluctuation was 2.7 m.

Monitoring Results - Water Chemistry and Temperature

The Durham (045) well was sampled in 2005 and 2009, and the chemistry results are presented in Appendix C. The results indicate that no drinking water guidelines were exceeded. VOCs, pesticides and perchlorate were not detected.

The tritium level in this well was 2.04 TU, indicating that the water in this well is a mix of old and recent water (i.e., recharge occurred before and after 1952).

Temperature data in the Durham (045) well has been recorded since about 2004. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 7.76^{o}C, with annual fluctuations between 6.24^{o}C and 9.47^{o}C.

3.11 Kentville (048)

Well Description

The Kentville (048) observation well is located near Kentville, Kings County. The well was constructed in May 1977 as part of a water supply investigation for the Kentville Industrial Park (Callan, 1977) and was previously named the "Kentville Industrial Park" observation well. The well is completed in a sandstone aquifer. It is 106.7 m deep and the casing depth extends to 30.5 m. Well location and construction information is provided in Table 3.11 and the well log is in Appendix A. A 72-hour pump test was conducted at this well in June 1977 and the results indicated a transmissivity of 84 m^2/day and a storativity of 3 x 10^{-4} (Callan, 1977).

Table 3.11: Kentville (048) Well Construction Information

Well Name	Kentville (048)
Observation Well ID Number	048
NSE Well Log Number	772021
County	Kings
Nearest Community	Kentville
UTM - Easting	377628
UTM - Northing	4992245
Year Monitoring Started	1980
Casing Depth (m, bgs)	30.5
Well Depth (m, bgs)	106.7
Elevation - top of casing (m, asl)	12.79
Geologic Unit	Wolfville Formation
Aquifer Material	Bedrock - sandstone

Notes: bgs = below ground surface; asl = above sea level

The location of the Kentville (048) observation well is shown in Figure F.11a, Appendix F. It is situated in a wooded area (see Figure F.11b) and the surrounding land use includes an industrial park (Annapolis Valley Regional Industrial Park), residential properties and undeveloped land. This well lies within the wellhead protection area for the Town of Kentville wellfield, which includes seven production wells. The wellfield was initially developed in the late 1970's to supply the nearby industrial park and was expanded to become the primary water supply for the Town of Kentville in 2002. The nearest production well is located approximately 150 m away from the Kentville (048) observation well.

Monitoring Results - Water Levels

The water level graphs for Kentville (048) are shown in Figure B.11, Appendix B. This well has been monitored since 1980. A visual inspection of the historical water level graph indicates that the water level dropped slightly (i.e., approximately 0.2 m) between 1995 and 2008, but rose again to pre-1995 levels after 2008. The statistical trend analysis for this well (Appendix E) indicates there is a small downward trend, equivalent to 0.6 cm/year.

The 2014 water levels fluctuated within the typical historical range for this well. The average water level elevation in 2014 was 7.03 m above sea level and the annual water level fluctuation was 0.82 m. The average depth to water in this well in 2014 was 5.76 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Kentville (048) well was sampled in 2005, 2007 and 2011 and the results are presented in Appendix C. In 2005, no drinking water guidelines were exceeded. In 2007 and 2011, lead exceeded the health-based drinking water guideline, and chloride, iron and total dissolved solids exceeded the aesthetic drinking water guidelines. No pesticides or VOC’s have been detected in any of the sampling events.

The chloride level in this well was at 230 mg/L in 2005, which is elevated above the typical background level for groundwater in coastal Nova Scotia (<50 mg/L). In 2007 and 2011, the chloride level in this well increased to 270 mg/L and 290 mg/L, respectively, which exceeded the aesthetic objective of 250 mg/L. The well is located approximately 15 km from the ocean and, therefore, the elevated chloride levels are not expected to be caused by sea water. The

bromide/chloride ratio at this well indicated the salt source is likely to be road salt. The bromide/chloride ratio at this well was 7.4 (i.e., 0.2 mg/L/270 mg/L x 10,000 = 7.4). Please see Section 2.2.4 for a discussion of how this ratio is used to assess salt sources.

The perchlorate level in this well was 0.05 ug/L, which is below the recommended Health Canada guidance value of 6 ug/L. The tritium level in this well was 3.8 TU (+/- 0.3), indicating that the water in this well is a mix of old and recent water (i.e., recharge occurred before and after 1952).

Temperature data in the Kentville (048) well has been recorded since about 2004. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 7.21^{o}C, with annual fluctuations between 1.85^{o}C and 11.82^{o}C.

3.12 Sydney (050)

Well Description

The Sydney (050) observation well is located near Sydney, Cape Breton County. It was constructed in 1977 as part of a regional water resource study in the Sydney Coalfield (Baechler, 1986) and has also been referred to as the "Sydney Watershed " observation well. The well is completed in a sandstone aquifer and is 100.6 m deep with a casing depth extending to 6.1 m. Well location and construction information is provided in Table 3.12 and the well log is provided in Appendix A. A 72-hour pump test was conducted at this well in the 1980's and the results indicated a transmissivity of 71 m^2/day (Baechler, 1986).

Table 3.12: Sydney (050) Well Construction Information

Well Name	Sydney (050)
Observation Well ID Number	050
NSE Well Log Number	771077
County	Cape Breton
Nearest Community	Sydney
UTM - Easting	720589
UTM - Northing	5106450
Year Monitoring Started	1984
Casing Depth (m, bgs)	6.7
Well Depth (m, bgs)	100.6
Elevation - top of casing (m, asl)	64.10
Geologic Unit	South Bar Formation
Aquifer Material	Bedrock - sandstone

Notes: bgs = below ground surface; asl = above sea level

The well was cleaned in November 2011 because a downward water level trend suggested it may have become partially clogged due to chemical or biological incrustation. The cleaning process

involved eight hours of jetting, followed by overnight chlorination, followed by another four hours of jetting. A downhole video of the well was completed before and after the cleaning process.

The location of the Sydney (050) observation well is shown in Figure F.12a, Appendix F. It is situated in a rural area where land use is primarily residential and undeveloped land. The well is located within the Sydney wellfield, which consists of 11 production wells. The wellfield, which began operating in 1996, pumps an average of 16,000 m^3/day and is the largest municipal wellfield in Nova Scotia. The nearest production well is approximately 200 m from the Sydney (050) observation well.

Monitoring Results - Water Levels

The water level graphs for Sydney (050) are shown in Figure B.12, Appendix B. This well has been monitored since 1984. The water levels decreased when the Sydney wellfield began pumping in 1996; after a period of less than one year, water levels stabilized until approximately 2008 when a declining trend was observed. As discussed above, the well was cleaned in November 2011 because the declining water level was suspected to be related to fouling of the well. However, the water level did not initially appear to recover when water level monitoring resumed in December 2011, after the well had been cleaned. (Note: the water level did eventually recover in January 2012 and has since returned to typical historical levels. Further details about the recovery of water levels will be provided in subsequent annual reports).

The statistical trend analysis for this well (Appendix E) indicates there is a downward trend, equivalent to approximately 5.5 cm/year. Note that the trend analysis includes data collected after December 2011 when the water levels started to recover after the well was cleaned.

The average water level elevation at this well from 1984 to 1994 (i.e., before the wellfield began pumping) was approximately 59.9 m above sea level and the annual water level fluctuation varied between 0.7 m and 1.0 m. Between 2004 and 2009 the average water level elevation was approximately 58.7 m above sea level, with an annual water level fluctuation of up to approximately 3 m. The depth to water in this well is between 5.0 and 6.0 m below top of casing.

The 2014 water levels well fluctuated within the typical historical range for this well. Water levels were relatively high in the winter and spring followed by declining levels in summer and early fall,

before recovering again. The average water level elevation in 2014 was 59.13 m above sea level and the annual water level fluctuation was 3.1 m. The average depth to water in this well in 2011 was 5.0 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Sydney (050) well was sampled in 2005 and 2008 and the chemistry results are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded; however, manganese was above the aesthetic drinking water guideline in both samples. VOCs, pesticides and perchlorate were not detected.

The tritium level in this well was 4.92 TU (+/- 0.43), indicating that the water in this well is a mix of old and recent water (i.e., recharge occurred before and after 1952).

Temperature data in the Sydney (050) well has been recorded since about 2004. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 7.43ºC, with annual fluctuations between 5.84ºC and 9.22ºC.

3.13 North Grant (054)

Well Description

The North Grant (054) observation well is located in Lower North Grant, Antigonish County. This well was constructed in 1987 to expand the NS Groundwater Observation Well Network. The well is completed in slate and is 39.0 m deep and the casing extends to a depth of 13.1 m. Well location and construction information is provided in Table 3.13 and the well log is in Appendix A.

The location of the North Grant (054) observation well is shown in Figure F.13a, Appendix F. The well is situated approximately 15 km northwest of the town of Antigonish, and approximately 3.0 m from the side of North Grant Road (see Figure F.13b). It is located approximately 100 m from Wrights River, and there is a domestic drilled well located within 150 m.

Table 3.13: North Grant (054) Well Construction Information

Well Name	North Grant (054)
Observation Well ID Number	054
NSE Well Log Number	871262
County	Antigonish
Nearest Community	Lower North Grant
UTM - Easting	576403
UTM - Northing	5055139
Year Monitoring Started	1987
Casing Depth (m, bgs)	13.1
Well Depth (m, bgs)	39.0
Elevation - top of casing (m, asl)	21.7
Geologic Unit	Horton Group
Aquifer Material	Bedrock - shale/slate

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for North Grant (054) are shown in Figure B.13, Appendix B. This well

has been monitored since 1987; however, there is a gap in the monitoring data between 1997 and 2006. Water levels at this well have declined approximately 40 cm since 1997. From 1987 to 1997, the average water level elevation was approximately 19.8 m above sea level and the annual water level fluctuation was about 0.9 m. The average water level elevation for the period between 2006 and 2011 was slightly lower, at 19.4 m above sea level, and the average annual water level fluctuation for this period was approximately 1.1 m.

The statistical trend analysis for this well (Appendix E) indicates there is an overall downward trend, equivalent to approximately 1.9 cm/year. Note that the trend analysis includes more recent data collected after a nearly 10 year hiatus in monitoring, and that the recent average water levels appear to be slightly lower than before the hiatus.

The 2014 water levels fluctuated at the low end of the typical historical range for this well. The average water level elevation in 2014 was 19.37 m above sea level and the annual water level fluctuation was 0.94 m. The average depth to water in this well in 2014 was 2.34 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The North Grant (054) well was sampled in 2006 and 2008 and the chemistry results are presented in Appendix C. The results indicate that no drinking water guidelines were exceeded in 2006; however, the 2008 sample exceeded health-based guidelines for arsenic and aesthetic guidelines for turbidity and iron. VOCs and pesticides were not detected.

The tritium level in this well was 1.95 TU (+/- 0.22), indicating that the water in this well is a mix of old and recent water (i.e., recharge occurred before and after 1952).

Temperature data in the North Grant (054) well has been recorded since about 2006. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 7.85^{o}C, with annual fluctuations between 6.24^{o}C and 9.81^{o}C.

3.14 Stillwater (055)

Well Description

The Stillwater (055) observation well is located in Stillwater, Guysborough County. This well was constructed in 1987 to expand the NS Groundwater Observation Well Network. It is completed in fractured bedrock comprised of greywacke. The well is 36.0 m deep and the casing extends to 13.4 m depth. Well location and construction information are provided in Table 3.14 and the well log is provided in Appendix A.

The location of the Stillwater (055) observation well is shown in Figure F.14, Appendix F. The well is located in a wooded area off Route #7 on Department of Natural Resources' property adjacent to a gravel road leading to a rifle range. The nearest water well is a domestic drilled well located within 250 m. The St. Mary's River is approximately 750 m away, and the well is located 2 km from an Environment Canada Hydrometric Station on St. Mary's River.

Table 3.14: Stillwater (055) Well Construction Information

Well Name	Stillwater (055)
Observation Well ID Number	055
NSE Well Log Number	871263
County	Guysborough
Nearest Community	Stillwater
UTM - Easting	579938
UTM - Northing	5004212
Year Monitoring Started	1987
Casing Depth (m, bgs)	13.4
Well Depth (m, bgs)	36.0
Elevation - top of casing (m, asl)	26.87
Geologic Unit	Goldenville Formation
Aquifer Material	Bedrock - greywacke

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Stillwater (055) are shown in Figure B.14, Appendix B. This well has been monitored since 1987; however, monitoring stopped in the summer of 1995 and did not resume until May 2006. Water levels appear to have remained relatively consistent over time. A statistical trend analysis was conducted for this well (Appendix E) but statistical confidence levels were not high enough to reliably indicate a trend.

From 1987 to 1995, the average water level elevation at this well was approximately 25.0 m above sea level and the annual water level fluctuation was about 1.1 m. The average water level elevation for the period between 2006 and 2011 was slightly higher, at 25.08 m above sea level, and the annual water level fluctuation for this period was up to 1.4 m.

The 2014 water levels fluctuated at the low end of the typical historical range for this well. For much of the summer and early fall water levels were at the low end of the range, or even created new historical lows. The average water level elevation in 2014 was 24.86 m above sea level and the annual water level fluctuation was 1.64 m. The average depth to water in this well in 2014 was 2.01 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Stillwater (055) well was sampled in 2006 and 2008 and the chemistry results are presented in Appendix C. The results indicate that no drinking water guidelines were exceeded in 2006, however, the aesthetic guideline for manganese was exceeded in 2008. One VOC (toluene) was measured at the detection limit of 1 ug/L in 2006 but it was not detected in 2008. No pesticides were detected at this well.

The tritium level in this well was 3.82 TU (+/- 0.34), indicating that the water in this well is a mix of old and recent water (i.e., recharge occurred before and after 1952).

Temperature data in the Stillwater (055) well has been recorded since about 2006. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 7.39^{o}C, with annual fluctuations between 4.63^{o}C and 10.53^{o}C.

3.15 Sheet Harbour (056)

Well Description

The Sheet Harbour (056) observation well is located in Sheet Harbour, Halifax County. The well was constructed in 1987 to expand the NS Groundwater Observation Well Network. The well is completed in a bedrock aquifer and is 46.4 m deep with 7.01 m of casing. Well location and construction information is provided in Table 3.15 and the well log is provided in Appendix A.

The location of the Sheet Harbour (056) observation well is shown in Figure F.15a, Appendix F. It is situated in a rural area where the surrounding land is predominantly undeveloped. The well is located in a field, about 50 m north of Route #7 (see Figure F.15b). It is located approximately 5.0 m from the East Halfway Brook and there is a domestic drilled well within 35 m of the observation well.

Table 3.15: Sheet Harbour (056) Well Construction Information

Well Name	Sheet Harbour (056)
Observation Well ID Number	056
NSE Well Log Number	871264
County	Halifax
Nearest Community	Sheet Harbour
UTM - Easting	543176
UTM - Northing	4972468
Year Monitoring Started	1987
Casing Depth (m, bgs)	7.01
Well Depth (m, bgs)	46.4
Elevation - top of casing (m, asl)	38.06
Geologic Unit	Goldenville Formation
Aquifer Material	Bedrock - Quartzite

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Sheet Harbour (056) are shown in Figure B.15, Appendix B. Based on

a visual inspection of the historical water level graph, the water level at this well increased over time by approximately 1 m. The average water level elevation at this well was as follows: 35.9 m (1987 to 1993); 36.2 m (1994 to 1999); and 36.9 m (2007 to 2009). A trend analysis was not completed for this well because there was insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels fluctuated close to, or even in some cases exceeding, the historical highs for this well throughout most of the year. In 2014, the average water level elevation was 36.79 m above sea level and the annual water level fluctuation was 0.81 m. The depth to water in this well in 2014 was 1.27 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Sheet Harbour (056) well was sampled in 2008 and the chemistry results are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded; however, arsenic was detected at 10 ug/L, which is equal to but does not exceed the drinking water guideline for arsenic. In addition, the aesthetic guideline for manganese was exceeded. No VOCs or pesticides were detected at this well.

Temperature data in the Sheet Harbour (056) well has been recorded since about 2007. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 7.19^{o}C, with annual fluctuations between 4.92^{o}C and 9.56^{o}C.

3.16 Hayden Lake (059)

Well Description

The Hayden Lake (059) observation well is located near East Jordan, Shelburne County. The well was constructed in 1987 to expand the NS Groundwater Observation Well Network. It is completed in fractured bedrock comprised of greywacke. The well is 48.8 m deep and the casing extends to 6.1 m depth. Well location and construction information is provided in Table 3.16 and the well log is provided in Appendix A.

The location of the Hayden Lake (059) observation well is shown in Figure F.16, Appendix F. It is situated in a rural area where the surrounding land is primarily undeveloped. The well is located adjacent to the Hayden Lake Water Treatment Plant, which supplies the Town of Lockeport. The nearest water well is a domestic well located approximately 300 m away.

Table 3.16: Hayden Lake (059) Well Construction Information

Well Name	Hayden Lake (059)
Observation Well ID Number	059
NSE Well Log Number	870189
County	Shelburne
Nearest Community	East Jordan
UTM - Easting	321365
UTM - Northing	4849195
Year Monitoring Started	1988
Casing Depth (m, bgs)	6.1
Well Depth (m, bgs)	48.8
Elevation - top of casing (m, asl)	2.94
Geologic Unit	Goldenville Formation
Aquifer Material	Bedrock - greywacke

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Hayden Lake (059) are shown in Figure B.16, Appendix B. This well has been monitored since 1988. There is no visually obvious long-term water level trend and the statistical trend analysis (Appendix E) indicates that there is no significant trend present.

The 2014 water levels well fluctuated within the typical historical range for this well. The average water level elevation in 2014 was 1.51 m above sea level and the annual water level fluctuation was 0.84 m. The depth to water in 2014 was 1.43 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Hayden Lake (059) well was sampled in 2005 and 2008 and the chemistry results are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded; however, the pH level in the 2008 sample did not meet the aesthetic drinking water guideline.

Note that one VOC (chloroform) was detected below the drinking water guideline in 2005; however, it was not detected in the 2008 sample. Chloroform is produced when chlorine reacts with organic matter and may have been present in this well as a result of chlorine use and storage at the nearby water treatment plant.

Perchlorate was detected at very low levels (0.014 ug/L), but was far below the recommended Health Canada guidance value of 6 ug/L. No pesticides were detected at this well.

The tritium level in this well was 3.4 TU, indicating that the water in this well is a mix of old and recent water (i.e., recharge occurred before and after 1952).

Temperature data in the Hayden Lake (059) well has been recorded since about 2004. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 9.21^{o}C, with annual fluctuations between 6.62^{o}C and 10.93^{o}C.

3.17 Meteghan (060)

Well Description

The Meteghan (060) observation well is located near the community of Meteghan River, Digby County. The well was constructed in March 1987 to expand the NS Groundwater Observation Well Network. The well is completed in slate and is 61.0 m deep with 12.19 m of casing. Well location and construction information is provided in Table 3.17 and the well log is provided in Appendix A.

The location of the Meteghan (060) observation well is shown in Figure F.17a, Appendix F. The well is situated on the lawn of a private property (see Figure F.17b), located 100 m south of the Meteghan River. The nearest water well is a domestic dug well approximately 30 m away.

Table 3.17: Meteghan (060) Well Construction Information

Well Name	Meteghan (060)
Observation Well ID Number	060
NSE Well Log Number	870188
County	Digby
Nearest Community	Meteghan River
UTM - Easting	250890
UTM - Northing	4900628
Year Monitoring Started	1987
Casing Depth (m, bgs)	12.19
Well Depth (m, bgs)	61.0
Elevation - top of casing (m, asl)	13.81
Geologic Unit	Halifax Formation
Aquifer Material	Bedrock-slate

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Meteghan (060) are shown in Figure B.17, Appendix B. This well has been monitored since mid-December 1987. A statistical trend analysis was conducted for this well (Appendix E) but statistical confidence levels were not high enough to reliably indicate a trend.

The 2014 water levels fluctuated near the high end of the typical historical range for this well. The average water level elevation in 2014 was 9.50 m above sea level and the annual water level fluctuation was 0.67 m. The average depth to water in 2014 was 4.31 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Meteghan (060) well was sampled in 2006 and 2008 and the chemistry data are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded; however, aesthetic drinking water guidelines were exceeded for turbidity, iron and manganese in both the 2006 and 2008 samples. The elevated turbidity is expected due to the high iron and manganese levels. VOCs and pesticides were not detected.

The tritium level in this well was 0.46 TU (+/- 0.14), indicating that the water in this well is old water (i.e., recharge occurred before 1952).

Temperature data in the Meteghan (060) well has been recorded since about 2006. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.99^{o}C, with annual fluctuations between 7.95^{o}C and 10.15^{o}C.

3.18 Annapolis Royal (062)

Well Description

The Annapolis Royal (062) observation well is located near Lake La Rose, Annapolis County. The well was constructed in December 1989 to expand the NS Groundwater Observation Well Network. The well is completed in granite and is 62.8 m deep with 24.3 m of casing. Well location and construction information is provided in Table 3.18 and the well log is provided in Appendix A.

The location of the Annapolis Royal (062) observation well is shown in Figure F.18, Appendix F. It is situated in a rural area where the surrounding land is primarily undeveloped. The well is located 500 m from Lake La Rose, the former water supply for the Town of Annapolis Royal. The nearest water well is a domestic well located approximately 1,000 m away.

Table 3.18: Annapolis Royal (062) Well Construction Information

Well Name	Annapolis Royal (062)
Observation Well ID Number	062
NSE Well Log Number	891722
County	Annapolis
Nearest Community	Lake La Rose
UTM - Easting	303029
UTM - Northing	4952588
Year Monitoring Started	1990
Casing Depth (m, bgs)	24.3
Well Depth (m, bgs)	62.8
Elevation - top of casing (m, asl)	121.06
Geologic Unit	Liscomb Complex
Aquifer Material	Bedrock - granite

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Annapolis Royal (062) are shown in Figure B.18, Appendix B. This well has been monitored since 1990 and water levels have remained relatively constant. A statistical trend analysis was conducted for this well (Appendix E) but statistical confidence levels were not high enough to reliably indicate a trend.

The 2014 water levels fluctuated within the typical historical range for this well. The average water level elevation in 2014 was 109.74 m above sea level and the annual water level fluctuation was 1.25 m. The average depth to water in 2014 was 11.32 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Annapolis Royal (062) well was sampled in 2005, 2007 and 2010 and the results are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded; however, turbidity (2007) and manganese (2005, 2007 and 2010) exceeded the aesthetic drinking water guidelines. One VOC, toluene, was detected at 2 ug/L in 2005 and at 1 ug/L in 2007. These toluene levels are below the aesthetic drinking water guideline of 24 ug/L. The well is located beside a road and, therefore, toluene (a chemical found in gasoline) may be due to runoff from the road. Toluene was not detected in the 2010 sample. Pesticides and perchlorate were not detected.

The tritium level in this well was measured in 2005 and found to be 0.27 TU, (+/- 0.17), indicating the water in the well is relatively old (i.e., recharge occurred before 1952).

Temperature data in the Annapolis Royal (062) well has been recorded since about 2003. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period is 8.13^{o}C, with annual fluctuations between 7.79 ^{o}C and 8.68^{o}C.

3.19 Hebron (063)

Well Description

The Hebron (063) observation well is located near Dayton, Yarmouth County. The well was constructed in 1989 to expand the NS Groundwater Observation Well Network. The well is completed in slate and is 45.7 m deep with 12.2 m of casing. Well location and construction information is provided in Table 3.19 and the well log is provided in Appendix A.

The location of the Hebron (063) observation well is shown in Figure F.19, Appendix F. It is situated in a rural area and the surrounding land use is primarily residential. The well is located approximately 100 m from Lake Milo and 1,000 m from the ocean. The nearest water well is a domestic well located approximately 90 m away.

Table 3.19: Hebron (063) Well Construction Information

Well Name	Hebron (063)
Observation Well ID Number	063
NSE Well Log Number	891721
County	Yarmouth
Nearest Community	Dayton
UTM - Easting	250697
UTM - Northing	4862322
Year Monitoring Started	1990
Casing Depth (m, bgs)	12.2
Well Depth (m, bgs)	45.7
Elevation - top of casing (m, asl)	23.89
Geologic Unit	Whiterock Formation
Aquifer Material	Bedrock - slate

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Hebron (063) are shown in Figure B.19, Appendix B. This well has been monitored since 1990 and water levels have been relatively constant, although there appears to be a slight increase in the average water level (up by about 0.3 m) since the 1990s. The hourly water level data for this well shows tidal fluctuations with an amplitude of approximately 0.05 m. A statistical trend analysis was conducted for this well (Appendix E) but statistical confidence levels were not high enough to reliably indicate a trend.

The 2014 water levels within this well generally fluctuated within the typical historically range for the year, with some exceedances of the upper range during the winter/spring months. The average water level elevation in 2014 was 21.57 m above sea level and the annual water level fluctuation was 1.43 m. The average depth to water in 2014 was 2.32 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Hebron (063) well was sampled in 2005 and 2008 and the chemistry results are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded; however, the aesthetic drinking water guidelines were exceeded for turbidity, iron and manganese. In addition, the low pH in this well did not meet the aesthetic guideline in the 2005 sample and was equal to the guideline in the 2008 sample. The elevated turbidity levels in this well are expected due to the high iron and manganese levels. Note that the ion balance error reported in the general chemistry analysis was 23% in 2005 and 13% in 2008, which exceeds the generally acceptable level of 5% and, therefore, these results should be viewed with caution. VOCs, pesticides and perchlorate were not detected at this well.

The tritium level in this well was 4.6 TU, indicating that the water in this well is a mix of old and recent water (i.e., recharge occurred before and after 1952).

Temperature data in the Hebron (063) well has been recorded since about 2003. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.73^{o}C, with annual fluctuations between 6.02^{o}C and 11.78^{o}C.

3.20 Margaree (064)

Well Description

The Margaree (064) observation well is located near the community of Margaree Valley, Inverness County. The well was constructed in January 1990 to expand the NS Groundwater Observation Well Network. The well is completed in a bedrock aquifer and is 45.7 m deep with 12.2 m of casing. Well location and construction information is provided in Table 3.20 and the well log is provided in Appendix A.

The location of the Margaree (064) observation well is shown in Figure F.20a, Appendix F. The well is situated 1.5 km northwest of the town of Margaree Valley. It is located at the end of a field (see Figure F.20b), 25 m from the northeast branch of the Margaree River, where Nova Scotia Environment has a surface water quality station and Environment Canada has a hydrometric station that measures river water levels. The land surrounding the well is used for growing hay.

Table 3.20: Margaree (064) Well Construction Information

Well Name	Margaree (064)
Observation Well ID Number	064
NSE Well Log Number	902524
County	Inverness
Nearest Community	Margaree Valley
UTM - Easting	655717
UTM - Northing	5137031
Year Monitoring Started	1990
Casing Depth (m, bgs)	12.2
Well Depth (m, bgs)	45.7
Elevation - top of casing (m, asl)	46.53
Geologic Unit	Windsor Group
Aquifer Material	Bedrock-conglomerate

Notes: bgs = below ground surface; asl = above sea level

The Margaree (064) observation well was discontinued from the Network in 2013 and all monitoring equipment removed. This was due to a property sale, with access to the well no longer provided to Nova Scotia Environment by the new property owner. As its' use is discontinued, the Margaree (064) well is no longer included on Figure 1.1 (active wells).

Monitoring Results - Water Levels

The water level graphs for Margaree (064) are shown in Figure B.20, Appendix B. This well has been monitored since 1990, with a data gap from early 1998 to mid-2006 and was discontinued for Network use in 2013. The water levels appear to have increased by approximately 0.5 m between 1990 and 1998, and then declined by a similar amount between 2006 and 2013. The statistical trend analysis for this well (Appendix E) until it was discontinued in 2013 indicates there was a downward trend, equivalent to approximately 1.5 cm/year.

The water level data for 2012, and until it was discontinued after the first month of 2013, shows fluctuations that were near historical lows for the majority of the year. The average water level elevation in the final full year of monitoring (2012) was 42.43m above sea level and the annual water level fluctuation was 0.94 m. The average depth to water in 2012 was 4.1 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Margaree (064) well was sampled in 2006 and 2008 and the chemistry results are presented in Appendix C. The results indicate that no drinking water guidelines were exceeded. VOCs and pesticides were not detected.

The tritium level in this well was 0.41 TU (+/- 0.14), indicating that the water in this well is old water (i.e., recharge occurred before 1952).

Temperature data in the Margaree (064) well has been recorded from about 2006 until 2013. A graph of the average daily temperature in this well until it was discontinued in 2013 is presented in Appendix D. The average groundwater temperature during this period was 7.86^{o}C, with annual fluctuations between 6.75^{o}C and 9.49^{o}C.

3.21 Ingonish (065)

Well Description

The Ingonish (065) observation well is located near the community of Ingonish Beach, Victoria County. The well was constructed in December 1989 to expand the NS Groundwater Observation Well Network. The well is completed in a bedrock aquifer and is 45.7 m deep with 12.2 m of casing. Well location and construction information is provided in Table 3.21 and the well log is provided in Appendix A.

Table 3.21: Ingonish (065) Well Construction Information

Well Name	Ingonish (065)
Observation Well ID Number	065
NSE Well Log Number	892288
County	Victoria
Nearest Community	Ingonish Beach
UTM - Easting	698083
UTM - Northing	5170473
Year Monitoring Started	1990
Casing Depth (m, bgs)	12.2
Well Depth (m, bgs)	45.7
Elevation - top of casing (m, asl)	6.63
Geologic Unit	Early Devonion Granodiorite
Aquifer Material	Bedrock - granodiorite

Notes: bgs = below ground surface; asl = above sea level

The location of the Ingonish (065) observation well is shown in Figure F.21a, Appendix F. The well is situated on the Highlands Links golf course, within the Cape Breton Highlands Park. It is located 1.5 km south of Ingonish Centre and is approximately 30 m northwest of Clyde Burn Brook. The well is in a forested area, adjacent to a small storage building (see site photograph in Figure F.21b).

Monitoring Results - Water Levels

The water level graphs for Ingonish (065) are shown in Figure B.21, Appendix B. This well has been monitored since November 1990 with a data gap between mid-1998 to late 2006. Water levels appear to have remained relatively consistent over time. The statistical trend analysis for this well (Appendix E) indicates there is an overall upward trend, equivalent to approximately 1.7 cm/year.

The 2014 water levels generally fluctuated within the historically observed water level range for this well, with some peaks above historical values in the winter, spring and fall of the year. The average water level elevation in 2014 was 2.15 m above sea level and the annual water level fluctuation was 2.83 m. The average depth to water in 2014 was 4.48 m below top of casing.

Monitoring Results - Water Chemistry

The Ingonish (065) well was sampled in 2009 and the chemistry results are presented in Appendix C. The results indicate that no drinking water guidelines were exceeded. Note that the ion balance error reported in the general chemistry analysis was 10%, which exceeds the generally acceptable level of 5% and, therefore, these results should be viewed with caution. VOCs and pesticides were not detected.

Temperature data in the Ingonish (065) well has been recorded since about 2007. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 6.27^{o}C, with annual fluctuations between 4.89^{o}C and 7.09^{o}C.

3.22 Debert (068)

Well Description

The Debert (068) observation well is located near the community of Debert, Colchester County. The well was constructed in August 1983 as a domestic water supply and was added to the NS Observation Well Network in 1993 to expand the network. The well is completed in a bedrock aquifer comprised of conglomerate. It is 46.6 m deep and has 7.9 m of casing. Well location and construction information is provided in Table 3.22 and the well log is provided in Appendix A.

The location of the Debert (068) observation well is shown in Figure F.22, Appendix F. The well is situated within the Debert Industrial Park, north of Highway 104. It is located in a cleared area beside a parking lot.

Table 3.22: Debert (068) Well Construction Information

Well Name	Debert (068)
Observation Well ID Number	068
NSE Well Log Number	832002
County	Colchester
Nearest Community	Debert
UTM - Easting	466921
UTM - Northing	5028483
Year Monitoring Started	1993
Casing Depth (m, bgs)	7.9
Well Depth (m, bgs)	46.6
Elevation - top of casing (m, asl)	28.35
Geologic Unit	Wolfville Formation
Aquifer Material	Bedrock-conglomerate

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Debert (068) are shown in Figure B.22, Appendix B. Monitoring began at this well in 1993; however, there is a gap in monitoring data between 1996 and 2006. A trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels at this well were at, or near, historical high levels for the majority of the year. The average water level elevation in 2014 was 25.54 m above sea level and the annual water level fluctuation was 3.44 m. The average depth to water in 2014 was 2.81 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Debert (068) well has not been sampled and, therefore, water chemistry results are not available.

Temperature data in the Debert (068) well has been recorded since about 2006. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.39^{o}C, with annual fluctuations between 6.17^{o}C and 10.62^{o}C.

3.23 Dalem Lake (069)

Well Description

The Dalem Lake (069) observation well is located near the community of New Dominion, Victoria County. This well was drilled in 1992 to expand the Groundwater Observation Well Network. The well is completed in a sandstone aquifer and is 61.0 m deep with 12.4 m of casing. Well location and construction information is provided in Table 3.23.

The location of the Dalem Lake (069) observation well is shown in Figure F.23, Appendix F. The well is located approximately 75 m south of the 105 Trans-Canada Highway. There are no other wells in the nearby and the surrounding land has recently been logged.

Table 3.23: Dalem Lake (069) Well Construction Information

Well Name	Dalem Lake (069)
Observation Well ID Number	069
NSE Well Log Number	943326
County	Victoria
Nearest Community	New Dominion
UTM - Easting	698221
UTM - Northing	5124576
Year Monitoring Started	1992
Casing Depth (m, bgs)	12.4
Well Depth (m, bgs)	61.0
Elevation - top of casing (m, asl)	93.75
Geologic Unit	South Bar Formation
Aquifer Material	Bedrock - sandstone

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Dalem Lake (069) are shown in Figure B.23, Appendix B. This well has been monitored since 1992 with a data gap between 1997 and early 2006. Water levels have remained relatively consistent. A statistical trend analysis was conducted for this well (Appendix E) but statistical confidence levels were not high enough to reliably indicate a trend.

The 2014 water levels were generally within the historically observed water level range for this well. The average water level elevation in 2014 was 86.80 m above sea level and the annual water level fluctuation was 1.0 m. The average depth to water in 2014 was 6.95 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Dalem Lake (069) well was sampled in 2006 and 2008 and the chemistry results are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded; however, manganese was above the aesthetic guideline in both the 2006 and the 2008 samples. VOCs and pesticides were not detected.

The tritium level in this well was 3.61 TU (+/- 0.30), indicating that the water in this well is a mix of old and recent water (i.e., recharge occurred before and after 1952).

Temperature data in the Dalem Lake (069) well has been recorded since about 2006. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 6.91^{o}C, with annual fluctuations between 6.27 and 7.56^{o}C.

3.24 Amherst (071)

Well Description

The Amherst (071) observation well is located near the Town of Amherst, Cumberland County. It was drilled in July 1986 as a test well for the Town of Amherst's wellfield and was originally named "Test Hole No. 86-9". The well is completed in a sandstone aquifer and is 116.5 m deep with 5.8 m of casing. Well location and construction information is provided in Table 3.24 and the well log is provided in Appendix A.

The location of the Amherst (071) observation well is shown in Figure F.24, Appendix F. The well is situated in a field approximately 175 m northwest of Route 66 (i.e., Tyndal Road). There are two domestic wells within 125 m of this observation well and the Town of Amherst's wellfield is located nearby.

Table 3.24: Amherst (071) Well Construction Information

Well Name	Amherst (071)
Observation Well ID Number	071
NSE Well Log Number	862667
County	Cumberland
Nearest Community	Amherst
UTM - Easting	411279
UTM - Northing	5079213
Year Monitoring Started	1993
Casing Depth (m, bgs)	5.8
Well Depth (m, bgs)	116.5
Elevation - top of casing (m, asl)	17.77
Geologic Unit	Balfron Formation
Aquifer Material	Bedrock - sandstone

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Amherst (071) are shown in Figure B.24, Appendix B. Monitoring began at this well in 1993 and water levels appear to have remained relatively consistent; however, there is no data for the period between 1996 and 2006 and, therefore, the variability of the water level at this well is somewhat uncertain. A trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels fluctuated within the historical range for most of the year. The average water level elevation in 2014 was 15.11 m above sea level and the annual water level fluctuation was 1.60 m. The average depth to water in 2014 was 2.66 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Amherst (071) well was sampled in 2006 and 2009 and the chemistry results are presented in Appendix C. The results indicate that no drinking water guidelines were exceeded. VOCs and pesticides were not detected.

The tritium level in this well was 4.0 TU (+/- 0.32), indicating that the water in this well is either a mix of old and recent water (i.e., recharge occurred before and after 1952) or is recent water (i.e., recharge occurred after 1952).

Temperature data in the Amherst (071) well has been recorded since about 2006. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 7.39^{o}C, with annual fluctuations between 5.97 ^{o}C and 8.96^{o}C**.**

3.25 Kelley River (073)

Well Description

The Kelley River (073) observation well is located near the community of River Herbert, Cumberland County. This well was drilled as part of a hydrogeological investigation of the Kelley River Basin in 1972 (Hennigar, 1974). This well is referred to as "Observation well No.2" in the report entitled "Hydrogeology of the Kelley River IHD Benchmark Basin Cumberland County, NS" (Hennigar, 1974). The well is completed in a sandstone aquifer and is approximately 11.6 m deep with 4.2 m of casing. Well location and construction information is provided in Table 3.25 and the well log is provided in Appendix A.

Table 3.25: Kelley River (073) Well Construction Information

Well Name	Kelley River (073)
Observation Well ID Number	073
NSE Well Log Number	721858
County	Cumberland
Nearest Community	River Herbert
UTM - Easting	386806
UTM - Northing	5049171
Year Monitoring Started	2006
Casing Depth (m, bgs)	4.2
Well Depth (m, bgs)	11.6
Elevation - top of casing (m, asl)	33.13
Geologic Unit	Malagash Formation
Aquifer Material	Bedrock - sandstone

Notes: bgs = below ground surface; asl = above sea level

The location of the Kelley River (073) observation well is shown in Figure F.25, Appendix F. The well is located within the Chignecto Game Sanctuary, 13 km from the Boars Back Ridge Road. It is in a wooded area and is located 18 m from Nova Scotia Environment's surface water quality station and Environment Canada's hydrometric station on Kelley River.

Monitoring Results - Water Levels

The water level graphs for Kelley River (073) are shown in Figure B.25, Appendix B. This well has been monitored since 2006 and water levels appear to have remained relatively consistent. A trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels were generally within the normal range for this well, however, historical highs were exceeded several times during the year. The average water level elevation in 2014 was 31.72 m above sea level and the annual water level fluctuation was 1.30 m. The average depth to water in 2014 was 1.41 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Kelley River (073) well was sampled in 2007 and the chemistry results are presented in Appendix C. The results indicate that no drinking water guidelines were exceeded. VOCs and pesticides were not detected.

The tritium level in this well was 3.78 TU (+/- 0.32), indicating that the water in this well is a mix of old and recent water (i.e., recharge occurred before and after 1952).

Temperature data in the Kelley River (073) well has been recorded since about 2006. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 6.93ºC, with annual fluctuations between 6.23ºC and 7.53ºC.

3.26 Atlanta (074)

Well Description

The Atlanta (074) observation well is located near the community of Atlanta, Kings County. The well was constructed in 2007 as part of an aquifer evaluation project completed by Nova Scotia Department of Environment and Labour. The well is completed in a sandstone aquifer and is 53.4 m deep with 36.0 m of casing. Well location and construction information is provided in Table 3.26 and the well log is provided in Appendix A. A 72-hour pumping test conducted at this well in 2007 indicated a transmissivity of 105 m^2/day, hydraulic conductivity of 5.7 m/day and a safe yield of 1,227 m^3/day (188 igpm).

Table 3.26: Atlanta (074) Well Construction Information

Well Name	Atlanta (074)
Observation Well ID Number	074
NSE Well Log Number	070613
County	Kings
Nearest Community	Atlanta
UTM - Easting	381956
UTM - Northing	5000758
Year Monitoring Started	2008
Casing Depth (m, bgs)	36.0
Well Depth (m, bgs)	53.4
Elevation - top of casing (m, asl)	16.20
Geologic Unit	Blomidon Formation
Aquifer Material	Bedrock - sandstone

Notes: bgs = below ground surface; asl = above sea level

The location of the Atlanta (074) observation well is shown in Figure F.26a, Appendix F. The well

is located approximately 250 m south of Bains Road and is surrounded by undeveloped land in a wooded area. It is located 150 m from the nearest domestic well and 150 m from the Habitant River.

Monitoring Results - Water Levels

The water level graphs for Atlanta (074) are shown in Figure B.26, Appendix B. This well has been monitored since May 2008 and water levels appear to have remained relatively consistent. A trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels were at, or close to, historical highs for this well for the majority of the year. The average water level elevation in 2014 was 13.99 m above sea level and the annual water level fluctuation was 0.59 m. The average depth to water in 2014 was 2.21 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Atlanta (074) well was sampled in 2007 and 2010 and the results are presented in Appendix C. The results indicate that the health-based drinking water guideline was exceeded for uranium in 2007 and 2010. VOCs and pesticides were not detected. This well has not been sampled for tritium or perchlorate.

Temperature data in the Atlanta (074) well has been recorded since about 2008. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 5.91^{o}C, with an annual temperature range between 4.58^{o}C and 7.18^{o}C.

3.27 Sheffield Mills (075)

Well Description

The Sheffield Mills (075) observation well is located near the community of Sheffield Mills, Kings County. The well was constructed in 2007 as part of an aquifer evaluation project completed by Nova Scotia Department of Environment and Labour. The well is completed in a sandstone aquifer and is 53.4 m deep with 19.2 m of casing. Well location and construction information is provided in Table 3.27 and the well log is provided in Appendix A. A 72-hour pumping test conducted at this well in 2007 indicated a transmissivity of 72.4 m^2/day, hydraulic conductivity of 5.7 m/day and a safe yield of 371 m^3/day (57 igpm).

Table 3.27: Sheffield Mills (075) Well Construction Information

Well Name	Sheffield Mills (075)
Observation Well ID Number	075
NSE Well Log Number	070618
County	Kings
Nearest Community	Sheffield Mills
UTM - Easting	384693
UTM - Northing	5000590
Year Monitoring Started	2008
Casing Depth (m, bgs)	19.2
Well Depth (m, bgs)	53.4
Elevation - top of casing (m, asl)	9.10
Geologic Unit	Wolfville Formation
Aquifer Material	Bedrock - sandstone

Notes: bgs = below ground surface; asl = above sea level

The location of the Sheffield Mills (075) observation well is shown in Figure F.27a, Appendix F.

The well is located south of Highway 221 in an active agricultural field which is used for growing vegetables (see Figure F.27b). It is located 165 m from the Habitant River and there are several houses with domestic wells located within 300 m.

Monitoring Results - Water Levels

The water level graphs for Sheffield Mills (075) are shown in Figure B.27, Appendix B. This well has been monitored since May 2008 and water levels appear to have remained relatively consistent. A trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels generally fluctuated within the historical range for this well, however, historical highs were exceeded several times in the spring and winter. The average water level elevation in 2014 was 3.39 m above sea level and the annual water level fluctuation was 0.69 m. The average depth to water in 2014 was 5.71 m below ground surface.

Monitoring Results - Water Chemistry and Temperature

The Sheffield Mills (075) well was sampled in 2007 and 2010 and the results are presented in Appendix C. The results indicate that no drinking water guidelines were exceeded. VOCs and pesticides were not detected. This well has not been sampled for tritium or perchlorate.

Temperature data in the Sheffield Mills (075) well has been recorded since about 2008. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.24^{o}C, with a range between 7.5^{o}C and 8.99^{o}C.

3.28 Fall River (076)

Well Description

The Fall River (076) observation well is located in the community of Fall River, Halifax County. The well was constructed in February 2008 by NSE and NSDNR to expand the Groundwater Observation Well Network. The well is completed in a slate aquifer and is 61.0 m deep with 13.1 m of casing. Well location and construction information is provided in Table 3.28 and the well log is provided in Appendix A. A 4-hour constant rate pumping test was conducted at this well in 2008 by NSDNR (Kennedy et al., 2009). The results indicated a transmissivity of 0.07 m^2/day, hydraulic conductivity of 1.21 x 10^{-3} m/day and an estimated safe yield of 2.13 m^3/day (0.3 igpm).

Table 3.28: Fall River (076) Well Construction Information

Well Name	Fall River (076)
Observation Well ID Number	076
NSE Well Log Number	080824
County	Halifax
Nearest Community	Fall River
UTM - Easting	450243
UTM - Northing	4962226
Year Monitoring Started	2008
Casing Depth (m, bgs)	13.1
Well Depth (m, bgs)	61.0
Elevation - top of casing (m, asl)	108.67
Geologic Unit	Halifax Formation
Aquifer Material	Bedrock - slate

Notes: bgs = below ground surface; asl = above sea level

The location of the Fall River (076) observation well is shown in Figure F.28a, Appendix F, and a

photograph of the well is shown in Figure F.28b. The well is located in a baseball field in a subdivision development and is within 100 m of the nearest domestic well.

Monitoring Results - Water Levels

The water level graphs for Fall River (076) are shown in Figure B.28, Appendix B. This well has been monitored since March 2008 and water levels appear to have remained relatively consistent. A trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels fluctuated quite widely within this well, exceeding both historical highs (spring, fall, winter) and historical lows (summer) on occasion. The average water level elevation in 2014 was 104.12 m above sea level and the annual water level fluctuation was 7.83 m. The average depth to water in 2014 was 4.55 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Fall River (076) well was sampled in 2008 and the chemistry results are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded, however, three aesthetic drinking water guidelines were exceeded, including pH, iron and manganese. VOCs and pesticides were not detected. This well has not been sampled for tritium or perchlorate.

Temperature data in the Fall River (076) well has been recorded since about 2008. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.03^{o}C, with fluctuations between 6.72^{o}C and 9.56^{o}C.

3.29 West Northfield (077)

Well Description

The West Northfield (077) observation well is located adjacent to the LaHave River in the community of West Northfield, Lunenburg County. The well was constructed in March 2008 by NSE to expand the Groundwater Observation Well Network. The well is completed in a slate aquifer and is 48.8 m deep with 12.8 m of casing. Well location and construction information is provided in Table 3.29 and the well log is provided in Appendix A. A 5-hour pumping test (i.e., step-test) was conducted at this well in 2008 by NSDNR (Kennedy et al., 2009). The results indicated a transmissivity of 0.44 m^2/day, hydraulic conductivity of 1.44 X 10^{-2} m/day and an estimated safe yield of 10.53 m^3/day (1.6 igpm).

Table 3.29: West Northfield (077) Well Construction Information

Well Name	West Northfield (077)
Observation Well ID Number	077
NSE Well Log Number	080132
County	Lunenburg
Nearest Community	West Northfield
UTM - Easting	373416
UTM - Northing	4922807
Year Monitoring Started	2008
Casing Depth (m, bgs)	12.8
Well Depth (m, bgs)	48.8
Elevation - top of casing (m, asl)	50.84
Geologic Unit	Halifax Formation
Aquifer Material	Bedrock - slate

Notes: bgs = below ground surface; asl = above sea level

The location of the West Northfield (077) observation well is shown in Figure F.29a, Appendix F,

and a photograph of the well is shown in Figure F.29b. The well is located adjacent to the LaHave River (within 50 m of the river) beside a bridge that crosses the LaHave. It is located within 100 m from the nearest domestic well. Note that surface water flow data is also collected at this location as part of the Canada/Nova Scotia Hydrometric Program.

Monitoring Results - Water Levels

The water level graphs for West Northfield (077) are shown in Figure B.29, Appendix B. This well has been monitored since May 2008 and water levels appear to have remained relatively consistent. A trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels generally fluctuated near the upper historical range for this well and exceeded the historical highs on several occasions. The average water level elevation in 2014 was 49.95 m above sea level and the annual water level fluctuation was 1.67 m. The average depth to water in 2014 was 0.89 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The West Northfield (077) well was sampled in 2008 and the chemistry results are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded, however, the aesthetic drinking water guideline for manganese was exceeded. VOCs and pesticides were not detected. This well has not been sampled for tritium or perchlorate.

Temperature data in the West Northfield (077) well has been recorded since about 2008. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.58^{o}C, with fluctuations between 7.30^{o}C and 9.99^{o}C.

3.30 Musquodoboit Harbour (078)

Well Description

The Musquodoboit Harbour (078) observation well is located adjacent to the Musquodoboit River in the community of Musquodoboit Harbour, Halifax County. The well was constructed in March 2008 by NSE and NSDNR to expand the Groundwater Observation Well Network. The well is completed in a slate aquifer and is 61.0 m deep with 27.1 m of casing.

Well location and construction information is provided in Table 3.30 and the well log is provided in Appendix A.

Table 3.30: Musquodoboit Harbour (078) Well Construction Information

Well Name	Musquodoboit Harbour (078)
Observation Well ID Number	078
NSE Well Log Number	080861
County	Halifax
Nearest Community	Musquodoboit Harbour
UTM - Easting	488125
UTM - Northing	4959880
Year Monitoring Started	2008
Casing Depth (m, bgs)	27.1
Well Depth (m, bgs)	61.0
Elevation - top of casing (m, asl)	7.71
Geologic Unit	Halifax Formation
Aquifer Material	Bedrock - slate

Notes: bgs = below ground surface; asl = above sea level

A 1.5-hour constant rate pumping test was conducted at this well in 2008 by NSDNR (Kennedy et al., 2009). The results indicated a transmissivity of 0.010 m^2/day, hydraulic conductivity of 1.5 X 10^{-4} m/day and an estimated safe yield of 0.31 m^3/day (0.05 igpm). Note that this well is completed in bedrock, however, there is a sand and gravel layer that is approximately 25 m thick which overlies the bedrock at this location. During drilling, it was estimated that the yield of this

overlying sand and gravel aquifer was approximately 1,300 m^3/day (200 igpm).

The location of the Musquodoboit Harbour (078) observation well is shown in Figure F.30a, Appendix F, and a photograph of the well is shown in Figure F.30b. The well is located on the edge of a ball field near a wetland and the Musquodoboit River (within 200 m of the river). It is located within 300 m from the nearest domestic well.

Monitoring Results - Water Levels

The water level graphs for Musquodoboit Harbour (078) are shown in Figure B.30, Appendix B. This well has been monitored since May 2008 and water levels appear to have remained relatively consistent. A trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels generally fluctuated within the historical range for this well, however, both historical highs and lows were extended several times during the year. The average water level elevation in 2014 was 4.86 m above sea level and the annual water level fluctuation was 2.86 m. The average depth to water in 2014 was 2.85 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Musquodoboit Harbour (078) well was sampled in 2008 and the chemistry results are presented in Appendix C. The results indicate that the health-based drinking water guideline was exceeded for fluoride, an no aesthetic drinking water guidelines were exceeded. VOCs and pesticides were not detected. This well has not been sampled for tritium or perchlorate.

Temperature data in the Musquodoboit Harbour (078) well has been recorded since about 2008. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 7.45ºC, with fluctuations between 6.03ºC and 9.45ºC.

3.31 Lewis Lake (079)

Well Description

The Lewis Lake (079) observation well is located in the Jerry Lawrence Provincial Park near the community of Lewis Lake, Halifax County. The well was constructed in 1969 as a water supply for the park and was converted to an observation well in 2008 because it was no longer in use as a water supply well.

This well is completed in a granite aquifer and is 77.0 m deep with 7.6 m of casing. Well location and construction information is provided in Table 3.31 and the well log is provided in Appendix A. A 3-hour pumping test (i.e., step-test) was conducted at this well in 2008 by NSDNR (Kennedy et al., 2009). The results indicated a transmissivity of 1.53 m^2/day, hydraulic conductivity of $2.7x10^{-2}$m/day and an estimated safe yield of 57.31 m^3/day (8.8 igpm).

Table 3.31: Lewis Lake (079) Well Construction Information

Well Name	Lewis Lake (079)
Observation Well ID Number	079
NSE Well Log Number	690090
County	Halifax
Nearest Community	Lewis Lake
UTM - Easting	433048
UTM - Northing	4948873
Year Monitoring Started	2008
Casing Depth (m, bgs)	7.6
Well Depth (m, bgs)	77.0
Elevation - top of casing (m, asl)	71.84
Geologic Unit	Late Devonian Granite
Aquifer Material	Bedrock - granite

Notes: bgs = below ground surface; asl = above sea level

The location of the Lewis Lake (079) observation well is shown in Figure F.31a, Appendix F, and

a photograph of the well is shown in Figure F.31b. The well is located in a forested area within 100 m of Lewis Lake. The nearest domestic well is approximately 1,000 m away.

Monitoring Results - Water Levels

The water level graphs for Lewis Lake (079) are shown in Figure B.31, Appendix B. This well has been monitored since 2008 and water levels appear to have remained relatively consistent. A trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels generally fluctuated within the historical range for this well. The average water level elevation in 2011 was 69.34 m above sea level and the annual water level fluctuation was 0.89 m. The average depth to water in 2014 was 2.50 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Lewis Lake (079) well was sampled in 2008 and the chemistry data are presented in Appendix C. The results indicate that health-based drinking water guidelines were exceeded for arsenic and fluoride, and aesthetic drinking water guidelines were exceeded for manganese. VOCs and pesticides were not detected. This well has not been sampled for tritium or perchlorate.

Temperature data in the Lewis Lake (079) well has been recorded since the end of 2008. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 7.56^{o}C, with fluctuations between 6.58^{o}C and 8.53^{o}C.

3.32 Arisaig (080)

Well Description

The Arisaig (080) observation well is located in Arisaig Provincial Park, near Arisaig in Antigonish County. The well was constructed in 1977 as a water supply for the park and was converted to an observation well in 2009 because it was no longer in use as a water supply well. The location of the Arisaig (080) observation well is shown in Figure F.32a, Appendix F.

The well is completed in a bedrock aquifer and is 91.5 m deep with 12.2 m of casing. Well location and construction information is provided in Table 3.32 and the well log is provided in Appendix A.

Table 3.32: Arisaig (080) Well Construction Information

Well Name	Arisaig (080)
Observation Well ID Number	080
NSE Well Log Number	770542
County	Antigonish
Nearest Community	Arisaig
UTM - Easting	564737
UTM - Northing	5067204
Year Monitoring Started	2009
Casing Depth (m, bgs)	12.2
Well Depth (m, bgs)	91.5
Elevation - top of casing (m, asl)	27.67
Geologic Unit	Earltown Formation
Aquifer Material	Bedrock - shale

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Arisaig (080) are shown in Figure B.32, Appendix B. This well has been monitored since the end of 2009. For the initial six months water levels in the well increased steadily before becoming relatively consistent. This was likely due to slow water level recovery following the well commissioning and water sampling. Data is shown for the period following this recovery. A trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels were near historical high levels for the entire year. However, it should be noted that this well has only had a few years of historical data, so the expected fluctuation range is still being established. The average water level elevation in 2014 was 20.84 m above sea level and the annual water level fluctuation was 0.45 m. The average depth to water in 2014 was 6.83 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Arisaig (080) well was sampled in 2009 and the chemistry results are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded; however, the pH level and turbidity did not meet the drinking water aesthetic objectives. Pesticides were not detected. With respect to VOCs, toluene was detected at 2 ug/L, but was below drinking water guideline of 24 ug/L. This well has not been sampled for tritium or perchlorate.

The chloride level in this well was 57 mg/L. Although this does not exceed the aesthetic objective of 250 mg/L, it is elevated above the typical background level for groundwater in coastal Nova Scotia (<50 mg/L). The ocean is about 500 m from this well and, therefore, the elevated chloride level may be due to seawater influence. The bromide/chloride ratio for this well was 35 (i.e., 0.2 mg/L/ 57mg/L x 10,000 =35). This result indicates that the source of the chloride is sea water. Please see Section 2.2.4 for a discussion of how this ratio is used to assess salt sources.

Temperature data in the Arisaig (080) well has been recorded since 2009. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period at this well was 7.59^{o}C. Groundwater temperatures in the well appear to be more stable since about 2013, also likely related to well commissioning/sampling effects, with fluctuations since then between 7.43^{o}C and 8.53^{o}C.

3.33 Coldbrook (081)

Well Description

The Coldbrook (081) observation well is located in the Coldbrook Provincial Park near the community of Coldbrook, Kings County. The well was constructed in 1961 as a water supply for the park and was converted to an observation well in 2009 because it was no longer in use as a water supply well. The location of the Coldbrook (081) observation well is shown in Figure F.33a, Appendix F, and a photograph of the well is shown in Figure F.33b.

The well is completed in a bedrock aquifer and is 70.7 m deep with 52.4 m of casing. Well location and construction information is provided in Table 3.33 and the well log is provided in Appendix A. A 1-hour pumping test was conducted at this well in 1974. The results indicated a specific capacity of 6.29 m^2/day and an estimated short-term safe yield of 26.18 m^3/day (8.8 igpm).

Table 3.33: Coldbrook (081) Well Construction Information

Well Name	Coldbrook (081)
Observation Well ID Number	081
NSE Well Log Number	610135
County	Kings
Nearest Community	Coldbrook
UTM - Easting	376149
UTM - Northing	4991748
Year Monitoring Started	2009
Casing Depth (m, bgs)	52.4
Well Depth (m, bgs)	70.7
Elevation - top of casing (m, asl)	24.29
Geologic Unit	Wolfville Formation
Aquifer Material	Bedrock - sandstone

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Coldbrook (081) are shown in Figure B.33, Appendix B. This well has been monitored since 2009 and water levels appear to have remained relatively consistent. A trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels remained relatively constant with some minor seasonal fluctuations. The average water level elevation in 2014 was 9.62 m above sea level and the annual water level fluctuation was 1.80 m. The average depth to water in 2014 was 14.67 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Coldbrook (081) well was sampled in 2009 and the chemistry results are presented in Appendix C. The results indicate that all parameters are within the drinking water guidelines. VOCs and pesticides were not detected. This well has not been sampled for tritium or perchlorate.

Temperature data in the Coldbrook (081) well has been recorded since 2009. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.12^{o}C, with fluctuations between 8.03^{o}C and 8.21^{o}C.

3.34 Long Point (082)

Well Description

The Long Point (082) observation well is located in the Long Point Provincial Park near the community of Long Point, Inverness County. The well was constructed in 1974 as a water supply for the park and was converted to an observation well in 2009 because it was no longer in use as a water supply well. The location of the Long Point (082) observation well is shown in Figure F.34a, Appendix F, and a photograph of the well is shown in Figure F.34b.

The well is completed in a bedrock aquifer and is 18.6 m deep with 13.1 m of casing. Well location and construction information is provided in Table 3.34 and the well log is provided in Appendix A. A pumping test was conducted at this well in 1974. The results indicated a transmissivity of 3.6 m^2/day and an estimated safe yield of 13.7 m^3/day (2.1 igpm).

Table 3.34: Long Point (082) Well Construction Information

Well Name	Long Point (082)
Observation Well ID Number	082
NSE Well Log Number	742421
County	Inverness
Nearest Community	Long Point
UTM - Easting	618131
UTM - Northing	5074277
Year Monitoring Started	2009
Casing Depth (m, bgs)	13.1
Well Depth (m, bgs)	18.5
Elevation - top of casing (m, asl)	10.17
Geologic Unit	Mabou Group
Aquifer Material	Bedrock - mudstone/sandstone

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Long Point (082) are shown in Figure B.34, Appendix B. This well has been monitored since 2009 and water levels appear to have remained relatively consistent. A trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels fluctuated within, or near the top of the historical range during the year. The average water level elevation in 2014 was 8.86 m above sea level and the annual water level fluctuation was 0.92 m. The average depth to water in 2014 was 1.31 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Long Point (082) well was sampled in 2009 and the chemistry results are presented in Appendix C. The results indicate that no drinking water guidelines were exceeded. Pesticides were not detected. With respect to VOCs, toluene was detected at 2 ug/L, but was below drinking water guideline of 24 ug/L. This well has not been sampled for tritium or perchlorate.

The chloride level in this well was 61 mg/L. Although this level does not exceed the aesthetic objective of 250 mg/L, it is elevated above the typical background level for groundwater in coastal Nova Scotia (<50 mg/L). The bromide/chloride ratio for this well was >10 (i.e., 0.25 mg/L/ 61mg/L x 10,000 =41). This result indicates that the source of the chloride is formation salt, indicating the well may be influenced by the nearby Windsor Group/Carbonate bedrock. Please see Section 2.2.4 for a discussion of how this ratio is used to assess salt sources.

Temperature data in the Long Point (082) well has been recorded since 2009. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 9.11^{o}C, with annual fluctuations between 6.31^{o}C and 12.52^{o}C.

3.35 Tatamagouche (083)

Well Description

The Tatamagouche (083) observation well is located at the Tatamagouche Provincial Park, 1.5 km east of the community of Tatamagouche, Colchester County. The well was constructed in 1951 as a water supply for the park and was converted to an observation well in 2009 because it was no longer in use as a water supply well. The location of the Tatamagouche (083) observation well is shown in Figure F.35a, Appendix F.

The well is completed in a bedrock aquifer and is 24.5 m deep with an unknown casing length. Well location and construction information is provided in Table 3.35 and the well log is provided in Appendix A. A 22-hour pumping test was conducted at this well in 1974. The results indicated a transmissivity of 1.72 m^2/day and an estimated safe yield of 13.09 m^3/day (2.0 igpm).

Table 3.35: Tatamagouche (083) Well Construction Information

Well Name	Tatamagouche (083)
Observation Well ID Number	083
NSE Well Log Number	510124
County	Colchester
Nearest Community	Tatamagouche
UTM - Easting	479226
UTM - Northing	5061591
Year Monitoring Started	2009
Casing Depth (m, bgs)	unknown
Well Depth (m, bgs)	24.5
Elevation - top of casing (m, asl)	19.30
Geologic Unit	Tatamagouche Formation
Aquifer Material	Bedrock - sandstone/siltstone

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Tatamagouche (083) are shown in Figure B.35, Appendix B. This well has been monitored since 2009 and water levels appear to have remained relatively consistent with regular seasonal fluctuations. A trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels fluctuated near historical highs in the winter and spring and near historical lows in the late summer and fall. The average water level elevation in 2014 was 13.85 m above sea level and the annual water level fluctuation was 1.47 m. The average depth to water in 2014 was 5.45 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Tatamagouche (083) well was sampled in 2008 and the chemistry results are presented in Appendix C. The results indicate that no health-based drinking water guidelines were exceeded; however, aesthetic drinking water guidelines were exceeded for colour, pH, turbidity, and manganese. VOCs and pesticides were not detected. This well has not been sampled for tritium or perchlorate.

Temperature data in the Tatamagouche (083) well has been recorded since 2009. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 8.08^{o}C, with annual fluctuations between 6.52^{o}C and 9.69^{o}C.

3.36 Pugwash (084)

Well Description

The Pugwash (084) observation well is located in the Village of Pugwash, Cumberland County. The well was constructed in 2010 to support a sea water intrusion study under the Atlantic Climate Adaption Solutions program (Ferguson and Beebe, 2012). The well was added to the NS Groundwater Observation Well Network in November 2010. The location of the Pugwash (084) observation well is shown in Figure F.36a, Appendix F.

The well is completed in a bedrock aquifer and is 61.6 m deep with a casing length of 12.2 m. It is adjacent to the ocean. Well location and construction information is provided in Table 3.36a and the well log is provided in Appendix A. A pumping test was conducted at this well indicated a transmissivity of 30 m^2/day and a storativity of 10^{-4} (Beebe, 2011).

Table 3.36a: Pugwash (084) Well Construction Information

Well Name	Pugwash (084)
Observation Well ID Number	084
NSE Well Log Number	100983
County	Colchester
Nearest Community	Pugwash
UTM - Easting	448360
UTM - Northing	5077961
Year Monitoring Started	2010
Casing Depth (m, bgs)	12.2
Well Depth (m, bgs)	61.6
Elevation - top of casing (m, asl)	8.90
Geologic Unit	Cumberland Group
Aquifer Material	Bedrock - Shale/sandstone

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Pugwash (084) are shown in Figure B.36, Appendix B. This well has been monitored since 2010 and water levels appear to have remained relatively consistent, with both seasonal fluctuations and daily fluctuations which are likely associated with a tidal influence. A trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels fluctuated within, or near the top of the historical range during the year. The average water level elevation in 2014 was 4.46 m above sea level and the annual water level fluctuation was 1.37 m. The average depth to water in 2014 was 0.64 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Pugwash (084) observation well has not been sampled by Nova Scotia Environment, however, test results for selected inorganic and metal parameters have been reported by Beebe (2011) and are presented in Table 3.36b. No guidelines were exceeded for the parameters that were tested.

Temperature data in the Pugwash (084) well has been recorded since late 2010. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 7.98^{o}C, with fluctuations between 7.08^{o}C and 9.21^{o}C.

Table 3.36b: Pugwash (084) Groundwater Chemistry Results (from Beebe, 2011)

Parameter	Units	Drinking Water Guideline	Detection Limit	Sample Name Pugwash 2
Inorganics				
Total Alkalinity (Total as CaCO3)	mg/L	-	30	120
Bromide (Br)	mg/L	-	0.5	ND
Chloride (Cl)	mg/L	250 AO	5	26
Fluoride (F)	mg/L	1.5	0.5	ND
Nitrate (N)	mg/L	10	0.06	0.21
Nitrite (N)	mg/L	1	0.06	ND
Orthophosphate (P)	mg/L	-	0.3	ND
pH	no units	6.5 to 8.5 AO	-	7.75
Sulphate (SO4)	mg/L	500 AO	20	270
Metals				
Aluminium (Al)	ug/L	-	5	ND
Calcium (Ca)	ug/L	-	100	120,000
Copper (Cu)	ug/L	1,000 AO	2	ND
Iron (Fe)	ug/L	300 AO	50	ND
Lead (Pb)	ug/L	10	0.5	ND
Magnesium (Mg)	ug/L	-	100	9,200
Manganese (Mn)	ug/L	50 AO	2	26
Phosphorus (P)	ug/L	-	100	130
Potassium (K)	ug/L	-	100	4,100
Sodium (Na)	ug/L	200,000 AO	100	40,000
Sulphur (S)	ug/L	-	5,000	91,000
Zinc (Zn)	ug/L	5,000 AO	5	ND

Notes: All guidelines are health-based MACs or IMACs, unless otherwise indicated.

AO = Aesthetic Objective.

ND = Not Detected.

3.37 St. Peters (085)

Well Description

The St. Peters (085) observation well is located on Oban Road, approximately 1 km north of the Village of St. Peters, Richmond County. The well was constructed in 2006 as a test well to explore for a water supply for St. Peters. It was converted to an observation well in December 2010. The location of the St. Peters (085) observation well is shown in Figure F.37, Appendix F.

The well is completed in a bedrock aquifer and is 112.9 m deep with a casing length of 18.3m. Well location and construction information is provided in Table 3.37 and the well log is provided in Appendix A.

Table 3.37: St. Peters (085) Well Construction Information

Well Name	St. Peters (085)
Observation Well ID Number	085
NSE Well Log Number	062067
County	Richmond
Nearest Community	St. Peters
UTM - Easting	664778
UTM - Northing	5059282
Year Monitoring Started	2010
Casing Depth (m, bgs)	18.3
Well Depth (m, bgs)	112.9
Elevation - top of casing (m, asl)	31.43
Geologic Unit	Cumberland Group
Aquifer Material	Bedrock - conglomerate

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for St Peters (085) are shown in Figure B.37, Appendix B. This well has been monitored since the end of 2010. A statistical trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels fluctuated near historical lows for much of the year. The average water level elevation in 2014 was 1.50 m above sea level and the annual water level fluctuation was 1.03 m. The average depth to water in 2014 was 3.5 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The St. Peters (085) well was sampled in 2011 and the chemistry results are presented in Appendix C. The results indicate that the health-based drinking water guideline was exceeded for arsenic, and the aesthetic drinking water guideline was exceeded for pH. VOCs and pesticides were not detected. This well has not been sampled for tritium or perchlorate.

Temperature data in the St. Peter's (085) well has been recorded since late 2010. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 6.07^{o}C, with fluctuations between 5.23^{o}C and 8.64^{o}C.

3.38 Smileys Park (086)

Well Description

The Smileys Park (086) observation well is located in Smileys Provincial Park, near the community of McKay Section, Hants County. The well was constructed in 1967 as a water supply for the park and was converted to an observation well in 2011 because it was no longer in use as a water supply well.

The location of the Smileys Park (086) observation well is shown in Figure F.38, Appendix F. The well is completed in a surficial aquifer and is 9.8 m deep with a casing length of 8.2 m. Well location and construction information is provided in Table 3.38 and the well log is provided in Appendix A.

Table 3.38: Smileys Park (086) Well Construction Information

Well Name	Smileys Park (086)
Observation Well ID Number	086
NSE Well Log Number	670564
County	Hants
Nearest Community	McKay Section
UTM - Easting	424131
UTM - Northing	4984939
Year Monitoring Started	2011
Casing Depth (m, bgs)	8.23
Well Depth (m, bgs)	9.8
Elevation - top of casing (m, asl)	38.53
Geologic Unit	Quaternary – Alluvial Deposits
Aquifer Material	Surficial – Clay & Gravel

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Smileys Park (086) are shown in Figure B.38, Appendix B. This well has been monitored since July 2011. A statistical trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels fluctuated relatively significantly, increasing both historical highs and lows for this recently added well. The average water level elevation in 2014 was 29.05 m above sea level and the annual water level fluctuation was 2.85 m. The average depth to water in 2014 was 5.95 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Smileys Park (086) well was sampled in 1993 and reported within a 1995 DNR Water Supply Study for the Provincial Park at the time. These results are provided in Table 4.2 and details in Appendix C. This well has not been sampled for VOC's, pesticides, tritium or perchlorate. The well will be re-sampled and results updated in the future. The results indicate that the aesthetic drinking water guidelines were exceeded for turbidity and iron.

Temperature data in the Smileys Park (086) well has been recorded since 2011. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 7.59^{o}C, with fluctuations between 3.88^{o}C and 11.90^{o}C.

3.39 Rainbow Haven (087)

Well Description

The Rainbow Haven (087) observation well is located at the Rainbow Haven Beach Provinical Park, near the community of Cow Bay and Rainbow Haven, Halifax County. The well was constructed in 2011 as an observation well for Nova Scotia Environment.

The location of the Rainbow Haven (087) observation well is shown in Figure F.39, Appendix F. The well is completed in a surficial aquifer and is 31.7 m deep with a casing length of 32.6 m. Well location and construction information is provided in Table 3.39 and the well log is provided in Appendix A.

Table 3.39: Rainbow Haven (087) Well Construction Information

Well Name	Rainbow Haven (087)
Observation Well ID Number	087
NSE Well Log Number	110646
County	Halifax
Nearest Community	Rainbow Haven
UTM - Easting	466891
UTM - Northing	4944100
Year Monitoring Started	2012
Casing Depth (m, bgs)	31.7
Well Depth (m, bgs)	31.7
Elevation - top of casing (m, asl)	5.41
Geologic Unit	Quaternary –Marine Deposits
Aquifer Material	Surficial – Sand & Gravel

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Rainbow Haven (087) are shown in Figure B.39, Appendix B. This well has been monitored since July 2012. A statistical trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels fluctuated relatively significantly, increasing both historical highs and lows for this recently added well. The well is on the coast near the ocean and likely also shows tidal influences. The average water level elevation in 2014 was 2.74 m above sea level and the annual water level fluctuation was 0.61 m. The average depth to water in 2014 was 2.26 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Rainbow Haven (087) well was sampled by Nova Scotia Environment in 2012. The results indicate that health-based drinking water guidelines were exceeded for uranium, and aesthetic drinking water guidelines were exceeded for chloride, sulphate, turbidity, TDS, sodium, iron and manganese. VOCs were not detected. This well has not been sampled for pesticides, tritium or perchlorate.

The chloride level in this well was relatively high at 18,000 mg/L, which greatly exceeds the Health Canada aesthetic objective of 250 mg/L. The bromide/chloride ratio at this well along with other evidence indicates the salt source is likely due to brackish sea water. The bromide/chloride ratio at this well was 29 (i.e., 52 mg/L/18000 mg/L x 10,000 = 29) and likely represents a groundwater mixing zone with sea water. Please see Section 2.2.4 for a discussion of how this ratio is used to assess salt sources. Other evidence includes strontium, sulphate, sodium and potassium chemistry consistent with a high level of sea water mixing. Finally, the well is located within about 200 m of the ocean.

Temperature data in the Rainbow Haven (087) well has been recorded since 2012. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 5.49^{o}C, with fluctuations between 4.90^{o}C and 7.80^{o}C.

3.40 Maitland (088)

Well Description

The Maitland (088) observation well is located in the former Maitland Provincial Park, on Route 3A near the community of Blockhouse, Lunenburg County. The well was constructed in 1971 as a water supply for the park and was converted to an observation well in 2013 because it was no longer in use as a water supply well.

The location of the Maitland (088) observation well is shown in Figure F.40, Appendix F. The well is completed in slate bedrock and is 24.7 m deep with a casing length of 5.2 m. Well location and construction information is provided in Table 3.40 and the well log is provided in Appendix A.

Table 3.40: Maitland (088) Well Construction Information

Well Name	Maitland (088)
Observation Well ID Number	088
NSE Well Log Number	710457
County	Lunenburg
Nearest Community	Maitland
UTM - Easting	385636
UTM - Northing	4921397
Year Monitoring Started	2013
Casing Depth (m, bgs)	5.2
Well Depth (m, bgs)	24.7
Elevation - top of casing (m, asl)	74.29
Geologic Unit	Halifax Formation
Aquifer Material	Bedrock - Slate

Notes: bgs = below ground surface; asl = above sea level

Monitoring Results - Water Levels

The water level graphs for Maitland (088) are shown in Figure B.40, Appendix B. This well has been monitored since April 2013. A statistical trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels fluctuated relatively significantly, increasing both historical highs and lows for this recently added well. The average water level elevation in 2014 was 68.18 m above sea level and the annual water level fluctuation was 1.23 m. The average depth to water in 2014 was 1.82 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Maitland (088) well was sampled in 1994 and reported within a 1994 DNR Water Supply Study for the Provincial Park at the time. These results are provided in Table 4.2 and details in Appendix C. This well has not been sampled for VOC's, pesticides, tritium or perchlorate. The well will be re-sampled and results updated in the future. The results indicate that the aesthetic drinking water guidelines were exceeded for chloride, pH, turbidity, iron and manganese.

Temperature data in the Maitland (088) well has been recorded since 2013. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 7.85^{o}C, with fluctuations between 6.52^{o}C and 9.43^{o}C.

3.41 Simms Settlement (089)

Well Description

The Simms Settlement (089) observation well is located in a former provincial day park, near the community of Hubbards, Lunenburg County, as shown in. The park was supplied with water from a surficial dug well in 1975, but sometime between 1975-1994 a drilled well was installed and used for the park water supply. As no driller's log was available, NSE recently created a well record based on known information. The park is no longer used and the existing drilled well was converted to an observation well in 2013, to expand the Groundwater Observation Well Network.

Well location and construction information is provided in Table 3.41 and the well log is provided in Appendix A.

Table 3.41: Simms Settlement (089) Well Construction Information

Well Name	Simms Settlement (089)
Observation Well ID Number	089
NSE Well Log Number	762869
County	Halifax
Nearest Community	Simms Settlement
UTM - Easting	412273
UTM - Northing	4941181
Year Monitoring Started	2013
Casing Depth (m, bgs)	6.05
Well Depth (m, bgs)	40.2
Elevation - top of casing (m, asl)	55.07
Geologic Unit	Sandy Lake Monzogranite
Aquifer Material	Granite (assumed)

Notes: bgs = below ground surface; asl = above sea level

The location of the Simms Settlement (089) observation well is shown in Figure F.41, Appendix F. The well is completed in assumed granite bedrock and is 40.2 m deep with a casing length of 6.05 m.

Monitoring Results - Water Levels

The water level graphs for Simms Settlement (089) are shown in Figure B.41, Appendix B. This well has been monitored since April 2014. A statistical trend analysis has not been completed for this well because there are insufficient water level data available (i.e., <10 years of useable data).

The 2014 water levels fluctuated, increasing both historical highs and lows for this recently added well. The average water level elevation in 2014 was 46.76 m above sea level and the annual water level fluctuation was 0.71 m. The average depth to water in 2014 was 3.24 m below top of casing.

Monitoring Results - Water Chemistry and Temperature

The Simms Settlement (089) well was sampled in 1975 and reported within a 1994 DNR Water Supply Study for the Provincial Park at the time. These results are provided in Table 4.2 and details in Appendix C. This well has not been sampled for VOC's, pesticides, tritium or perchlorate. The well will be re-sampled and results updated in the future. The results indicate that no drinking water guidelines were exceeded for the parameters tested.

Temperature data in the Simms Settlement (089) well has been recorded since April 2013. A graph of the daily average groundwater temperature in this well based on the entire monitoring period is presented in Appendix D. The average groundwater temperature during this period was 6.70^{o}C, with fluctuations between 5.89^{o}C and 7.71^{o}C.

4.0 SUMMARY & CONCLUSIONS

4.1 Groundwater Levels

Table 4.1 presents a summary of groundwater level trends for each observation well and further details are provided in Appendix E. Trend analyses were only carried out on wells with at least ten years of "useable" water level data. A year was considered useable if data were available for at least 75% of the year. Twenty one (21) of the observation wells had enough water level data available to complete trend analyses. The remaining 20 wells had either been monitored for less than ten years, or had data gaps that caused some years of monitoring data to be unusable. The level for statistical reliability for a trend was set to require a confidence level of 90% or above (Aziz et al, 2003) for validity. Seven (7) of the 21 wells with enough useable data had data statistical confidence levels of 90% or less and therefore trend calculations of these were not considered valid.

The trend analysis results indicate that 14 of the wells exhibit groundwater level trends with statistical confidence levels above 90%. Six of these indicate upward trends and eight indicate downward trends. Thus, more wells are indicating decreasing trends than those indicating increases. The size of the trends in all cases is relatively small (e.g. water level changes of less than 1 m in 20 years).

Care should be taken when interpreting the water level trends. The long term water level graphs in Appendix B should always be viewed when comparing calculated rates of change. In many cases, calculated long-term trend rates are not reflective of more recent local water level changes, as the calculated rates tend to statistically average out short term effects. In some cases abrupt visual graph water level or trend direction changes can be seen when monitoring resumes after periods (e.g. 5 years) of inactivity. Such changes may influence the calculated rate slope but may be more related to local well and monitoring re-commissioning effects than they are to actual long term aquifer trends.

Upward trends were observed at the following 6 wells: Greenwood (003), Fraser Brook (004), Wilmot (005), Truro (014), Durham (045) and Ingonish (065). The largest upward trend had a slope calculation of + 2.5 cm/year at the Truro (014) observation well. The reason for the upward trends at these wells has not been determined, however, possible reasons include: reduced pumping

rates in nearby water wells, increased annual precipitation, greater infiltration rates due to changes in land use, and reduction in evapotranspiration rates. The increased water levels at the Truro (014) observation well after a hiatus in well monitoring (1992-2003) may be due to recovery of aquifer levels following the decommissioning of a nearby municipal water supply well in 1994.

Downward trends were observed at the following 8 wells: Murray Siding (007), Monastery (028), Point Aconi (030), Lawrencetown (043), Kentville (048), Sydney (050), North Grant (054) and Margaree (064). The largest downward trend had a slope calculation of - 5.5 cm/year at the Sydney (050) observation well. The reason for the downward trends at these wells has not been confirmed, however, two of the observation wells are located in municipal wellfields where water level declines are expected to be associated with wellfield pumping. It should be noted that the water level drop in the Sydney (050) observation well between 2006-2012 may have been related to well clogging and poor recovery in the well. This may have been addressed by cleaning the well in 2011, as subsequent water levels do indicate relative recovery in the well between 2013-2015.

In summary, overall groundwater levels across Nova Scotia do not currently indicate any consistent trends. The groundwater level graphs (Appendix B) indicate that typical seasonal variations occur at most locations, with higher water levels present in the wet months (usually winter, spring and late fall) and lower water levels present during the dry summer and early fall periods. Localized, longer term trends in some wells do occur (based on annual averages), however these trends can be either increasing or decreasing.

Conditions causing localized water level trends are not always evident but in some cases are thought to be related to adjacent water supply wells or municipal wellfield effects, changes in land use or other human caused factors. Additional factors that could affect provincial groundwater levels include potential changes in precipitation, evapotranspiration and sea level rise. Detailed analysis of possible correlations with these other factors was not evaluated in this work due to the absence of consistent, long term, province-wide water level trends (i.e. data shows both upward and downward groundwater level trends).

Table 4.1: Summary of Groundwater Level Trends

Well Name	Well No.	Year Monitoring Started	No. of Useable Years [1]	Average Yearly Water Level Change (cm/year)[2]	Water Level Trend[3]
Truro	014	1971	22	2.5	Increasing
Ingonish	065	1990	11	1.7	Increasing
Durham	045	1979	29	1.5	Increasing
Wilmot	005	1966	24	0.4	Increasing
Greenwood	003	1966	26	0.3	Increasing
Fraser Brook	004	1966	25	0.2	Increasing
Murray Siding	007	1968	18	-0.6	Decreasing
Kentville	048	1980	21	-0.6	Decreasing
Margaree	064	1990	13	-1.5	Decreasing
Point Aconi	030	1976	22	-1.7	Decreasing
North Grant	054	1987	10	-1.9	Decreasing
Lawrencetown	043	1978	18	-1.9	Decreasing
Monastery	028	1976	16	-3.9	Decreasing
Sydney	050	1984	20	-5.5	Decreasing
Annapolis Royal	062	1990	10	1.1	NA
Hebron	063	1990	12	1.0	NA
Wolfville	010	1969	26	-0.5	NA
Stillwater	055	1987	10	-2.0	NA
Hayden Lake	059	1988	20	0.0	NA
Meteghan	060	1987	14	0.4	NA
Dalem Lake	069	1992	11	0.4	NA
Sheet Harbour	056	1987	9	NA	Insufficient Data
Debert	068	1993	9	NA	Insufficient Data
Amherst	071	1993	8	NA	Insufficient Data
Kelley River	073	2006	8	NA	Insufficient Data

Well Name	Well No.	Year Monitoring Started	No. of Useable Years [1]	Average Yearly Water Level Change (cm/year)[2]	Water Level Trend[3]
Atlanta	074	2008	6	NA	Insufficient Data
Sheffield Mills	075	2008	6	NA	Insufficient Data
Fall River	076	2008	6	NA	Insufficient Data
West Northfield	077	2008	6	NA	Insufficient Data
Musquodoboit Hbr	078	2008	6	NA	Insufficient Data
Lewis Lake	079	2008	6	NA	Insufficient Data
Arisaig	080	2009	5	NA	Insufficient Data
Coldbrook	081	2009	5	NA	Insufficient Data
Long Point	082	2009	5	NA	Insufficient Data
Tatamagouche	083	2009	5	NA	Insufficient Data
Pugwash	084	2010	4	NA	Insufficient Data
St. Peters	085	2010	4	NA	Insufficient Data
Smileys Park	086	2011	6	NA	Insufficient Data
Rainbow Haven	087	2012	2	NA	Insufficient Data
Maitland	088	2013	1	NA	Insufficient Data
Simms Settlement	089	2013	1	NA	Insufficient Data

Notes:
1. For a year to be considered a "useable" year, data must be available for at least 75% of the year.
2. Positive water level change (+) values indicate an increasing trend and negative (-) values indicate a decreasing trend.
3. Water level trends are noted here only when statistical confidence level is >90%.
4. Insufficient data means there are less than 10 useable years of data available.
5. NA (not available) means calculations were not performed due to data constraints (insufficient data or statistical confidence level below 90%)

4.2 Groundwater Quality

Table 4.2 presents a summary of the most recent groundwater quality results for each of the

network's observation wells (including the discontinued Margaree 064 well). For the latest four network wells (086, 087, 088, 089) the sampling was conducted previously by another department, sample parameters did not include the complete list currently used and in three cases the sample results were obtained greater than 20 years ago. NSE currently plans to update the well chemistry sampling from these observation wells. Detailed chemistry results are available in Appendix C.

The results indicate that ten (10) of the 41 wells exceeded health-based drinking water guidelines in the most recent sampling event. The parameters that exceeded health-based guidelines include: arsenic (5 wells), fluoride (2 wells), lead (1 well), nitrate (1 well) and uranium (2 wells). Most of these exceedances (including arsenic, fluoride and uranium) are associated with naturally-occurring dissolved minerals that are known to occur in groundwater in certain areas of the province. The nitrate exceedance was observed at a well located in an agricultural area, and is likely to be caused by human activity.

Twenty-three (23) of the 41 wells exceeded aesthetic drinking water guidelines (or other non-health related guidelines) in the most recent sampling event. The parameters that exceeded aesthetic drinking water guidelines include: manganese (at 16 wells), iron (11 wells), turbidity (15 wells), pH (7 wells), chloride (2 wells), colour (2 wells), sodium (1 well) and total dissolved solids (2 wells). The majority of these parameters are representative of naturally-occurring water quality problems that are commonly encountered in water wells in Nova Scotia and elsewhere. Chloride was detected above background levels at seven wells, including two wells where the chloride level was above the aesthetic drinking water guideline. Based on the chemistry and location of these wells, it appears that two or three of the wells have been impacted by road salt, three have been impacted by sea water intrusion, and one has been impacted by naturally-occurring salt contained in the geologic formation.

The water quality results show that none of the observation wells exceeded drinking water guidelines for volatile organic compounds (VOCs) or pesticides. However, one VOC (toluene) was detected at two observation wells at low levels (i.e., 2 ug/L). The source of the toluene has not been determined; however, these wells are located beside roads and, therefore, the toluene may be associated with gasoline runoff from roads. No pesticides were detected in any of the observation wells.

The groundwater temperature data collected at each observation well (see Appendix D) show that all of the observation wells experience seasonal temperature fluctuations. The peak groundwater

temperatures usually occur between September and January and the lowest temperatures usually occur between March and June. The temperature range at each observation well is variable, however, the typical range is between 6ºC and 10ºC, with a typical average temperature of approximately 8ºC. Statistical analysis of potential long term trends in groundwater temperature was not conducted during this work.

Of the 17 observation wells tested for tritium, 13 wells contained either recent water (recharged after 1952) or a mix of recent and old water (recharged before and after 1952). Only four of the 17 wells tested for tritium contained purely old water (recharged before1952). These results suggest that most of the wells draw water from aquifers that are recharged relatively quickly. This is encouraging from a water quantity point of view because the aquifers are being regularly replenished with new water, but it also indicates that the aquifers are vulnerable to contaminants released at the surface that can be carried into the aquifer relatively quickly. This vulnerability emphasizes the importance of implementing source water protection measures to ensure that aquifers are protected from surface activities.

Table 4.2: Summary of Groundwater Quality Results

Well Name	**Parameters Exceeding Health-Based Drinking Water Guidelines**	**Parameters Exceeding Aesthetic Drinking Water Guidelines (or other non-health guidelines)**	**Comments**
Greenwood (003)	None	Turbidity, Iron, Manganese	None
Fraser Brook (004)	Arsenic	None	None
Wilmot (005)	Nitrate	None	None
Murray Siding (007)	None	Turbidity, Iron, Manganese	None
Wolfville (010)	None	Turbidity, Iron, Manganese	Chloride exceeds background
Truro (014)	Not sampled	Not sampled	Not sampled
Monastery (028)	None	None	None
Point Aconi (030)	None	None	None
Lawrencetown (043)	Arsenic	None	Chloride exceeds background

Well Name	**Parameters Exceeding Health-Based Drinking Water Guidelines**	**Parameters Exceeding Aesthetic Drinking Water Guidelines (or other non-health guidelines)**	**Comments**
Durham (045)	None	None	None
Kentville (048)	Lead	Chloride, Turbidity, Iron, TDS	None
Sydney (050)	None	Manganese	None
North Grant (054)	Arsenic	Turbidity, Iron	None
Stillwater (055)	None	Manganese	None
Sheet Harbour (056)	None	Manganese	None
Hayden Lake (059)	None	pH	None
Meteghan (060)	None	Turbidity, Iron, Manganese	None
Annapolis Royal (062)	None	Manganese	None
Hebron (063)	None	Turbidity, Iron, Manganese	None
Margaree (064)	None	None	None
Ingonish (065)	None	None	None
Debert (068)	Not sampled	Not sampled	Not sampled
Dalem Lake (069)	None	Turbidity, Manganese	None
Amherst (071)	None	None	None
Kelley River (073)	None	None	None
Atlanta (074)	Uranium	None	None
Sheffield Mills (075)	None	None	None
Fall River (076)	None	pH, Turbidity, Iron, Manganese	None
West Northfield (077)	None	Manganese	None
Musquodoboit Hbr (078)	Fluoride	None	None

Well Name	**Parameters Exceeding Health-Based Drinking Water Guidelines**	**Parameters Exceeding Aesthetic Drinking Water Guidelines (or other non-health guidelines)**	**Comments**
Lewis Lake (079)	Arsenic, Fluoride	Manganese	None
Arisaig (080)	None	pH, Turbidity	Toluene detected below guidelines; Chloride exceeds background
Coldbrook (081)	None	Turbidity	None
Long Point (082)	None	None	Toluene detected below guidelines; Chloride exceeds background
Tatamagouche (083)	None	pH, Turbidity, Manganese, Colour	None
Pugwash (084)	None	None	None
St Peters (085)	Arsenic	pH	None
Smiley's Park (086)	None	Turbidity, Iron	Chloride exceeds background
Rainbow Haven (087)	Uranium	Chloride, Sulphate, Turbidity, TDS, Sodium, Iron, Manganese	None
Maitland (088)	None	Colour, pH, Turbidity, Iron, Manganese	Partial analysis
Simms Settlement (089)	None	None	Partial analysis

Note: Some wells have been sampled multiple times. This table summarizes the most recent sample results.

5.0 REFERENCES

Aziz, J.J., M. Ling, H. S. Rifai, C. J. Newell, and J.R. Gonzales, 2003. MAROS: A Decision Support System for Optimizing Monitoring Plans. Ground Water, vol. 41, no. 3, pp. 355-367.

Baechler, F.E. 1986. Regional Water Resources Sydney Coalfield, Nova Scotia. Department of the Environment, Halifax.

Beebe, C.R. 2011. Investigation of Occurrence and Assessment of Risk of Saltwater Intrusion in Nova Scotia, Canada. Unpublished M.Sc. Thesis. Saint Francis Xavier University.

Bottomley, D.J. 1983. Origins of Some Arseniferous Groundwaters in Nova Scotia and New Brunswick, Canada. Canada Journal of Hydrology, 69: 223-257.

Callan, D.M. 1977. Groundwater Exploration and Testing Programme - Annapolis Valley Industrial Park, Kentville, N.S.

Clark I.D. and P. Fritz. 1997. Environmental Isotopes in Hydrogeology. Lewis Publishers, Boca Raton.

Cross, H.J. 1980. Report on Test Drilling, Upper Lawrencetown, Halifax County, Nova Scotia. Department of the Environment, Water Planning and Management Division, Halifax.

Environment Canada. 2015. Canadian Climate Normals Online. http://climate.weather.gc.ca/climate_normals/index_e.html

Ferguson, G. and C. Beebe. 2012. Vulnerability of Nova Scotia's Coastal Groundwater Supplies to Climate Change. Report prepared for the Atlantic Climate Change Solutions Association. http://atlanticadaptation.ca/sites/discoveryspace.upei.ca.acasa/files/Nova%20Scotia%20ACAS%20groundwater%20report%20_0.pdf

Gibb, J.E., and K.A. McMullin. 1980. Regional Water Resources, Pictou County, Nova Scotia. Nova Scotia Department of the Environment.

Gilbert, R.O. 1987. Statistical Methods for Environmental Pollution Monitoring. John

Wiley&Sons.

Health Canada. 2007. Perchlorate and Human Health. http://www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/perchlorate_e.html

Health Canada. 2012. Guidelines for Canadian Drink Water Quality – Summary Table. August 2012. Water, Air and Climate Change Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.

Hennigar, T.W. 1966. Report on the geology and hydrology of the Fraser Brook Watershed, IHD-IWB-RB-23.

Hennigar, T.W. 1972. Hydrogeology of the Truro Area, Nova Scotia. Province of Nova Scotia Department of Mines, Groundwater Section report 72-1.

Hennigar, T.W. 1974. Hydrogeology of the Kelley River IHD Benchmark Basin, Cumberland County, Nova Scotia. Province of Nova Scotia Department of Environment.

Kennedy, G.W., K. G. Garroway and J. M. Drage. 2009. Hydrogeology program in Nova Scotia. Minerals Resources Branch Report of Activities 2008. Nova Scotia Department of Natural Resources. Report ME 2009-1.

McIntosh, J.R. 1984. Groundwater Hydrographs in Nova Scotia 1965-1981. Nova Scotia Department of the Environment.

NS Environment and Labour. 2007. Nova Scotia Groundwater Observation Well Network - 2007 Report. Nova Scotia Department of Environment and Labour.

NS Environment Climate Change Portal http://climatechange.novascotia.ca/climate-data

NS Environment. 2008. Nova Scotia Groundwater Observation Well Network - 2008 Report. Nova Scotia Department of Environment.

NS Environment. 2009. Nova Scotia Groundwater Observation Well Network - 2009 Report. Nova Scotia Department of Environment.

NS Environment. 2010. Nova Scotia Groundwater Observation Well Network - 2010 Report. Nova Scotia Department of Environment.

NS Environment. 2011. Nova Scotia Groundwater Observation Well Network - 2011 Report. Nova Scotia Department of Environment.

Rivard, C., D. Paradis, S.J. Paradis, A. Bolduc, R.H. Morin, S. Liao, S. Pullan, Gauthier, M.-J., S. Trepanier, A. Blackmore, I. Spooner, C. Deblonde, R. Bovin, R.A. Fernandes, S. Castonguay, T. Hamblin, Y. Michaud, J. Drage, and C. Paniconi. 2012. Canadian Groundwater Inventory: Regional Hydrogeological Characterization of the Annapolis Valley Aquifers. Geological Survey of Canada. Bulletin 598.

Strait of Canso Natural Environment Committee. 1975. Strait of Canso Natural Environment Inventory Water Resources.

Trescott, P.C. 1968. Groundwater Resources and Hydrogeology of the Annapolis-Cornwallis Valley, Nova Scotia. Nova Scotia Department of Mines, Memoir 6.

Trescott, P.C. 1969. Wolfville aquifer evaluation, Kings County, Nova Scotia. Province of Nova Scotia Department of Mines, Groundwater Section Report 69-1.

APPENDIX A
WELL LOGS

Table A-1: Summary of Observation Well Construction Information

Well#	Address	Community	County	Date	Well Depth (ft)	Casing Depth (ft)	Depth to Bedrock (ft)	Depth to Static Level (ft)	Water Yield (igpm)	Driller	Type of Well
661225	NS OBS WELL - GREENWOOD (003)	GREENWOOD	KINGS	20-Jun-66	25	21.5				1	DRILLED
661226	NS OBS WELL - FRASER BROOK (004)	LOWER HARMONY	COLCHESTER	11-Jul-66	60		2		5	1	DRILLED
661267	NS OBS WELL - WILMOT (005)	WILMOT	ANNAPOLIS	18-May-66	60	21				1	DRILLED
671074	NS OBS WELL - MURRAY SIDING (007)	MURRAYS SIDING	COLCHESTER	02-Aug-67	28	26	26			1	DRILLED
681252	NS OBS WELL - WOLFVILLE (010)	WOLFVILLE	KINGS	17-Dec-68	79	74.5	35			1	DRILLED
701431	NS OBS WELL - TRURO (014)	TRURO	COLCHESTER	16-Nov-70	300	60	35			1	DRILLED
742420	NS OBS WELL - MONASTERY (028)	MONASTERY	ANTIGONISH	01-Jan-74	520				40	1	DRILLED
761408	NS OBS WELL - POINT ACONI (030)	POINT ACONI	CAPE BRETON	11-Aug-76	100	42	14		10	45	DRILLED
771538	NS OBS WELL - LAWRENCETOWN (043)	UPPER LAWRENCETOWN	HALIFAX	16-Mar-77	175	145	10	4	8	83	DRILLED
772021	NS OBS WELL - KENTVILLE (048)	KENTVILLE	KINGS	20-May-77	400	100	95		150	20	DRILLED
771077	NS OBS WELL - SYDNEY (050)	SYDNEY	CAPE BRETON	09-Mar-77	330	22	13		250	45	DRILLED
782683	NS OBS WELL - DURHAM (045)	DURHAM	PICTOU	01-Jul-78	247		20		100	4	DRILLED
832002	NS OBS WELL - DEBERT (068)	DEBERT	COLCHESTER	13-Aug-83	153	26		112	10	6	DRILLED
871262	NS OBS WELL - NORTH GRANT (054)	LOWER NORTH GRANT	ANTIGONISH	30-Mar-87	150	43		14	20	2	DRILLED
871263	NS OBS WELL - STILLWATER (055)	STILLWATER	GUYSBOROUGH	01-Apr-87	118	44		30	4.5	2	DRILLED
871264	NS OBS WELL - SHEET HARBOUR (056)	BEAVER HARBOUR	HALIFAX	06-Apr-87	150	23		10	0.7	2	DRILLED
870189	NS OBS WELL - HAYDEN LAKE (059)	EAST JORDAN	SHELBURNE	31-Mar-87	160	20	10		3.7	210	DRILLED
870188	NS OBS WELL - METEGHAN (060)	METEGHAN RIVER	DIGBY	31-Mar-87	200	40			0.7	210	DRILLED
891721	NS OBS WELL - HEBRON (063)	DAYTON	YARMOUTH	19-Dec-89	150	40	3		45	210	DRILLED
891722	NS OBS WELL - ANNAPOLIS ROYAL (062)	LAKE LA ROSE	ANNAPOLIS	20-Dec-89	205	80	71		0.5	210	DRILLED
892288	NS OBS WELL - INGONISH (065)	INGONISH	VICTORIA	12-Dec-89	150	40			100	45	DRILLED
902524	NS OBS WELL - MARGAREE (064)	MARGAREE VALLEY	INVERNESS	16-Jan-90	150	40			10	45	DRILLED
943326	NS OBS WELL - DALEM LAKE (069)	NEW DOMINION	VICTORIA	01-Jan-92	200	40.5					DRILLED
862667	NS OBS WELL - AMHERST (071)	AMHERST	CUMBERLAND	29-Jul-86	382	20	15			32	DRILLED
721858	NS OBS WELL - KELLEY RIVER (073)	RIVER HEBERT	CUMBERLAND	01-Dec-71	50	13.6					DRILLED
070613	NS OBS WELL - ATLANTA (074)	ATLANTA	KINGS	29-Aug-07	175	118	112		100	307	DRILLED
070618	NS OBS WELL - SHEFFIELD MILLS (075)	SHEFFIELD MILLS	KINGS	29-Aug-07	175	63	16		60	307	DRILLED
080824	NS OBS WELL - FALL RIVER (076)	FALL RIVER	HALIFAX	28-Feb-08	200	43	3.5	12	1.5	695	DRILLED
080132	NS OBS WELL - WEST NORTHFIELD (077)	WEST NORTHFIELD	LUNENBURG	06-Mar-08	160	42	24		7	307	DRILLED
080861	NS OBS WELL - MUSQUODOBOIT HBR (078)	MUSQUODOBOIT HARBOUR	HALIFAX	06-Mar-08	200	89	81		0.5	734	DRILLED
690090	NS OBS WELL - LEWIS LAKE (079)	LEWIS LAKE	HALIFAX	11-Jun-69	250	25	20		6	3	DRILLED
770542	NS OBS WELL - ARISAIG (080)	ARISAIG	ANTIGONISH	05-Jul-77	300	40	30			15	DRILLED
610135	NS OBS WELL - COLDBROOK (081)	COLDBROOK	KINGS	01-Jan-61	232	172		45			DRILLED
742421	NS OBS WELL - LONG POINT (082)	LONG POINT	INVERNESS	01-Aug-74	61	43		7.5			DRILLED
510124	NS OBS WELL - TATAMAGOUCHE (083)	TATAMAGOUCHE	COLCHESTER	01-Jan-51	80.4					33	DRILLED
100983	NS OBS WELL - PUGWASH (084)	PUGWASH	CUMBERLAND	30-Sep-10	202	40	24	9	75	882	DRILLED
062067	NS OBS WELL - ST. PETERS (085)	ST. PETER'S	RICHMOND	02-Mar-06	370	60	42		12.5	446	DRILLED
670564	NS OBS WELL - SMILEYS PARK (086)	MCKAY SECTION	HANTS	27-Mar-67	32	27			60	18	DRILLED
110646	NS OBS WELL - RAINBOW HAVEN (087)	RAINBOW HAVEN	HALIFAX	21-Dec-11	104	104		40	10+	695	DRILLED
710457	NS OBS WELL - MAITLAND (088)	MAITLAND	LUNENBURG	20-Jun-71	81	17	10	3	5	14	DRILLED
762869	NS OBS WELL - SIMMS SETTLEMENT (089)	SIMMS SETTLEMENT	LUNENBURG	31-Dec-76	132	20		7			DRILLED

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 661225
Well Type DRILLED

Certified Well Contractor

Name: MINES
Certificate No.: 1
Company: N. S. DEPARTMENT OF MINES

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF MINES
or Contractor/Builder/Consultant, etc.:
Civic Address of Well: NS OBS WELL - GREENWOOD (003)
Lot Number: Subdivision:
County: KINGS Postal Code:
Nearest Community in Altlas/Map Book: ATLAS GREENWOOD

Well Location

NS Atlas or Map Book Reference :
Atlas or Map Book:
Map Page No.:
Reference Letter:
Reference Number:
Roamer Letter:
Roamer Number:

NTS Map Reference :
Map Sheet: 21H2
Reference Map: B
Tract No.: 7
Claim: M

GPS (WGS84 UTM) :
Northing (m): 4985498
Easting (m): 350680
Property (PID):
Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	25		FINE GRAINED	SAND		COARSE GRAIN	SAND	☐

Well Construction Information

Total depth below surface (ft): 25
Depth to bedrock (ft):
Water bearing fractures encountered at (ft):
Outer Well Casing:
From (ft): 0 To (ft): 22
Diameter (in): 4.5
Length of casing above ground :
(ft): (in):
Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):
Reservoir material:
Reservoir vol. (cu.yd):
Reservoir material size:
Apron Material:
Apron depth (ft):
Apron thickness (ft):
Apron width (ft):
Apron volume (cu.yd):
Bottom material:

Water Yield

Estimated Yield (igpm):
Method:
Rate (igpm):
Duration (hrs):
Depth to water at end of test (ft):
Total drawdown (ft):
Water level recovered to (ft):
Recovery time (hrs):
Depth to static level (ft):
Overflow ☐

Comments: NS OBSERVATION WELL - GREENWOOD (003)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL
Water use: MONITORING
Method of drilling:
Date well completed: 20-Jun-66

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 661226
Well Type DRILLED

Certified Well Contractor

Name: MINES
Certificate No.: 1
Company: N. S. DEPARTMENT OF MINES

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF MINES
or Contractor/Builder/Consultant, etc.:
Civic Address of Well: NS OBS WELL - FRASER BROOK (004)
Lot Number: Subdivision:
County: COLCHESTER Postal Code:
Nearest Community in Altlas/Map Book: ATLAS LOWER HARMONY

Well Location

NS Atlas or Map Book Reference :
Atlas or Map Book:
Map Page No.:
Reference Letter:
Reference Number:
Roamer Letter:
Roamer Number:

NTS Map Reference :
Map Sheet: 11E6
Reference Map: A
Tract No.: 81
Claim: J

GPS (WGS84 UTM) :
Northing (m): 5021100
Easting (m): 486889
Property (PID):
Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	2	REDDISH	SANDY	TILL				☐
6	60	REDDISH	LAMINATED	SILTSTONE	GRAY	LAYERS	SILTSTONE	☐

Well Construction Information

Total depth below surface (ft): 60
Depth to bedrock (ft): 2
Water bearing fractures encountered at (ft):
Outer Well Casing:
From (ft): To (ft):
Diameter (in): 6
Length of casing above ground :
(ft): (in):
Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):
Reservoir material:
Reservoir vol. (cu.yd):
Reservoir material size:
Apron Material:
Apron depth (ft):
Apron thickness (ft):
Apron width (ft):
Apron volume (cu.yd):
Bottom material:

Water Yield

Estimated Yield (igpm): 6.5
Method: PUMP TEST
Rate (igpm): 5
Duration (hrs): 24
Depth to water at end of test (ft):
Total drawdown (ft): 29.5
Water level recovered to (ft):
Recovery time (hrs):
Depth to static level (ft):
Overflow ☐

Comments: NS OBSERVATION WELL - FRASER BROOK (004)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL
Water use: MONITORING
Method of drilling:
Date well completed: 11-Jul-66

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 661267
Well Type DRILLED

Certified Well Contractor

Name: MINES
Certificate No.: 1
Company: N. S. DEPARTMENT OF MINES

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF MINES
or Contractor/Builder/Consultant, etc.:
Civic Address of Well: NS OBS WELL - WILMOT (005)
Lot Number: Subdivision:
County: ANNAPOLIS Postal Code:
Nearest Community in Altlas/Map Book: ATLAS WILMOT

Well Location

NS Atlas or Map Book Reference :
Atlas or Map Book:
Map Page No.:
Reference Letter:
Reference Number:
Roamer Letter:
Roamer Number:

NTS Map Reference :
Map Sheet: 21A14
Reference Map: D
Tract No.: 71
Claim: G

GPS (WGS84 UTM) :
Northing (m): 4979368
Easting (m): 340015
Property (PID):
Well Location Sketch Available ☐

Depth in feet	Primary Lithology	Secondary Lithology

Well Construction Information

Total depth below surface (ft): 60
Depth to bedrock (ft):
Water bearing fractures encountered at (ft):
Outer Well Casing:
From (ft): 0 To (ft): 21
Diameter (in): 4.5
Length of casing above ground :
(ft): (in):
Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):
Reservoir material:
Reservoir vol. (cu.yd):
Reservoir material size:
Apron Material:
Apron depth (ft):
Apron thickness (ft):
Apron width (ft):
Apron volume (cu.yd):
Bottom material:

Water Yield

Estimated Yield (igpm):
Method:
Rate (igpm):
Duration (hrs):
Depth to water at end of test (ft):
Total drawdown (ft):
Water level recovered to (ft):
Recovery time (hrs):
Depth to static level (ft):
Overflow ☐

Comments: NS OBSERVATION WELL - WILMOT (005)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL
Water use: MONITORING
Method of drilling:
Date well completed: 18-May-66

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 671074

Well Type DRILLED

Certified Well Contractor

Name: MINES

Certificate No.: 1

Company: N. S. DEPARTMENT OF MINES

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF MINES

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - MURRAY SIDING (007)

Lot Number: Subdivision:

County: COLCHESTER Postal Code:

Nearest Community in Altlas/Map Book: ATLAS MURRAYS SIDING

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book:

Map Page No.:

Reference Letter:

Reference Number:

Roamer Letter:

Roamer Number:

NTS Map Reference :

Map Sheet: 11E6

Reference Map: A

Tract No.: 107

Claim: K

Well Construction Sketch Available ☐

GPS (WGS84 UTM) :

Northing (m): 5024186

Easting (m): 483114

Estimated GPS Accuracy (m, +/-): 50

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	26		COARSE GRAIN	SAND		COARSE GRAIN	GRAVEL	☐
26	28			SANDSTONE			SILTSTONE	☐

Well Construction Information

Total depth below surface (ft): 28

Depth to bedrock (ft): 26

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft): 0 To (ft): 26

Diameter (in): 6

Length of casing above ground :

(ft): (in):

Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method:

Rate (igpm):

Duration (hrs):

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft):

Overflow ☐

Comments: NS OBS WELL - MURRAY SIDING (007)
NOTE: WELL AND CASING DEPTH MEASURED TO BE 18 FT BGS ON 20 MAY 2010; ASSUME WELL COLLAPSE.

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling:

Date well completed: 02-Aug-67

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 681252
Well Type DRILLED

Certified Well Contractor

Name: MINES
Certificate No.: 1
Company: N. S. DEPARTMENT OF MINES

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF MINES
or Contractor/Builder/Consultant, etc.:
Civic Address of Well: NS OBS WELL - WOLFVILLE (010)
Lot Number: Subdivision:
County: KINGS Postal Code:
Nearest Community in Altlas/Map Book: ATLAS WOLFVILLE

Well Location

NS Atlas or Map Book Reference :
Atlas or Map Book:
Map Page No.:
Reference Letter:
Reference Number:
Roamer Letter:
Roamer Number:

NTS Map Reference :
Map Sheet: 21H1
Reference Map: B
Tract No.: 78
Claim: K

GPS (WGS84 UTM) :
Northing (m): 4993828
Easting (m): 392086
Property (PID):
Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	3	RED	CLAYEY	TILL				☐
3	15		FINE GRAINED	SAND			GRAVEL	☐
15	35	RED	CLAYEY	TILL				☐
35	79	RED		SANDSTONE				☐

Well Construction Information

Total depth below surface (ft): 79
Depth to bedrock (ft): 35
Water bearing fractures encountered at (ft):
Outer Well Casing:
From (ft): To (ft): 75
Diameter (in): 4.5
Length of casing above ground :
(ft): (in):
Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):
Reservoir material:
Reservoir vol. (cu.yd):
Reservoir material size:
Apron Material:
Apron depth (ft):
Apron thickness (ft):
Apron width (ft):
Apron volume (cu.yd):
Bottom material:

Water Yield

Estimated Yield (igpm):
Method:
Rate (igpm):
Duration (hrs):
Depth to water at end of test (ft):
Total drawdown (ft):
Water level recovered to (ft):
Recovery time (hrs):
Depth to static level (ft):
Overflow ☐

Comments: NS OBSERVATION WELL - WOLFVILLE (010)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL
Water use: MONITORING
Method of drilling:
Date well completed: 17-Dec-68

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 701431
Well Type DRILLED

Certified Well Contractor

Name: MINES
Certificate No.: 1
Company: N. S. DEPARTMENT OF MINES

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF MINES
or Contractor/Builder/Consultant, etc.:
Civic Address of Well: NS OBS WELL - TRURO (014)
Lot Number: Subdivision:
County: COLCHESTER Postal Code:
Nearest Community in Altlas/Map Book: ATLAS TRURO

Well Location

NS Atlas or Map Book Reference :
Atlas or Map Book:
Map Page No.:
Reference Letter:
Reference Number:
Roamer Letter:
Roamer Number:

NTS Map Reference :
Map Sheet: 11E6
Reference Map: B
Tract No.: 99
Claim: F

GPS (WGS84 UTM) :
Northing (m): 5023778
Easting (m): 476052
Property (PID):
Well Location Sketch Available ☐

Depth in feet / Primary Lithology / Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	20			GRAVEL				☐
20	35			GLACIAL TILL				☐
35	300			SHALE		SEAM	SANSTONE	☐

Well Construction Information

Total depth below surface (ft): 300
Depth to bedrock (ft): 35
Water bearing fractures encountered at (ft):
Outer Well Casing:
From (ft): 0 To (ft): 60
Diameter (in): 6
Length of casing above ground :
(ft): (in):
Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):
Reservoir material:
Reservoir vol. (cu.yd):
Reservoir material size:
Apron Material:
Apron depth (ft):
Apron thickness (ft):
Apron width (ft):
Apron volume (cu.yd):
Bottom material:

Water Yield

Estimated Yield (igpm):
Method:
Rate (igpm):
Duration (hrs):
Depth to water at end of test (ft):
Total drawdown (ft):
Water level recovered to (ft):
Recovery time (hrs):
Depth to static level (ft):
Overflow ☐

Comments: NS OBSERVATION WELL - TRURO (014)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL
Water use: MONITORING
Method of drilling:
Date well completed: 16-Nov-70

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 742420

Well Type DRILLED

Certified Well Contractor

Name: MINES

Certificate No.: 1

Company: N. S. DEPARTMENT OF MINES

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF MINES

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - MONASTERY (028)

Lot Number: Subdivision:

County: ANTIGONISH Postal Code:

Nearest Community in Altlas/Map Book: ATLAS MONASTERY

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book:

Map Page No.:

Reference Letter:

Reference Number:

Roamer Letter:

Roamer Number:

NTS Map Reference :

Map Sheet: 11F12

Reference Map: A

Tract No.: 91

Claim:

GPS (WGS84 UTM) :

Northing (m): 5052489

Easting (m): 606083

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	1		CLAYEY	TILL				☐
1	520			SANDSTONE			SHALE & CONGLOM	☐

Well Construction Information

Total depth below surface (ft): 520

Depth to bedrock (ft):

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft): To (ft):

Diameter (in):

Length of casing above ground :

(ft): (in):

Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm): 67

Method:

Rate (igpm): 40

Duration (hrs): 50

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft):

Overflow ☐

Comments: NS OBSERVATION WELL - MONASTERY (028)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling:

Date well completed: 01-Jan-74

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 761408

Well Type DRILLED

Certified Well Contractor

Name: MCDONALD, IAN

Certificate No.: 45

Company: ISLAND WELL DRILLERS

Well Owner/Contractor Information

Well Drilled For: Owner: CAPE BRETON DEVELOPMEN

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - POINT ACONI (030)

Lot Number: Subdivision:

County: CAPE BRETON Postal Code:

Nearest Community in Altlas/Map Book: ATLAS POINT ACONI

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book: MAP

Map Page No.: 43

Reference Letter: A

Reference Number: 1

Roamer Letter: O

Roamer Number: 13

NTS Map Reference :

Map Sheet: 11K8

Reference Map: B

Tract No.: 70

Claim:

GPS (WGS84 UTM) :

Northing (m): 5133152

Easting (m): 707986

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	14			SHALE & CLAY				☐
14	100			SANDSTONE				☐

Well Construction Information

Total depth below surface (ft): 100

Depth to bedrock (ft): 14

Water bearing fractures encountered at (ft):

70

Outer Well Casing:

From (ft): 6 To (ft): 42

Diameter (in): 6

Length of casing above ground :

(ft): (in):

Driveshoe make: UNKNOWN

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm): 10

Method: PUMPED

Rate (igpm): 10

Duration (hrs): 1

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft):

Overflow ☐

Comments: NS OBSERVATION WELL - POINT ACONI (030)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling: ROTARY

Date well completed: 11-Aug-76

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 771538

Well Type DRILLED

Certified Well Contractor

Name: EDWARDS, HARRY A.

Certificate No.: 83

Company: H. J. EDWARDS WELL DRILLING LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - LAWRENCETOWN (043)

Lot Number: Subdivision:

County: HALIFAX Postal Code:

Nearest Community in Altlas/Map Book: ATLAS UPPER LAWRENCETOWN

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book: MAP

Map Page No.: 24

Reference Letter: D

Reference Number: 3

Roamer Letter: N

Roamer Number: 11

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

GPS (WGS84 UTM) :

Northing (m): 4947712

Easting (m): 464172

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	5			SAND & GRAVEL & BOU				☐
5	12			BOULDER & ROCK				☐
12	152	GRAY		QUARTZITE			SLATE	☐
152	165	DARK GRA		SLATE		QUARTZ VEINS		☑
165	174	GREENISH		QUARTZITE			SLATE	☐

Well Construction Information

Total depth below surface (ft): 175

Depth to bedrock (ft): 10

Water bearing fractures encountered at (ft): 152, 155

Outer Well Casing:

From (ft): 0 To (ft): 145

Diameter (in): 6

Length of casing above ground :

(ft): (in):

Driveshoe make: UNKNOWN

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm): 14.5

Method:

Rate (igpm): 8

Duration (hrs): 1.5

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft): 4

Overflow ☐

Comments: NS OBSERVATION WELL - LAWRENCETOWN (043)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling: ROTARY

Date well completed: 16-Mar-77

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 782683

Well Type DRILLED

Certified Well Contractor

Name: STEWART, EDMUND

Certificate No.: 4

Company: E. D. STEWART LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - DURHAM (045)

Lot Number: Subdivision:

County: PICTOU Postal Code:

Nearest Community in Altlas/Map Book: ATLAS DURHAM

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book:
Map Page No.:
Reference Letter:
Reference Number:
Roamer Letter:
Roamer Number:

NTS Map Reference :

Map Sheet: 11E10
Reference Map:
Tract No.:
Claim:

GPS (WGS84 UTM) :

Northing (m): 5052105
Easting (m): 516224
Property (PID):
Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	20		SANDY	TILL				☐
20	247	RED		SANDSTONE & SHALE	GRAY		SANDSTONE & SHA	☐

Well Construction Information

Total depth below surface (ft): 247

Depth to bedrock (ft): 20

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft): To (ft):

Diameter (in):

Length of casing above ground :

(ft): (in):

Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):
Reservoir material:
Reservoir vol. (cu.yd):
Reservoir material size:
Apron Material:
Apron depth (ft):
Apron thickness (ft):
Apron width (ft):
Apron volume (cu.yd):
Bottom material:

Water Yield

Estimated Yield (igpm): 100
Method: PUMPED
Rate (igpm): 100
Duration (hrs): 72
Depth to water at end of test (ft):
Total drawdown (ft):
Water level recovered to (ft):
Recovery time (hrs):
Depth to static level (ft):
Overflow ☐

Comments: NS OBSERVATION WELL - DURHAM (045)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL
Water use: MONITORING
Method of drilling:
Date well completed: 01-Jul-78

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 772021

Well Type DRILLED

Certified Well Contractor

Name: HOPPER, RUSSELL

Certificate No.: 20

Company: HOPPER BROS. LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF DEVELOPMENT

or Contractor/Builder/Consultant, etc.: CBCL

Civic Address of Well: NS OBS WELL - KENTVILLE (048)

Lot Number: Subdivision:

County: KINGS Postal Code:

Nearest Community in Altlas/Map Book: ATLAS KENTVILLE

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book:

Map Page No.:

Reference Letter:

Reference Number:

Roamer Letter:

Roamer Number:

NTS Map Reference :

Map Sheet: 21A2

Reference Map: A

Tract No.: 71

Claim:

GPS (WGS84 UTM) :

Northing (m): 4992245

Easting (m): 377628

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	55		FINE GRAINED	SAND		MEDIUM GRAINE	SAND	☐
55	60		MEDIUM GRAIN	SAND		COARSE GRAIN	SAND	☐
60	95			GRAVEL				☑
95	380	GRAY		SANDSTONE		INTERBEDDED	SHALE	☑
380	400	BROWN	ARGILLACEOU	METASEDIMENT	PURPLE			☐

Well Construction Information

Total depth below surface (ft): 400

Depth to bedrock (ft): 95

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft): 0 To (ft): 100

Diameter (in): 8

Length of casing above ground :

(ft): (in):

Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm): 150

Method: PUMPED

Rate (igpm): 150

Duration (hrs): 72

Depth to water at end of test (ft): 122

Total drawdown (ft): 140

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft):

Overflow ☐

Comments: NS OBSERVATION WELL - KENTVILLE (048)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling:

Date well completed: 20-May-77

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 771077

Well Type DRILLED

Certified Well Contractor

Name: MCDONALD, IAN

Certificate No.: 45

Company: ISLAND WELL DRILLERS

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - SYDNEY (050)

Lot Number: Subdivision:

County: CAPE BRETON Postal Code:

Nearest Community in Altlas/Map Book: ATLAS SYDNEY

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book: MAP

Map Page No.: 24

Reference Letter: A

Reference Number: 5

Roamer Letter: J

Roamer Number: 13

NTS Map Reference :

Map Sheet: 11K1

Reference Map: A

Tract No.: 66

Claim:

GPS (WGS84 UTM) :

Northing (m): 5106450

Easting (m): 720589

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	13			BOULDER & GRAVEL				☐
13	330			COAL &SHALE & SANDS				☐

Well Construction Information

Total depth below surface (ft): 330

Depth to bedrock (ft): 13

Water bearing fractures encountered at (ft):

63

Outer Well Casing:

From (ft): 6 To (ft): 22

Diameter (in): 6

Length of casing above ground :

(ft): (in):

Driveshoe make: UNKNOWN

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm): 250

Method: PUMPED

Rate (igpm): 250

Duration (hrs): 1

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft):

Overflow ☐

Comments: NS OBSERVATION WELL - SYDNEY (050)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling: ROTARY

Date well completed: 09-Mar-77

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 871262

Well Type DRILLED

Certified Well Contractor

Name: CHISHOLM, WAYNE

Certificate No.: 2

Company: G. W. REID WELL DRILLING LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - NORTH GRANT (054)

Lot Number: Subdivision:

County: ANTIGONISH Postal Code:

Nearest Community in Altlas/Map Book: LOWER NORTH GRANT

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book:

Map Page No.: 29

Reference Letter: C

Reference Number: 4

Roamer Letter: M

Roamer Number: 12

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

GPS (WGS84 UTM) :

Northing (m): 5055139

Easting (m): 576403

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	34			MUD				☐
34	150			SHALE			SLATE	☐

Well Construction Information

Total depth below surface (ft): 150

Depth to bedrock (ft):

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft): To (ft): 43

Diameter (in): 6

Length of casing above ground :

(ft): (in):

Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method: AIR LIFT

Rate (igpm): 20

Duration (hrs):

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft): 14

Overflow ☐

Comments: NS OBSERVATION WELL NORTH GRANT (054)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: OTHER

Method of drilling:

Date well completed: 30-Mar-87

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 871263

Well Type DRILLED

Certified Well Contractor

Name: CHISHOLM, WAYNE

Certificate No.: 2

Company: G. W. REID WELL DRILLING LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - STILLWATER (055)

Lot Number: Subdivision:

County: GUYSBOROUGH Postal Code:

Nearest Community in Altlas/Map Book: STILLWATER

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book:

Map Page No.: 30

Reference Letter: C

Reference Number: 4

Roamer Letter: P

Roamer Number: 12

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

GPS (WGS84 UTM) :

Northing (m): 5004212

Easting (m): 579938

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	24			MUD			GRAVEL	☐
24	38			ROCK				☐
38	118			BEDROCK				☐

Well Construction Information

Total depth below surface (ft): 118

Depth to bedrock (ft):

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft): To (ft): 44

Diameter (in): 6

Length of casing above ground :

(ft): (in):

Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method: AIR LIFT

Rate (igpm): 4.5

Duration (hrs):

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft): 30

Overflow ☐

Comments: NS OBSERVATION WELL STILLWATER (055)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling:

Date well completed: 01-Apr-87

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 871264

Well Type DRILLED

Certified Well Contractor

Name: CHISHOLM, WAYNE

Certificate No.: 2

Company: G. W. REID WELL DRILLING LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - SHEET HARBOUR (056)

Lot Number: Subdivision:

County: HALIFAX Postal Code:

Nearest Community in Altlas/Map Book: BEAVER HARBOUR

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book:

Map Page No.: 28

Reference Letter: E

Reference Number: 2

Roamer Letter: H

Roamer Number: 14

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

GPS (WGS84 UTM) :

Northing (m): 4972468

Easting (m): 543176

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	8			GRAVEL				☐
8	18			ROCK				☐
18	150			BEDROCK				☐

Well Construction Information

Total depth below surface (ft): 150

Depth to bedrock (ft):

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft): To (ft): 23

Diameter (in): 6

Length of casing above ground :

(ft): (in):

Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method: AIR LIFT

Rate (igpm): 0.7

Duration (hrs):

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft): 10

Overflow ☐

Comments: NS OBSERVATION WELL SHEET HARBOUR (056)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: OTHER

Method of drilling:

Date well completed: 06-Apr-87

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 870189

Well Type DRILLED

Certified Well Contractor

Name: MOWAT, DONALD

Certificate No.: 210

Company: MOWAT'S WELL DRILLING LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - HAYDEN LAKE (059)

Lot Number: Subdivision:

County: SHELBURNE Postal Code:

Nearest Community in Altlas/Map Book: ATLAS EAST JORDAN

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book: MAP

Map Page No.: 10

Reference Letter: C

Reference Number: 5

Roamer Letter: G

Roamer Number: 7

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

GPS (WGS84 UTM) :

Northing (m): 4849195

Easting (m): 321365

Property (PID):

Well Location Sketch Available ☐

Depth in feet / Primary Lithology / Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	10			CLAY			BOULDER	☐
10	160			GREYWACKE				☐

Well Construction Information

Total depth below surface (ft): 160

Depth to bedrock (ft): 10

Water bearing fractures encountered at (ft): 30

Outer Well Casing:

From (ft): 0 To (ft): 20

Diameter (in): 6

Length of casing above ground :

(ft): (in):

Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm): 3.7

Method: AIR LIFT

Rate (igpm): 3.7

Duration (hrs):

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft):

Overflow ☐

Comments: NS OBSERVATION WELL - HAYDEN LAKE (059)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling:

Date well completed: 31-Mar-87

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 870188

Well Type DRILLED

Certified Well Contractor

Name: MOWAT, DONALD

Certificate No.: 210

Company: MOWAT'S WELL DRILLING LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - METEGHAN (060)

Lot Number: Subdivision:

County: DIGBY Postal Code:

Nearest Community in Altlas/Map Book: METEGHAN RIVER

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book:

Map Page No.: 4

Reference Letter: A

Reference Number: 4

Roamer Letter: F

Roamer Number: 16

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

GPS (WGS84 UTM) :

Northing (m): 4900628

Easting (m): 250890

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	4			GRAVEL				☐
4	200			SLATE				☐

Well Construction Information

Total depth below surface (ft): 200

Depth to bedrock (ft):

Water bearing fractures encountered at (ft): 90, 180

Outer Well Casing:

From (ft): To (ft): 40

Diameter (in): 6

Length of casing above ground :

(ft): (in):

Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method: AIR LIFT

Rate (igpm): 0.7

Duration (hrs):

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft):

Overflow ☐

Comments: NS OBSERVATION WELL METEGHAN (060)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling:

Date well completed: 31-Mar-87

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 891722
Well Type DRILLED

Certified Well Contractor

Name: MOWAT, DONALD
Certificate No.: 210
Company: MOWAT'S WELL DRILLING LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT
or Contractor/Builder/Consultant, etc.:
Civic Address of Well: NS OBS WELL - ANNAPOLIS ROYAL (062)
Lot Number: Subdivision:
County: ANNAPOLIS Postal Code:
Nearest Community in Altlas/Map Book: ATLAS LAKE LA ROSE

Well Location

NS Atlas or Map Book Reference :
Atlas or Map Book: MAP
Map Page No.: 8
Reference Letter: A
Reference Number: 4
Roamer Letter: H
Roamer Number: 14

NTS Map Reference :
Map Sheet:
Reference Map:
Tract No.:
Claim:

GPS (WGS84 UTM) :
Northing (m): 4952588
Easting (m): 303029
Property (PID):
Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	71			CLAY			BOULDER	☐
71	205			GRANITE				☐

Well Construction Information

Total depth below surface (ft): 205
Depth to bedrock (ft): 71
Water bearing fractures encountered at (ft): 120
Outer Well Casing:
From (ft): 0 To (ft): 80
Diameter (in): 6
Length of casing above ground :
(ft): (in):
Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):
Reservoir material:
Reservoir vol. (cu.yd):
Reservoir material size:
Apron Material:
Apron depth (ft):
Apron thickness (ft):
Apron width (ft):
Apron volume (cu.yd):
Bottom material:

Water Yield

Estimated Yield (igpm): 0.5
Method: AIR LIFT
Rate (igpm): 0.5
Duration (hrs):
Depth to water at end of test (ft):
Total drawdown (ft):
Water level recovered to (ft):
Recovery time (hrs):
Depth to static level (ft):
Overflow ☐

Comments: NS OBSERVATION WELL - ANNAPOLIS ROYAL (062)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL
Water use: MONITORING
Method of drilling:
Date well completed: 20-Dec-89

NOVA SCOTIA
Environment and Labour

Well Report

(Summary Log)

NSEL Well No. 891721
Well Type DRILLED

Certified Well Contractor

Name: MOWAT, DONALD
Certificate No.: 210
Company: MOWAT'S WELL DRILLING LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT
or Contractor/Builder/Consultant, etc.:
Civic Address of Well: NS OBS WELL - HEBRON (063)
Lot Number: Subdivision:
County: YARMOUTH Postal Code:
Nearest Community in Altlas/Map Book: ATLAS DAYTON

Well Location

NS Atlas or Map Book Reference :
Atlas or Map Book: MAP
Map Page No.: 5
Reference Letter: A
Reference Number: 3
Roamer Letter: F
Roamer Number: 14

NTS Map Reference :
Map Sheet:
Reference Map:
Tract No.:
Claim:

GPS (WGS84 UTM) :
Northing (m): 4862322
Easting (m): 250697
Property (PID):
Well Location Sketch Available ☐

Depth in feet / Primary Lithology / Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	3			TOPSOIL				☐
3	140			SLATE				☐
140	144			QUARTZITE				☐
144	150			SHALE				☐

Well Construction Information

Total depth below surface (ft): 150
Depth to bedrock (ft): 3
Water bearing fractures encountered at (ft): 57, 150
Outer Well Casing:
From (ft): 0 To (ft): 40
Diameter (in): 6
Length of casing above ground :
(ft): (in):
Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):
Reservoir material:
Reservoir vol. (cu.yd):
Reservoir material size:
Apron Material:
Apron depth (ft):
Apron thickness (ft):
Apron width (ft):
Apron volume (cu.yd):
Bottom material:

Water Yield

Estimated Yield (igpm): 45
Method: AIR LIFT
Rate (igpm): 45
Duration (hrs):
Depth to water at end of test (ft):
Total drawdown (ft):
Water level recovered to (ft):
Recovery time (hrs):
Depth to static level (ft):
Overflow ☐

Comments: NS OBSERVATION WELL - HEBRON (063)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL
Water use: MONITORING
Method of drilling:
Date well completed: 19-Dec-89

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 902524

Well Type DRILLED

Certified Well Contractor

Name: MCDONALD, IAN

Certificate No.: 45

Company: ISLAND WELL DRILLERS

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - MARGAREE (064)

Lot Number: Subdivision:

County: INVERNESS Postal Code:

Nearest Community in Altlas/Map Book: MARGAREE VALLEY

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book:

Map Page No.: 38

Reference Letter: A

Reference Number: 1

Roamer Letter: L

Roamer Number: 12

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

GPS (WGS84 UTM) :

Northing (m): 5137031

Easting (m): 655717

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	9			GRAVEL			TILL	☐
9	150			CONGLOMERATE				☐

Well Construction Information

Total depth below surface (ft): 150

Depth to bedrock (ft):

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft): To (ft): 40

Diameter (in): 6

Length of casing above ground :

(ft): (in):

Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method: AIR LIFT

Rate (igpm): 10

Duration (hrs):

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft):

Overflow ☐

Comments: NOFRACTUREINCREASEDFR80'- NS OBSERVATION WELL MARGAREE (064)

Well Status/Water Use/Date Completed

Final status of well:

Water use:

Method of drilling:

Date well completed: 16-Jan-90

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 892288

Well Type DRILLED

Certified Well Contractor

Name: MCDONALD, IAN

Certificate No.: 45

Company: ISLAND WELL DRILLERS

Well Owner/Contractor Information

Well Drilled For: Owner: DEPT. OF ENVIRONMENT

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - INGONISH (065)

Lot Number: Subdivision:

County: VICTORIA Postal Code:

Nearest Community in Altlas/Map Book: INGONISH

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book:

Map Page No.: 42

Reference Letter: A

Reference Number: 2

Roamer Letter: F

Roamer Number: 10

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

GPS (WGS84 UTM) :

Northing (m): 5170473

Easting (m): 698083

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	30			GRAVEL			BOULDERS	☐
30	33			GRANITE				☐
33	150			GRANITE				☐

Well Construction Information

Total depth below surface (ft): 150

Depth to bedrock (ft):

Water bearing fractures encountered at (ft): 44, 149

Outer Well Casing:

From (ft): To (ft): 40

Diameter (in): 6

Length of casing above ground :

(ft): (in):

Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method: AIR LIFT

Rate (igpm): 100

Duration (hrs):

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft):

Overflow ☐

Comments: NS OBSERVATION WELL INGONISH (065)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use:

Method of drilling:

Date well completed: 12-Dec-89

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 832002

Well Type DRILLED

Certified Well Contractor

Name: JOHNSON, GREGORY I.

Certificate No.: 6

Company: HUB WELL DRILLING LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: PHILLIP BARLEY

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - DEBERT (068)

Lot Number: Subdivision:

County: COLCHESTER Postal Code:

Nearest Community in Altlas/Map Book: DEBERT

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book:

Map Page No.:

Reference Letter:

Reference Number:

Roamer Letter:

Roamer Number:

NTS Map Reference :

Map Sheet: 11E6

Reference Map: C

Tract No.: 60

Claim:

GPS (WGS84 UTM) :

Northing (m): 5028483

Easting (m): 466921

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	18			CLAY			SAND /LENSES	☐
18	153			CONGLOMERATE				☐

Well Construction Information

Total depth below surface (ft): 153

Depth to bedrock (ft):

Water bearing fractures encountered at (ft): 112

Outer Well Casing:

From (ft): To (ft): 26

Diameter (in): 4

Length of casing above ground :

(ft): (in):

Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method:

Rate (igpm): 10

Duration (hrs):

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft): 112

Overflow ☐

Comments: NS OBSERVATION WELL DEBERT (068)

Well Status/Water Use/Date Completed

Final status of well: WATER SUPPLY WELL

Water use: DOMESTIC

Method of drilling:

Date well completed: 13-Aug-83

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 943326

Well Type DRILLED

Certified Well Contractor

Name

Certificate No.

Company ISLAND WELL DRILLERS

Well Owner/Contractor Information

Well Drilled For: Owner | NS DEPT. OF ENVIRONMENT

or Contractor/Builder/Consultant, etc.

Civic Address of Well NS OBS WELL - DALEM LAKE (069)

Lot Number | Subdivision

County VICTORIA | Postal Code

Nearest Community in Altlas/Map Book ATLAS | DALEM LAKE

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book MAP

Map Page No. 38

Reference Letter E

Reference Number 2

Roamer Letter O

Roamer Number 12

NTS Map Reference :

Map Sheet

Reference Map

Tract No.

Claim

GPS (WGS84 UTM) :

Northing (m) 5124576

Easting (m) 698221

Property (PID)

Well Location Sketch Available ☐

Depth in feet	Primary Lithology	Secondary Lithology

Well Construction Information

Total depth below surface (ft) 200

Depth to bedrock (ft)

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft) 0 To (ft) 41

Diameter (in) 6

Length of casing above ground :

(ft) (in)

Driveshoe make

Dug Well Information

Depth of liner (crock) (ft)

Reservoir material

Reservoir vol. (cu.yd)

Reservoir material size

Apron Material

Apron depth (ft)

Apron thickness (ft)

Apron width (ft)

Apron volume (cu.yd)

Bottom material

Water Yield

Estimated Yield (igpm)

Method

Rate (igpm)

Duration (hrs)

Depth to water at end of test (ft)

Total drawdown (ft)

Water level recovered to (ft)

Recovery time (hrs)

Depth to static level (ft)

Overflow ☐

Comments NS OBSERVATION WELL - DALEM LAKE (069)

Well Status/Water Use/Date Completed

Final status of well OBSERVATION WELL

Water use MONITORING

Method of drilling

Date well completed 01-Jan-94

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 862667

Well Type DRILLED

Certified Well Contractor		Well Owner/Contractor Information	
Name	CHAPPELL, WALTER	Well Drilled For: Owner	TOWN OF AMHERST
Certificate No.	32	or Contractor/Builder/Consultant, etc.	
Company	WALTER CHAPPELL WELL DRILLING LTD.	Civic Address of Well	NS OBS WELL - AMHERST (071)
		Lot Number / Subdivision	/
		County / Postal Code	CUMBERLAND /
		Nearest Community in Atlas/Map Book	ATLAS AMHERST

Well Location

NS Atlas or Map Book Reference :		NTS Map Reference :		GPS (WGS84 UTM) :	
Atlas or Map Book	MAP	Map Sheet		Northing (m)	5079213
Map Page No.	18	Reference Map		Easting (m)	411279
Reference Letter	B	Tract No.		Property (PID)	
Reference Number	2	Claim		Well Location Sketch Available	☐
Roamer Letter	G				
Roamer Number	8				

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	15			TILL				☐
15	45			SANDSTONE				☐
45	101	REDDISH		SHALE	BROWN			☐
101	109	BROWN	FINE GRAINED	SANDSTONE				☐
109	114	REDDISH	FINE GRAINED					☐
114	124	REDDISH	FINE GRAINED	SANDSTONE		MEDIUM GRAINE		☐
124	127	BROWN	FINE GRAINED	SHALE				☐
127	130			SHALE			SANDSTONE	☐
130	157	REDDISH	MEDIUM GRAIN	SANDSTONE	RED	COARSE GRAINE		☐
157	161	GRAYISH	MEDIUM GRAIN	SANDSTONE		COARSE GRAINE		☐
161	165	REDDISH		SHALE	BROWN			☐
165	166	BROWN		MUDSTONE				☐
166	196	GRAYISH	MEDIUM GRAIN	SANDSTONE				☐
196	198	REDDISH		SHALE			SANDSTONE	☐
198	202	REDDISH		SILTSTONE				☐
202	206	BROWN		SHALE				☐
206	211	BROWN		SILTSTONE				☐
211	227	BROWN		SILTSTONE			SHALE	☐
227	235	REDDISH		SHALE				☐
235	258	BROWN		SILTSTONE	GREENIS			☐
258	262	REDDISH	MEDIUM GRAIN	SANDSTONE				☐
262	263	REDDISH		SHALE				☐
263	277	REDDISH	MEDIUM GRAIN	SANDSTONE				☐
277	281	REDDISH		SHALE				☐
281	294	BROWN		SILTSTONE				☐
294	296	BROWN		SHALE				☐
296	358	BROWN	FINE GRAINED	SILTSTONE			SHALE	☐
358	370	REDDISH		SANDSTONE				☐
370	378	GRAYISH		SANDSTONE				☐
378	382	BROWN		SILTSTONE				☐

Well Construction Information

Total depth below surface (ft): 382

Depth to bedrock (ft): 15

Water bearing fractures encountered at (ft):

140

Outer Well Casing:

From (ft): 0 To (ft): 20

Diameter (in): 6

Length of casing above ground :

(ft) (in)

Driveshoe make

Dug Well Information

Depth of liner (crock) (ft)

Reservoir material

Reservoir vol. (cu.yd)

Reservoir material size

Apron Material

Apron depth (ft)

Apron thickness (ft)

Apron width (ft)

Apron volume (cu.yd)

Bottom material

Water Yield

Estimated Yield (igpm)

Method

Rate (igpm)

Duration (hrs)

Depth to water at end of test (ft)

Total drawdown (ft)

Water level recovered to (ft)

Recovery time (hrs)

Depth to static level (ft)

Overflow ☐

Comments: NS OBSERVATION WELL - AMHERST (071)

Well Status/Water Use/Date Completed

Final status of well: TEST HOLE

Water use: MONITORING

Method of drilling

Date well completed: 29-Jul-86

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 721858

Well Type DRILLED

Certified Well Contractor

Name

Certificate No.

Company

Well Owner/Contractor Information

Well Drilled For: Owner | NS DEPT. OF ENVIRONMENT

or Contractor/Builder/Consultant, etc.

Civic Address of Well: NS OBS WELL - KELLEY RIVER (073)

Lot Number | Subdivision

County: CUMBERLAND | Postal Code

Nearest Community in Altlas/Map Book: ATLAS | KELLEY RIVER

Well Location

NS Atlas or Map Book Reference :

- Atlas or Map Book: MAP
- Map Page No.: 12
- Reference Letter: D
- Reference Number: 5
- Roamer Letter
- Roamer Number

NTS Map Reference :

- Map Sheet
- Reference Map
- Tract No.
- Claim

GPS (WGS84 UTM) :

- Northing (m): 5049171
- Easting (m): 386806
- Property (PID)
- Well Location Sketch Available ☐

Depth in feet	Primary Lithology	Secondary Lithology

Well Construction Information

Total depth below surface (ft): 38

Depth to bedrock (ft)

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft): 0 To (ft): 14

Diameter (in)

Length of casing above ground :

(ft) (in)

Driveshoe make

Dug Well Information

Depth of liner (crock) (ft)

Reservoir material

Reservoir vol. (cu.yd)

Reservoir material size

Apron Material

Apron depth (ft)

Apron thickness (ft)

Apron width (ft)

Apron volume (cu.yd)

Bottom material

Water Yield

Estimated Yield (igpm)

Method

Rate (igpm)

Duration (hrs)

Depth to water at end of test (ft)

Total drawdown (ft)

Water level recovered to (ft)

Recovery time (hrs)

Depth to static level (ft)

Overflow ☐

Comments: NS OBSERVATION WELL - KELLEY RIVER (073)

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling

Date well completed: 01-Jul-72

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 070613
Well Type DRILLED

Certified Well Contractor

Name: ROGERS, KIRK
Certificate No.: 307
Company: K. D. ROGERS WELL DRILLING LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT &
or Contractor/Builder/Consultant, etc.:
Civic Address of Well: NS OBS WELL - ATLANTA (074)
Lot Number: Subdivision:
County: KINGS Postal Code: B0P 1H0
Nearest Community in Atlas/Map Book: ATLAS ATLANTA

Well Location

NS Atlas or Map Book Reference :
Atlas or Map Book: ATLAS
Map Page No.: 46
Reference Letter: Z
Reference Number: 2
Roamer Letter: H
Roamer Number: 6

NTS Map Reference :
Map Sheet:
Reference Map:
Tract No.:
Claim:

GPS (WGS84 UTM) :
Northing (m): 5000758
Easting (m): 381956
Property (PID): 55045942
Well Location Sketch Available: ☑

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	112			SAND				☑
112	175			SANDSTONE				☑

Well Construction Information

Total depth below surface (ft): 175
Depth to bedrock (ft): 112
Water bearing fractures encountered at (ft): 115 175
Outer Well Casing:
From (ft): 0 To (ft): 118
Diameter (in): 6
Length of casing above ground :
(ft): 4 (in):
Driveshoe make: MEDIUM

Dug Well Information

Depth of liner (crock) (ft):
Reservoir material:
Reservoir vol. (cu.yd):
Reservoir material size:
Apron Material:
Apron depth (ft):
Apron thickness (ft):
Apron width (ft):
Apron volume (cu.yd):
Bottom material:

Water Yield

Estimated Yield (igpm):
Method: AIR LIFT
Rate (igpm): 100
Duration (hrs): 1
Depth to water at end of test (ft):
Total drawdown (ft):
Water level recovered to (ft): 10
Recovery time (hrs): 24
Depth to static level (ft):
Overflow: ☐

Comments:
NS OBSERVATION WELL - ATLANTA (074)
FRACTURES 115-175 FT. DIST TO PROP LINE 300+', WATERCOURSE 200+'. WELL LOC EDGE OF WOOD ROAD, WELLHEAD 4 FT ABOVE GROUND.

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL
Water use: MONITORING
Method of drilling: ROTARY
Date well completed: 29-Aug-07

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 070618
Well Type DRILLED

Certified Well Contractor

Name: ROGERS, KIRK
Certificate No.: 307
Company: K. D. ROGERS WELL DRILLING LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT &
or Contractor/Builder/Consultant, etc.:
Civic Address of Well: NS OBS WELL - SHEFFIELD MILLS (075)
Lot Number: Subdivision:
County: KINGS Postal Code: B0P 1H0
Nearest Community in Altlas/Map Book: ATLAS SHEFFIELD MILLS

Well Location

NS Atlas or Map Book Reference :
Atlas or Map Book: ATLAS
Map Page No.: 47
Reference Letter: V
Reference Number: 2
Roamer Letter: D
Roamer Number: 6

NTS Map Reference :
Map Sheet:
Reference Map:
Tract No.:
Claim:

GPS (WGS84 UTM) :
Northing (m): 5000590
Easting (m): 384693
Property (PID): 55301667
Well Location Sketch Available: ☑

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	16			SAND				☐
16	175			SANDSTONE				☑

Well Construction Information

Total depth below surface (ft): 175
Depth to bedrock (ft): 16
Water bearing fractures encountered at (ft): 60, 175
Outer Well Casing:
From (ft): 0 To (ft): 63
Diameter (in): 6
Length of casing above ground :
(ft): 4 (in):
Driveshoe make: MEDIUM

Dug Well Information

Depth of liner (crock) (ft):
Reservoir material:
Reservoir vol. (cu.yd):
Reservoir material size:
Apron Material:
Apron depth (ft):
Apron thickness (ft):
Apron width (ft):
Apron volume (cu.yd):
Bottom material:

Water Yield

Estimated Yield (igpm):
Method: AIR LIFT
Rate (igpm): 60
Duration (hrs): 1
Depth to water at end of test (ft):
Total drawdown (ft):
Water level recovered to (ft): 20
Recovery time (hrs): 24
Depth to static level (ft):
Overflow: ☐

Comments

NS OBSERVATION WELL - SHEFFIELD MILLS (075)
FRACTURES 60-175 FT. WELL LOC AT EDGE OF FIELD. WELLHEAD 4 FT ABOVE GROUND.

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL
Water use: MONITORING
Method of drilling: ROTARY
Date well completed: 29-Aug-07

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 080824

Well Type DRILLED

Certified Well Contractor

Name: JACOBS, BYRON

Certificate No.: 695

Company: BLUENOSE WELL DRILLING

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT &

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - FALL RIVER (076); TAMARACK DRIVE

Lot Number: 65 Subdivision:

County: HALIFAX Postal Code:

Nearest Community in Atlas/Map Book: ATLAS FALL RIVER

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book: ATLAS

Map Page No.: 58

Reference Letter: Y

Reference Number: 4

Roamer Letter: F

Roamer Number: 5

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

Well Construction Sketch Available: ☑

GPS (WGS84 UTM) :

Northing (m): 4962226

Easting (m): 450243

Estimated GPS Accuracy (m, +/-): 50

Property (PID): 40372922

Well Location Sketch Available: ☑

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	4							☐
4	200			SLATE				☐

Well Construction Information

Total depth below surface (ft): 200

Depth to bedrock (ft): 3.5

Water bearing fractures encountered at (ft): 18, 41, 102

Outer Well Casing:

From (ft): 0 To (ft): 43

Diameter (in): 6

Length of casing above ground :

(ft): 1 (in):

Driveshoe make: HEAVY WALL

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method: AIR LIFT

Rate (igpm): 1.5

Duration (hrs): 1

Depth to water at end of test (ft): 195

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft): 12

Overflow: ☐

Comments : NS OBS WELL - FALL RIVER (076); WB FRACT 18' 5 GPM, 41' 0.5 GPM, 102' 1 GPM. WELL LOC SKETCH: NEAR BALLFIELD OFF TALISMAN DR. WELL SKETCH SHOWS 8.75" HOLE FOR CASING, 6" BOREHOLE, BENTONITE SEAL ABOVE DRIVE SHOE. LOT FROM POL.

ADDRESS TAMARACK DRIVE (POL), TALISMAN DRIVE (LOG).

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling: ROTARY

Date well completed: 28-Feb-08

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 080132

Well Type DRILLED

Certified Well Contractor

Name: ROGERS, KIRK

Certificate No.: 307

Company: K. D. ROGERS WELL DRILLING

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT &

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - WEST NORTHFIELD (077); BRUHM ROAD

Lot Number: Subdivision:

County: LUNENBURG Postal Code: B4V 2W1

Nearest Community in Altlas/Map Book: ATLAS WEST NORTHFIELD

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book: ATLAS

Map Page No.: 73

Reference Letter: Z

Reference Number: 2

Roamer Letter: A

Roamer Number: 1

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

Well Construction Sketch Available ☐

GPS (WGS84 UTM) :

Northing (m): 4922807

Easting (m): 373416

Estimated GPS Accuracy (m, +/-): 50

Property (PID): 60200029

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	10							☐
10	24			SAND & SILT				☑
24	160			SLATE				☑

Well Construction Information

Total depth below surface (ft): 160

Depth to bedrock (ft): 24

Water bearing fractures encountered at (ft): 124

Outer Well Casing:

From (ft): 0 To (ft): 42

Diameter (in): 6

Length of casing above ground :

(ft): 3 (in):

Driveshoe make: MEDIUM

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method: AIR LIFT

Rate (igpm): 7

Duration (hrs): 1

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft): 32

Recovery time (hrs): 1

Depth to static level (ft):

Overflow ☐

Comments : NS OBS WELL - WEST NORTHFIELD (077); DIST TO OFF-SITE SEPTIC: 100+ FT. ADDRESS HWY #10 (POL), BRUHM RD (LOG).

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling: ROTARY

Date well completed: 06-Mar-08

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 080861

Well Type DRILLED

Certified Well Contractor

Name: JACOBS, LARRY

Certificate No.: 734

Company: BLUENOSE WELL DRILLING

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT &

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - MUSQUODOBOIT HBR (078); 104 PARK RD

Lot Number: Subdivision: DALE BENNETT PARK

County: HALIFAX Postal Code:

Nearest Community in Altlas/Map Book: ATLAS MUSQUODOBOIT HARBOUR

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book: ATLAS

Map Page No.: 59

Reference Letter: Y

Reference Number: 5

Roamer Letter: D

Roamer Number: 1

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

Well Construction Sketch Available: ☑

GPS (WGS84 UTM) :

Northing (m): 4959880

Easting (m): 488125

Estimated GPS Accuracy (m, +/-): 50

Property (PID): 40591471

Well Location Sketch Available: ☑

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	66							☐
66	81		COARSE GRAIN	SAND				☑
81	200			SEE COMMENTS				☐

Well Construction Information

Total depth below surface (ft): 200

Depth to bedrock (ft): 81

Water bearing fractures encountered at (ft): 66, 81, 95

Outer Well Casing:

From (ft): 0 To (ft): 89

Diameter (in): 6

Length of casing above ground :

(ft): 1 (in):

Driveshoe make: HEAVY WALL

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method: AIR LIFT

Rate (igpm): 0.5

Duration (hrs): 1

Depth to water at end of test (ft): 195

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft):

Overflow: ☐

Comments : NS OBS WELL - MUSQUODOBOIT HBR (078); WB FRACT 66-81, 95 FT. WELL SKETCH: CASED OFF SAND WITH COBBLES WITH 200 GPM; BENTONITE SEAL ABOVE DRIVE SHOE; 6" BOREHOLE BELOW CASING. WELL LOC SKETCH: WELL NEAR PARKING LOT. STRAT: 81-200 FT NOT GIVEN.

CIVIC & ADDRESS FROM POL.

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling: ROTARY

Date well completed: 06-Mar-08

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 690090

Well Type DRILLED

Certified Well Contractor

Name: BOWMASTER

Certificate No.: 3

Company: WILLIAM BOWMASTER, SR.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF LANDS & FORES

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - LEWIS LAKE (079)

Lot Number: Subdivision:

County: HALIFAX Postal Code:

Nearest Community in Altlas/Map Book: LEWIS LAKE

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book: MAP

Map Page No.: 20

Reference Letter: D

Reference Number: 5

Roamer Letter: H

Roamer Number: 8

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

Well Construction Sketch Available ☐

GPS (WGS84 UTM) :

Northing (m): 4948873

Easting (m): 433048

Estimated GPS Accuracy (m, +/-): 50

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	20							☐
20	250			GRANITE				☐

Well Construction Information

Total depth below surface (ft): 250

Depth to bedrock (ft): 20

Water bearing fractures encountered at (ft): 240, 250

Outer Well Casing:

From (ft): 6 To (ft): 25

Diameter (in): 6

Length of casing above ground :

(ft): (in):

Driveshoe make: UNKNOWN

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method:

Rate (igpm): 6

Duration (hrs): 1.5

Depth to water at end of test (ft): 27

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft):

Overflow ☐

Comments : NS OBS WELL - LEWIS LAKE (079) FORMER PARK WATER SUPPLY WELL; CONVERTED TO OBSERVATION WELL IN 2008.

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling: ROTARY

Date well completed: 11-Jun-69

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 770542

Well Type DRILLED

Certified Well Contractor

Name: HINGLEY, FLEMING

Certificate No.: 15

Company: A & W WELL DRILLING LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF ENVIRONMENT

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: NS OBS WELL - ARISAIG (080)

Lot Number: Subdivision:

County: ANTIGONISH Postal Code:

Nearest Community in Altlas/Map Book: ARISAIG

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book: MAP

Map Page No.: 29

Reference Letter: B

Reference Number: 3

Roamer Letter: L

Roamer Number: 9

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

Well Construction Sketch Available ☐

GPS (WGS84 UTM) :

Northing (m): 5067204

Easting (m): 564737

Estimated GPS Accuracy (m, +/-): 50

Property (PID):

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
1	20			GRAVEL & SAND				☐
20	30			SHALE				☐

Well Construction Information

Total depth below surface (ft): 300

Depth to bedrock (ft): 30

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft): 1 To (ft): 40

Diameter (in): 6

Length of casing above ground :

(ft): (in):

Driveshoe make: UNKNOWN

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method:

Rate (igpm):

Duration (hrs):

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft):

Overflow ☐

Comments: NS OBS WELL - ARISAIG (080)
FORMER PARK WATER SUPPLY WELL FOR ARISAIG PARK;
CONVERTED TO MONITORING WELL IN 2009.

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling: ROTARY

Date well completed: 05-Jul-77

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 610135
Well Type DRILLED

Certified Well Contractor

Name
Certificate No.
Company

Well Owner/Contractor Information

Well Drilled For: Owner | NS DEPT. OF LANDS AND FOR
or Contractor/Builder/Consultant, etc.
Civic Address of Well | NS OBS WELL - COLDBROOK (081) 7073 HWY 1
Lot Number | Subdivision
County | KINGS | Postal Code
Nearest Community in Altlas/Map Book | ATLAS | COLDBROOK

Well Location

NS Atlas or Map Book Reference :
Atlas or Map Book
Map Page No.
Reference Letter
Reference Number
Roamer Letter
Roamer Number

NTS Map Reference :
Map Sheet
Reference Map
Tract No.
Claim
Well Construction Sketch Available ☐

GPS (WGS84 UTM) :
Northing (m) | 4991748
Easting (m) | 376149
Estimated GPS Accuracy (m, +/-) | 50
Property (PID) | 55281984
Well Location Sketch Available ☐

Depth in feet	Primary Lithology	Secondary Lithology

Well Construction Information

Total depth below surface (ft) | 232
Depth to bedrock (ft)
Water bearing fractures encountered at (ft):
Outer Well Casing:
From (ft) | 0 | To (ft) | 172
Diameter (in) | 4
Length of casing above ground :
(ft) | (in)
Driveshoe make

Dug Well Information

Depth of liner (crock) (ft)
Reservoir material
Reservoir vol. (cu.yd)
Reservoir material size
Apron Material
Apron depth (ft)
Apron thickness (ft)
Apron width (ft)
Apron volume (cu.yd)
Bottom material

Water Yield

Estimated Yield (igpm)
Method
Rate (igpm)
Duration (hrs)
Depth to water at end of test (ft)
Total drawdown (ft)
Water level recovered to (ft)
Recovery time (hrs)
Depth to static level (ft) | 45
Overflow ☐

Comments : NS OBS WELL - COLDBROOK (081)
FORMER PARK SUPPLY WELL CONVERTED TO OBSERVATION WELL IN 2009; STATIC LEVEL WAS 45 FT IN 1961 AND 44 FT IN 1974; BEDROCK DEPTH ESTIMATED TO BE 80-150 FT.

Well Status/Water Use/Date Completed

Final status of well | OBSERVATION WELL
Water use | MONITORING
Method of drilling
Date well completed | 01-Jan-61

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 742421

Well Type DRILLED

Certified Well Contractor

Name

Certificate No.

Company

Well Owner/Contractor Information

Well Drilled For: Owner | NS DEPT. OF LANDS AND FOR

or Contractor/Builder/Consultant, etc.

Civic Address of Well | NS OBS WELL - LONG POINT (082) HWY 19

Lot Number | Subdivision

County | INVERNESS | Postal Code

Nearest Community in Altlas/Map Book | ATLAS | LONG POINT

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book

Map Page No.

Reference Letter

Reference Number

Roamer Letter

Roamer Number

NTS Map Reference :

Map Sheet

Reference Map

Tract No.

Claim

Well Construction Sketch Available ☐

GPS (WGS84 UTM) :

Northing (m) 5074277

Easting (m) 618131

Estimated GPS Accuracy (m, +/-) 50

Property (PID) 50017490

Well Location Sketch Available ☐

Depth in feet	Primary Lithology	Secondary Lithology

Well Construction Information

Total depth below surface (ft) 61

Depth to bedrock (ft)

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft) 0 To (ft) 43

Diameter (in) 6

Length of casing above ground :

(ft) (in)

Driveshoe make

Dug Well Information

Depth of liner (crock) (ft)

Reservoir material

Reservoir vol. (cu.yd)

Reservoir material size

Apron Material

Apron depth (ft)

Apron thickness (ft)

Apron width (ft)

Apron volume (cu.yd)

Bottom material

Water Yield

Estimated Yield (igpm)

Method

Rate (igpm)

Duration (hrs)

Depth to water at end of test (ft)

Total drawdown (ft)

Water level recovered to (ft)

Recovery time (hrs)

Depth to static level (ft) 7.5

Overflow ☐

Comments : NS OBS WELL - LONG POINT (082)
FORMER PARK SUPPLY WELL CONVERTED TO OBSERVATION WELL IN 2009; WELL CONSTRUCTION DATE ASSUMED TO BE 1-AUG-1974 FROM PUMPING TEST RECORDS;

Well Status/Water Use/Date Completed

Final status of well OBSERVATION WELL

Water use MONITORING

Method of drilling

Date well completed 01-Aug-74

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 510124
Well Type DRILLED

Certified Well Contractor

Name: MATTATALL, EARL
Certificate No.: 33
Company:

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF LANDS AND FOR
or Contractor/Builder/Consultant, etc.:
Civic Address of Well: NS OBS WELL - TATAMAGOUCHE (083) 2660 HWY 6
Lot Number: Subdivision:
County: COLCHESTER Postal Code:
Nearest Community in Altlas/Map Book: ATLAS TATAMAGOUCHE

Well Location

NS Atlas or Map Book Reference :
Atlas or Map Book:
Map Page No.:
Reference Letter:
Reference Number:
Roamer Letter:
Roamer Number:

NTS Map Reference :
Map Sheet:
Reference Map:
Tract No.:
Claim:
Well Construction Sketch Available ☐

GPS (WGS84 UTM) :
Northing (m): 5061591
Easting (m): 479226
Estimated GPS Accuracy (m, +/-): 50
Property (PID): 20419768
Well Location Sketch Available ☐

Depth in feet	Primary Lithology	Secondary Lithology

Well Construction Information

Total depth below surface (ft): 80.4
Depth to bedrock (ft):
Water bearing fractures encountered at (ft):
Outer Well Casing:
From (ft): To (ft):
Diameter (in): 4
Length of casing above ground :
(ft): (in):
Driveshoe make:

Dug Well Information

Depth of liner (crock) (ft):
Reservoir material:
Reservoir vol. (cu.yd):
Reservoir material size:
Apron Material:
Apron depth (ft):
Apron thickness (ft):
Apron width (ft):
Apron volume (cu.yd):
Bottom material:

Water Yield

Estimated Yield (igpm):
Method:
Rate (igpm):
Duration (hrs):
Depth to water at end of test (ft):
Total drawdown (ft):
Water level recovered to (ft):
Recovery time (hrs):
Depth to static level (ft):
Overflow ☐

Comments : NS OBS WELL - TATAMAGOUCHE (083)
FORMER PARK SUPPLY WELL CONVERTED TO OBSERVATION WELL IN 2009.

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL
Water use: MONITORING
Method of drilling:
Date well completed: 01-Jan-51

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 100983

Well Type DRILLED

Certified Well Contractor

Name: JOHNSON, BRIAN

Certificate No.: 882

Company: HUB WELL DRILLING LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: ST. FX UNIVERSITY WELL #3

or Contractor/Builder/Consultant, etc.: ST. FX UNIVERSITY

Civic Address of Well: NS OBS WELL - PUGWASH (084); 247 WATER ST.

Lot Number: Subdivision:

County: CUMBERLAND Postal Code:

Nearest Community in Altlas/Map Book: ATLAS PUGWASH

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book: ATLAS

Map Page No.: 17

Reference Letter: Y

Reference Number: 3

Roamer Letter: C

Roamer Number: 6

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

Well Construction Sketch Available ☐

GPS (WGS84 UTM) :

Northing (m): 5077959

Easting (m): 448364

Estimated GPS Accuracy (m, +/-): 50

Property (PID): 25156936

Well Location Sketch Available ☑

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	24	BROWN		CLAY & SAND				☐
24	70	BROWN		SHALE				☐
70	133	BROWN		SANDSTONE				☐
133	202	BROWN		SHALE	BROWN	SANDY	SHALE	☐

Well Construction Information

Total depth below surface (ft): 202

Depth to bedrock (ft): 24

Water bearing fractures encountered at (ft): 51, 75, 85, 120

Outer Well Casing:

From (ft): 0 To (ft): 40

Diameter (in): 6

Length of casing above ground :

(ft): 2 (in): 0

Driveshoe make: REGULAR HEAVY

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method: AIR LIFT

Rate (igpm): 75

Duration (hrs): 1

Depth to water at end of test (ft): 202

Total drawdown (ft):

Water level recovered to (ft): 9

Recovery time (hrs):

Depth to static level (ft): 9

Overflow ☐

Comments : NS OBS WELL - PUGWASH (084); WELL #3. DIST TO ON & OFF-SITE SEPTIC: NONE, TO WATERCOURSE & WELL N/A. CIVIC 247 (LOG), MULTIPLE 227 & 247 & 249 (NSCAF). SEE LOGS 100981 & 100982 FOR WELLS #1 & 2.

NOTE: THIS WELL WAS DRILLED BY ST. FX AS PART OF SEA WATER INTRUSION PROJECT (ATLANTIC CLIMATE ADAPTION SOLUTIONS PROJECT) AND THEN CONVERTED TO A PROVINCIAL OBSERVATION WELL IN 2010.

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: OBSERVATION

Method of drilling: ROTARY

Date well completed: 30-Sep-10

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 062067

Well Type DRILLED

Certified Well Contractor

Name: MCDONALD, JAMIE

Certificate No.: 446

Company: ISLAND WELL DRILLERS LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: VILLAGE OF ST. PETER'S

or Contractor/Builder/Consultant, etc.: DILLON CONSULTING LTD (SYDNEY)

Civic Address of Well: NS OBS WELL - ST. PETERS (085); OBAN ROAD

Lot Number: Subdivision:

County: RICHMOND Postal Code:

Nearest Community in Altlas/Map Book: MAP ST. PETER'S

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book: MAP

Map Page No.: 39

Reference Letter: B

Reference Number: 4

Roamer Letter: K

Roamer Number: 8

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

Well Construction Sketch Available ☐

GPS (WGS84 UTM) :

Northing (m): 5061576

Easting (m): 667038

Estimated GPS Accuracy (m, +/-): 50

Property (PID): 75086793

Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
16	42	RED		HARDPAN				☐
0	16	RED		FIRECLAY			BOULDERS	☐
42	370	REDDISH B	SEE COMMENT	CONGLOMERATE		STRINGERS	SANDSTONE & SHA	☐

Well Construction Information

Total depth below surface (ft): 370

Depth to bedrock (ft): 42

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft): 0 To (ft): 60

Diameter (in): 6.625

Length of casing above ground :

(ft): 2 (in):

Driveshoe make: ROTARY - UNSPECI

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method: AIR LIFT

Rate (igpm): 12.5

Duration (hrs): 2

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft):

Overflow ☐

Comments : NS OBS WELL - ST. PETERS (085); WATER STEADILY INCREASED FROM 200'-370'. WATER COLOUR REDDISH. WELL STATUS: OBSERVATION WELL & TEST HOLE. DRILLING FLUID: BAROID QUICK FOAM. STRAT: 42-370 FT RED/BROWN CONGLOMERATE WITH MINOR SANDSTONE & SHALE STRINGERS.

NOTE: THIS WELL WAS ORIGINALLY DRILLED AS A MUNICIPAL TEST WELL IN 2006 AND CONVERTED TO A PROVINCIAL OBSERVATION WELL IN 2010.

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: OBSERVATION

Method of drilling: ROTARY

Date well completed: 02-Mar-06

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 670564
Well Type DRILLED

Certified Well Contractor

Name: TRASK, JAMES L.
Certificate No.: 18
Company: S. G. TRASK AND SONS LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF LANDS & FORES
or Contractor/Builder/Consultant, etc.:
Civic Address of Well: NS OBS WELL - SMILEYS PARK (086)
Lot Number: Subdivision:
County: HANTS Postal Code:
Nearest Community in Altlas/Map Book: ATLAS MCKAY SECTION

Well Location

NS Atlas or Map Book Reference :
Atlas or Map Book: MAP
Map Page No.: 20
Reference Letter: C
Reference Number: 1
Roamer Letter: O
Roamer Number: 7

NTS Map Reference :
Map Sheet:
Reference Map:
Tract No.:
Claim:
Well Construction Sketch Available ☐

GPS (WGS84 UTM) :
Northing (m): 4984939
Easting (m): 424131
Estimated GPS Accuracy (m, +/-): 50
Property (PID):
Well Location Sketch Available ☐

Depth in feet | Primary Lithology | Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	25			DRIFT & CLAY				☐
25	32	GRAY		GRAVEL & CLAY				☐
32	61	RED		CLAY				☐

Well Construction Information

Total depth below surface (ft): 32
Depth to bedrock (ft):
Water bearing fractures encountered at (ft): 16
Outer Well Casing:
From (ft): 6 To (ft): 27
Diameter (in): 6
Length of casing above ground :
(ft): (in):
Driveshoe make: UNKNOWN

Dug Well Information

Depth of liner (crock) (ft):
Reservoir material:
Reservoir vol. (cu.yd):
Reservoir material size:
Apron Material:
Apron depth (ft):
Apron thickness (ft):
Apron width (ft):
Apron volume (cu.yd):
Bottom material:

Water Yield

Estimated Yield (igpm):
Method: PUMPED
Rate (igpm): 60
Duration (hrs): 8
Depth to water at end of test (ft): 16
Total drawdown (ft): 14
Water level recovered to (ft): 16
Recovery time (hrs): 8
Depth to static level (ft):
Overflow ☐

Comments : NS OBS WELL - SMILEYS PARK (086)

NOTE: THIS WAS A FORMER WATER SUPPLY WELL FOR SMILEYS PROVINCIAL PARK. IT WAS CONVERTED TO A PROVINCIAL OBSERVATION WELL IN 2011.

Well Status/Water Use/Date Completed

Final status of well:
Water use: DOMESTIC
Method of drilling: CABLE TOOL
Date well completed: 27-Mar-67

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 110646

Well Type DRILLED

Certified Well Contractor

Name: JACOBS, BYRON

Certificate No.: 695

Company: BLUENOSE WELL DRILLING LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: DEPT. OF NATURAL RESOURC

or Contractor/Builder/Consultant, etc.:

Civic Address of Well: 2248 COW BAY ROAD (COLE HARBOUR DYKE ROAD), HRM

Lot Number: Subdivision:

County: HALIFAX Postal Code:

Nearest Community in Altlas/Map Book: ATLAS RAINBOW HAVEN

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book: ATLAS

Map Page No.: 68

Reference Letter: V

Reference Number: 3

Roamer Letter: G

Roamer Number: 1

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

Well Construction Sketch Available ☐

GPS (WGS84 UTM) :

Northing (m): 4944096

Easting (m): 466893

Estimated GPS Accuracy (m, +/-): 50

Property (PID): 40158396

Well Location Sketch Available ☑

Depth in feet		Primary Lithology			Secondary Lithology			
From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	15	BROWN &	FINE GRAINED	SAND	BROWN &	MEDIUM GRAINE	SAND	☐
15	16		PEBBLY	GRAVEL		ROUNDED		☐
16	43	BROWN &	FINE GRAINED	SAND	BROWN &	MEDIUM GRAINE	SAND	☑
43	58	BROWN &	FINE GRAINED	SAND	SEE COM	SEE COMMENTS	SAND & GRAVEL	☐
58	104	GRAY	SEE COMMENT	GRAVEL	BROWN &	SEE COMMENTS	SAND	☑

Well Construction Information

Total depth below surface (ft): 104

Depth to bedrock (ft):

Water bearing fractures encountered at (ft): 65, 92

Outer Well Casing:

From (ft): 0 To (ft): 107

Diameter (in): 6

Length of casing above ground :

(ft): 1 (in):

Driveshoe make: HEAVY WALL

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method: AIR LIFT

Rate (igpm):

Duration (hrs): 1

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft): 40

Overflow ☐

Comments : WB ZONE AT 92 FT SALT WATER. EST YIELD (DNR) 10+ GPM; TO BE PUMPED LATER. CASING LATER EXTENDED TO 3.83 FT ABOVE GROUND FOR INSTRUMENTATION. STATIC LEVEL 40 FT (LOG); LATER ROSE TO WITHIN 10 FT OF GROUND LEVEL. WELL LOC SKETCH: OFF PARKING LOT RD, BTWN RD

AND MAIN BLDG. STRAT FROM DNR: 0-15 FT SAND, ORGANIC MATERIAL PRESENT; 16-43 FT BROWN & BLACK FINE TO MEDIUM SAND, SHELLS & SHELL FRAGMENTS PRESENT, WATER AT 6.4M (21 FT) ~30 LPM (6-7 GPM).; 43-58 FT BROWN & BLACK FINE TO MEDIUM SAND & GREY SEE COMM

Well Status/Water Use/Date Completed

Final status of well: OBSERVATION WELL

Water use: MONITORING

Method of drilling: ROTARY

Date well completed: 21-Dec-11

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 710457

Well Type DRILLED

Certified Well Contractor

Name: FANCY, WILLIAM

Certificate No.: 14

Company: MARITIME WELL DRILLING CO. LTD.

Well Owner/Contractor Information

Well Drilled For: Owner: NS DEPT. OF LANDS & FORES

or Contractor/Builder/Consultant, etc.:

Civic Address of Well:

Lot Number: Subdivision:

County: LUNENBURG Postal Code:

Nearest Community in Altlas/Map Book: MAITLAND

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book: MAP

Map Page No.: 15

Reference Letter: D

Reference Number: 2

Roamer Letter: K

Roamer Number: 9

NTS Map Reference :

Map Sheet:

Reference Map:

Tract No.:

Claim:

Well Construction Sketch Available ☐

GPS (WGS84 UTM) :

Northing (m): 4921381

Easting (m): 385621

Estimated GPS Accuracy (m, +/-): 800

Property (PID):

Well Location Sketch Available ☐

Depth in feet / Primary Lithology / Secondary Lithology

From	To	Colour 1	Description 1	Lithology 1	Colour 2	Description 2	Lithology 2	Water Found
0	10			GRAVEL & CLAY				☐
10	81			SLATE				☐

Well Construction Information

Total depth below surface (ft): 81

Depth to bedrock (ft): 10

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft): 6 To (ft): 17

Diameter (in): 6

Length of casing above ground :

(ft): (in):

Driveshoe make: UNKNOWN

Dug Well Information

Depth of liner (crock) (ft):

Reservoir material:

Reservoir vol. (cu.yd):

Reservoir material size:

Apron Material:

Apron depth (ft):

Apron thickness (ft):

Apron width (ft):

Apron volume (cu.yd):

Bottom material:

Water Yield

Estimated Yield (igpm):

Method: BAILED

Rate (igpm): 5

Duration (hrs):

Depth to water at end of test (ft):

Total drawdown (ft):

Water level recovered to (ft):

Recovery time (hrs):

Depth to static level (ft): 3

Overflow ☐

Comments :

Well Status/Water Use/Date Completed

Final status of well:

Water use:

Method of drilling: CABLE TOOL

Date well completed: 20-Jun-71

NOVA SCOTIA
Environment

Well Report

(Summary Log)

NSE Well No. 762869

Well Type DRILLED

Certified Well Contractor

Name

Certificate No.

Company

Well Owner/Contractor Information

Well Drilled For: Owner NS DEPT. OF NATURAL RESO

or Contractor/Builder/Consultant, etc.

Civic Address of Well NS OBS WELL SIMMS SETTLEMENT (089), HIGHWAY #3

Lot Number Subdivision

County LUNENBURG Postal Code

Nearest Community in Altlas/Map Book ATLAS SIMMS SETTLEMENT

Well Location

NS Atlas or Map Book Reference :

Atlas or Map Book	ATLAS
Map Page No.	66
Reference Letter	Y
Reference Number	3
Roamer Letter	H
Roamer Number	4

NTS Map Reference :

Map Sheet	
Reference Map	
Tract No.	
Claim	

Well Construction Sketch Available ☐

GPS (WGS84 UTM) :

Northing (m)	4941181
Easting (m)	412273
Estimated GPS Accuracy (m, +/-)	50
Property (PID)	60086030

Well Location Sketch Available ☐

Depth in feet	Primary Lithology	Secondary Lithology

Well Construction Information

Total depth below surface (ft) 132

Depth to bedrock (ft)

Water bearing fractures encountered at (ft):

Outer Well Casing:

From (ft) 0 To (ft) 20

Diameter (in) 6

Length of casing above ground :

(ft) (in)

Driveshoe make

Dug Well Information

Depth of liner (crock) (ft)

Reservoir material

Reservoir vol. (cu.yd)

Reservoir material size

Apron Material

Apron depth (ft)

Apron thickness (ft)

Apron width (ft)

Apron volume (cu.yd)

Bottom material

Water Yield

Estimated Yield (igpm)

Method

Rate (igpm)

Duration (hrs)

Depth to water at end of test (ft)

Total drawdown (ft)

Water level recovered to (ft)

Recovery time (hrs)

Depth to static level (ft)

Overflow ☐

Comments : NS OBSERVATION WELL - SIMMS SETTLEMENT (089). FORMER PROVINCIAL DAY USE/PICNIC PARK WATER SUPPLY WELL, CONVERTED TO NSE OBSERVATION WELL IN 2013. DRILLER & YEAR UNKNOWN; ASSUMED 1976. NO STRAT AVAILABLE, BUT BEDROCK LIKELY GRANITE.

Well Status/Water Use/Date Completed

Final status of well OBSERVATION WELL

Water use MONITORING

Method of drilling UNKNOWN

Date well completed 31-Dec-76

APPENDIX B
GROUNDWATER LEVEL GRAPHS

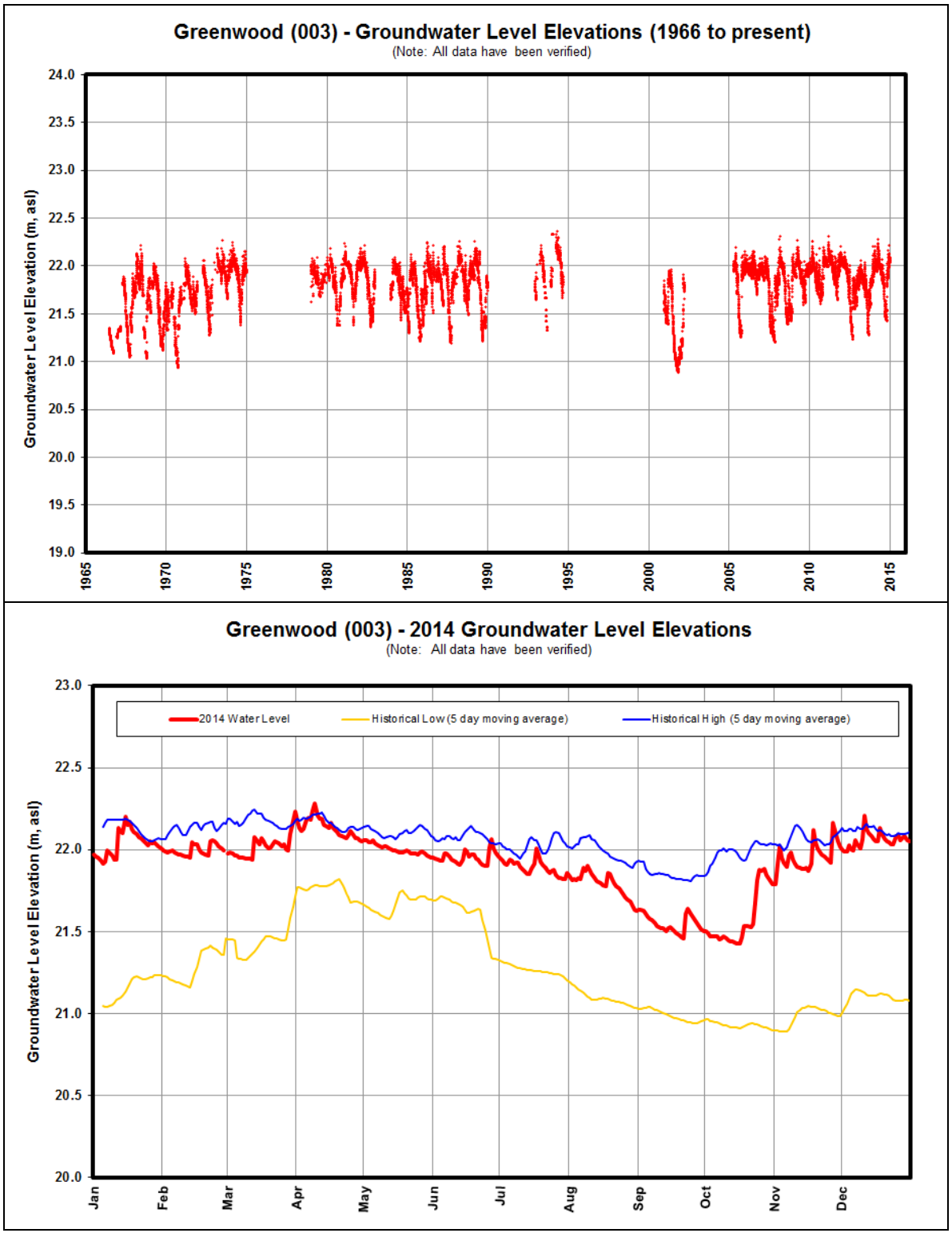


Figure B.1: Greenwood (003) Groundwater Level Elevations

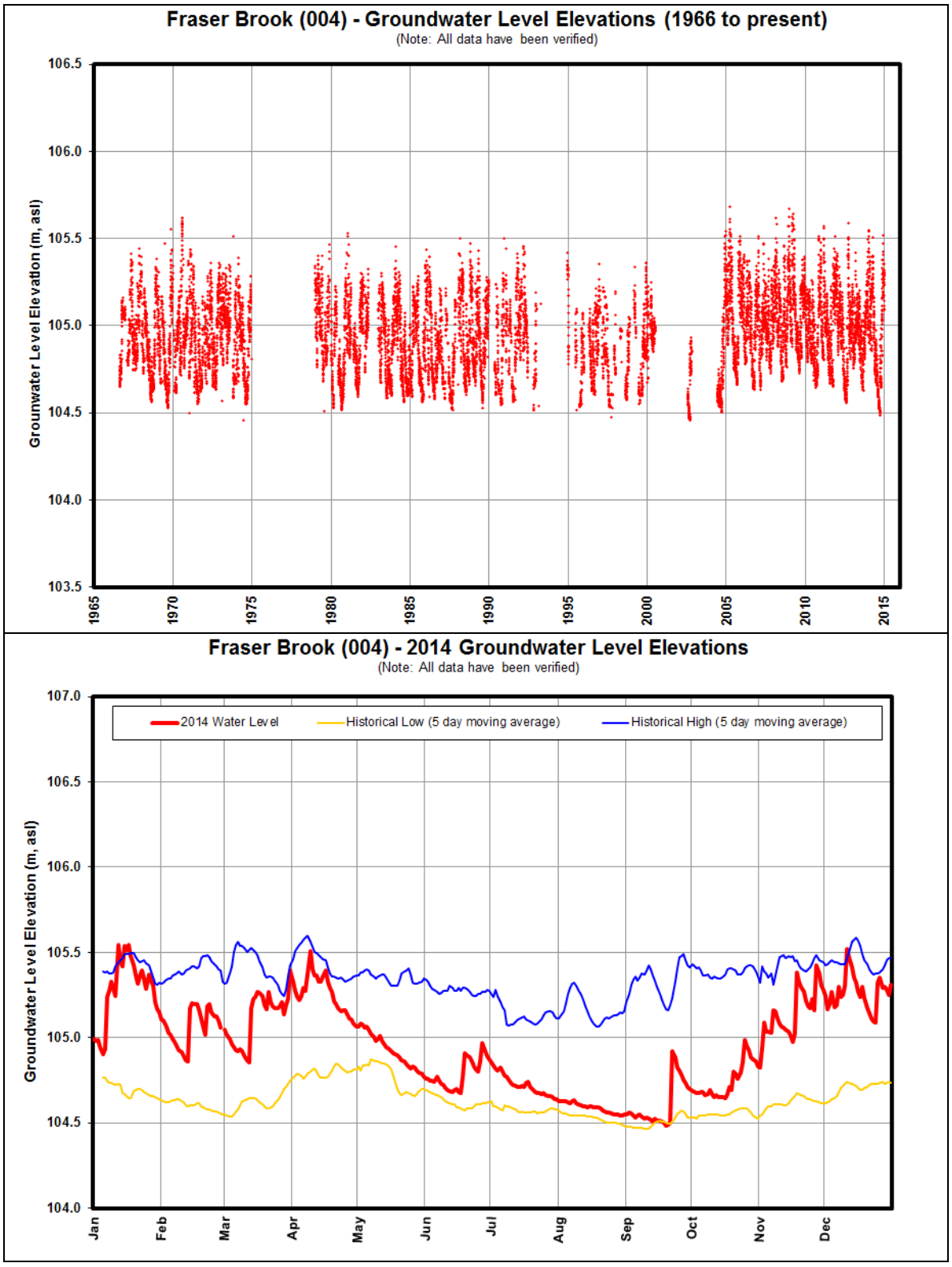


Figure B.2: Fraser Brook (004) Groundwater Level Elevations

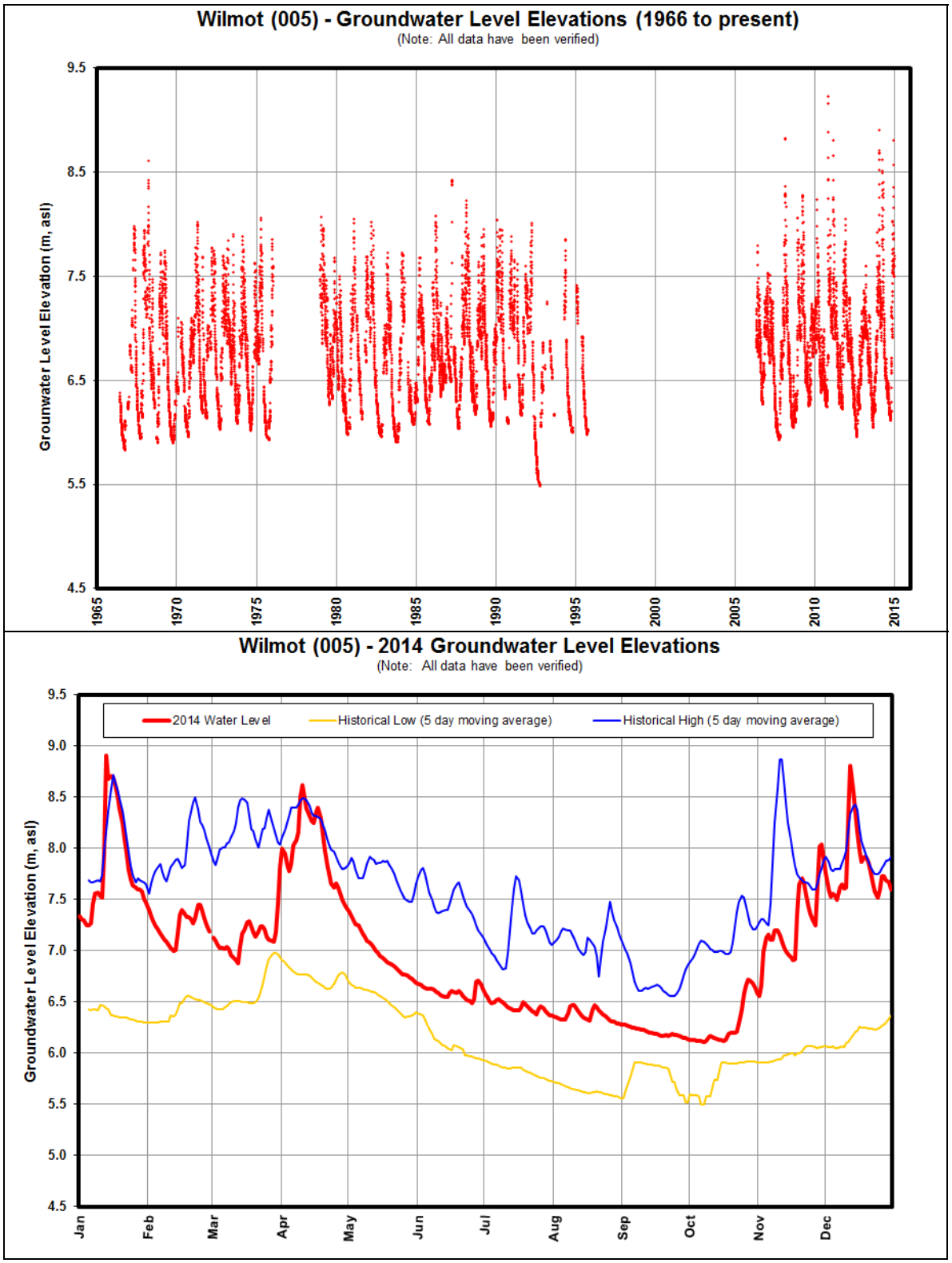


Figure B.3: Wilmot (005) Groundwater Level Elevations

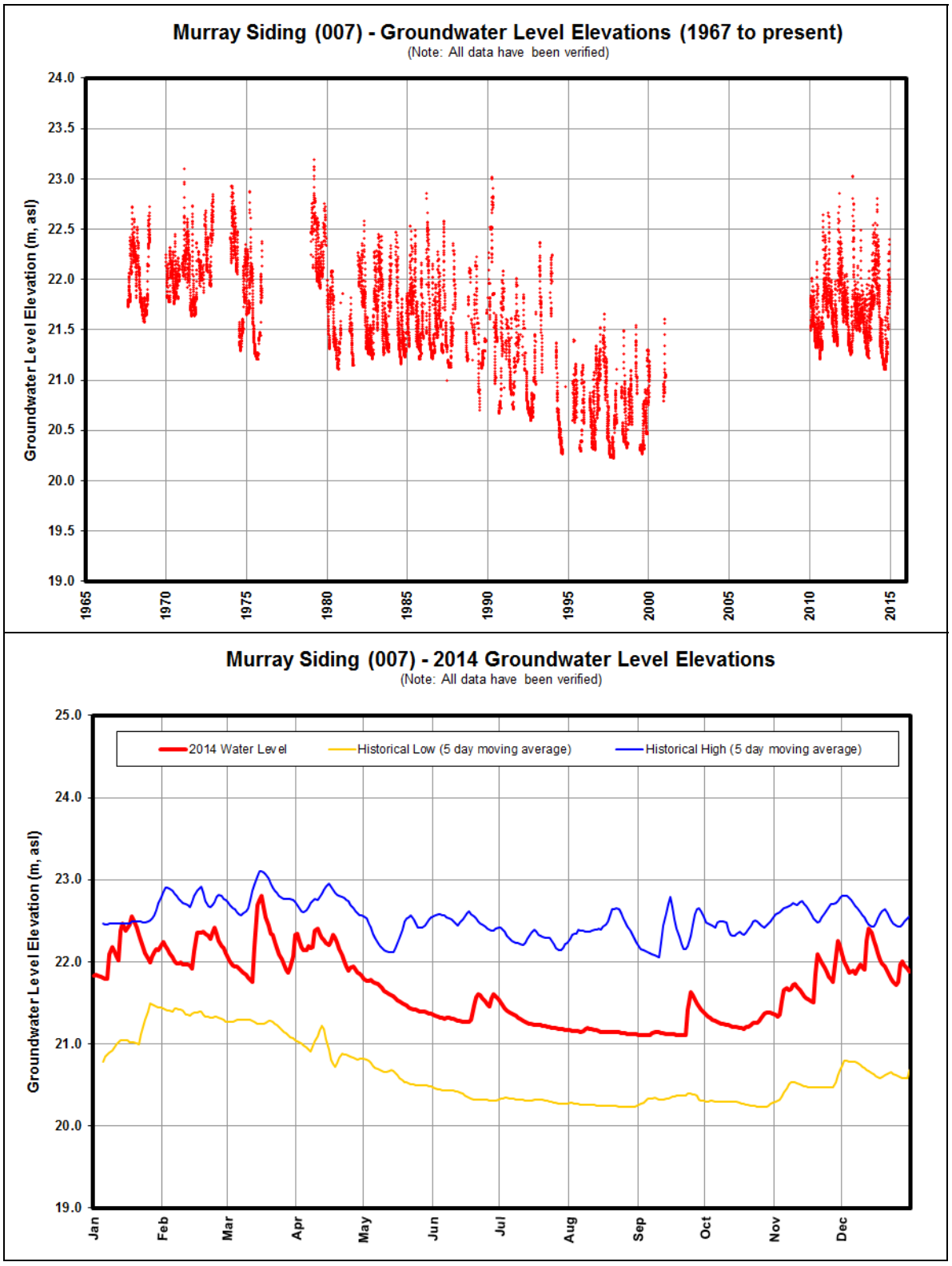


Figure B.4: Murray Siding (007) Groundwater Level Elevations

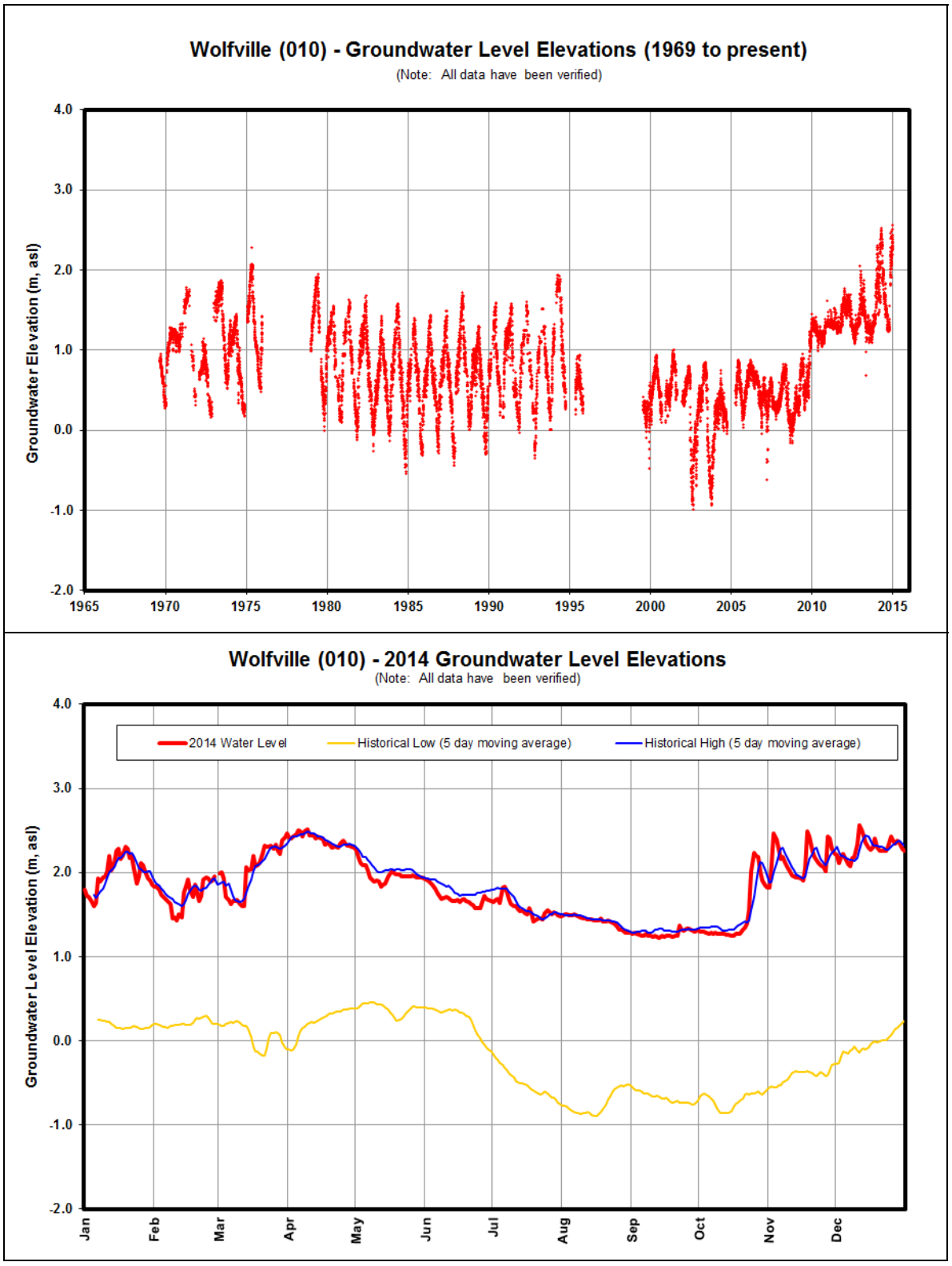


Figure B.5: Wolfville (010) Groundwater Level Elevations

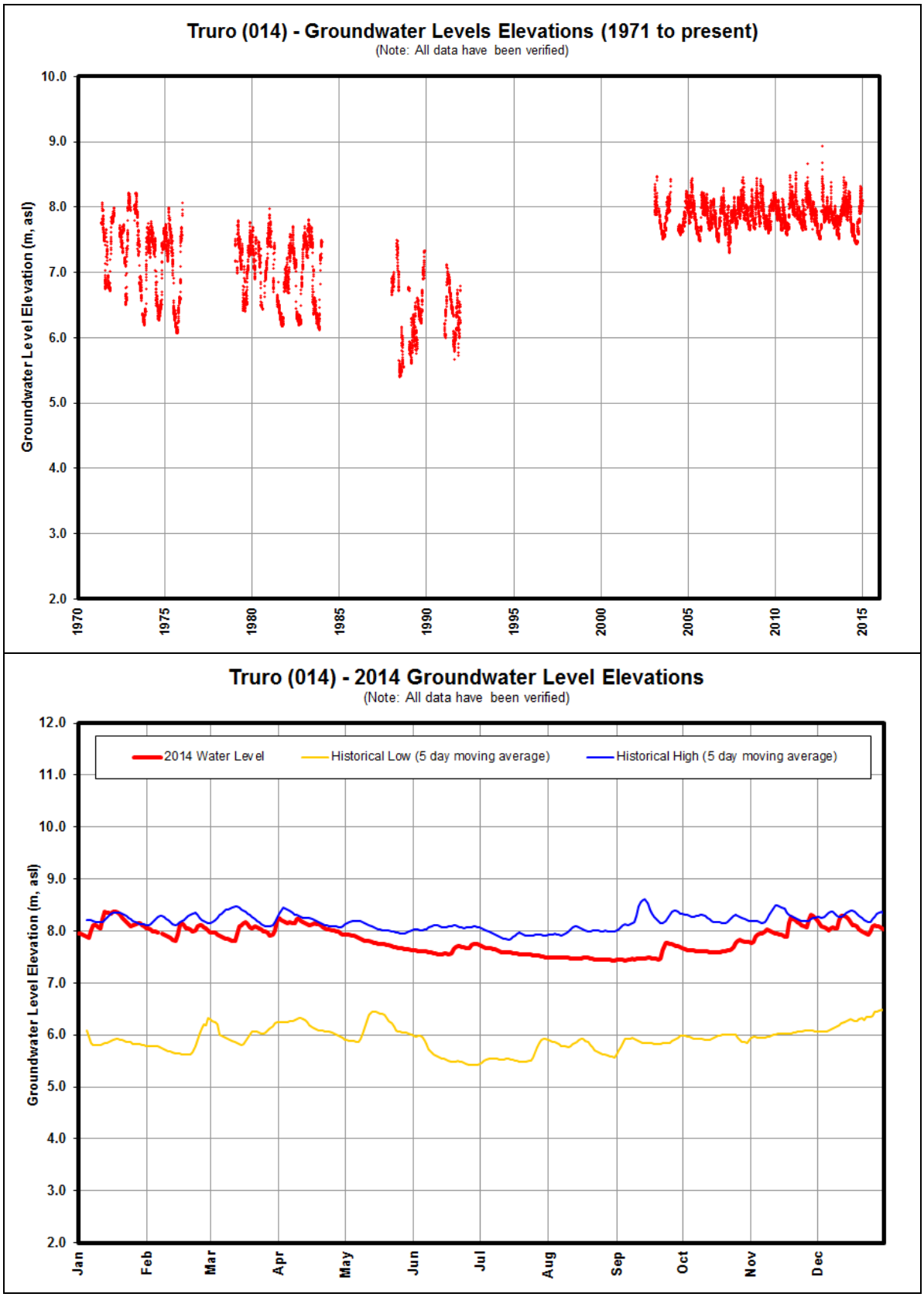


Figure B.6: Truro (014) Groundwater Level Elevations

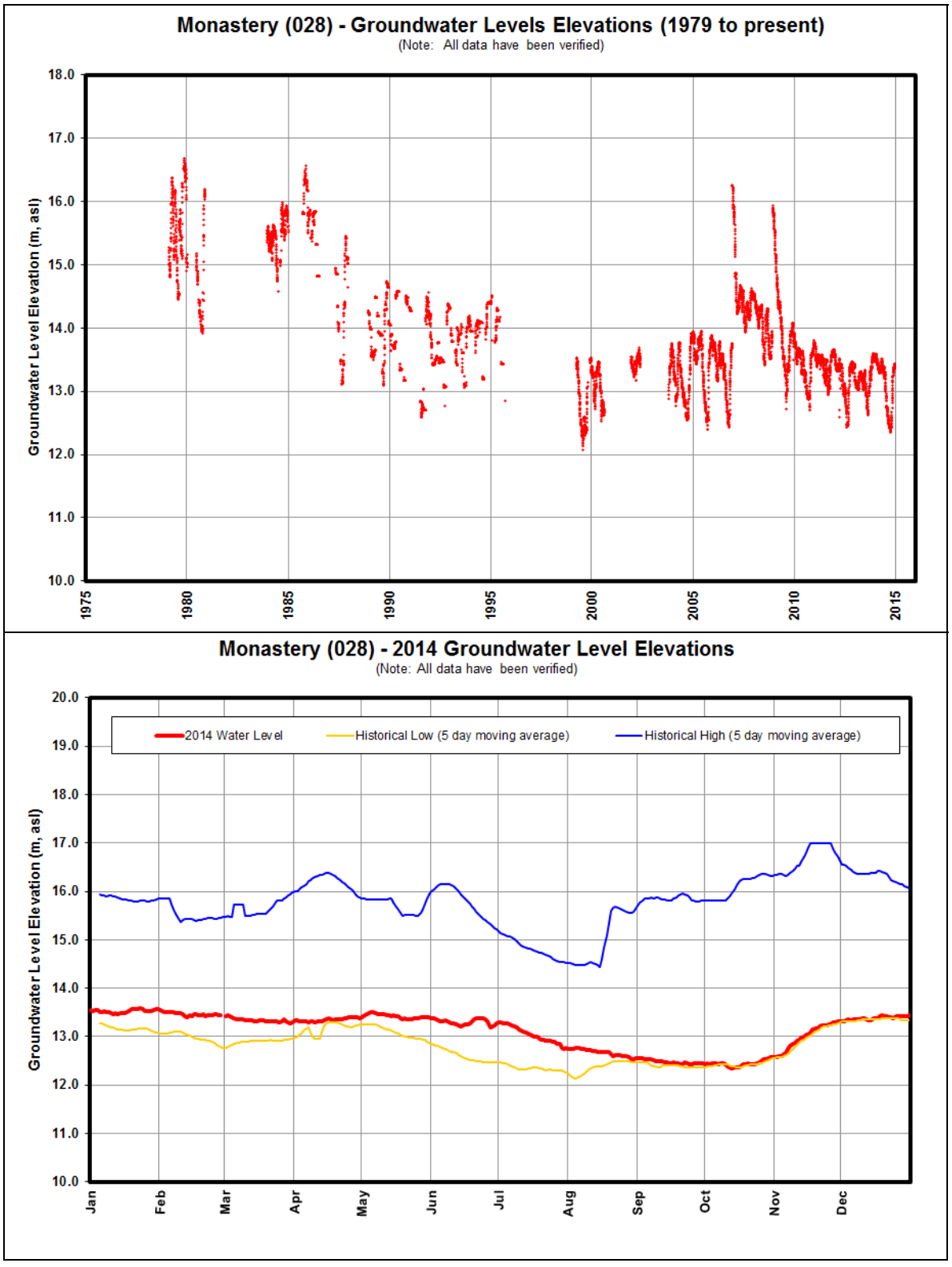


Figure B.7: Monastery (028) Groundwater Level Elevations

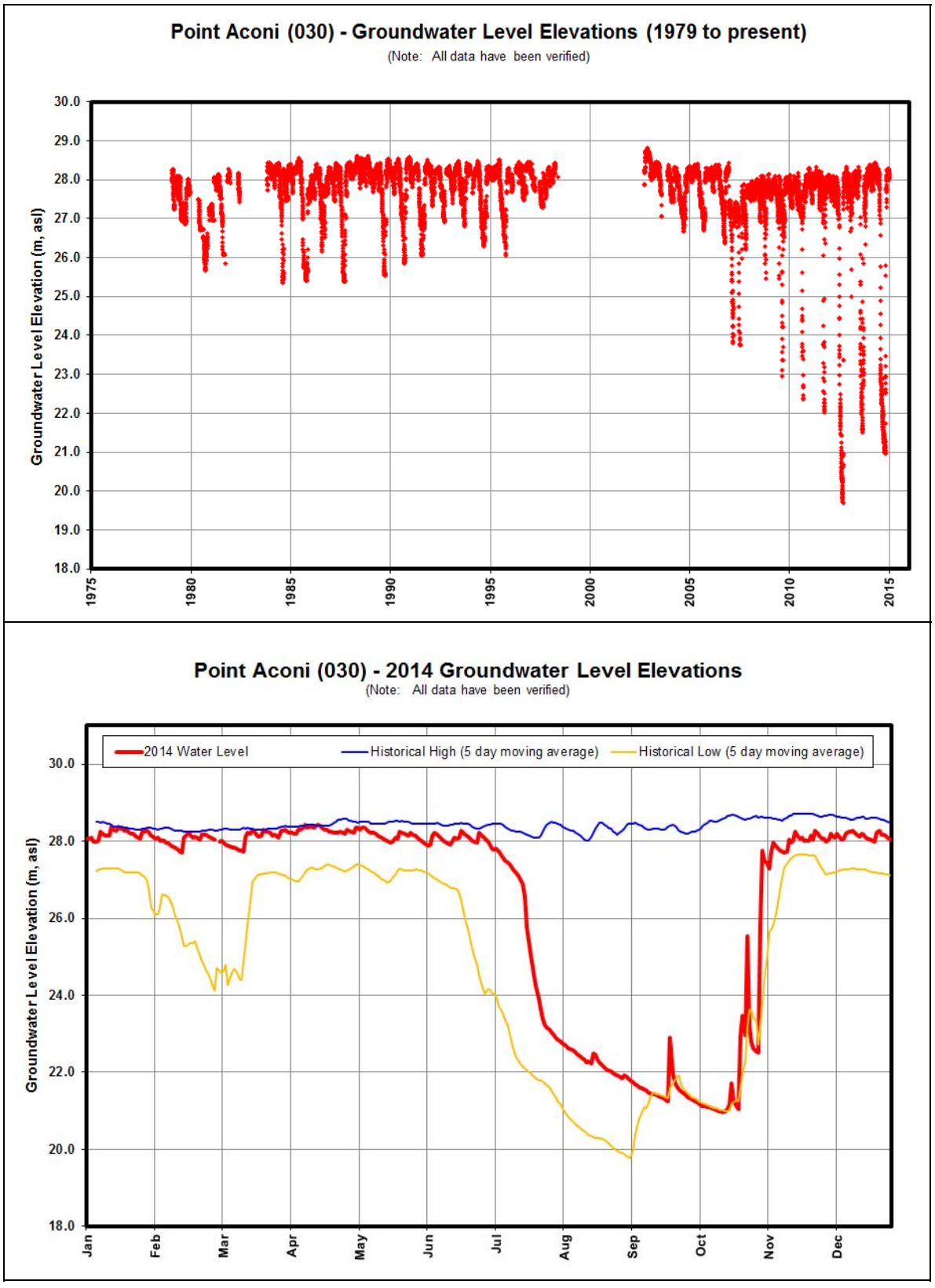


Figure B.8: Point Aconi (030) Groundwater Level Elevations

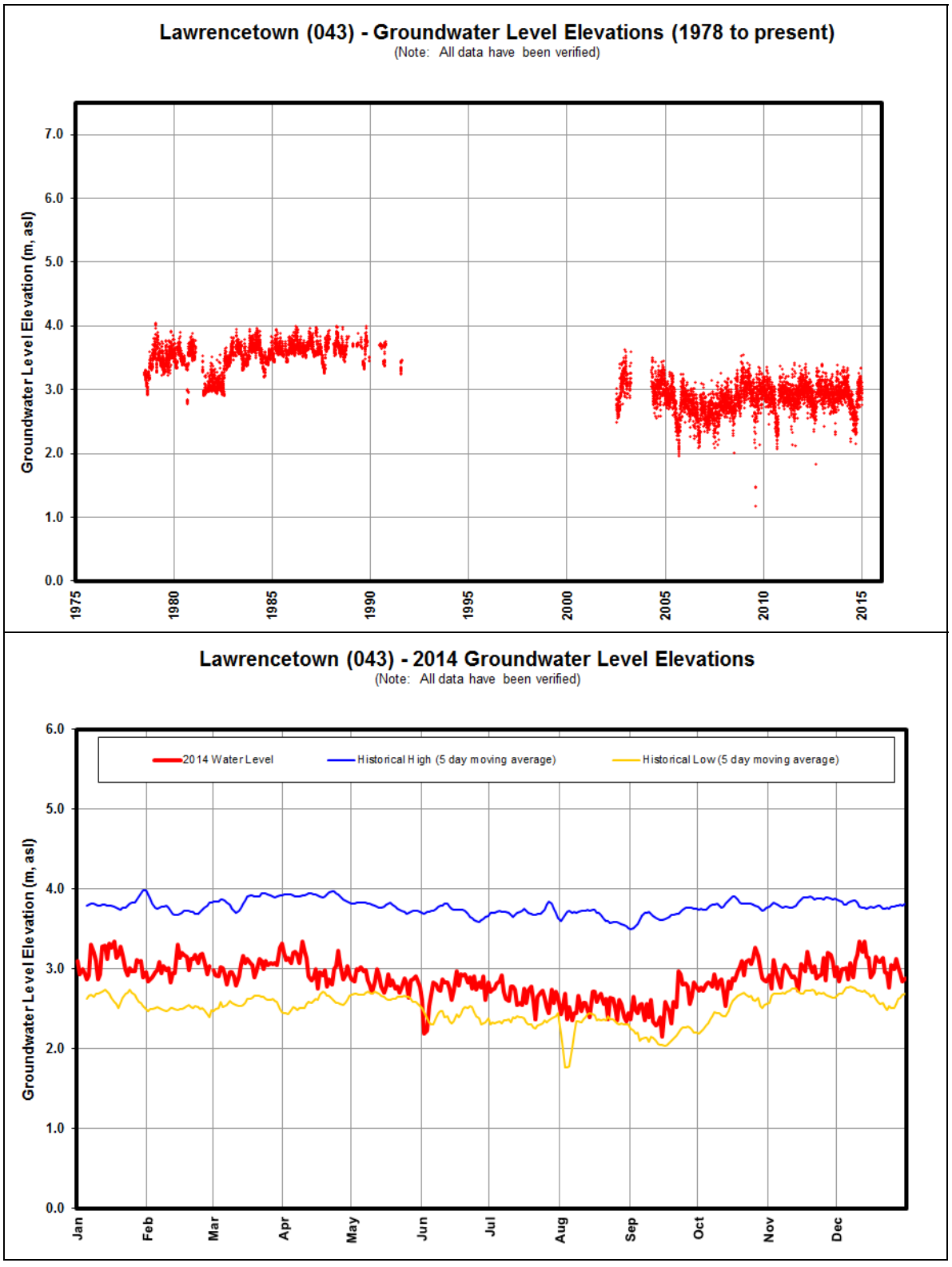


Figure B.9: Lawrencetown (043) Groundwater Level Elevations

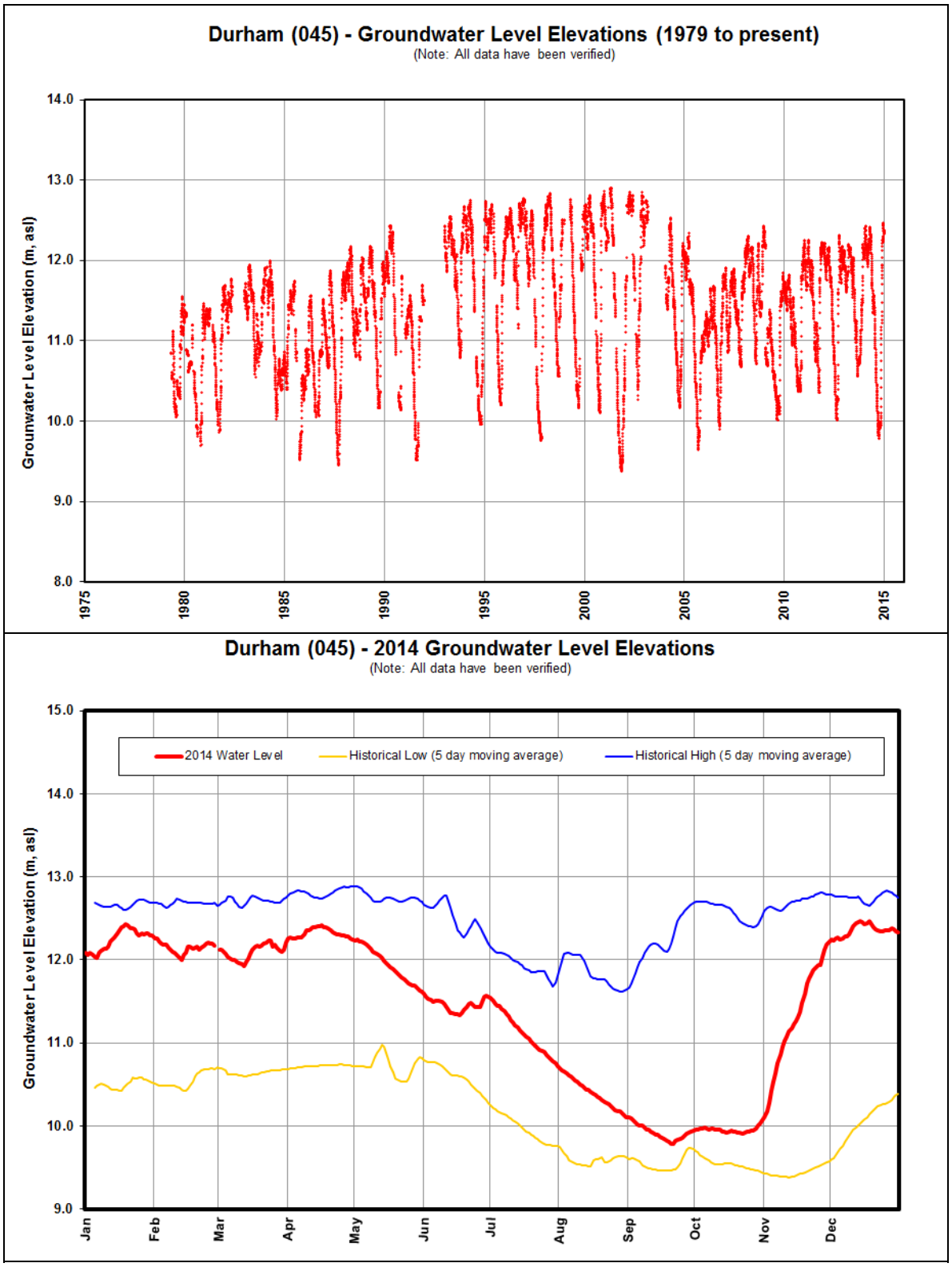


Figure B.10: Durham (045) Groundwater Level Elevations

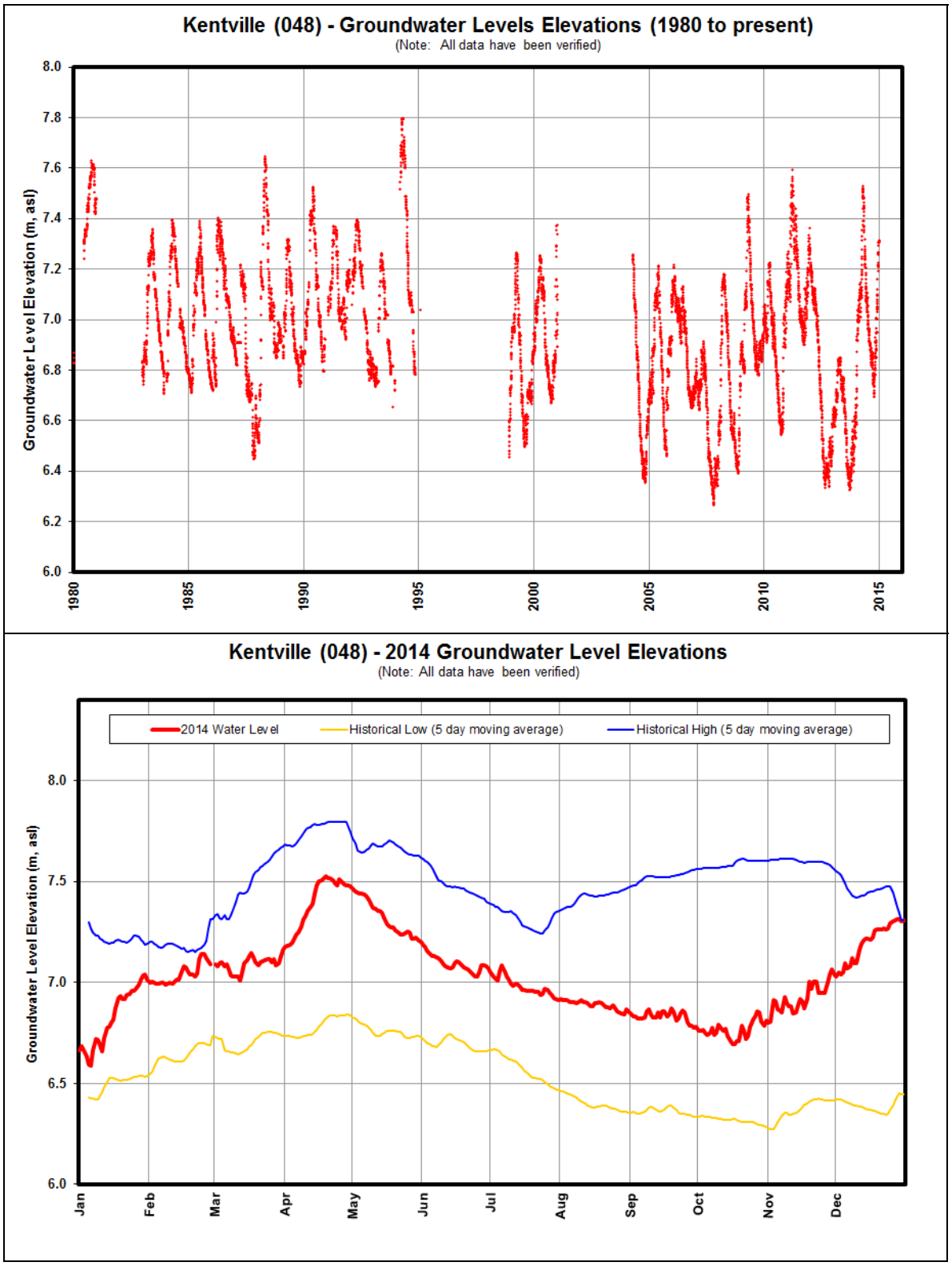


Figure B.11: Kentville (048) Groundwater Level Elevations

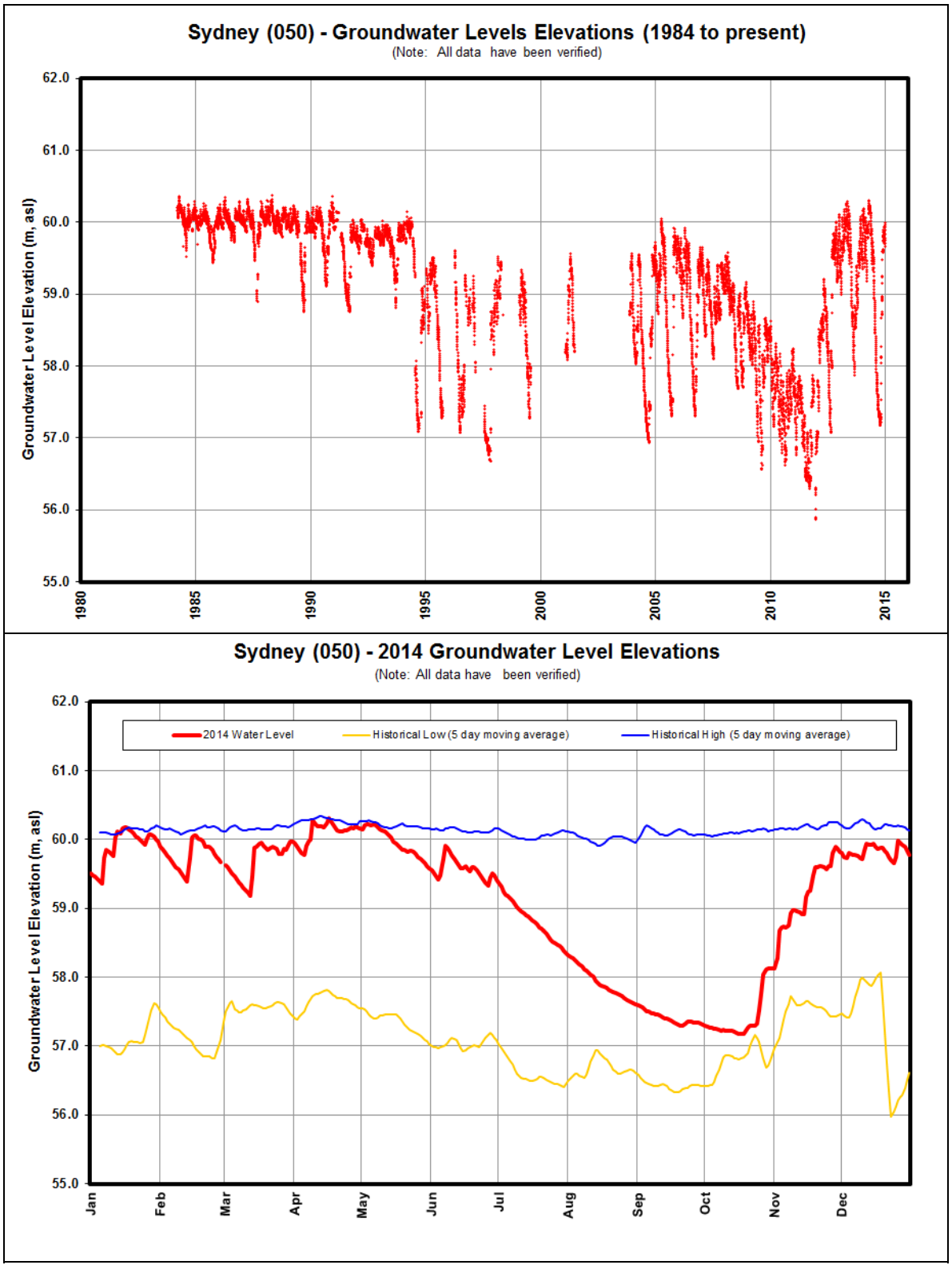


Figure B.12: Sydney (050) Groundwater Level Elevations

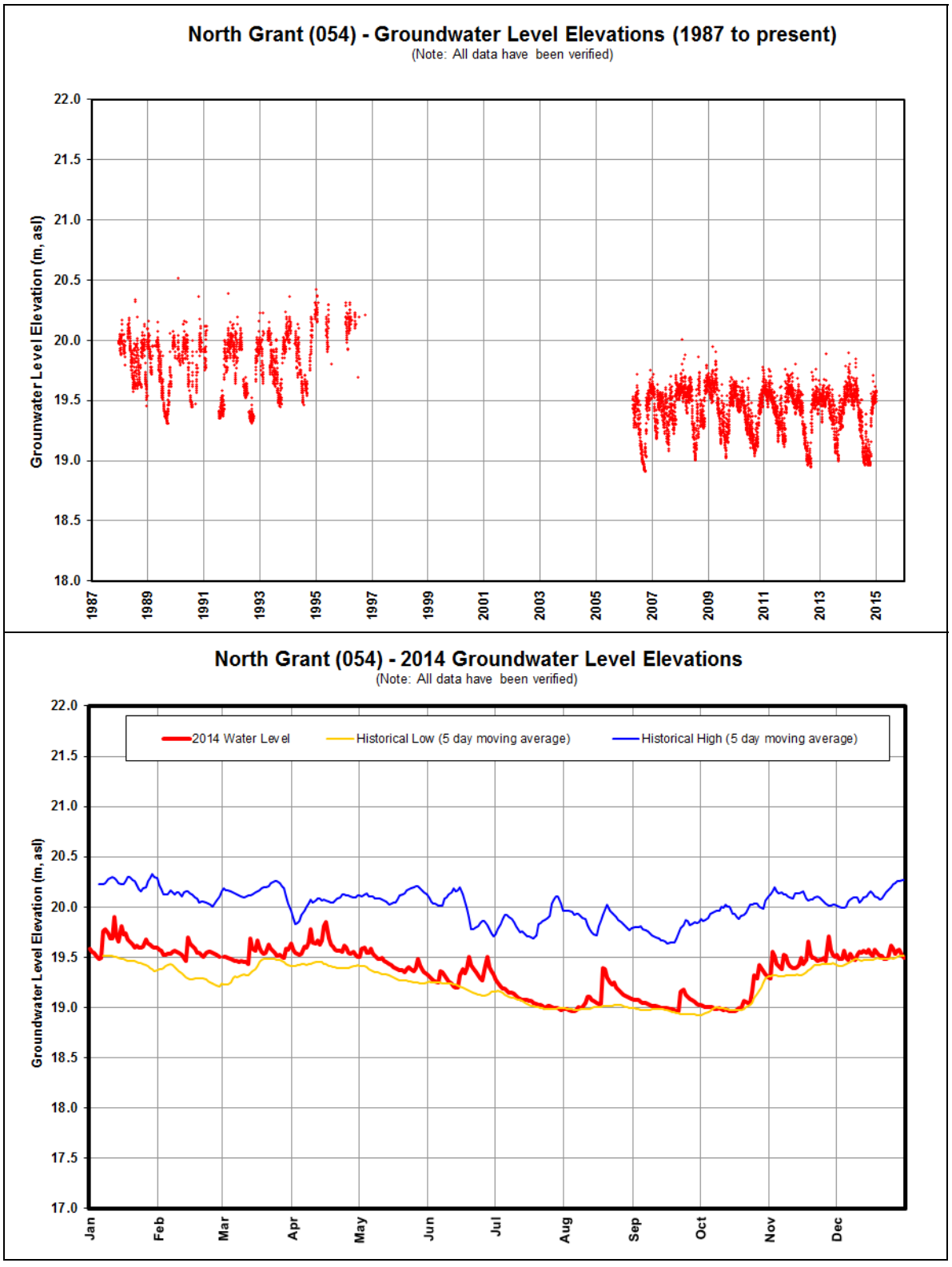


Figure B.13: North Grant (054) Groundwater Level Elevations

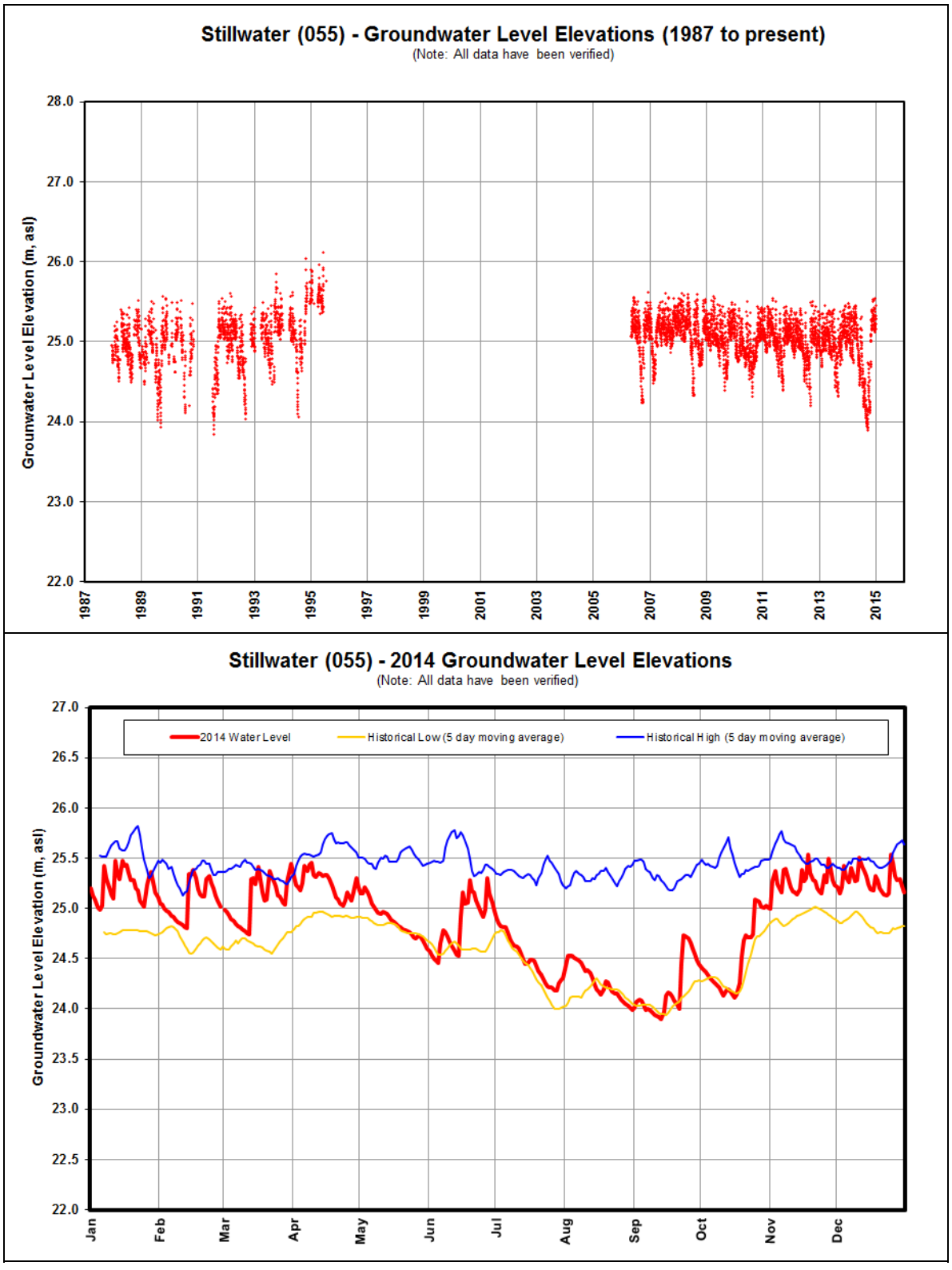


Figure B.14: Stillwater (055) Groundwater Level Elevations

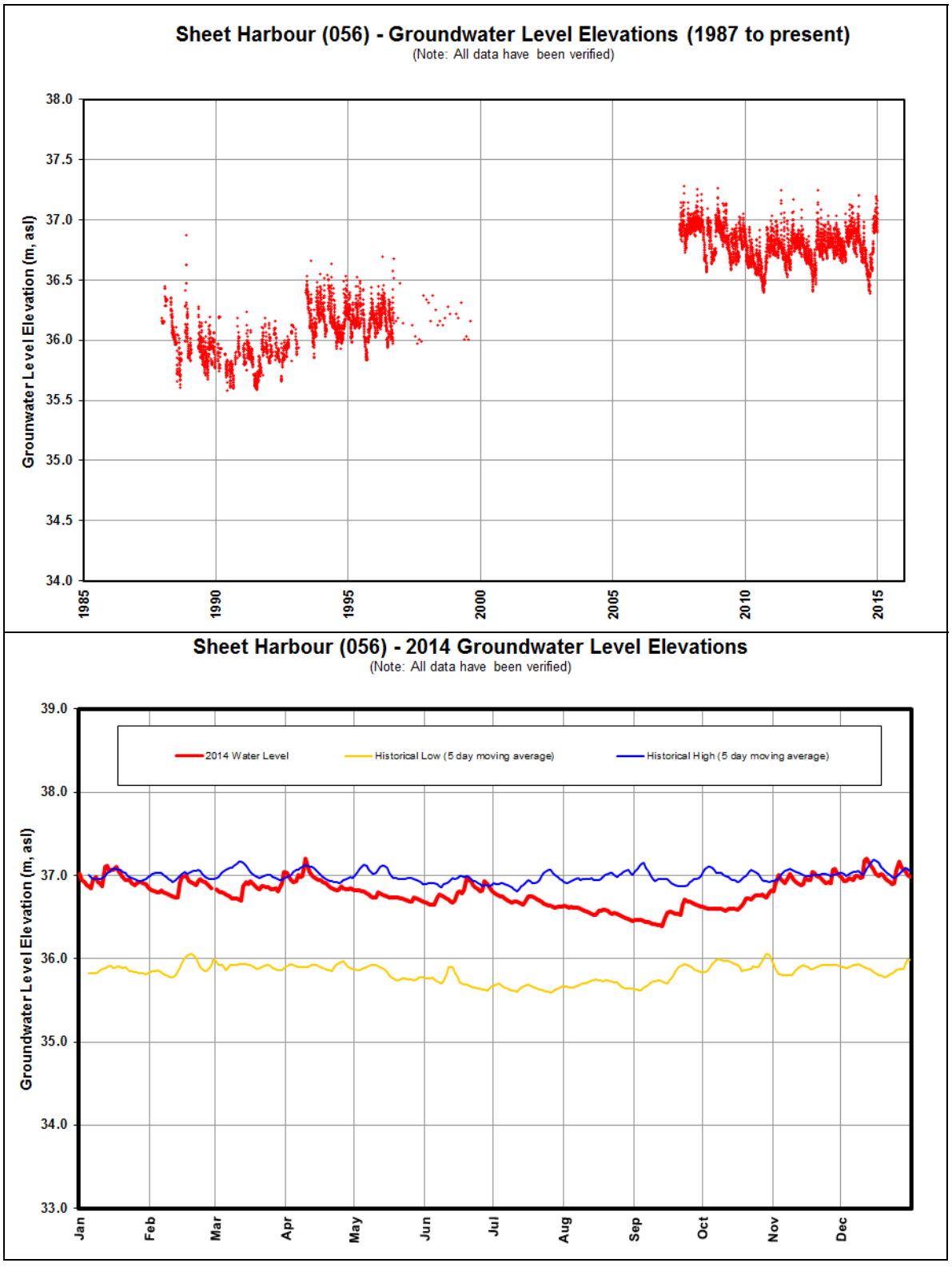


Figure B.15: Sheet Hbr (056) Groundwater Level Elevations

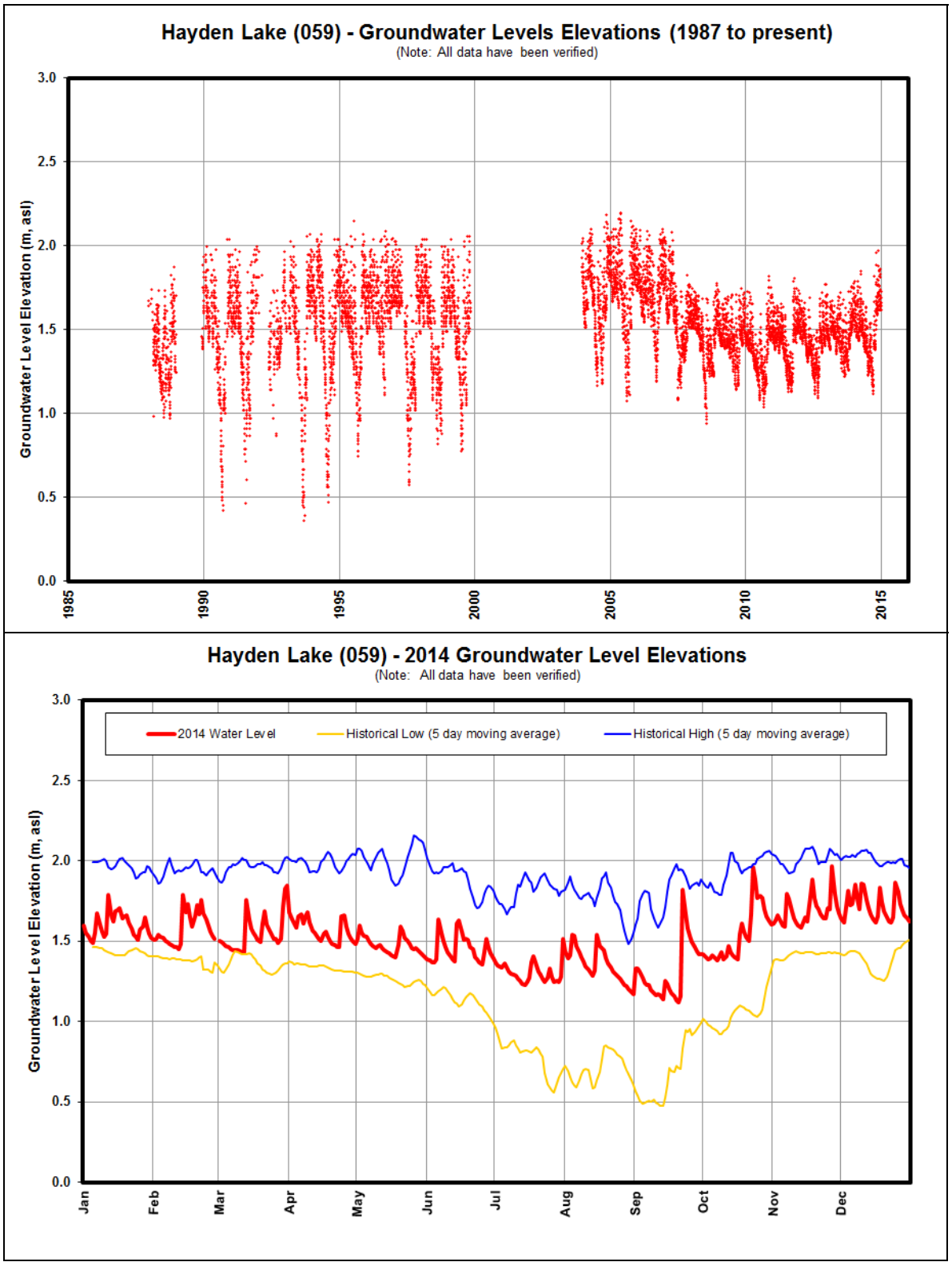


Figure B.16: Hayden Lake (059) Groundwater Level Elevations

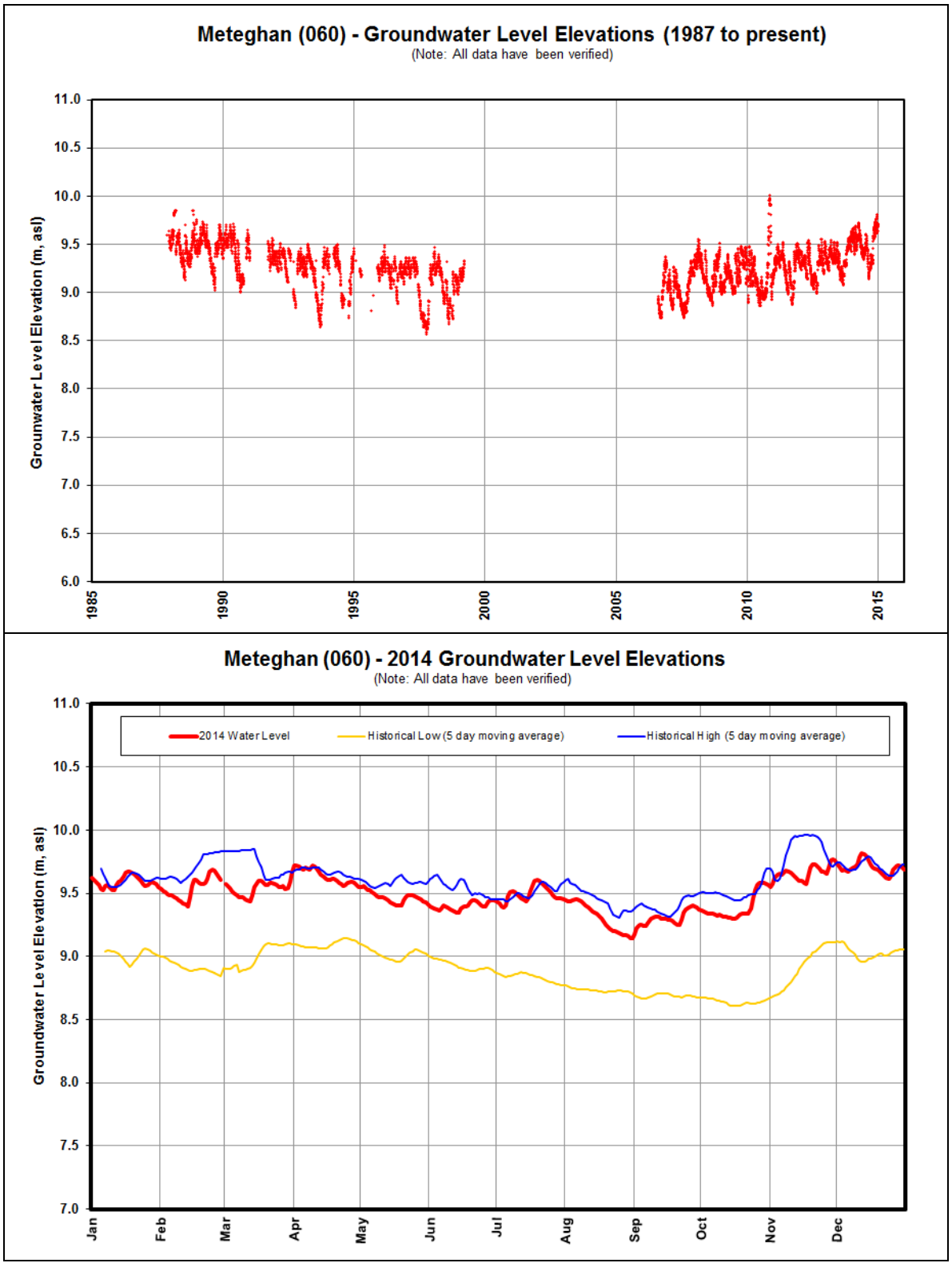


Figure B.17: Meteghan (060) Groundwater Level Elevations

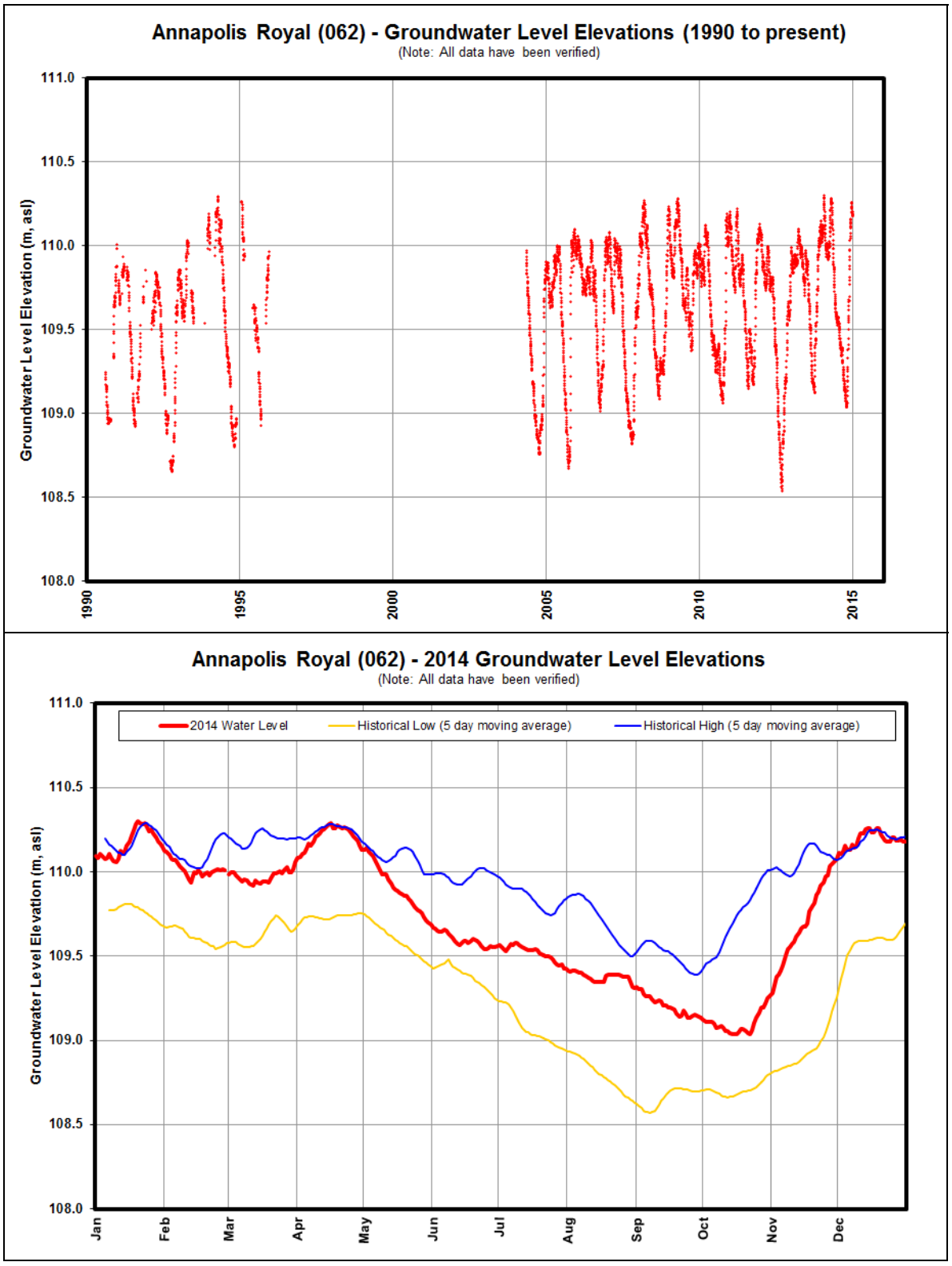


Figure B.18: Annapolis Royal (062) Groundwater Level Elevations

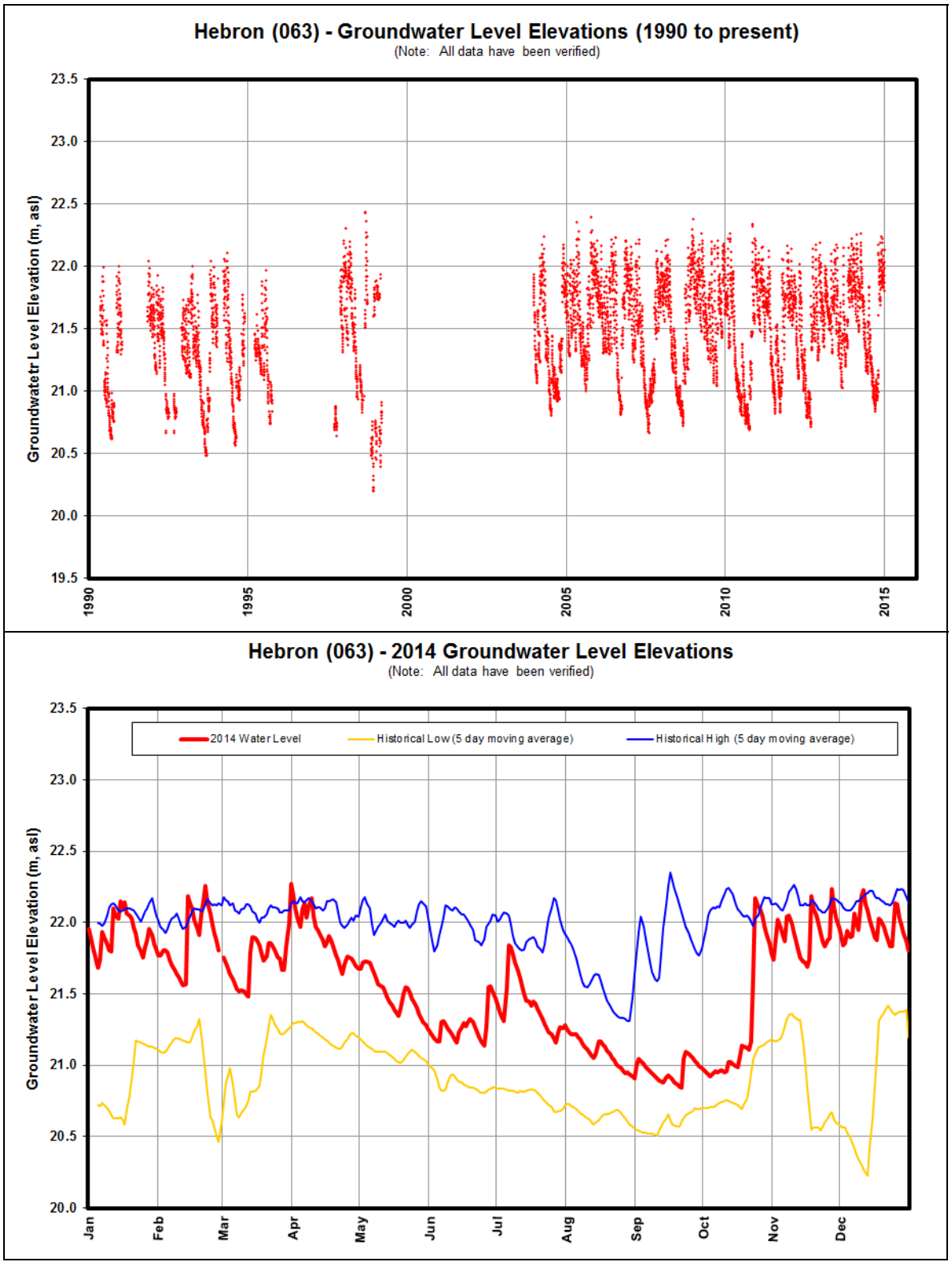


Figure B.19: Hebron (063) Groundwater Level Elevations

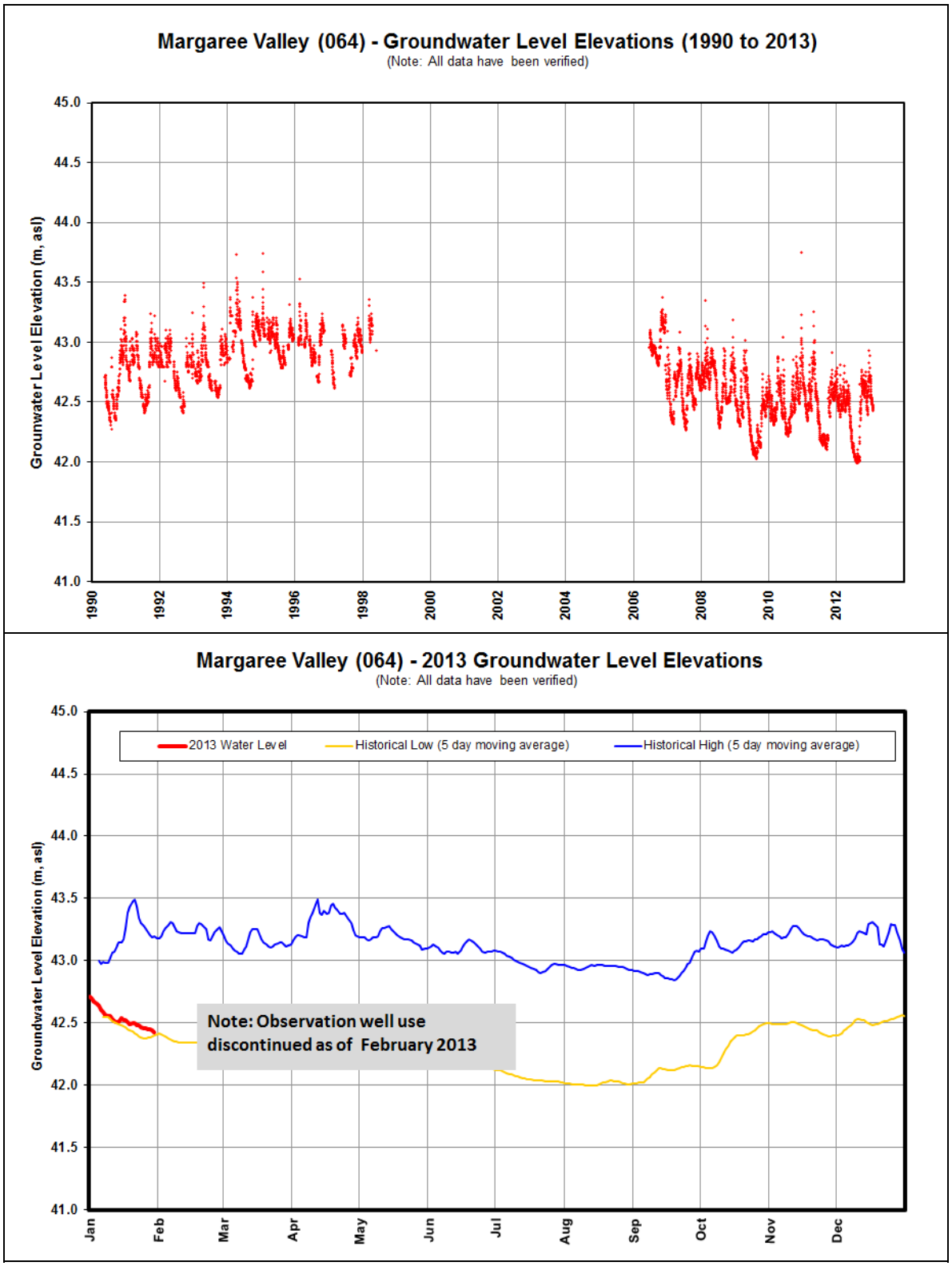


Figure B.20: Margaree (064) Groundwater Level Elevations

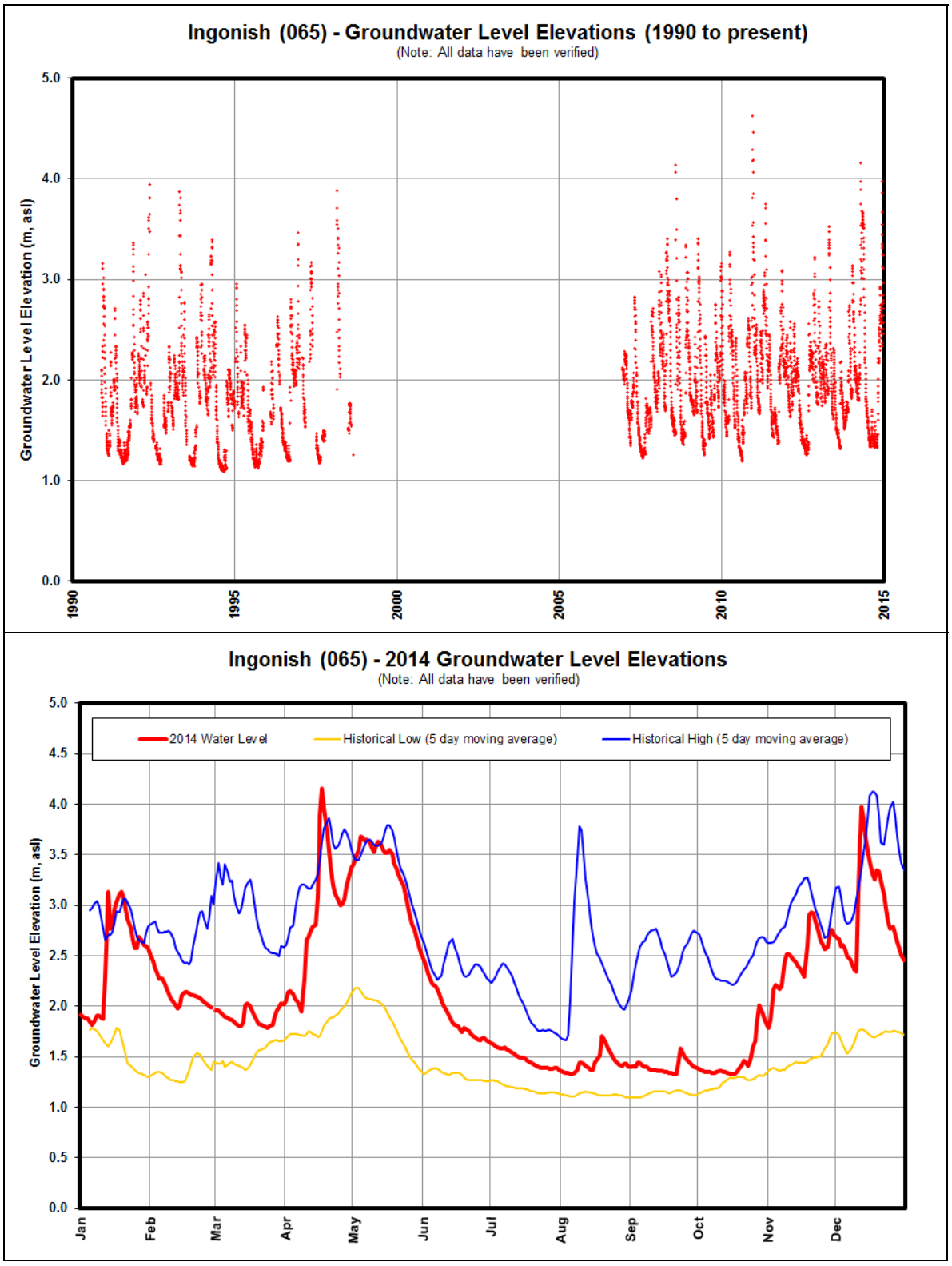


Figure B.21: Ingonish (065) Groundwater Level Elevations

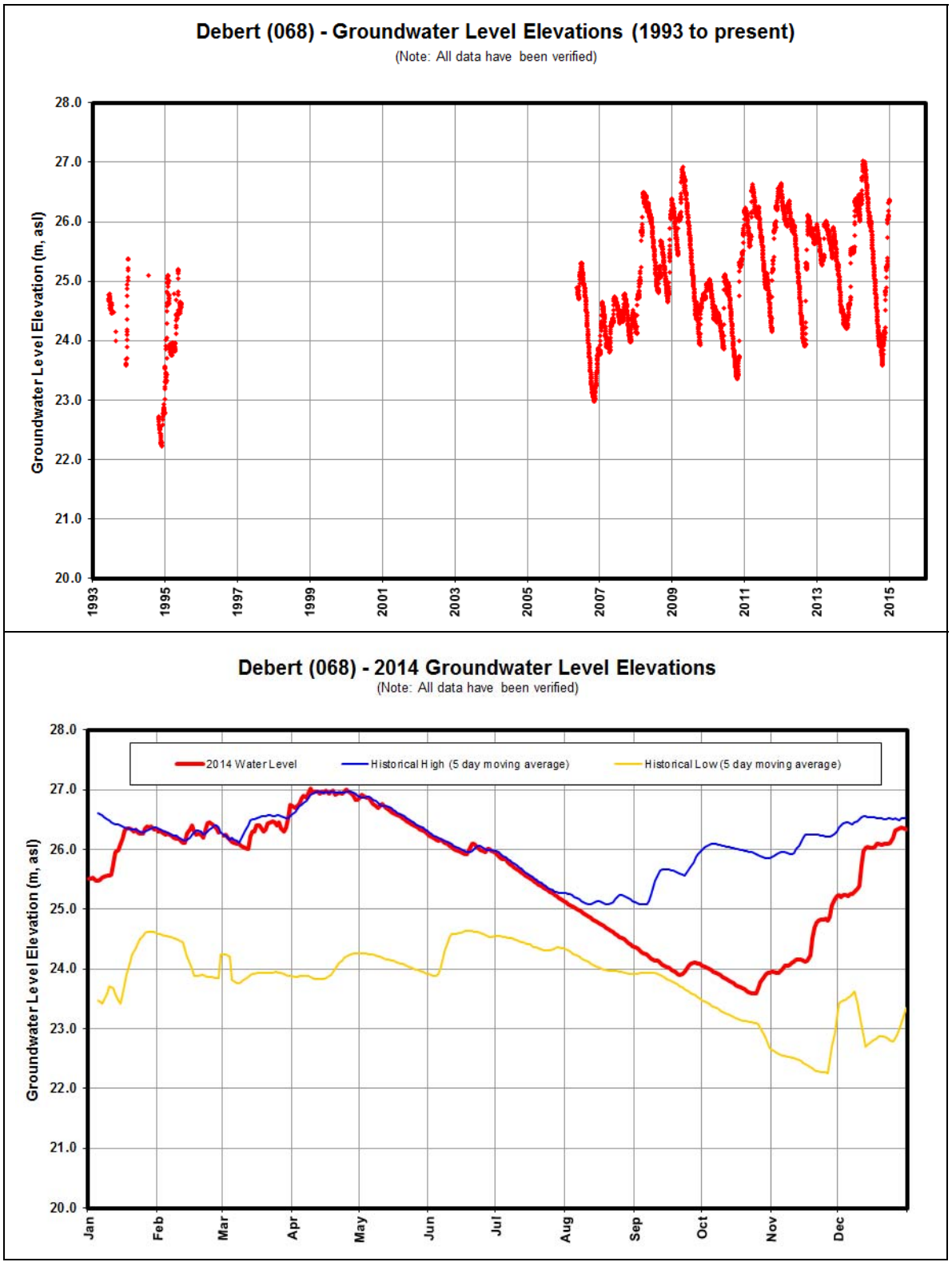


Figure B.22: Debert (068) Groundwater Level Elevations

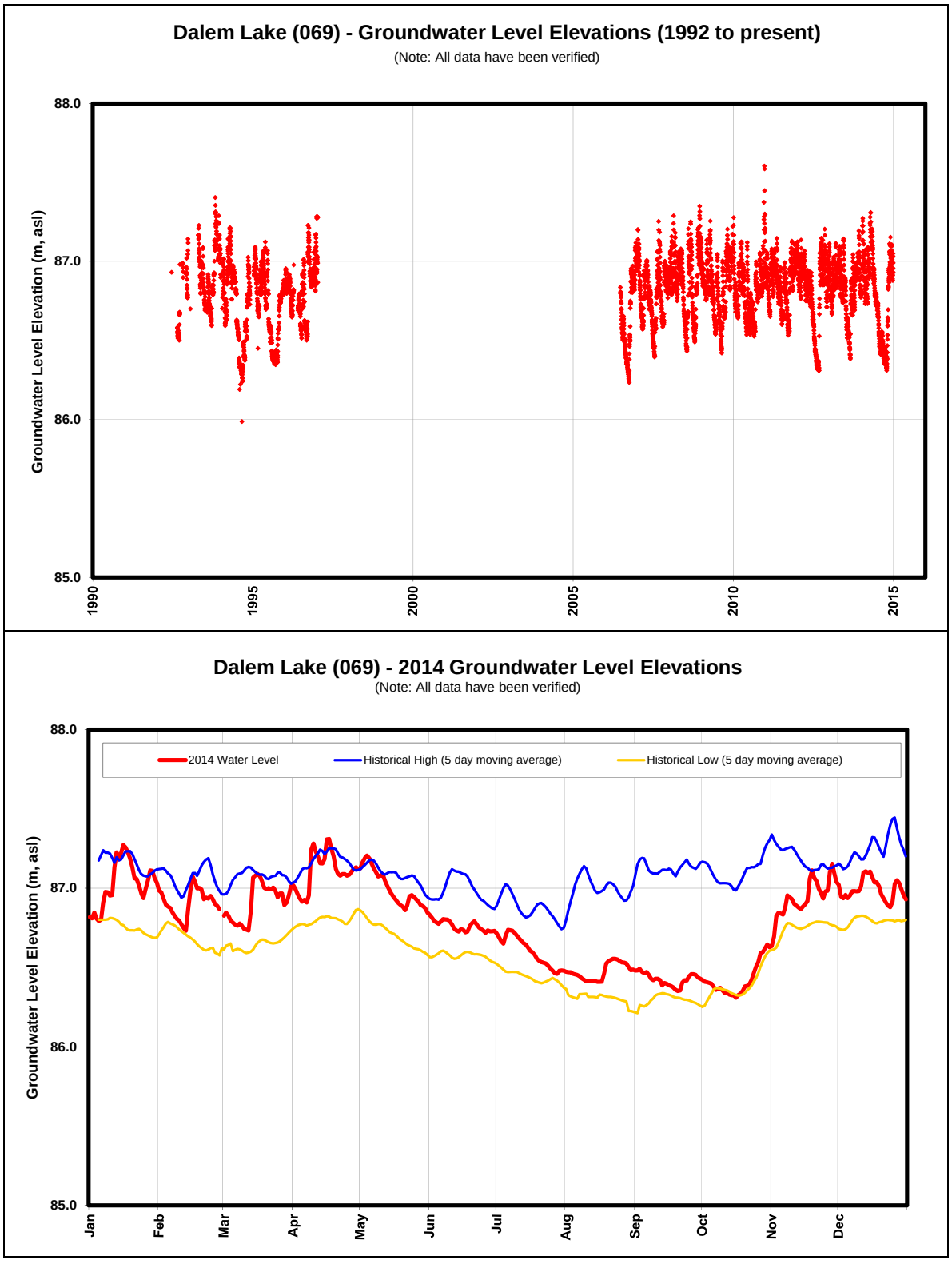


Figure B.23: Dalem Lake (069) Groundwater Level Elevations

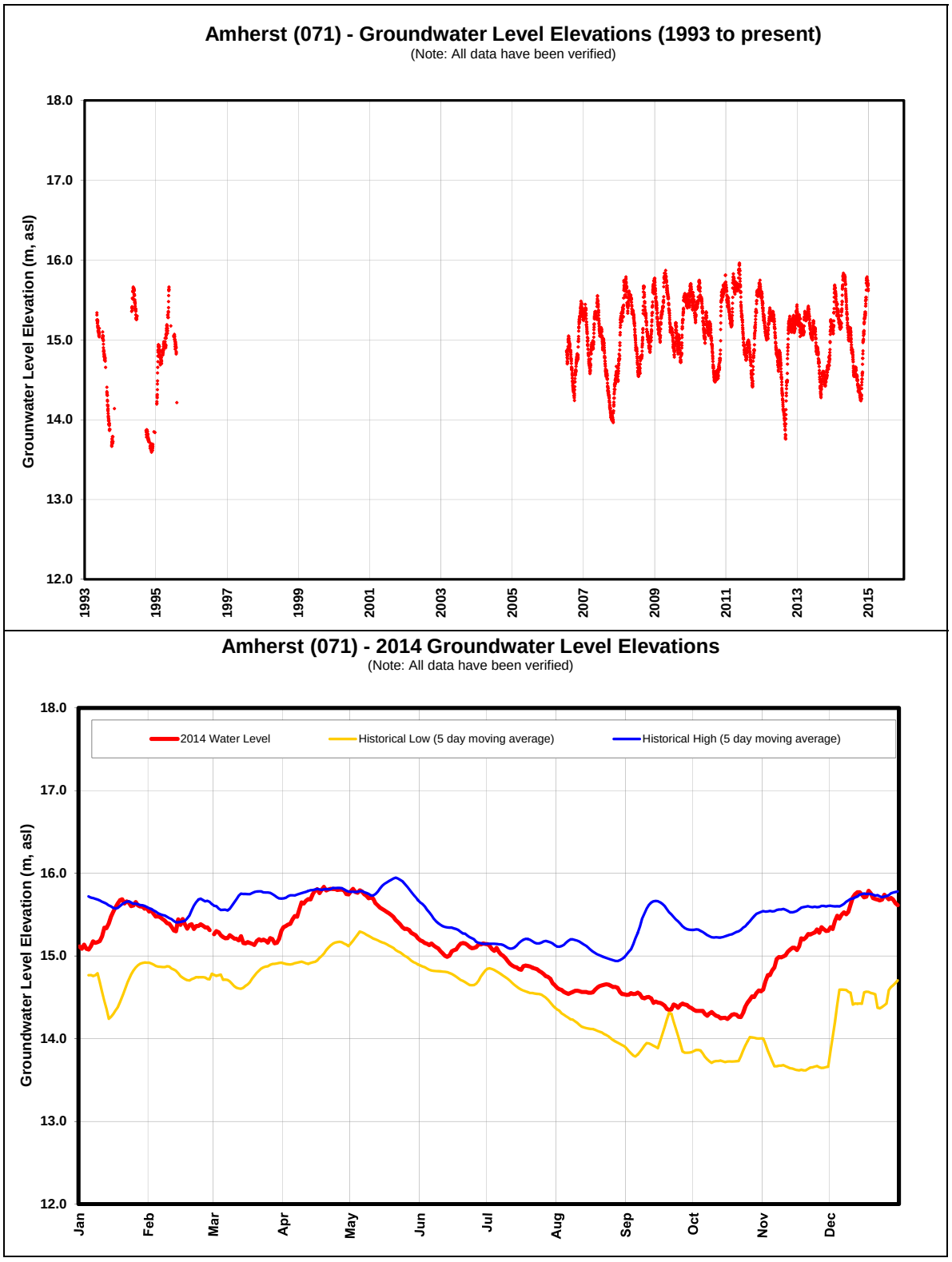


Figure B.24: Amherst (071) Groundwater Level Elevations

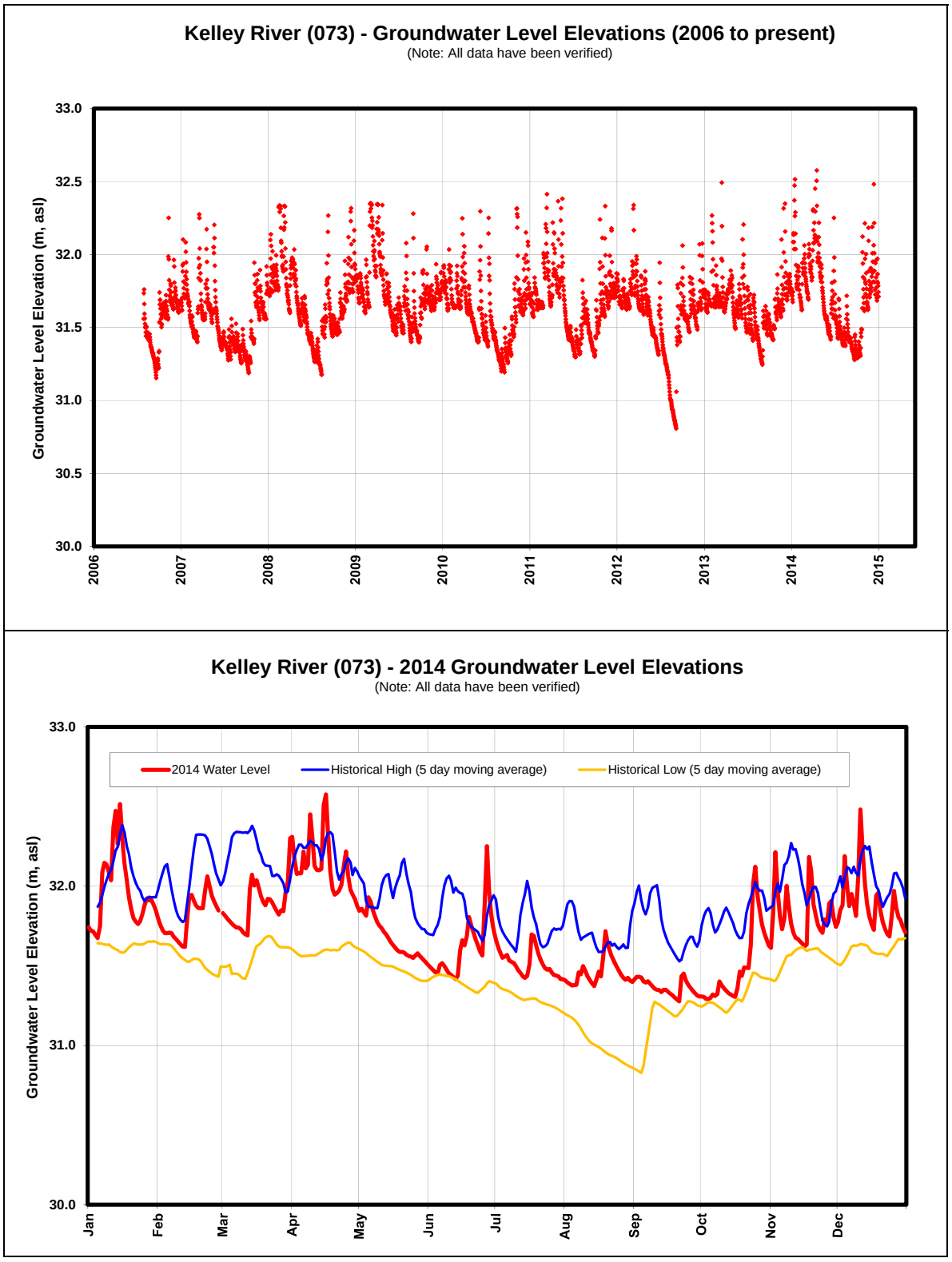


Figure B.25: Kelley River (073) Groundwater Level Elevations

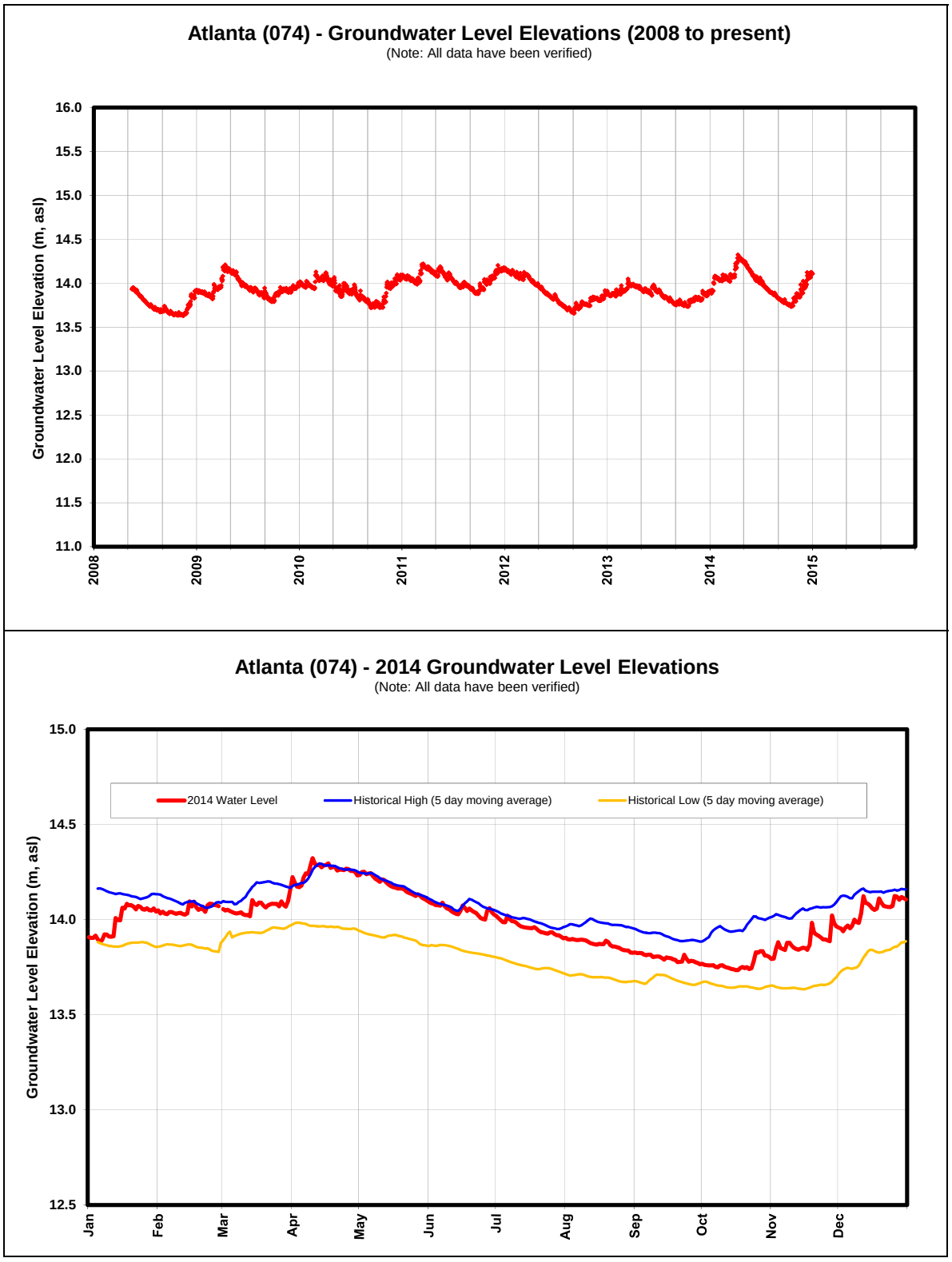


Figure B.26: Atlanta (074) Groundwater Level Elevations

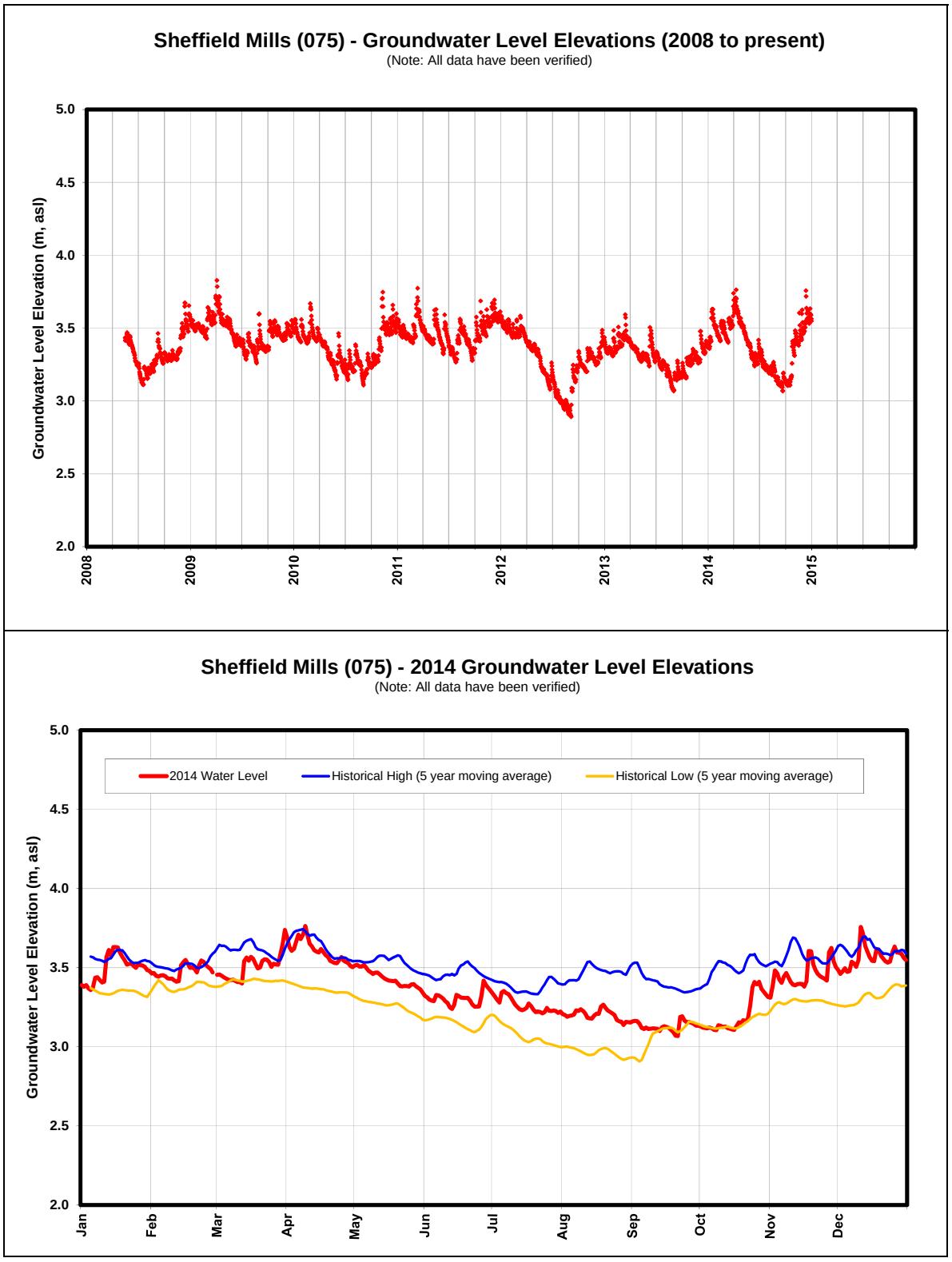


Figure B.27: Sheffield Mills (075) Groundwater Level Elevations

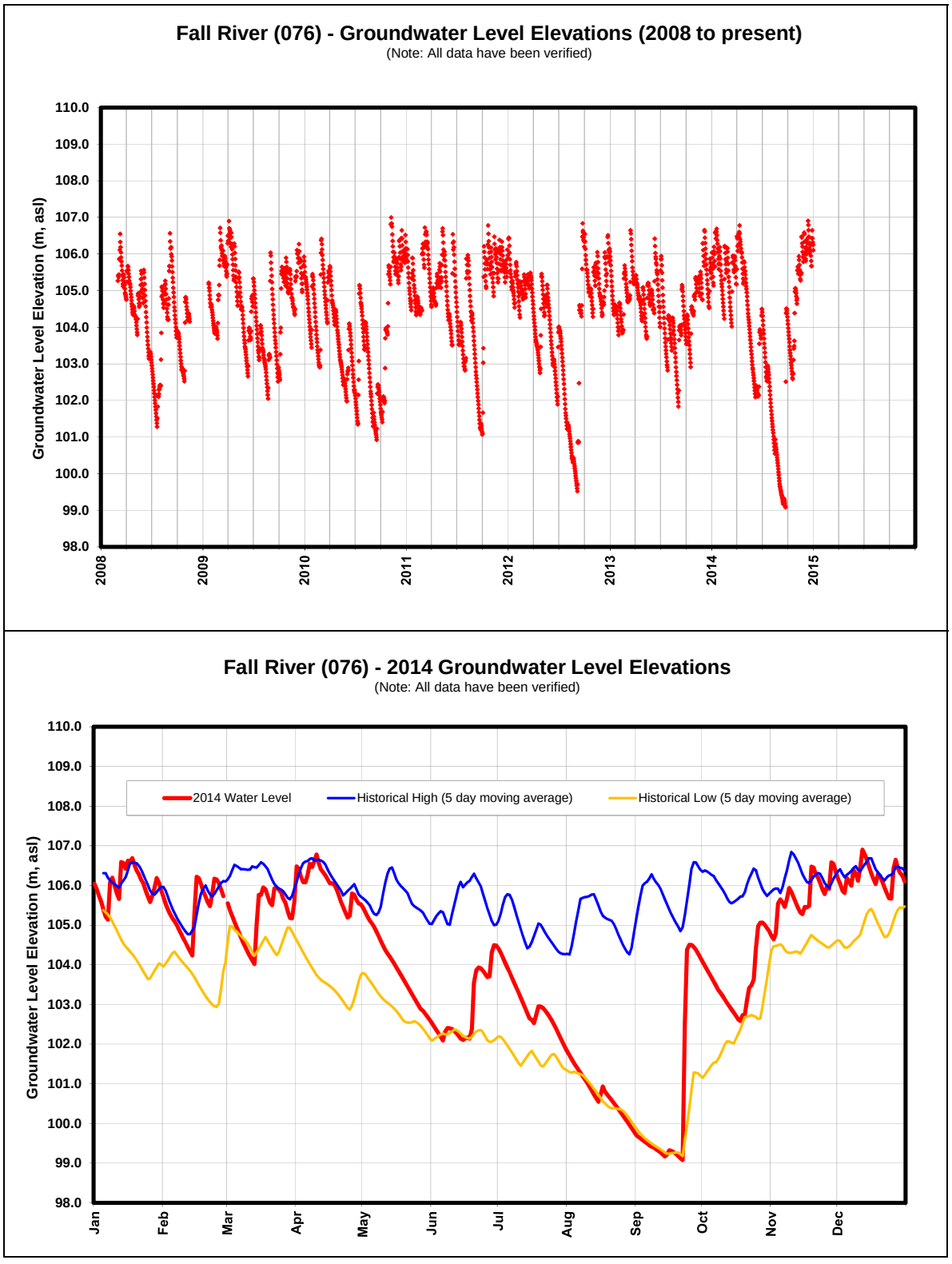


Figure B.28: Fall River (076) Groundwater Level Elevations

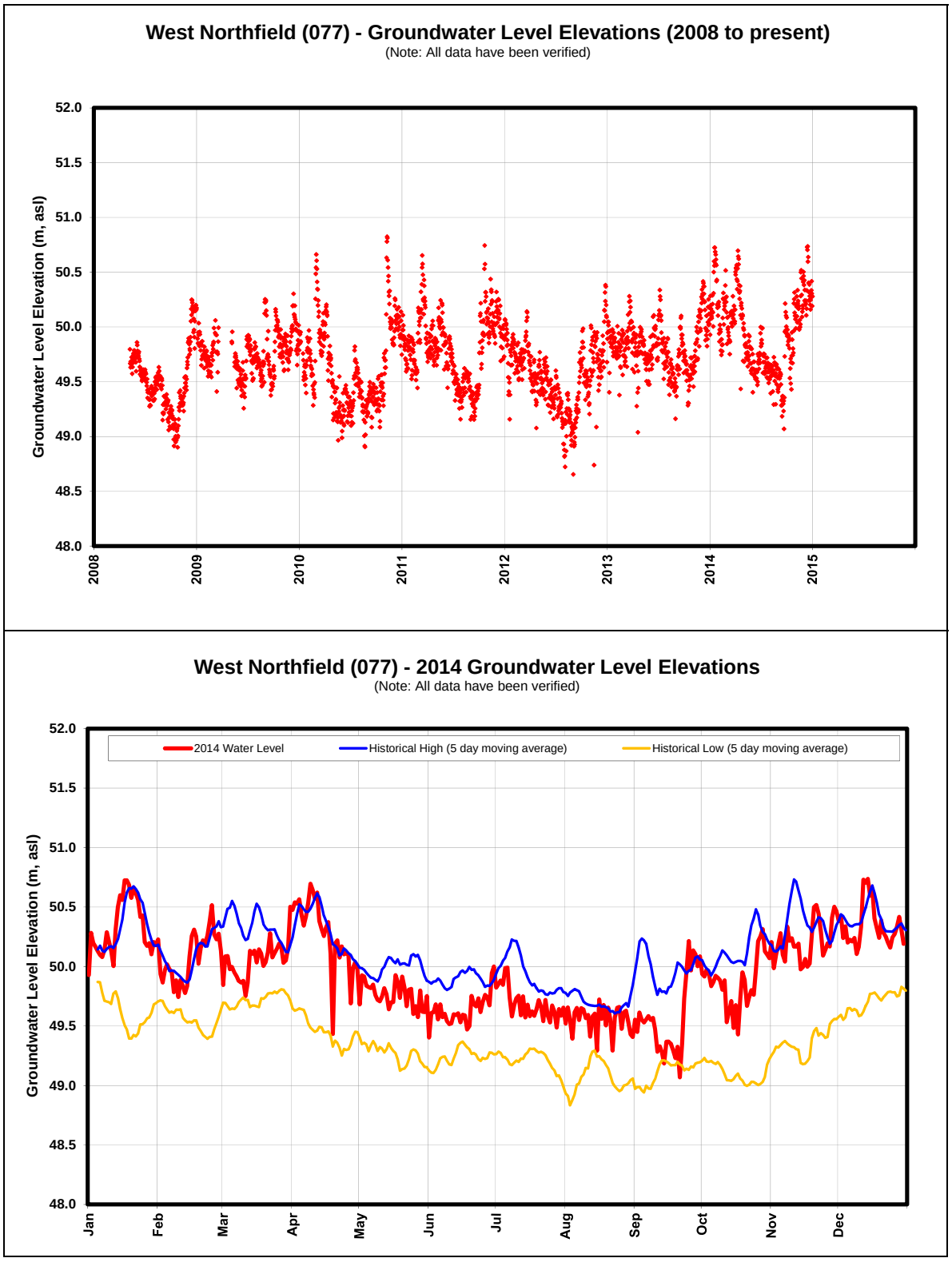


Figure B.29: West Northfield (077) Groundwater Level Elevations

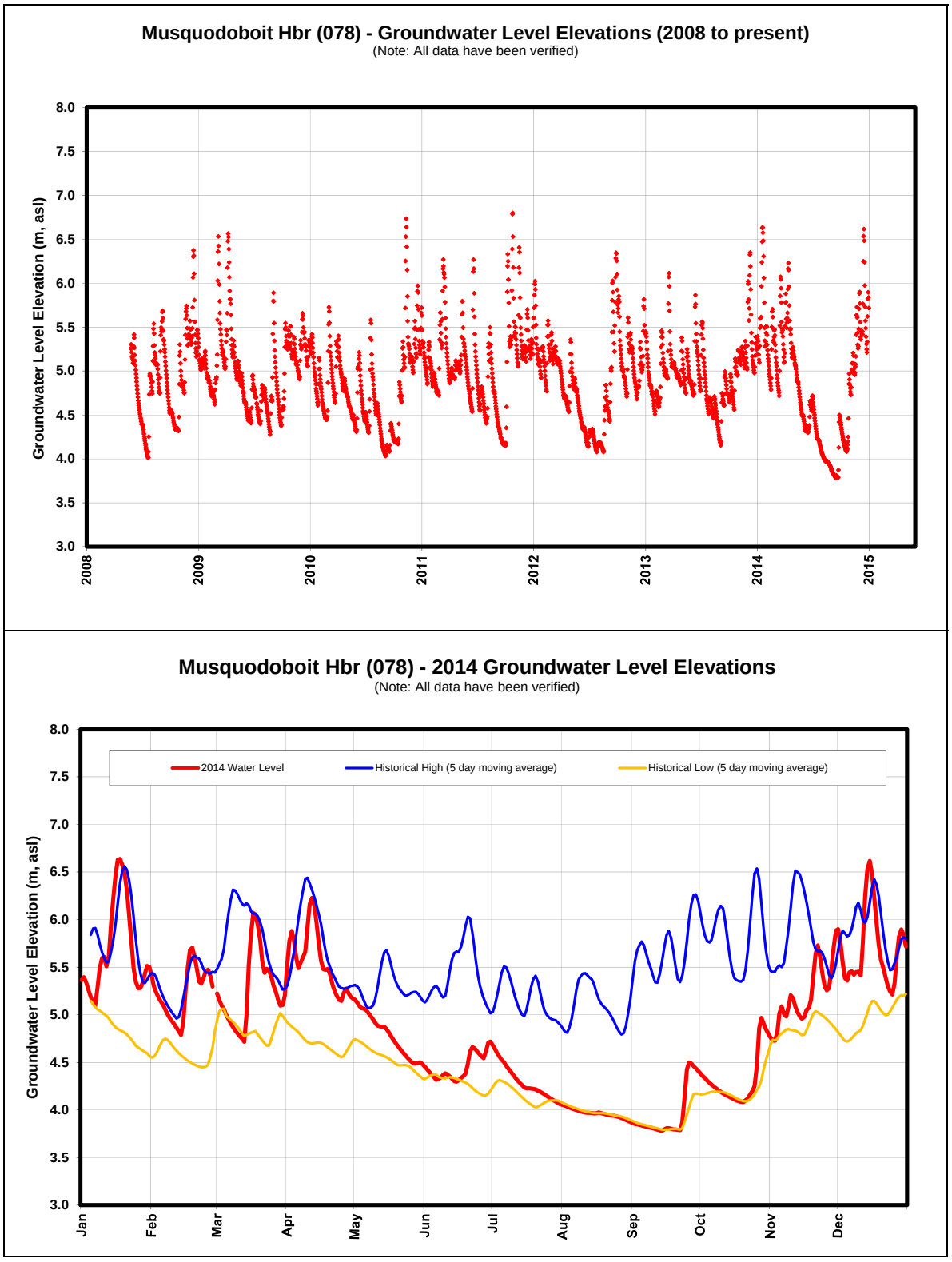


Figure B.30: Musquodoboit Harbour (078) Groundwater Level Elevations

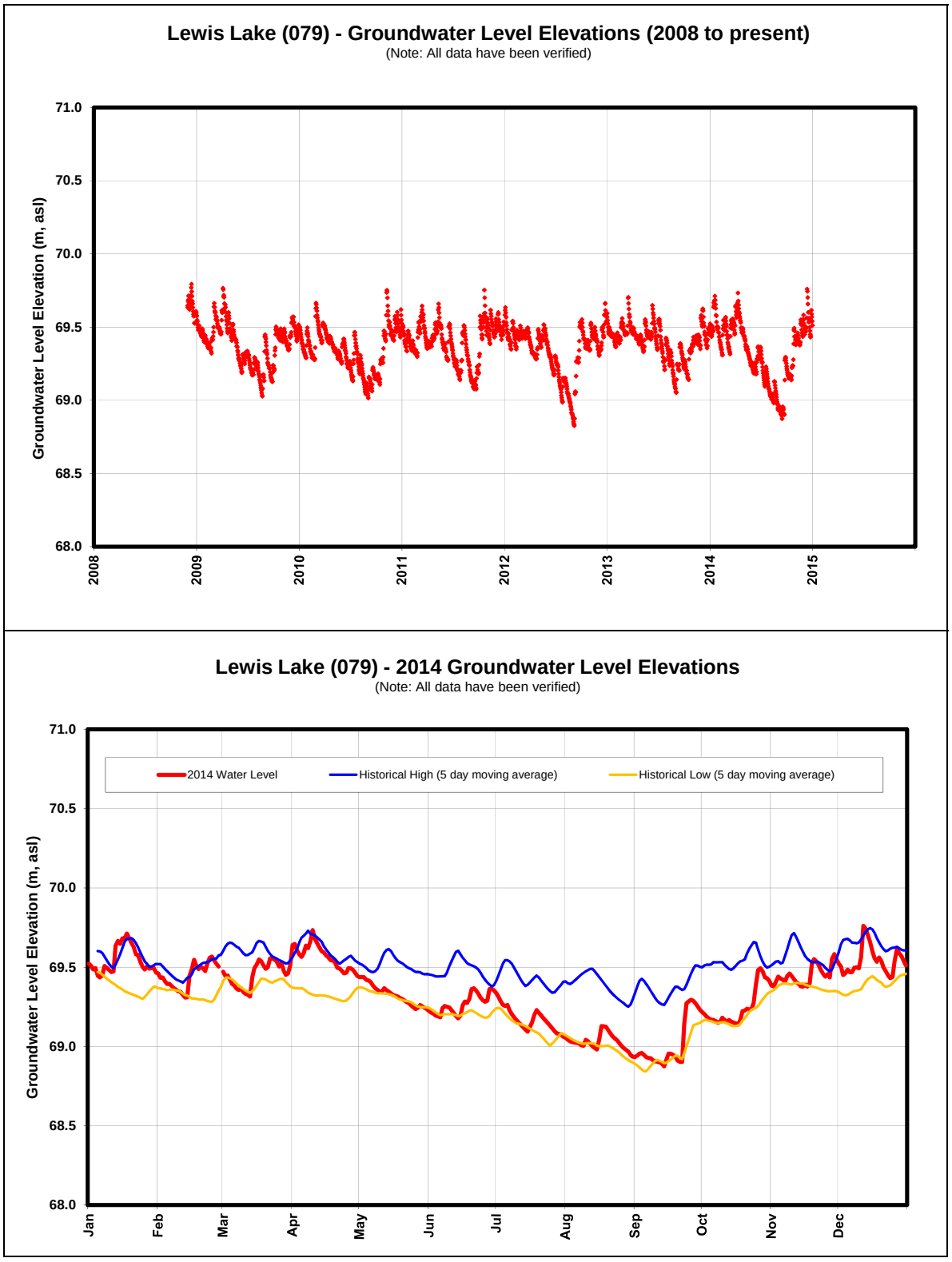


Figure B.31: Lewis Lake (079) Groundwater Level Elevations

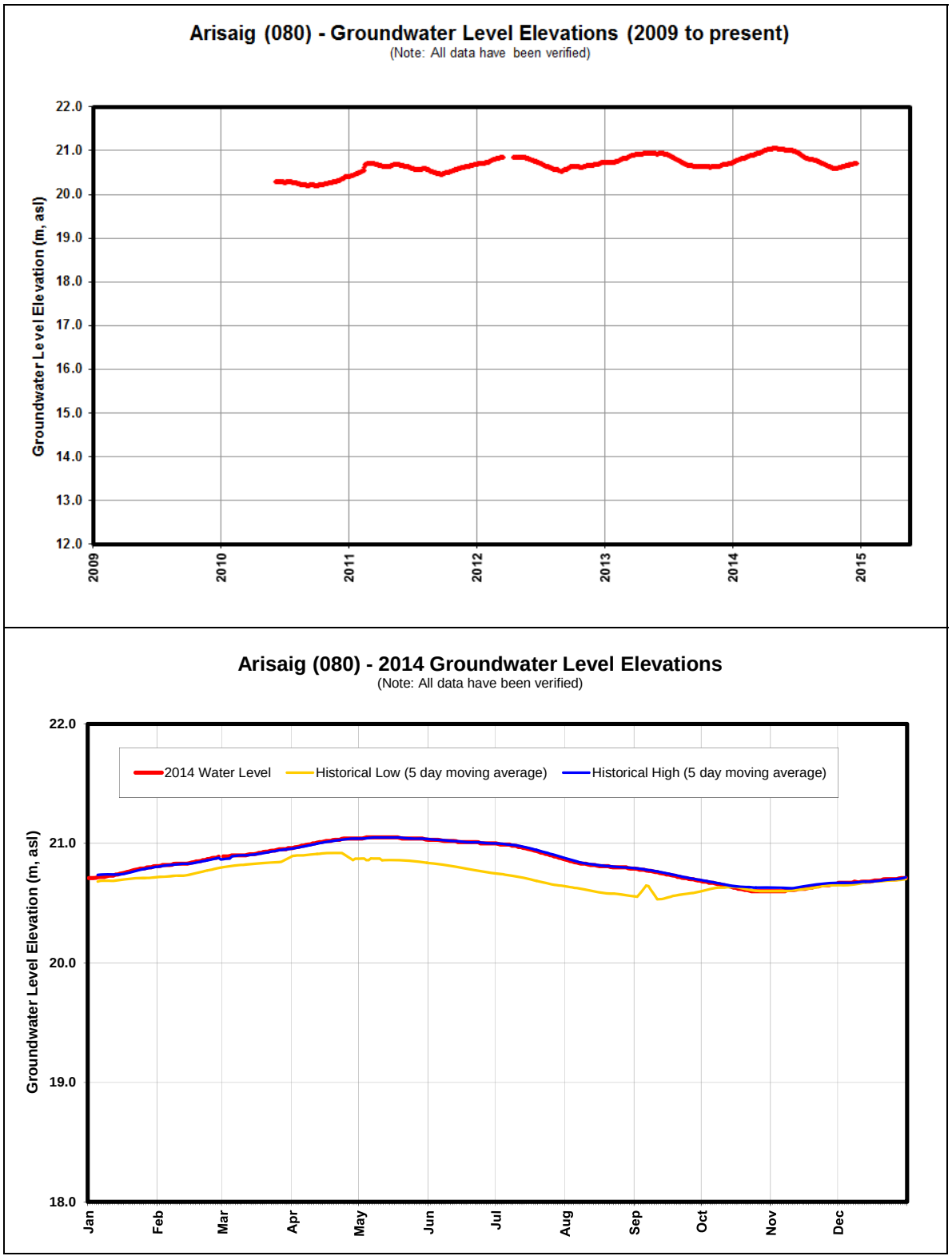


Figure B.32: Arisaig (080) Groundwater Level Elevations

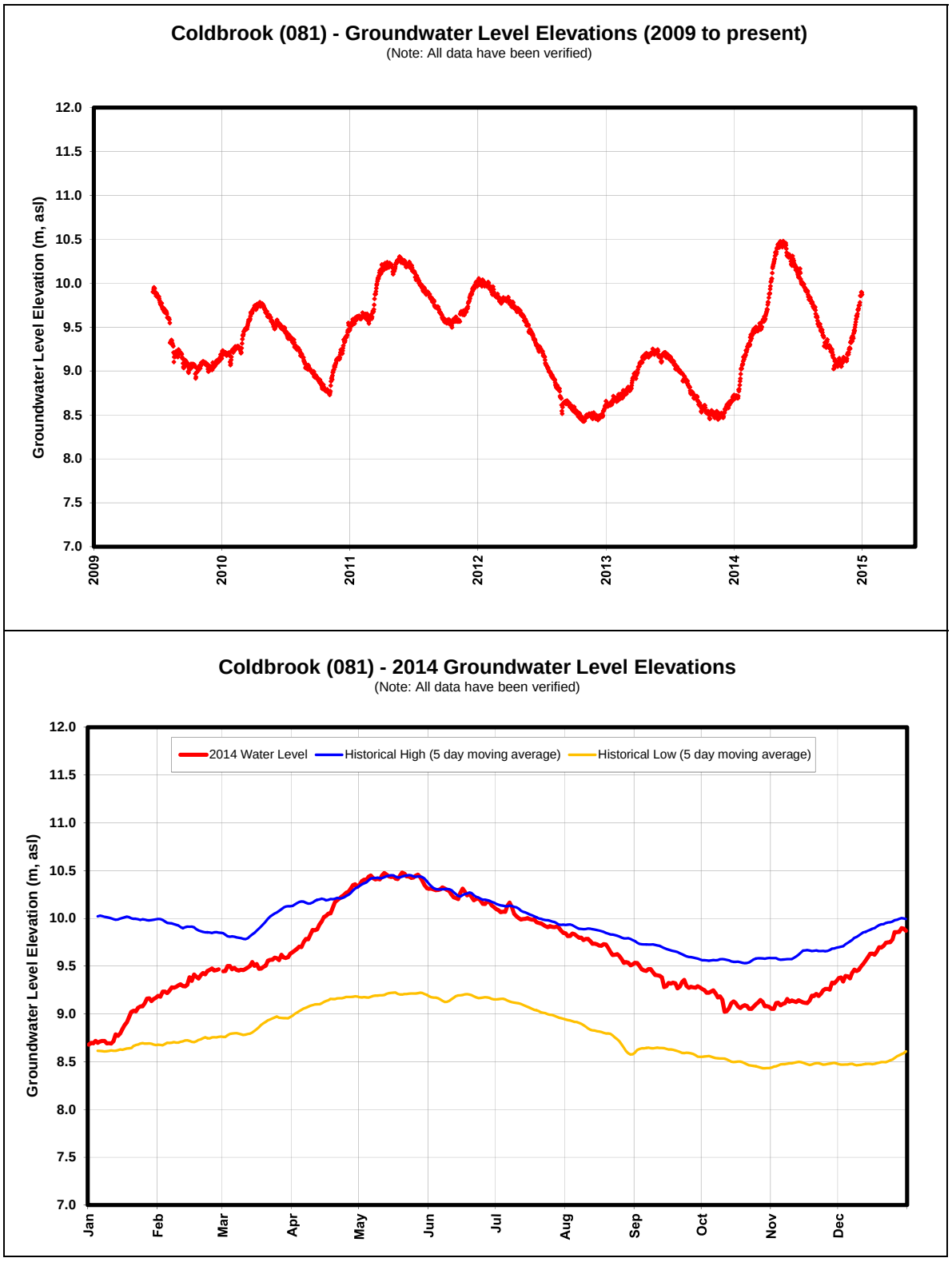


Figure B.33: Coldbrook (081) Groundwater Level Elevations

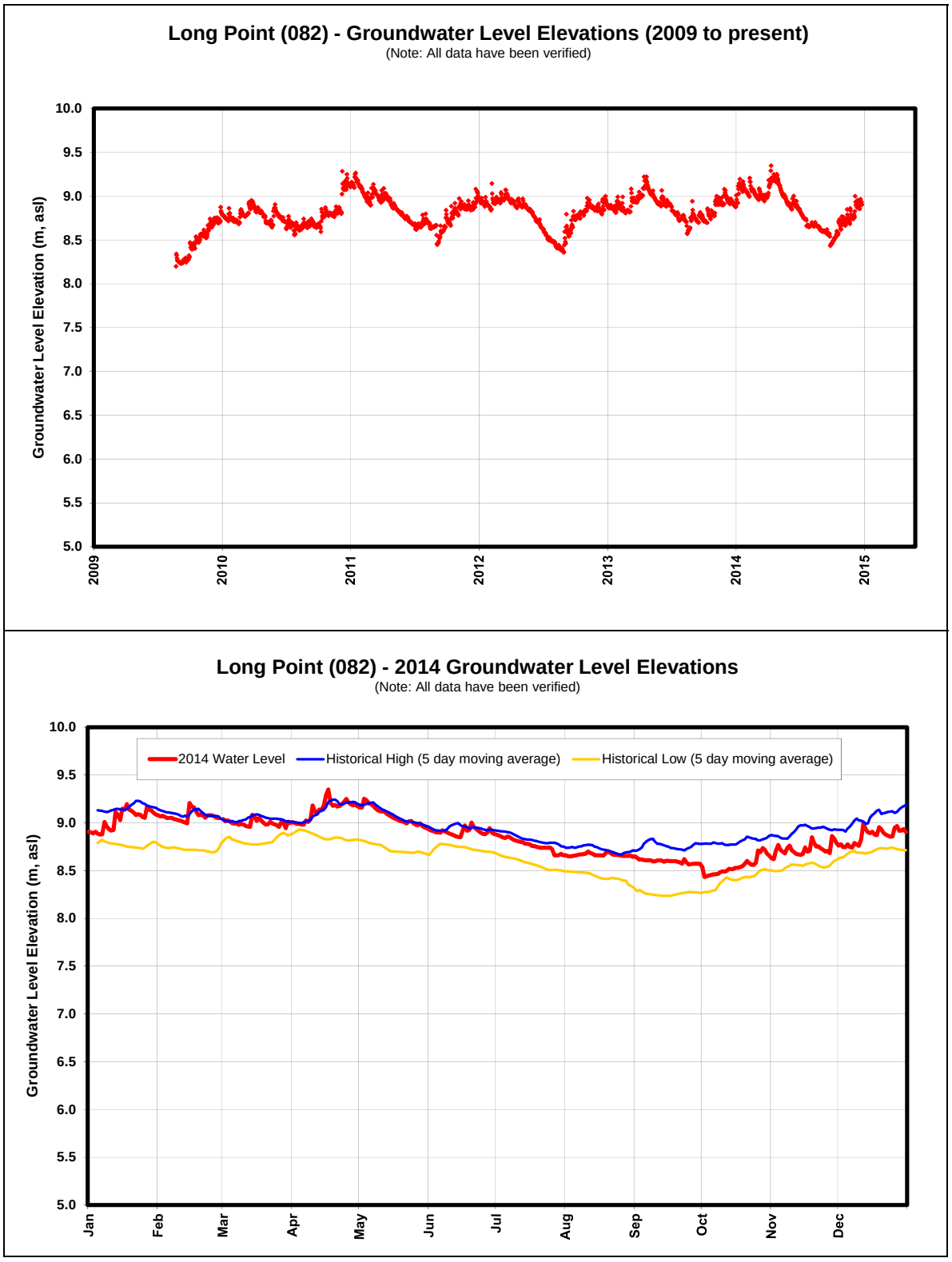


Figure B.34: Long Point (082) Groundwater Level Elevations

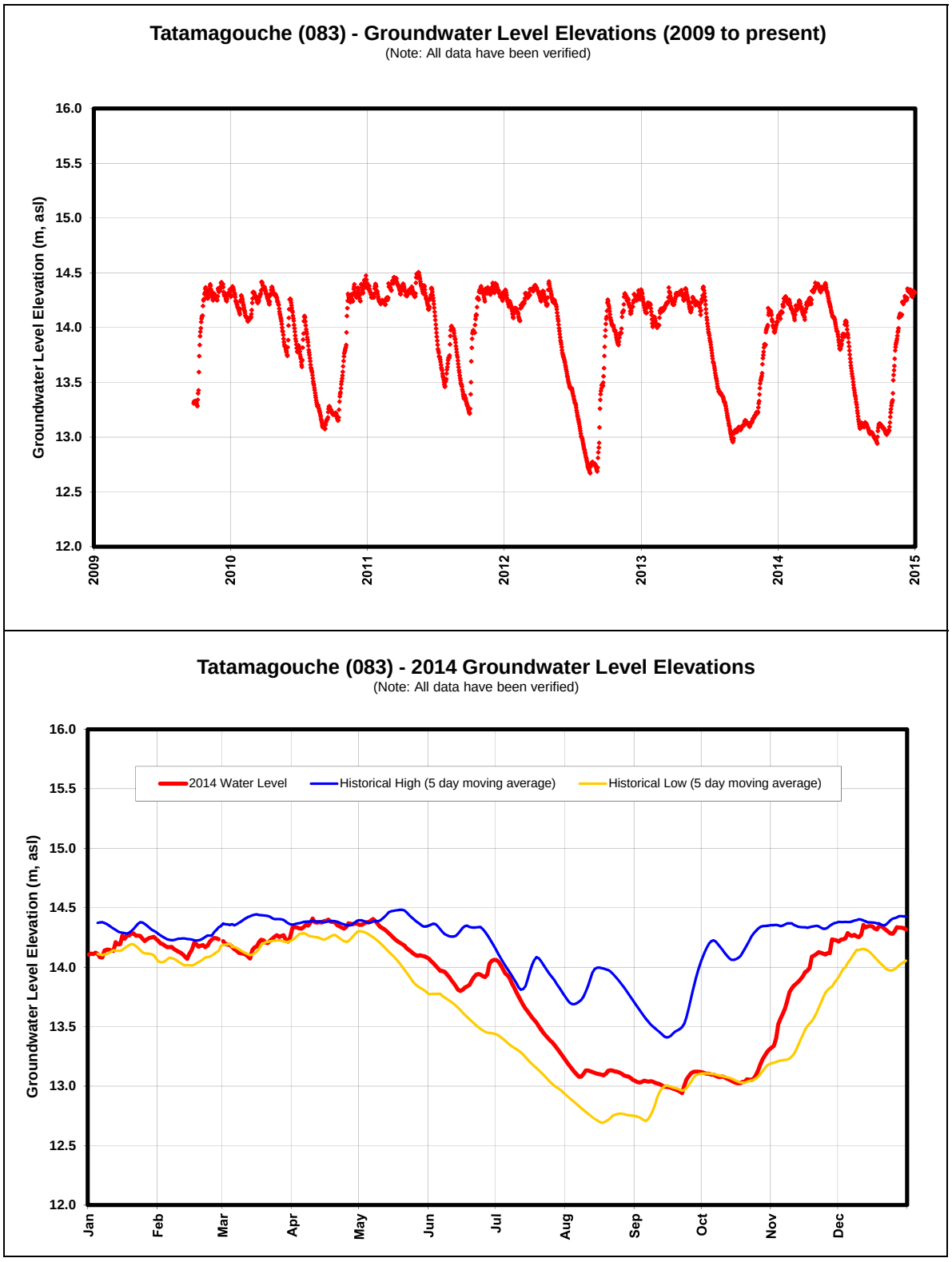


Figure B.35: Tatamagouche (083) Groundwater Level Elevations

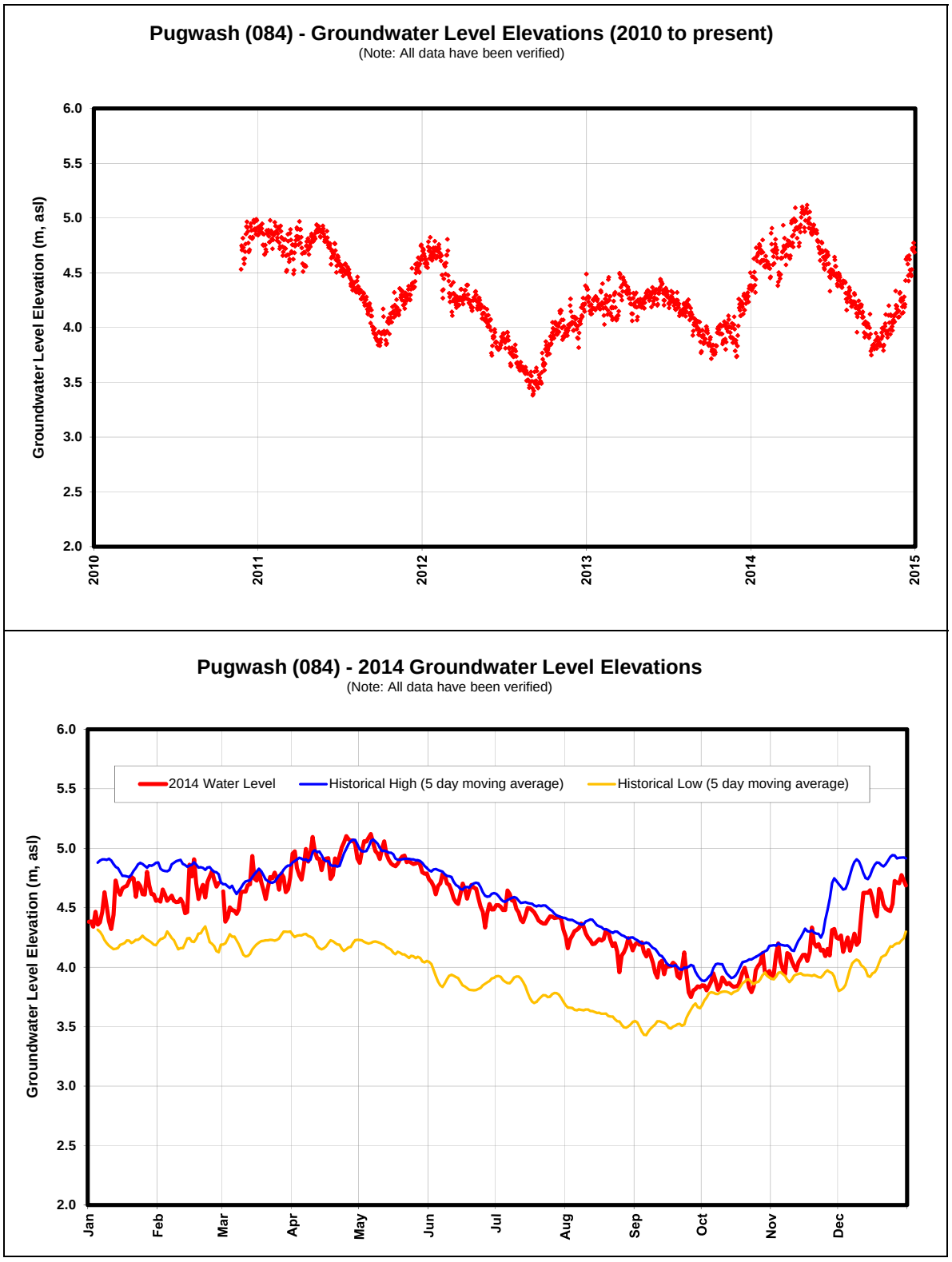


Figure B.36: Pugwash (084) Groundwater Level Elevations

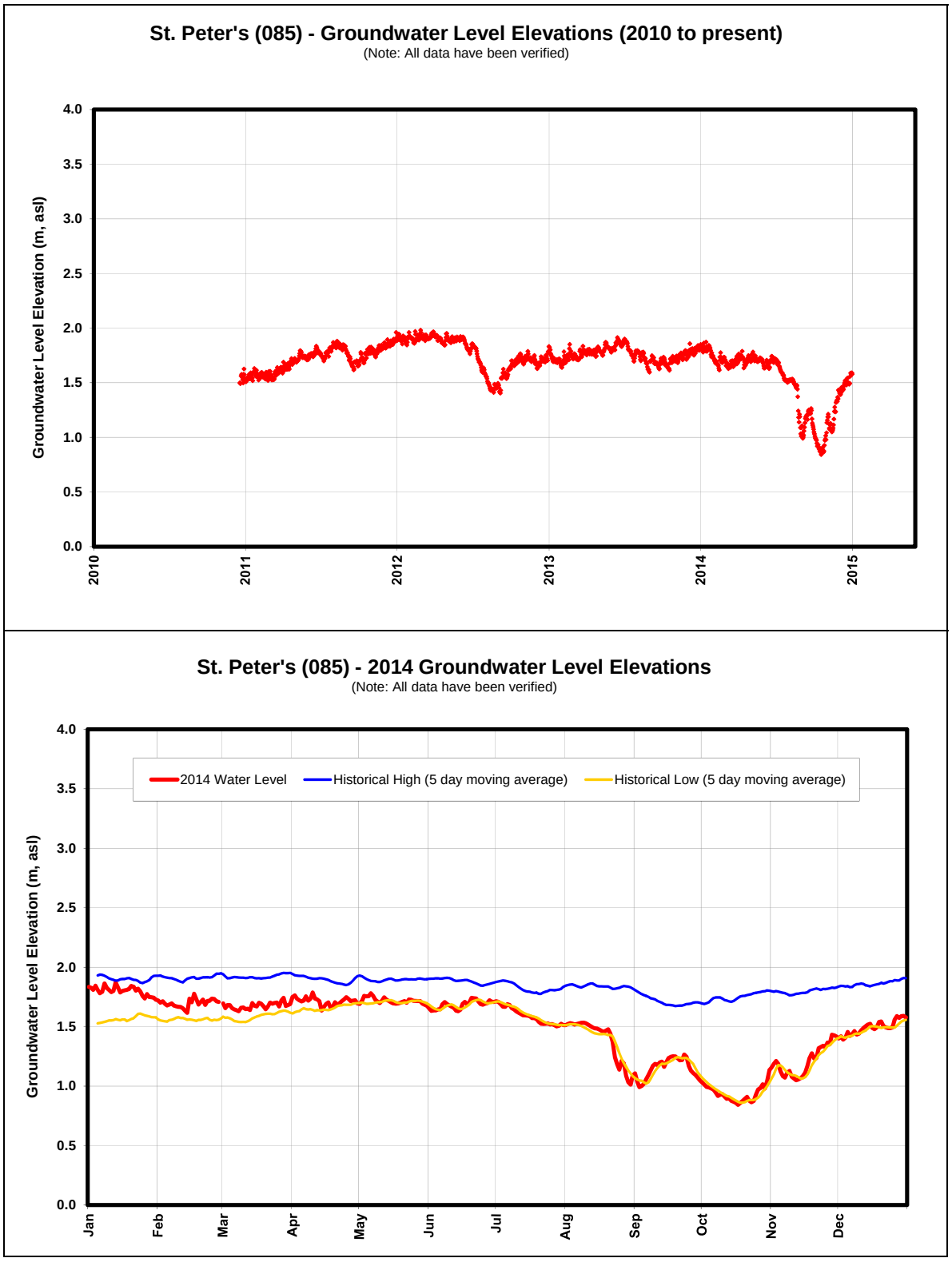


Figure B.37: St. Peter's (085) Groundwater Level Elevations

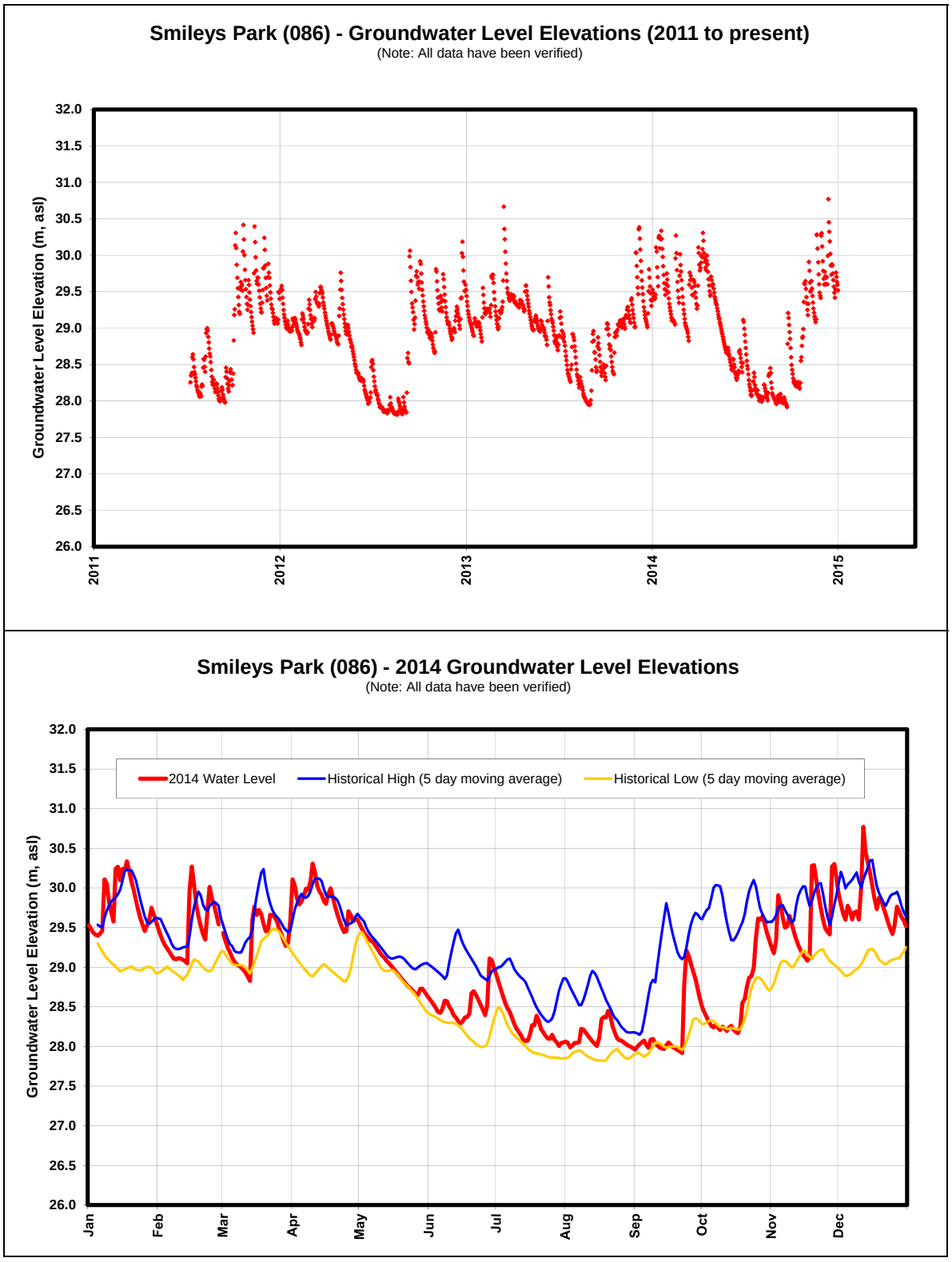


Figure B.38: Smileys Park (086) Groundwater Level Elevations

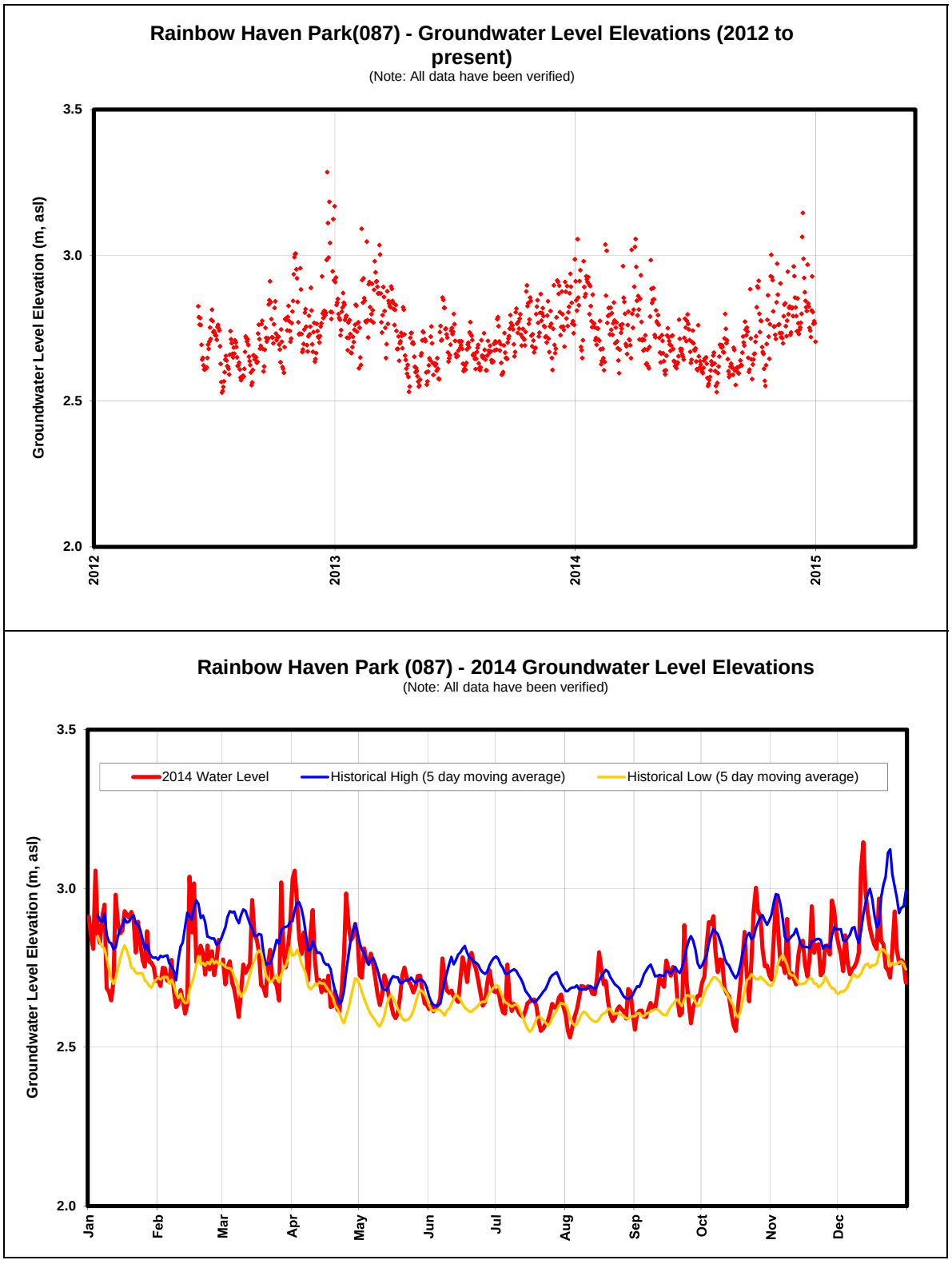


Figure B.39: Rainbow Haven (087) Groundwater Level Elevations

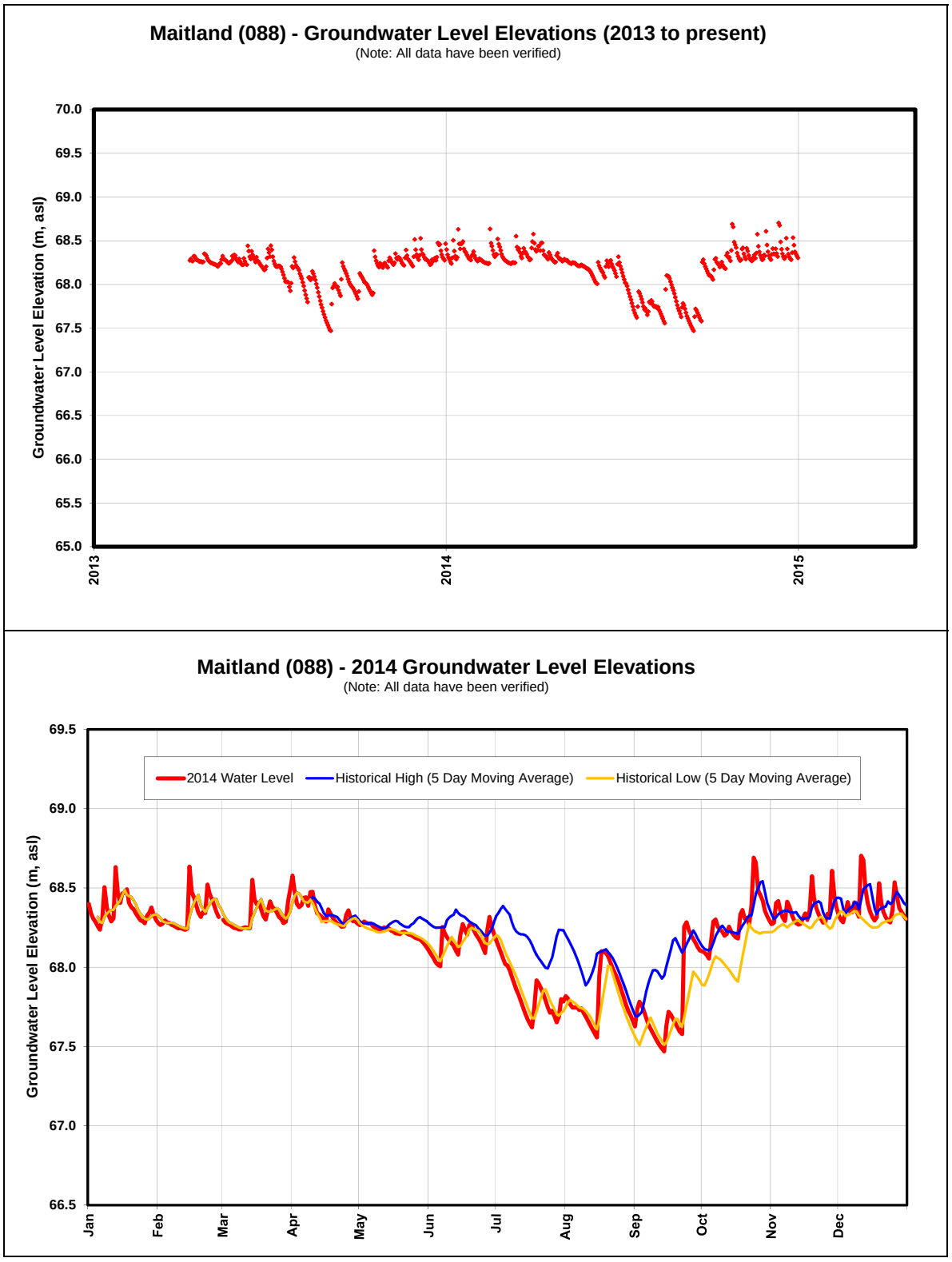


Figure B.40: Maitland (088) Groundwater Level Elevations

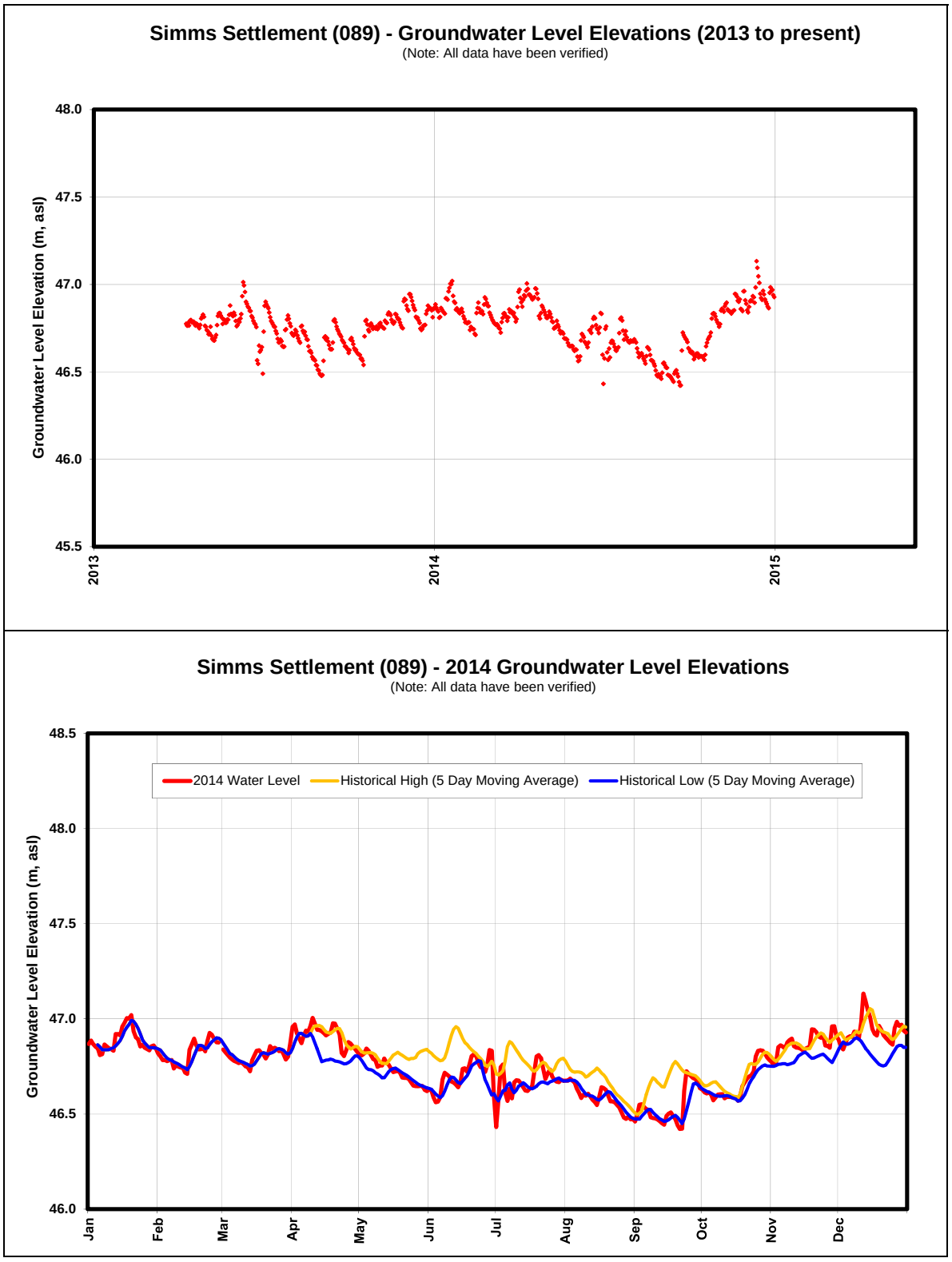


Figure B.41: Simms Settlement (089) Groundwater Level Elevations

APPENDIX C
GROUNDWATER CHEMISTRY RESULTS

Table C1. Summary of Parameters Tested at Each Well

Observation Well		General Chemistry	Metals	VOC	Pesticides	Tritium	Perchlorate
Greenwood (003)	23-Nov-2005	✓	✓	✓	✓	✓	✓
	18-Dec-2008	✓	✓	✓	✓		
	6-Jul-2011	✓	✓	✓	✓		
Fraser Brook (004)	10-Dec-2004	✓	✓	✓	✓		✓
	3-Dec-2008	✓	✓	✓	✓		
Wilmot (005)	29-Nov-2006	✓	✓	✓			
	12-May-2010	✓	✓	✓	✓		
Murray Siding (007)	22-Nov-2011	✓	✓	✓	✓		
Wolfville (010)	22-Dec-2004	✓	✓	✓	✓	✓	✓
	18-Dec-2008	✓	✓	✓	✓		
Truro (014)	N/A						
Monastery (028)	15-Dec-2006	✓	✓	✓	✓	✓	✓
	9-Dec-2008	✓	✓	✓	✓		
Point Aconi (030)	15-Sep-2005	✓	✓	✓	✓	✓	✓
	10-Dec-2008	✓	✓	✓	✓		
Lawrencetown (043)	18-Nov-2004	✓	✓				
	5-Dec-2008	✓	✓	✓	✓		
	16-Nov-2011	✓	✓	✓	✓		
Durham (045)	5-Oct-2005	✓	✓	✓	✓	✓	✓
	21-Jan-2009	✓	✓	✓	✓		
Kentville (048)	15-Jun-2005	✓	✓		✓	✓	✓
	7-Nov-2007	✓	✓	✓	✓		
	5-Jul-2011	✓	✓	✓	✓		
Sydney (050)	15-Sep-2005	✓	✓	✓	✓	✓	✓
	11-Dec-2008	✓	✓	✓	✓		
North Grant (054)	13-Dec-2006	✓	✓	✓	✓	✓	
	22-Jul-2008	✓	✓	✓	✓		
Stillwater (055)	13-Dec-2006	✓	✓	✓	✓	✓	
	4-Dec-2008	✓	✓	✓	✓		
Sheet Harbour (056)	5-Dec-2008	✓	✓	✓	✓		
Hayden Lake (059)	9-Jun-2005	✓	✓	✓	✓	✓	✓
	16-Dec-2008	✓	✓	✓	✓		
Meteghan (060)	12-Dec-2006	✓	✓	✓	✓	✓	
	17-Dec-2008	✓	✓	✓	✓		
Annapolis Royal (062)	9-Nov-2005	✓	✓	✓	✓	✓	✓
	26-Nov-2007	✓	✓	✓	✓		
	1-Jun-2010	✓	✓	✓	✓		
Hebron (063)	9-Jun-2005	✓	✓	✓	✓	✓	✓
	17-Dec-2008	✓	✓	✓	✓		
Margaree (064)	14-Dec-2006	✓	✓	✓	✓	✓	
	10-Dec-2008	✓	✓	✓	✓		
Ingonish (065)	25-Aug-2009	✓	✓	✓	✓		
Debert (068)	N/A						
Dalem Lake (069)	14-Dec-2006	✓	✓	✓	✓	✓	
	11-Dec-2008	✓	✓	✓	✓		
Amherst (071)	16-Dec-2006	✓	✓	✓	✓	✓	
	8-Jan-2009	✓	✓	✓	✓		
Kelley River (073)	12-Jan-2007	✓	✓	✓	✓	✓	
	9-Jun-2009	✓	✓	✓	✓		
Atlanta (074)	3-Sep-2007	✓	✓	✓	✓		
	8-Jun-2010	✓	✓	✓	✓		
Sheffield Mills (075)	10-Sep-2007	✓	✓	✓	✓		
	9-Jun-2010	✓	✓	✓	✓		
Fall River (076)	20-May-2008	✓	✓	✓	✓		
West Northfield (077)	12-Jun-2008	✓	✓	✓	✓		
Musquodoboit Hbr (078)	22-May-2008	✓	✓	✓	✓		
Lewis Lake (079)	31-Jul-2008	✓	✓	✓	✓		
Arisaig (080)	8-Sep-2009	✓	✓	✓	✓		
Coldbrook (081)	8-Aug-2009	✓	✓	✓	✓		
Long Point (082)	12-Aug-2009	✓	✓	✓	✓		
Tatamagouche (083)	21-Jul-2008	✓	✓	✓	✓		
Pugwash (084)	8-Dec-2010	✓	✓				
St Peters (085)	19-Jul-2011	✓	✓	✓	✓		
Smiley's Park (086)	8-Oct-1993	✓	✓				
Rainbow Haven (087)	5-Jun-2012	✓	✓	✓			
Maitland (088)	6-Jul-1994	✓	✓				
Simms Settlement (089)	20-Aug-1975	✓	✓				

Table C2: General Chemistry and Metal Results

Parameter	Units	Drinking Water Guideline	Detection Limit	Greenwood (003)			Fraser Brook (004)		Wilmot (005)		Murray Siding (007)	Wolfville (010)		Monastery (028)		Point Aconi (030)		Lawrencetown (043)		
				23-Nov-2005	18-Dec-2008	6-Jul-2011	10-Dec-2004	3-Dec-2008	29-Nov-2006	12-May-2010	22-Nov-2011	22-Dec-2004	18-Dec-2008	15-Dec-2006	9-Dec-2008	15-Sep-2005	10-Dec-2008	18-Nov-2004	5-Dec-2008	16-Nov-2011
General Chemistry																				
Total Alkalinity (Total as CaCO3)	mg/L	-	5	ND	ND	6	74	71	16	27	69	25	10	240	220	140	130	82	82	90
Chloride (Cl)	mg/L	250 AO	1	6	3	2	5	5	22	14	46	78	87	31	24	19	11	150	180	170
Colour	TCU	15 AO	5	5	7	ND	ND	ND	ND	ND	ND	ND	14	ND	ND	ND	ND	ND	ND	ND
Hardness (CaCO3)	mg/L	-	-	10	5	3	79.1	75	180	100	86	101	67	120	95	140	160	98.9	100	120
Nitrate + Nitrite	mg/L	10	0.05	ND	0.12	0.11	ND	1.2	**30**	**17**	0.93	1.9	1.5	ND	ND	ND	1.3	ND	ND	ND
Nitrite (N)	mg/L	1	0.01	ND	ND	ND	ND	ND	0.02	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate (N)	mg/L	10	0.05	ND	0.12	0.11	ND	1.2	**30**	**17**	0.93	1.9	1.5	ND	ND	ND	1.3	ND	ND	ND
Nitrogen (Ammonia Nitrogen)	mg/L	-	0.05	0.22	ND	ND	ND	ND	ND	ND	ND	ND	0.63	0.14	0.12	ND	ND	0.19	0.12	0.09
Total Organic Carbon (C)	mg/L	-	0.5	2	0.8	0.7	ND	0.5	ND	ND	ND	ND	1.6	2.1	1	ND	1.3	ND	0.5	ND
Orthophosphate (P)	mg/L	-	0.01	0.05	ND	ND	0.02	0.03	0.07	0.08	ND	ND	0.01	ND	ND	ND	ND	ND	ND	ND
pH	pH	6.5 - 8.5 OV	-	**6.41**	**6.49**	6.6	7.6	8.05	6.7	7.28	7.22	6.5	6.53	8.14	8.23	8.01	7.97	7.3	8.14	8.06
Reactive Silica (SiO2)	mg/L		0.5	11	11	11	7.8	7.1	7.9	7.7	11	17	14	11	13	7.6	9.2	7.3	8.5	7.9
Sulphate (SO4)	mg/L	500 AO	2	9	5	2	5	4	27	21	6	12	11	72	59	10	21	ND	ND	3
Turbidity	NTU	1 OV	0.1	**39**	**5.4**	**15**	0.2	0.3	**50**	0.2	**2.3**	0.9	**68**	0.2	0.3	ND	0.2	**1**	0.2	ND
Conductivity	uS/cm	-	-	79	41	1100	166	160	410	280	290	382	370	660	640	380	340	695	710	730
Anion Sum	me/L	-	-	0.372	0.18	0.22	1.73	1.73	3.65	2.56	2.89	3.08	2.99	7.13	6.36	3.6	3.38	5.92	6.77	6.68
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	1	ND	ND	6	74	70	16	27	69	25	10	235	220	140	126	82	81	89
Calculated TDS	mg/L	500 AO	1	40	28	28	94	95	275	182	165	196	201	417	365	207	194	341	375	370
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	4	1	1	ND	1	ND
Cation Sum	me/L	-	-	0.549	0.38	0.34	1.78	1.71	3.92	2.46	2.82	3.3	3.4	7.51	6.28	4.11	3.66	6.19	6.39	6.39
Ion Balance (% Difference)	%	-	-	19.2	35.7	21.4	1.56	0.58	3.58	1.99	1.23	3.3	6.42	2.61	0.63	6.56	3.98	2.27	2.89	2.22
Langelier Index (@ 20C)	N/A	-	-	-	-	-4.02	-0.68	-0.188	-1.75	-1.12	-0.949	-2.12	-2.59	0.553	0.539	0.41	0.423	-0.85	0.039	0.046
Langelier Index (@ 4C)	N/A	-	-	-	-	-4.27	-1.08	-0.44	-2	-1.37	-1.2	-2.52	-2.84	0.304	0.29	0.16	0.173	-1.25	-0.21	-0.202
Saturation pH (@ 20C)	N/A	-	-	-	-	10.6	8.28	8.24	8.45	8.4	8.17	8.62	9.12	7.59	7.69	7.6	7.55	8.15	8.1	8.01
Saturation pH (@ 4C)	N/A	-	-	-	-	10.9	8.68	8.49	8.7	8.65	8.42	9.02	9.37	7.84	7.94	7.85	7.8	8.55	8.35	8.26
Calcium (Ca)	mg/L	-	0.1	2.2	1.2	0.815	19.3	18	56	36	23	27.4	19	31	25	44	55	26.1	27	30
Magnesium (Mg)	mg/L	-	0.1	1	0.4	0.217	7.5	7.3	8.5	3.6	6.87	7.8	4.6	9.3	7.7	6.3	5.8	8.2	8.8	10.5
Phosphorus (P)	mg/L	-	0.1	ND	ND	0.136	ND	ND	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium (K)	mg/L	-	0.1	2.4	1.7	1.54	1	1	3.1	2.8	1.25	2	1.9	2.3	3.6	4	1	1.9	1.9	1.9
Sodium (Na)	mg/L	200 AO	0.1	3.6	2.1	2.33	4	4.3	7.5	6.8	24.3	28.3	29	120	98	30	10	95.4	98	91.3
Bromide (Br)	mg/L	-	0.5	ND	ND	ND	0.03	ND	-	ND	ND	0.06	ND	ND	ND	-	ND	0.53	ND	ND
Fluoride (F)	mg/L	1.5	0.1	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	0.3	ND	-	ND	0.11	0.1	ND
Metals																				
Aluminum (Al)	ug/L	-	10	47	18	20.3	ND	ND	ND	13	6.5	ND	ND	ND	ND	15	ND	ND	ND	10.2
Antimony (Sb)	ug/L	6	2	ND	ND	ND (1)	ND	ND	ND	ND	ND (1)	ND	ND	ND	0.78	ND	ND	ND	ND	ND (1)
Arsenic (As)	ug/L	10	2	2	ND	1.9	**14**	**15**	ND	ND	ND (1)	ND	ND	6	4.1	ND	ND	**56**	**58**	**65.7**
Barium (Ba)	ug/L	1000	5	59	25	11.7	5	6	89	53	56.3	69	46	25	25	40	18	26	41	38.7
Beryllium (Be)	ug/L	-	2	ND	ND	ND (1)	ND	ND	ND	ND	ND (1)	ND	ND	ND	ND	ND	ND	ND	ND	ND (1)
Bismuth (Bi)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Boron (B)	ug/L	5000	5	ND	ND	ND (50)	30	27	14	15	ND (50)	26	23	250	220	35	ND	93	110	100
Cadmium (Cd)	ug/L	5	0.3	ND	ND	0.032	ND	ND	ND	ND	0.041	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (Cr)	ug/L	50	2	ND	ND	1.6	ND	ND	ND	ND	ND (1)	ND	ND	ND	ND	ND	ND	ND	ND	ND (1)
Cobalt (Co)	ug/L	-	1	3	1	0.48	ND	ND	ND	ND	0.4	ND	2	ND	ND	ND	ND	ND	ND	ND (0.4)
Copper (Cu)	ug/L	1000 AO	2	3	ND	2.7	ND	ND	ND	10	ND	ND	ND	7	ND	6	ND	ND	ND	ND
Iron (Fe)	ug/L	300 AO	50	**8700**	**4300**	**4020**	ND	ND	ND	ND	**614**	230	**20000**	ND	ND	ND	ND	ND	ND	51
Lead (Pb)	ug/L	10	0.5	1.7	ND	0.97	ND	ND	2.3	0.7	ND	ND	ND	ND	ND	0.6	ND	ND	ND	ND
Manganese (Mn)	ug/L	50 AO	2	**140**	**84**	**70.2**	ND	ND	15	14	**92.8**	14	**1300**	42	48	**360**	7.9	16	32	26.9
Molybdenum (Mo)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	ND	ND	ND	ND	ND	ND
Mercury (Hg)	ug/L	1	0.01	-	ND	ND	-	ND	-	ND	0.018	-	ND	ND	ND	-	ND	-	ND	ND
Nickel (Ni)	ug/L	-	2	4	2	ND	ND	ND	3	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium (Se)	ug/L	50	2	ND	ND	ND (1)	ND	ND	ND	ND	ND (1)	ND	ND	ND	ND	ND	ND	ND	ND	ND (1)
Silver (Ag)	ug/L	-	0.5	ND	ND	ND (0.1)	ND	ND	ND	ND	ND (0.1)	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.1)
Strontium (Sr)	ug/L	-	5	9	ND	2.8	150	150	160	120	157	110	67	2400	2600	230	110	1100	1400	1380
Thallium (Tl)	ug/L	-	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tin (Sn)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Titanium (Ti)	ug/L	-	2	ND	ND	ND (5)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Uranium (U)	ug/L	20	0.1	0.2	ND	ND	1.5	1.4	ND	ND	ND	ND	ND	0.6	0.72	0.3	0.36	ND	ND	ND
Vanadium (V)	ug/L	-	2	ND	ND	ND	2	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc (Zn)	ug/L	5000 AO	5	87	60	34.3	ND	ND	7	24	5.2	ND	ND	34	ND	18	ND	ND	ND	10.6

Notes:
AO = Aesthetic Objective.
OV = Other Value - see Drinking Water Guidelines (Health Canada 2015) for details.
ND = not detected
ND( ) = not detected at the detection limit shown in brackets ( )
"-" = not tested
All guidelines are health-based MACs or IMACs, unless otherwise indicated.
Shaded values exceed guidelines.

Table C2: General Chemistry and Metal Results

Parameter	Units	Drinking Water Guideline	Detection Limit	Durham (045)		Kentville (048)			Sydney (050)		North Grant (054)		Stillwater (055)		Sheet Harbour (056)	Hayden Lake (059)		Meteghan (060)		An
				5-Oct-2005	21-Jan-2009	15-Jun-2005	7-Nov-2007	5-Jul-2011	15-Sep-2005	11-Dec-2008	13-Dec-2006	22-Jul-2008	13-Dec-2006	4-Dec-2008	5-Dec-2008	9-Jun-2005	16-Dec-2008	12-Dec-2006	17-Dec-2008	9-Nov-2005
General Chemistry																				
Total Alkalinity (Total as CaCO3)	mg/L	-	5	140	110	20	22	21	83	90	93	92	58	64	96	14	12	67	63	52
Chloride (Cl)	mg/L	250 AO	1	44	19	230	**270**	**290**	7	5	30	27	5	5	7	9.2	9	16	17	6
Colour	TCU	15 AO	5	ND	ND	ND	ND	8	ND	8	ND	ND	ND	ND	ND	ND	ND	6	ND	ND
Hardness (CaCO3)	mg/L	-	-	86	72	150	180	180	87	89	38	36	58	53	81	15	13	85	77	43
Nitrate + Nitrite	mg/L	10	0.05	ND	ND	1.2	0.96	1	0.17	ND	0.55	0.7	0.13	0.1	ND	ND	0.06	ND	ND	ND
Nitrite (N)	mg/L	1	0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrate (N)	mg/L	10	0.05	ND	ND	1.2	0.96	1	0.17	ND	0.55	0.7	0.13	0.1	ND	ND	0.06	ND	ND	ND
Nitrogen (Ammonia Nitrogen)	mg/L	-	0.05	0.11	ND	0.06	ND	ND	ND	ND	ND	ND	0.09	0.06	ND	ND	ND	0.07	0.08	ND
Total Organic Carbon (C)	mg/L	-	0.5	ND	ND	ND	ND	ND	ND	1.3	2.5	ND	2.5	0.8	0.6	0.8	0.6	3.3	0.6	ND
Orthophosphate (P)	mg/L	-	0.01	ND	0.01	ND	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.03
pH	pH	6.5 - 8.5 OV	-	8.16	7.95	6.84	7.39	6.94	8.03	7.7	7.83	8.03	7.32	7.28	7.99	6.74	**6.33**	7.42	7.31	7.3
Reactive Silica (SiO2)	mg/L		0.5	11	9.8	11	11	11	8.6	8	9.6	9.8	12	11	11	5.9	7.6	8.7	9	14
Sulphate (SO4)	mg/L	500 AO	2	16	11	16	19	21	7	7	35	31	6	4	4	4.3	4	13	13	7
Turbidity	NTU	1 OV	0.1	ND	0.5	**5**	0.7	**1.7**	0.3	0.2	**1.1**	**53**	0.4	0.6	0.3	ND	0.1	**59**	**49**	0.2
Conductivity	uS/cm	-	-	410	290	910	1000	28	210	190	340	340	140	140	220	70	64	200	200	130
Anion Sum	me/L	-	-	4.31	2.95	7.36	8.5	9.01	2.02	2.1	3.5	3.3	1.44	1.52	2.19	0.622	0.58	2.11	2.04	1.38
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	1	134	108	20.3	22	21	82	90	93	91	58	64	95	13.6	12	67	63	52
Calculated TDS	mg/L	500 AO	1	243	167	223	**503**	**537**	115	116	209	206	89	88	121	41.2	40	124	119	89
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	1	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cation Sum	me/L	-	-	4.22	2.92	8.18	8.67	9.32	2.07	2.05	3.43	3.58	1.5	1.4	2.07	0.659	0.57	2.29	2.15	1.44
Ion Balance (% Difference)	%	-	-	1.01	0.51	5.28	0.99	1.69	1.29	1.2	1.07	4.07	2.18	4.11	2.82	2.9	0.87	4.09	2.63	2.2
Langelier Index (@ 20C)	N/A	-	-	0.382	0.008	-1.54	-0.975	-1.45	0.069	-0.207	-0.526	-0.363	-0.962	-0.998	0.053	-2.86	-3.4	-0.765	-0.956	-1.15
Langelier Index (@ 4C)	N/A	-	-	0.132	-0.242	-1.79	-1.22	-1.7	-0.182	-0.458	-0.776	-0.613	-1.21	-1.25	-0.198	-3.11	-3.65	-1.02	-1.21	-1.41
Saturation pH (@ 20C)	N/A	-	-	7.78	7.94	8.38	8.37	8.39	7.96	7.91	8.36	8.39	8.28	8.28	7.94	9.6	9.73	8.19	8.27	8.45
Saturation pH (@ 4C)	N/A	-	-	8.03	8.19	8.63	8.61	8.64	8.21	8.16	8.61	8.64	8.53	8.53	8.19	9.85	9.98	8.44	8.52	8.71
Calcium (Ca)	mg/L	-	0.1	30	25	52	58	58.6	30	31	12	11	19	18	27	3.7	3.1	22	19	15
Magnesium (Mg)	mg/L	-	0.1	2.7	2.3	5.6	7.5	7.92	3	2.8	2.2	2.2	2.2	2	2.9	1.5	1.3	7.3	6.8	1.6
Phosphorus (P)	mg/L	-	0.1	0.1	ND	ND (0.2)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Potassium (K)	mg/L	-	0.1	1.6	1.3	4.9	5.4	5.77	1.7	1.4	1	1	1.8	1.6	1.9	0.9	1	1.7	1.7	1
Sodium (Na)	mg/L	200 AO	0.1	57	33	120	120	128	6.6	5.5	61	61	6.8	7	9.5	7.5	6.6	8.5	9.2	13
Bromide (Br)	mg/L	-	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoride (F)	mg/L	1.5	0.1	0.3	0.2	ND	ND	ND	0.1	0.1	0.6	0.6	ND	ND	0.1	ND	ND	0.6	0.6	0.2
Metals																				
Aluminum (Al)	ug/L	-	10	16	12	ND	ND	ND (5)	11	ND	46	620	35	20	ND	25	73	ND	ND	ND
Antimony (Sb)	ug/L	6	2	ND	ND	ND	ND	ND (1)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As)	ug/L	10	2	4	2	ND	ND	ND (1)	ND	ND	3	**15**	ND	ND	10	ND	ND	ND	ND	4
Barium (Ba)	ug/L	1000	5	130	110	64	76	79.6	93	91	88	110	11	10	7	7.4	8	5	6	52
Beryllium (Be)	ug/L	-	2	ND	ND	ND	ND	ND (1)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bismuth (Bi)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Boron (B)	ug/L	5000	5	38	27	5.7	6	ND (50)	15	10	610	560	8	8	18	6.9	7	47	51	12
Cadmium (Cd)	ug/L	5	0.3	ND	ND	ND	ND	0.042	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium (Cr)	ug/L	50	2	ND	ND	ND	ND	ND (1)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cobalt (Co)	ug/L	-	1	ND	ND	ND	ND	ND (0.4)	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND
Copper (Cu)	ug/L	1000 AO	2	ND	ND	ND	ND	ND	7	ND	ND	ND	ND	ND	ND	37	ND	ND	ND	ND
Iron (Fe)	ug/L	300 AO	50	ND	ND	ND	**410**	**585**	80	250	85	**4900**	ND	ND	77	ND	ND	**4900**	**4600**	ND
Lead (Pb)	ug/L	10	0.5	ND	ND	ND	**45**	**72.9**	ND	ND	ND	0.6	ND	ND	ND	ND	ND	ND	ND	ND
Manganese (Mn)	ug/L	50 AO	2	21	ND	ND	12	21.9	**630**	**830**	8	27	37	**100**	**160**	13	10	**60**	**52**	**110**
Molybdenum (Mo)	ug/L	-	2	8	4	ND	ND	ND	ND	ND	3	3	ND	ND	ND	ND	ND	ND	ND	4
Mercury (Hg)	ug/L	1	0.01	-	ND	-	0.01	0.033	-	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	-
Nickel (Ni)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	ND	ND	ND	ND	ND	ND
Selenium (Se)	ug/L	50	2	ND	ND	ND	ND	ND (1)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Silver (Ag)	ug/L	-	0.5	ND	ND	ND	ND	ND (0.1)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Strontium (Sr)	ug/L	-	5	1100	520	210	260	256	230	180	180	180	64	71	170	19	20	36	35	59
Thallium (Tl)	ug/L	-	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tin (Sn)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	ND	ND	ND	ND	ND
Titanium (Ti)	ug/L	-	2	ND	ND	ND	ND	ND (5)	ND	ND	ND	24	ND	ND	ND	ND	ND	ND	ND	ND
Uranium (U)	ug/L	20	0.1	0.7	0.9	ND	ND	ND	ND	ND	1.3	2.1	0.5	0.3	1	ND	ND	ND	ND	1.9
Vanadium (V)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	2	17	ND	ND	ND	ND	ND	ND	ND	ND
Zinc (Zn)	ug/L	5000 AO	5	21	ND	150	8	ND	6	ND	ND	8	ND	ND	ND	21	5	5	ND	ND

Notes:
AO = Aesthetic Objective.
OV = Other Value - see Drinking Water Guidelines (Health Canada 2015) for details.
ND = not detected
ND( ) = not detected at the detection limit shown in brackets ( )
"-" = not tested
All guidelines are health-based MACs or IMACs, unless otherwise indicated.
Shaded values exceed guidelines.

Table C2: General Chemistry and Metal Results

Parameter	Units	Drinking Water Guideline	Detection Limit	napolis Royal (062)		Hebron (063)		Margaree (064)		Ingonish (065)	Dalem Lake (069)		Amherst (071)		Kelley River (073)		Atlanta (074)		Sheffield I
				26-Nov-2007	1-Jun-2010	9-Jun-2005	17-Dec-2008	14-Dec-2006	10-Dec-2008	25-Aug-2009	14-Dec-2006	11-Dec-2008	16-Dec-2006	8-Jan-2009	12-Jan-2007	9-Jun-2009	3-Sep-2007	8-Jun-2010	10-Sep-2007
General Chemistry																			
Total Alkalinity (Total as CaCO3)	mg/L	-	5	54	55	23	24	160	160	13	63	65	120	120	22	26	95	88	95
Chloride (Cl)	mg/L	250 AO	1	6	6	49	57	10	8	9	38	38	33	32	8	7	8	8	6
Colour	TCU	15 AO	5	ND	ND	5.8	8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hardness (CaCO3)	mg/L	-	-	41	44	71	65	210	190	18	120	100	83	74	13	14	75	50	98
Nitrate + Nitrite	mg/L	10	0.05	ND	ND	ND	ND	ND	ND	0.15	ND	0.06	1.3	1.4	0.07	ND	0.74	0.61	0.78
Nitrite (N)	mg/L	1	0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	ND	ND	ND	ND	ND
Nitrate (N)	mg/L	10	0.05	ND	ND	ND	ND	ND	ND	0.15	ND	0.06	1.3	1.4	0.07	ND	0.74	0.61	0.78
Nitrogen (Ammonia Nitrogen)	mg/L	-	0.05	ND	ND	ND	0.05	0.13	0.12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Organic Carbon (C)	mg/L	-	0.5	ND	ND	1.2	1.6	3.6	ND	0.6	2.6	ND	2.3	ND	2.7	ND	ND	ND	ND
Orthophosphate (P)	mg/L	-	0.01	0.02	0.02	ND	0.01	ND	ND	ND	0.01	ND	0.04	0.05	ND	ND	ND	ND	ND
pH	pH	6.5 - 8.5 OV	-	8.03	7.77	**6.29**	6.5	8.13	8.11	7.4	7.8	7.77	8.08	7.97	7.22	7.1	8.08	8.12	7.99
Reactive Silica (SiO2)	mg/L		0.5	12	13	17	16	12	16	8.2	12	12	11	11	4.3	4.9	11	10	8.9
Sulphate (SO4)	mg/L	500 AO	2	7	8	13	16	93	87	4	8	7	40	42	4	4	4	4	3
Turbidity	NTU	1 OV	0.1	**15**	0.2	**150**	**45**	0.2	0.7	ND	0.3	**1.2**	ND	0.3	0.2	0.2	ND	0.3	ND
Conductivity	uS/cm	-	-	140	140	270	310	510	510	65	260	260	430	390	81	86	210	200	210
Anion Sum	me/L	-	-	1.4	1.43	2.12	2.41	5.48	5.17	0.6	2.51	2.54	4.3	4.26	0.765	0.81	2.26	2.1	2.17
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	1	53	54	23.2	24	160	154	13	62	65	120	117	22	26	94	87	94
Calculated TDS	mg/L	500 AO	1	88	89	169	174	311	295	44	150	145	260	259	46	51	135	120	124
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	1	ND	ND	ND	ND	2	2	ND	ND	ND	1	1	ND	ND	1	1	ND
Cation Sum	me/L	-	-	1.42	1.43	3.38	3.14	5.5	4.95	0.73	2.77	2.45	4.55	4.46	0.746	0.86	2.47	2	2.31
Ion Balance (% Difference)	%	-	-	0.71	0	22.9	13.2	0.182	2.17	9.77	4.97	1.8	2.89	2.29	1.26	2.99	4.44	2.44	3.13
Langelier Index (@ 20C)	N/A	-	-	-0.431	-0.657	-2.47	-2.29	0.525	0.484	-2.12	-0.191	-0.263	0.17	0.007	-2.19	-2.21	0.116	-0.049	0.147
Langelier Index (@ 4C)	N/A	-	-	-0.682	-0.909	-2.72	-2.54	0.276	0.235	-2.37	-0.442	-0.514	-0.08	-0.242	-2.44	-2.47	-0.135	-0.3	-0.104
Saturation pH (@ 20C)	N/A	-	-	8.46	8.43	8.76	8.79	7.61	7.63	9.52	7.99	8.03	7.91	7.96	9.41	9.31	7.96	8.17	7.84
Saturation pH (@ 4C)	N/A	-	-	8.71	8.68	9.01	9.04	7.85	7.88	9.77	8.24	8.28	8.16	8.21	9.66	9.57	8.22	8.42	8.09
Calcium (Ca)	mg/L	-	0.1	14	15	18	16	41	41	4.7	38	33	26	24	3.6	3.9	27	18	35
Magnesium (Mg)	mg/L	-	0.1	1.5	1.7	6.3	6	26	21	1.5	6.1	5.3	4.3	3.6	1	1.1	2.2	1.5	2.7
Phosphorus (P)	mg/L	-	0.1	ND	-	ND	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	ND
Potassium (K)	mg/L	-	0.1	1.2	1.1	1.7	1.8	1.7	1.3	0.79	1.3	1.2	1.3	1.2	1	0.9	2.2	2.2	2.5
Sodium (Na)	mg/L	200 AO	0.1	13	12	20	20	28	27	8	7.5	7.5	66	68	11	13	21	22	6.8
Bromide (Br)	mg/L	-	0.5	ND	ND	0.5	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoride (F)	mg/L	1.5	0.1	0.2	0.2	ND	ND	0.6	0.6	ND	0.2	0.2	0.6	0.6	ND	ND	ND	ND	ND
Metals																			
Aluminum (Al)	ug/L	-	10	ND	ND	ND	ND	12	ND	6.6	ND	ND	ND	ND	ND	ND	ND	17	ND
Antimony (Sb)	ug/L	6	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As)	ug/L	10	2	4	4	ND	ND	ND	ND	ND	4	3	ND	ND	ND	ND	ND	ND	ND
Barium (Ba)	ug/L	1000	5	66	77	14	17	21	19	7.7	150	150	170	180	24	170	8	7	18
Beryllium (Be)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bismuth (Bi)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Boron (B)	ug/L	5000	5	12	13	8.8	10	450	490	ND	9	5	12	11	14	30	13	16	7
Cadmium (Cd)	ug/L	5	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.04	ND
Chromium (Cr)	ug/L	50	2	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	ND
Cobalt (Co)	ug/L	-	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Copper (Cu)	ug/L	1000 AO	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	ND
Iron (Fe)	ug/L	300 AO	50	ND	ND	**27000**	**26000**	ND	ND	ND	180	160	ND	ND	87	ND	ND	ND	ND
Lead (Pb)	ug/L	10	0.5	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.6	ND
Manganese (Mn)	ug/L	50 AO	2	**93**	**95**	**440**	**460**	5	ND	ND	**330**	**350**	3	ND	20	2	ND	3	ND
Molybdenum (Mo)	ug/L	-	2	4	4	ND	ND	ND	ND	ND	ND	ND	50	56	ND	ND	ND	ND	ND
Mercury (Hg)	ug/L	1	0.01	0.02	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel (Ni)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Selenium (Se)	ug/L	50	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	5	ND
Silver (Ag)	ug/L	-	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Strontium (Sr)	ug/L	-	5	61	71	91	92	15000	14000	27	77	58	58	58	20	22	280	250	420
Thallium (Tl)	ug/L	-	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tin (Sn)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Titanium (Ti)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Uranium (U)	ug/L	20	0.1	3.6	2.6	ND	ND	ND	ND	0.58	ND	ND	3.7	3.8	ND	ND	**21**	**25**	8.4
Vanadium (V)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	5	4	ND	ND	ND	ND	ND
Zinc (Zn)	ug/L	5000 AO	5	ND	ND	16	ND	ND	ND	ND	ND	ND	ND	ND	ND	130	ND	16	ND

Notes:
AO = Aesthetic Objective.
OV = Other Value - see Drinking Water Guidelines (Health Canada 2015) for details.
ND = not detected
ND( ) = not detected at the detection limit shown in brackets ( )
"-" = not tested
All guidelines are health-based MACs or IMACs, unless otherwise indicated.
Shaded values exceed guidelines.

Table C2: General Chemistry and Metal Results

Parameter	Units	Drinking Water Guideline	Detection Limit	Mills (075)	Fall River (076)	West Northfield (077)	Musquodoboit Hbr (078)	Lewis Lake (079)	Arisaig (080)	Coldbrook (081)	Long Point (082)	Tatamagouche (083)	St Peters (085)	Smiley's Park (086)	Rainbow Haven (087)
				9-Jun-2010	20-May-2008	12-Jun-2008	22-May-2008	31-Jul-2008	8-Sep-2009	5-Aug-2009	12-Aug-2009	21-Jul-2008	19-Jul-2011	8-Oct-1993	5-Jun-2012
General Chemistry															
Total Alkalinity (Total as CaCO3)	mg/L	-	5	97	ND	57	81	62	240 (30)	37	99	210	200	187	320
Chloride (Cl)	mg/L	250 AO	1	5	12	15	8	11	57	3	61	7	20	83.8	**18000**
Colour	TCU	15 AO	5	ND	42	7	5	6	7	ND	ND	**25**	ND	3	ND
Hardness (CaCO3)	mg/L	-	-	95	13	80	21	21	10	33	130	20	11	448	5700
Nitrate + Nitrite	mg/L	10	0.05	0.12	0.14	ND	ND	ND	ND	0.16	0.10	ND	ND	0.38	ND
Nitrite (N)	mg/L	1	0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	ND
Nitrate (N)	mg/L	10	0.05	0.12	0.12	ND	ND	ND	ND	0.16	0.10	ND	ND	-	ND
Nitrogen (Ammonia Nitrogen)	mg/L	-	0.05	ND	0.07	ND	0.16	ND	0.11	ND	ND	ND	ND	ND	5.1
Total Organic Carbon (C)	mg/L	-	0.5	ND	1.1	ND	ND	0.5	ND (5)	ND	ND	ND	ND	1.5	ND
Orthophosphate (P)	mg/L	-	0.01	ND	ND	ND	ND	0.03	0.04	0.03	ND	ND	0.05	ND	ND
pH	pH	6.5 - 8.5 OV	-	8.05	**6**	8.1	7.78	7.8	**8.63**	7.36	7.64	**9.12**	**9**	7.3	7.62
Reactive Silica (SiO2)	mg/L		0.5	8.8	4	9.1	2.4	20	2.1	11	8.0	8	8.3	5.5	3.1
Sulphate (SO4)	mg/L	500 AO	2	3	14	32	9	7	ND	ND	29	18	69	205	**2600**
Turbidity	NTU	1 OV	0.1	0.6	**4.6**	0.5	0.6	**3.6**	**240**	**4.7**	0.1	**21**	0.6	**22.7**	**6**
Conductivity	uS/cm	-	-	200	110	240	210	170	610	84	400	440	580	1160	47000
Anion Sum	me/L	-	-	2.15	0.69	2.31	2.13	1.83	6.52	0.85	4.32	4.78	6.01	10.4	569
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	1	96	ND	57	81	61	233	37	99	187	182	187	320
Calculated TDS	mg/L	500 AO	1	117	54	139	119	124	353	54	246	270	348	-	**32500**
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	1	1	ND	ND	ND	ND	9	ND	ND	23	17	0.35	1.3
Cation Sum	me/L	-	-	2.08	0.95	2.31	2.14	1.98	6.37	0.82	4.31	4.89	5.7	11	547
Ion Balance (% Difference)	%	-	-	1.65	15.9	0	0.23	3.94	1.16	1.8	0.12	1.14	2.65	2.79	1.94
Langelier Index (@ 20C)	N/A	-	-	0.211	-	-0.081	-0.857	-0.889	0.109	-1.32	-0.111	0.784	0.286	-	0.902
Langelier Index (@ 4C)	N/A	-	-	-0.04	-	-0.331	-1.11	-1.14	-140	-1.57	-0.361	0.534	0.038	-0.08	0.662
Saturation pH (@ 20C)	N/A	-	-	7.84	-	8.18	8.64	8.69	8.52	8.68	7.75	8.34	8.71	-	6.72
Saturation pH (@ 4C)	N/A	-	-	8.09	-	8.43	8.89	8.94	8.77	8.93	8.00	8.59	8.96	7.38	6.96
Calcium (Ca)	mg/L	-	0.1	34	3.4	27	6.4	7.5	3.5	12	44	6.3	2.88	169	385
Magnesium (Mg)	mg/L	-	0.1	2.4	1.1	3	1.3	0.5	0.4	1.1	5.8	0.9	0.929	6.3	1160
Phosphorus (P)	mg/L	-	0.1	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	ND
Potassium (K)	mg/L	-	0.1	2.3	0.9	0.9	4.5	4.4	1.8	1.2	1.7	0.4	0.755	1.3	352
Sodium (Na)	mg/L	200 AO	0.1	3.2	8.1	16	37	33	140	2.9	37	100	126	46.1	**9730**
Bromide (Br)	mg/L	-	0.5	-	0.5	ND	ND	2.6	ND	ND	ND	ND	-	-	52
Fluoride (F)	mg/L	1.5	0.1	ND	ND	1.1	**1.6**	**2.5**	1.1	0.1	0.1	0.9	0.4	-	0.84
Metals															
Aluminum (Al)	ug/L	-	10	ND	45	ND	ND	ND	53	ND	ND	100	25.1	7	ND
Antimony (Sb)	ug/L	6	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (1)	ND	ND
Arsenic (As)	ug/L	10	2	ND	ND	ND	ND	**18**	ND	ND	ND	8	**29.7**	ND	ND
Barium (Ba)	ug/L	1000	5	16	14	6	5	72	36	10	100	68	20.7	77	30
Beryllium (Be)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (1)	ND	ND
Bismuth (Bi)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	ND
Boron (B)	ug/L	5000	5	7	6	27	120	35	74	7	19	61	114	15	4230
Cadmium (Cd)	ug/L	5	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55
Chromium (Cr)	ug/L	50	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (1)	2	ND
Cobalt (Co)	ug/L	-	1	ND	4	ND	ND	ND	ND	ND	ND	ND	ND (0.4)	ND	11.5
Copper (Cu)	ug/L	1000 AO	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	ND
Iron (Fe)	ug/L	300 AO	50	ND	**8700**	150	ND	140	59	ND	ND	150	ND	**460**	**734**
Lead (Pb)	ug/L	10	0.5	ND	1.5	ND	ND	0.7	ND	ND	ND	ND	ND	0.2	ND
Manganese (Mn)	ug/L	50 AO	2	ND	**770**	**150**	35	**60**	16	ND	2	**160**	3.3	22	**8160**
Molybdenum (Mo)	ug/L	-	2	ND	ND	6	5	3	3	ND	ND	15	7.3	ND	25
Mercury (Hg)	ug/L	1	0.01	ND	ND	0.01	0.01	ND	ND	ND	ND	0.01	ND	-	0.013
Nickel (Ni)	ug/L	-	2	ND	5	ND	ND	ND	ND	ND	ND	ND	ND	2	ND
Selenium (Se)	ug/L	50	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (1)	ND	ND
Silver (Ag)	ug/L	-	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (0.1)	ND	ND
Strontium (Sr)	ug/L	-	5	420	11	99	39	100	62	61	200	71	39.2	960	7060
Thallium (Tl)	ug/L	-	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tin (Sn)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Titanium (Ti)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	5	ND	-	ND
Uranium (U)	ug/L	20	0.1	9.7	ND	0.2	ND	0.2	ND	0.2	0.7	11	0.31	1.3	**32.8**
Vanadium (V)	ug/L	-	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc (Zn)	ug/L	5000 AO	5	6	21	ND	ND	ND	ND	ND	10	6	ND	24	ND

Notes:
AO = Aesthetic Objective.
OV = Other Value - see Drinking Water Guidelines (Health Canada 2015) for details.
ND = not detected
ND( ) = not detected at the detection limit shown in brackets ( )
"-" = not tested
All guidelines are health-based MACs or IMACs, unless otherwise indicated.
Shaded values exceed guidelines.

Table C2: General Chemistry and Metal Results

Parameter	Units	Drinking Water Guideline	Detection Limit	Maitland (088)	Simms Settlement (089)
				6-Jul-1994	20-Aug-1975
General Chemistry					
Total Alkalinity (Total as CaCO3)	mg/L	-	5	7	41
Chloride (Cl)	mg/L	250 AO	1	9.6	15
Colour	TCU	15 AO	5	**38**	5
Hardness (CaCO3)	mg/L	-	-	12.9	51
Nitrate + Nitrite	mg/L	10	0.05	ND	0.10
Nitrite (N)	mg/L	1	0.01	-	-
Nitrate (N)	mg/L	10	0.05	-	-
Nitrogen (Ammonia Nitrogen)	mg/L	-	0.05	ND	ND
Total Organic Carbon (C)	mg/L	-	0.5	0.5	-
Orthophosphate (P)	mg/L	-	0.01	ND	0.03
pH	pH	6.5 - 8.5 OV	-	**5.8**	7.5
Reactive Silica (SiO2)	mg/L		0.5	4.4	13.0
Sulphate (SO4)	mg/L	500 AO	2	4	6
Turbidity	NTU	1 OV	0.1	**12.5**	0.8
Conductivity	uS/cm	-	-	58.4	148
Anion Sum	me/L	-	-	-	-
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	1	-	-
Calculated TDS	mg/L	500 AO	1	-	-
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	1	-	-
Cation Sum	me/L	-	-	-	-
Ion Balance (% Difference)	%	-	-	-	-
Langelier Index (@ 20C)	N/A	-	-	-	-
Langelier Index (@ 4C)	N/A	-	-	-4.63	-
Saturation pH (@ 20C)	N/A	-	-	-	-
Saturation pH (@ 4C)	N/A	-	-	-	-
Calcium (Ca)	mg/L	-	0.1	3.36	18
Magnesium (Mg)	mg/L	-	0.1	1.1	1.3
Phosphorus (P)	mg/L	-	0.1	-	-
Potassium (K)	mg/L	-	0.1	0.2	0.6
Sodium (Na)	mg/L	200 AO	0.1	5.6	7
Bromide (Br)	mg/L	-	0.5	-	-
Fluoride (F)	mg/L	1.5	0.1	-	0.7
Metals					
Aluminum (Al)	ug/L	-	10	21	-
Antimony (Sb)	ug/L	6	2	ND	-
Arsenic (As)	ug/L	10	2	ND	-
Barium (Ba)	ug/L	1000	5	ND	-
Beryllium (Be)	ug/L	-	2	ND	-
Bismuth (Bi)	ug/L	-	2	-	-
Boron (B)	ug/L	5000	5	6	-
Cadmium (Cd)	ug/L	5	0.3	-	-
Chromium (Cr)	ug/L	50	2	ND	-
Cobalt (Co)	ug/L	-	1	ND	-
Copper (Cu)	ug/L	1000 AO	2	ND	30
Iron (Fe)	ug/L	300 AO	50	**1700**	100
Lead (Pb)	ug/L	10	0.5	0.2	-
Manganese (Mn)	ug/L	50 AO	2	**200**	ND
Molybdenum (Mo)	ug/L	-	2	ND	-
Mercury (Hg)	ug/L	1	0.01	-	-
Nickel (Ni)	ug/L	-	2	2	-
Selenium (Se)	ug/L	50	2	ND	-
Silver (Ag)	ug/L	-	0.5	ND	-
Strontium (Sr)	ug/L	-	5	16	-
Thallium (Tl)	ug/L	-	0.1	ND	-
Tin (Sn)	ug/L	-	2	ND	-
Titanium (Ti)	ug/L	-	2	-	-
Uranium (U)	ug/L	20	0.1	ND	-
Vanadium (V)	ug/L	-	2	ND	-
Zinc (Zn)	ug/L	5000 AO	5	21	10

Notes:
AO = Aesthetic Objective.
OV = Other Value - see Drinking Water Guidelines (Health Canada 2015) for details.
ND = not detected
ND( ) = not detected at the detection limit shown in brackets ( )
"-" = not tested
All guidelines are health-based MACs or IMACs, unless otherwise indicated.
Shaded values exceed guidelines.

Table C3: Volatile Organic Compound (VOC) Results (ug/L)

Parameter	Drinking Water Guideline	Detection Limit	Greenwood (003)			Fraser Brook (004)		Murray Siding (007)	Wilmo
			23-Nov-2005	18-Dec-2008	06-Jul-2011	10-Dec-2004	03-Dec-2008	22-Nov-2011	29-Nov-2006
CHLOROBENZENES									
1,2-Dichlorobenzene	200	0.5	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	-	1	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5	1	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	80	1	ND	ND	ND	ND	ND	ND	ND
VOLATILES									
1,1,1-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	-	1	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	-	2	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	14	2	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	1	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	-	1	ND	ND	ND	ND	ND	ND	ND
Benzene	5	1	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	16	1	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	1	ND	ND	ND	ND	ND	ND	ND
Bromomethane	-	8	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	5	1	ND	ND	ND	ND	ND	ND	ND
Chloroethane	-	8	ND	ND	ND	ND	ND	ND	ND
Chloroform	100	1	ND	ND	ND	ND	ND	ND	ND
Chloromethane	-	8	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	-	2	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	100	1	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	2.4 AO	1	ND	ND	ND	ND	ND	ND	ND
Ethylene Dibromide	-	1	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride(Dichloromethane)	-	3	ND	ND	ND	ND	ND	ND	ND
o-Xylene	300 AO	1	ND	ND	ND	ND	ND	ND	ND
p+m-Xylene	300 AO	2	ND	ND	ND	ND	ND	ND	ND
Styrene	-	1	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	30	1	ND	ND	ND	ND	ND	ND	ND
Toluene	24 AO	1	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	-	1	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	5	1	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane (FREON 11)	-	8	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	1	ND	ND	ND	ND	ND	ND	ND

Notes:
AO = Aesthetic Objective.
ND = not detected
ND( ) = not detected at the elevated detection limit shown in brackets ( )
All guidelines are health-based MACs or IMACs, unless otherwise indicated.
Shaded values exceed guidelines.

Table C3: Volatile Organic Compound (VOC) Results (ug/L)

Parameter	Drinking Water Guideline	Detection Limit	t (005)	Wolfville (010)		Monastery (028)		Point Aconi (030)		Lawrence
			12-May-2010	22-Dec-2004	18-Dec-2008	15-Dec-2006	09-Dec-2008	15-Sep-2005	10-Dec-2008	05-Dec-2008
CHLOROBENZENES										
1,2-Dichlorobenzene	200	0.5	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	80	1	ND	ND	ND	ND	ND	ND	ND	ND
VOLATILES										
1,1,1-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	-	2	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	14	2	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	1	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	16	1	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	1	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	-	8	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	-	8	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	100	1	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	-	8	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	-	2	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	100	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	2.4 AO	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylene Dibromide	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride(Dichloromethane)	-	3	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	300 AO	1	ND	ND	ND	ND	ND	ND	ND	ND
p+m-Xylene	300 AO	2	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	30	1	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	24 AO	1	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane (FREON 11)	-	8	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	1	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
AO = Aesthetic Objective.
ND = not detected
ND( ) = not detected at the elevated detection limit shown in brackets ( )
All guidelines are health-based MACs or IMACs, unless otherwise indicated.
Shaded values exceed guidelines.

Table C3: Volatile Organic Compound (VOC) Results (ug/L)

Parameter	Drinking Water Guideline	Detection Limit	town (043)	Durham (045)		Kentville (048)		Sydney (050)		North Gr
			16-Nov-2011	05-Oct-2005	21-Jan-2009	07-Nov-2007	05-Jul-2011	15-Sep-2005	11-Dec-2008	13-Dec-2006
CHLOROBENZENES										
1,2-Dichlorobenzene	200	0.5	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	80	1	ND	ND	ND	ND	ND	ND	ND	ND
VOLATILES										
1,1,1-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	-	2	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	14	2	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	1	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	16	1	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	1	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	-	8	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	-	8	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	100	1	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	-	8	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	-	2	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	100	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	2.4 AO	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylene Dibromide	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride(Dichloromethane)	-	3	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	300 AO	1	ND	ND	ND	ND	ND	ND	ND	ND
p+m-Xylene	300 AO	2	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	30	1	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	24 AO	1	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane (FREON 11)	-	8	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	1	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
AO = Aesthetic Objective.
ND = not detected
ND( ) = not detected at the elevated detection limit shown in brackets ( )
All guidelines are health-based MACs or IMACs, unless otherwise indicated.
Shaded values exceed guidelines.

Table C3: Volatile Organic Compound (VOC) Results (ug/L)

Parameter	Drinking Water Guideline	Detection Limit	ant (054)	Stillwater (055)		Sheet Harbour (056)	Hayden Lake (059)		Metegha
			22-Jul-2008	13-Dec-2006	04-Dec-2008	05-Dec-2008	09-Jun-2005	16-Dec-2008	13-Dec-2006
CHLOROBENZENES									
1,2-Dichlorobenzene	200	0.5	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	-	1	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5	1	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	80	1	ND	ND	ND	ND	ND	ND	ND
VOLATILES									
1,1,1-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	-	1	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	-	2	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	14	2	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	1	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	-	1	ND	ND	ND	ND	ND	ND	ND
Benzene	5	1	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	16	1	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	1	ND	ND	ND	ND	ND	ND	ND
Bromomethane	-	8	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	5	1	ND	ND	ND	ND	ND	ND	ND
Chloroethane	-	8	ND	ND	ND	ND	ND	ND	ND
Chloroform	100	1	ND	ND	ND	ND	3.2	ND	ND
Chloromethane	-	8	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	-	2	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	100	1	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	2.4 AO	1	ND	ND	ND	ND	ND	ND	ND
Ethylene Dibromide	-	1	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride(Dichloromethane)	-	3	ND	ND	ND	ND	ND	ND	ND
o-Xylene	300 AO	1	ND	ND	ND	ND	ND	ND	ND
p+m-Xylene	300 AO	2	ND	ND	ND	ND	ND	ND	ND
Styrene	-	1	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	30	1	ND	ND	ND	ND	ND	ND	ND
Toluene	24 AO	1	ND	1	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	-	1	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	5	1	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane (FREON 11)	-	8	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	1	ND	ND	ND	ND	ND	ND	ND

Notes:
AO = Aesthetic Objective.
ND = not detected
ND( ) = not detected at the elevated detection limit shown in brackets ( )
All guidelines are health-based MACs or IMACs, unless otherwise indicated.
Shaded values exceed guidelines.

Table C3: Volatile Organic Compound (VOC) Results (ug/L)

Parameter	Drinking Water Guideline	Detection Limit	an (060)	Annapolis Royal (062)			Hebron (063)		Margaree (064)	
			17-Dec-2008	09-Nov-2005	26-Nov-2007	01-Jun-2010	09-Jun-2005	17-Dec-2008	14-Dec-2006	10-Dec-2008
CHLOROBENZENES										
1,2-Dichlorobenzene	200	0.5	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	80	1	ND	ND	ND	ND	ND	ND	ND	ND
VOLATILES										
1,1,1-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	-	2	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	14	2	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	1	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	16	1	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	1	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	-	8	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	-	8	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	100	1	ND	ND (2)	ND	ND	ND	ND	ND	ND
Chloromethane	-	8	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	-	2	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	100	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	2.4 AO	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylene Dibromide	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride(Dichloromethane)	-	3	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	300 AO	1	ND	ND	ND	ND	ND	ND	ND	ND
p+m-Xylene	300 AO	2	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	30	1	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	24 AO	1	ND	2	1	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane (FREON 11)	-	8	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	1	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
AO = Aesthetic Objective.
ND = not detected
ND( ) = not detected at the elevated detection limit shown in brackets ( )
All guidelines are health-based MACs or IMACs, unless otherwise indicated.
Shaded values exceed guidelines.

Table C3: Volatile Organic Compound (VOC) Results (ug/L)

Parameter	Drinking Water Guideline	Detection Limit	Ingonish (065)	Dalem Lake (069)		Amherst (071)		Kelley River (073)		Atlanta
			25-Aug-2009	14-Dec-2006	11-Dec-2008	16-Dec-2006	08-Jan-2009	12-Jan-2007	09-Jun-2009	03-Sep-2007
CHLOROBENZENES										
1,2-Dichlorobenzene	200	0.5	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	80	1	ND	ND	ND	ND	ND	ND	ND	ND
VOLATILES										
1,1,1-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	-	2	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	14	2	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	1	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	16	1	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	100	1	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	-	8	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	-	8	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	100	1	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	-	8	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	-	2	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	100	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	2.4 AO	1	ND	ND	ND	ND	ND	ND	ND	ND
Ethylene Dibromide	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride(Dichloromethane)	-	3	ND	ND	ND	ND	ND	ND	ND	ND
o-Xylene	300 AO	1	ND	ND	ND	ND	ND	ND	ND	ND
p+m-Xylene	300 AO	2	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	30	1	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	24 AO	1	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	-	1	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethylene	5	1	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane (FREON 11)	-	8	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	1	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
AO = Aesthetic Objective.
ND = not detected
ND( ) = not detected at the elevated detection limit shown in brackets ( )
All guidelines are health-based MACs or IMACs, unless otherwise indicated.
Shaded values exceed guidelines.

Table C3: Volatile Organic Compound (VOC) Results (ug/L)

Parameter	Drinking Water Guideline	Detection Limit	a (074)	Sheffield Mills (075)		Fall River (076)	West Northfield (077)	Musquodoboit Hbr (078)
			08-Jun-2010	10-Sep-2007	09-Jun-2010	20-May-2008	12-Jun-2008	22-May-2008
CHLOROBENZENES								
1,2-Dichlorobenzene	200	0.5	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	-	1	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5	1	ND	ND	ND	ND	ND	ND
Chlorobenzene	80	1	ND	ND	ND	ND	ND	ND
VOLATILES								
1,1,1-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	-	1	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	-	2	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	14	2	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	1	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	-	1	ND	ND	ND	ND	ND	ND
Benzene	5	1	ND	ND	ND	ND	ND	ND
Bromodichloromethane	16	1	ND	ND	ND	ND	ND	ND
Bromoform	100	1	ND	ND	ND	ND	ND	ND
Bromomethane	-	8	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	5	1	ND	ND	ND	ND	ND	ND
Chloroethane	-	8	ND	ND	ND	ND	ND	ND
Chloroform	100	1	ND	ND	ND	ND	ND	ND
Chloromethane	-	8	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	-	2	ND	ND	ND	ND	ND	ND
Dibromochloromethane	100	1	ND	ND	ND	ND	ND	ND
Ethylbenzene	2.4 AO	1	ND	ND	ND	ND	ND	ND
Ethylene Dibromide	-	1	ND	ND	ND	ND	ND	ND
Methylene Chloride(Dichloromethane)	-	3	ND	ND	ND	ND	ND	ND
o-Xylene	300 AO	1	ND	ND	ND	ND	ND	ND
p+m-Xylene	300 AO	2	ND	ND	ND	ND	ND	ND
Styrene	-	1	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	30	1	ND	ND	ND	ND	ND	ND
Toluene	24 AO	1	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	-	1	ND	ND	ND	ND	ND	ND
Trichloroethylene	5	1	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane (FREON 11)	-	8	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	1	ND	ND	ND	ND	ND	ND

Notes:
AO = Aesthetic Objective.
ND = not detected
ND( ) = not detected at the elevated detection limit shown in brackets ( )
All guidelines are health-based MACs or IMACs, unless otherwise indicated.
Shaded values exceed guidelines.

Table C3: Volatile Organic Compound (VOC) Results (ug/L)

Parameter	Drinking Water Guideline	Detection Limit	Lewis Lake (079)	Arisaig (080)	Coldbrook (081)	Long Point (082)	Tatamagouche (083)	St Peters (085)
			31-Jul-2008	08-Sep-2009	05-Aug-2009	12-Aug-2009	21-Jul-2008	19-Jul-2011
CHLOROBENZENES								
1,2-Dichlorobenzene	200	0.5	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	-	1	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5	1	ND	ND	ND	ND	ND	ND
Chlorobenzene	80	1	ND	ND	ND	ND	ND	ND
VOLATILES								
1,1,1-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	-	1	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	-	1	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	-	2	ND	ND	ND	ND	ND	ND
1,1-Dichloroethylene	14	2	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	5	1	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	-	1	ND	ND	ND	ND	ND	ND
Benzene	5	1	ND	ND	ND	ND	ND	ND
Bromodichloromethane	16	1	ND	ND	ND	ND	ND	ND
Bromoform	100	1	ND	ND	ND	ND	ND	ND
Bromomethane	-	8	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	5	1	ND	ND	ND	ND	ND	ND
Chloroethane	-	8	ND	ND	ND	ND	ND	ND
Chloroform	100	1	ND	ND	ND	ND	ND	ND
Chloromethane	-	8	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	-	2	ND	ND	ND	ND	ND	ND
Dibromochloromethane	100	1	ND	ND	ND	ND	ND	ND
Ethylbenzene	2.4 AO	1	ND	ND	ND	ND	ND	ND
Ethylene Dibromide	-	1	ND	ND	ND	ND	ND	ND
Methylene Chloride(Dichloromethane)	-	3	ND	ND	ND	ND	ND	ND
o-Xylene	300 AO	1	ND	ND	ND	ND	ND	ND
p+m-Xylene	300 AO	2	ND	ND	ND	ND	ND	ND
Styrene	-	1	ND	ND	ND	ND	ND	ND
Tetrachloroethylene	30	1	ND	ND	ND	ND	ND	ND
Toluene	24 AO	1	ND	2	ND	2	ND	ND
trans-1,2-Dichloroethylene	-	2	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	-	1	ND	ND	ND	ND	ND	ND
Trichloroethylene	5	1	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane (FREON 11)	-	8	ND	ND	ND	ND	ND	ND
Vinyl Chloride	2	1	ND	ND	ND	ND	ND	ND

Notes:
AO = Aesthetic Objective.
ND = not detected
ND( ) = not detected at the elevated detection limit shown in brackets ( )
All guidelines are health-based MACs or IMACs, unless otherwise indicated.
Shaded values exceed guidelines.

Table C4: Pesticide Results (ug/L)

Parameter	Drinking Water Guideline	Detection Limit	Greenwood (003)			Fraser Brook (004)		Wilmot (005)	Murray Siding (007)	Wolfville (010)		Monastery (028)	Point Aconi (030)		Lawrence
			23-Nov-2005	18-Dec-2008	6-Jul-2011	10-Dec-2004	3-Dec-2008	12-May-2010	22-Nov-2011	22-Dec-2004	18-Dec-2008	15-Dec-2006	15-Sep-2005	10-Dec-2008	5-Dec-2008
Herbicides															
Atrazine	5	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
De-ethyl Atrazine		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butylate		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanazine	10	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Desmetryn		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diphenylamine		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Eptam		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethalfluralin		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexazinone		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metalaxyl		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metribuzin	80	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metolachlor	50	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pirimicarb		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Profluralin		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Prometryn		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Propazine		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Simazine	10	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Terbuthylazine		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Terbutryn		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Triallate		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Triadimefon		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trifluralin	45	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Organochlorine Pesticides															
Alachlor		0.5	ND	-	ND	ND	ND	ND	ND	ND	-	ND	ND	-	-
Aldrin + Dieldrin	0.7	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BHC, alpha-		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BHC, beta-		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Captan		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorbenside		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane, alpha-		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane, gamma-		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorfenson (Ovex)		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorothalonil (Daconil)		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorpropham		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dacthal (DCPA)		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE		0.01	ND (0.1)	ND (0.1)	ND	ND (0.1)	ND (0.1)	ND (0.1)	ND	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
DDT - orthopara (2,4')		0.01	ND (0.2)	ND (0.2)	ND	ND (0.2)	ND (0.2)	ND (0.2)	ND	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
DDT - parapara (4,4')		0.01	ND (0.2)	ND (0.2)	ND	ND (0.2)	ND (0.2)	ND (0.2)	ND	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Diallate(e/z)		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlobenil		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloran		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlofluanid		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dicofol		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan II		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan Sulphate		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endrin		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Folpet		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lindane (BHC), gamma-		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methidathion		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	900	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	ND	ND	ND
Mirex		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrofen		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin-cis/trans		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Procymidone		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pronamide		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Quintozene (Pentachloronitrobenzene)		0.5	ND	ND	ND	-	-	-	ND	-	ND	-	ND	ND	ND
Tecnazene		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetradifon		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tolylfluanid		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinclozolin		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Organophosphorus Pesticides															
Aspon		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Azinphos ethyl		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Azinphos methyl	20	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromacil		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (1)	ND	ND	ND
Benfluralin		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromophos		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromophos-ethyl		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbophenothion		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorfenvinphos(e/z)		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlormephos		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorpyrifos	90	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorpyriphos-methyl		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorthiophos		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanophos		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Demeton		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diazinon	20	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlofenthion		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorvos/Naled		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dicrotophos		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dimethoate	20	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dioxathion		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Disulfoton (Di-Syston)		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPN		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethion		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fenchlorphos (Ronnel)		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	ND	ND	ND
Fenitrothion		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fensulfothion		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fenthion		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fonofos		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iodofenphos		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isofenphos		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Malaoxon		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Malathion	190	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mevinphos-cis/trans (Phosdrin)		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Omethoate		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Parathion	50	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Parathion methyl		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phorate (Thimet)	2	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phosalone		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phosmet		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phosphamidon		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pirimiphos-ethyl		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pirimiphos-methyl		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Profenophos		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrazophos		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Quinalphos		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sulfotep		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Terbufos	1	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachlorvinphos (Stirophos)		0.2	ND	ND	ND	-	-	ND	ND	-	ND	-	ND	ND	ND
Other															
Hexachlorobenzene		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iprodione		1	-	-	ND	-	-	ND	ND	-	-	-	-	-	-
Propiconazole		0.5	-	-	ND	-	-	ND	ND	-	-	-	-	-	-

Notes:
AO = Aesthetic Objective.
ND = not detected
ND( ) = not detected at the elevated detection limit shown brackets ( )
All guidelines are health-based MACs or IMACs, unles otherwise indicated.
Shaded values exceed guidelines.

Table C4: Pesticide Results (ug/L)

Parameter	Drinking Water Guideline	Detection Limit	town (043	Durham (045)		Kentville (048)			Sydney (050)		North Grant (054)		Stillwater (055)		Sheet Harbour (056)	Hayden
			16-Nov-2011	5-Oct-2005	21-Jan-2009	15-Jun-2005	7-Nov-2007	5-Jul-2011	15-Sep-2005	11-Dec-2008	12-Dec-2006	22-Jul-2008	12-Dec-2006	4-Dec-2008	5-Dec-2008	9-Jun-2005
Herbicides																
Atrazine	5	0.2	ND	ND	ND	ND (1)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (2.5)
De-ethyl Atrazine		0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Butylate		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Cyanazine	10	0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Desmetryn		0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Diphenylamine		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Eptam		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Ethalfluralin		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Hexazinone		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Metalaxyl		0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Metribuzin	80	0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Metolachlor	50	0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Pirimicarb		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Profluralin		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Prometryn		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Propazine		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Simazine	10	0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Terbuthylazine		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Terbutryn		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Triallate		0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Triadimefon		0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Trifluralin	45	0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Organochlorine Pesticides																
Alachlor		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	-	-
Aldrin + Dieldrin	0.7	0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND (0.02)	ND	ND	ND	-
BHC, alpha-		0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND (0.1)	ND	ND	ND	-
BHC, beta-		0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND (0.1)	ND	ND	ND	-
Captan		1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Chlorbenside		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Chlordane, alpha-		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND (0.06)	ND	ND	ND	-
Chlordane, gamma-		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND (0.06)	ND	ND	ND	-
Chlorfenson (Ovex)		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Chlorothalonil (Daconil)		1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Chlorpropham		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Dacthal (DCPA)		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
4,4'-DDE		0.01	ND	ND (0.1)	ND (0.1)	ND	ND (0.1)	ND	ND (0.1)	ND (0.1)	ND	ND	ND	ND (0.1)	ND (0.1)	ND
DDT - orthopara (2,4')		0.01	ND	ND (0.2)	ND (0.2)	ND	ND (0.2)	ND	ND (0.2)	ND (0.2)	ND	ND	ND	ND (0.2)	ND (0.2)	ND
DDT - parapara (4,4')		0.01	ND	ND (0.2)	ND (0.2)	ND	ND (0.2)	ND	ND (0.2)	ND (0.2)	ND	ND	ND	ND (0.2)	ND (0.2)	ND
Diallate(e/z)		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Dichlobenil		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Dichloran		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Dichlofluanid		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Dicofol		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Endosulfan I		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND (0.2)	ND	ND	ND	-
Endosulfan II		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND (0.2)	ND	ND	ND	-
Endosulfan Sulphate		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND (0.2)	ND	ND	ND	-
Endrin		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND (0.02)	ND	ND	ND	-
Folpet		1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Heptachlor		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND (0.1)	ND	ND	ND	-
Lindane (BHC), gamma-		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND (0.1)	ND	ND	ND	-
Methidathion		0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Methoxychlor	900	0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Mirex		0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Nitrofen		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Permethrin-cis/trans		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Procymidone		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Pronamide		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Quintozene (Pentachloronitrobenzene)		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Tecnazene		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Tetradifon		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Tolylfluanid		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Vinclozolin		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Organophosphorus Pesticides																
Aspon		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Azinphos ethyl		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Azinphos methyl	20	1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Bromacil		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Benfluralin		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Bromophos		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Bromophos-ethyl		0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Carbophenothion		0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Chlorfenvinphos(e/z)		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Chlormephos		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Chlorpyrifos	90	0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND (0.01)	ND	ND	ND	-
Chlorpyriphos-methyl		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Chlorthiophos		0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Cyanophos		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Demeton		1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Diazinon	20	0.3	ND	ND	ND	ND (2)	ND	ND	ND	ND	ND	ND (0.02)	ND	ND	ND	ND (5)
Dichlofenthion		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Dichlorvos/Naled		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Dicrotophos		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Dimethoate	20	0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Dioxathion		1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Disulfoton (Di-Syston)		1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
EPN		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Ethion		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Fenchlorphos (Ronnel)		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Fenitrothion		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Fensulfothion		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Fenthion		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Fonofos		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Iodofenphos		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Isofenphos		0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Malaoxon		1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Malathion	190	0.5	ND	ND	ND	ND (2)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (5)
Mevinphos-cis/trans (Phosdrin)		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Omethoate		1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Parathion	50	0.5	ND	ND	ND	ND (2)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (5)
Parathion methyl		0.5	ND	ND	ND	ND (2)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND (5)
Phorate (Thimet)	2	0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Phosalone		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Phosmet		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Phosphamidon		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Pirimiphos-ethyl		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Pirimiphos-methyl		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Profenophos		0.5	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Pyrazophos		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Quinalphos		0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Sulfotep		0.1	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Terbufos	1	0.3	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Tetrachlorvinphos (Stirophos)		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Other																
Hexachlorobenzene		0.2	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Iprodione		1	ND	-	-	-	ND	ND	-	-	-	ND	-	-	-	-
Propiconazole		0.5	ND	-	-	-	ND	ND	-	-	-	ND	-	-	-	-

Notes:
AO = Aesthetic Objective.
ND = not detected
ND( ) = not detected at the elevated detection limit shown brackets ( )
All guidelines are health-based MACs or IMACs, unles otherwise indicated.
Shaded values exceed guidelines.

Table C4: Pesticide Results (ug/L)

Parameter	Drinking Water Guideline	Detection Limit	Lake (059)	Meteghan (060)		Annapolis Royal (062)			Hebron (063)		Margaree (064)		Ingonish (065)	Dalem Lake (069)		Amherst (071)	
			16-Dec-2008	13-Dec-2006	17-Dec-2008	9-Nov-2005	26-Nov-2007	1-Jun-2010	9-Jun-2005	17-Dec-2008	14-Dec-2006	8-Dec-2008	25-Aug-2009	14-Dec-2006	11-Dec-2008	16-Dec-2006	8-Jan-2009
Herbicides																	
Atrazine	5	0.2	ND	ND	ND	ND	ND	ND	ND (2.5)	ND	ND	ND	ND	ND	ND	ND	ND
De-ethyl Atrazine		0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Butylate		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Cyanazine	10	0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Desmetryn		0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Diphenylamine		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Eptam		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Ethalfluralin		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Hexazinone		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Metalaxyl		0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Metribuzin	80	0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Metolachlor	50	0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Pirimicarb		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Profluralin		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Prometryn		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Propazine		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Simazine	10	0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Terbuthylazine		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Terbutryn		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Triallate		0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Triadimefon		0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Trifluralin	45	0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Organochlorine Pesticides																	
Alachlor		0.5	-	ND	ND	ND	ND	ND	-	-	ND	ND	ND	ND	ND	ND	ND
Aldrin + Dieldrin	0.7	0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND (0.02)	ND	ND	ND	ND
BHC, alpha-		0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND (0.1)	ND	ND	ND	ND
BHC, beta-		0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND (0.1)	ND	ND	ND	ND
Captan		1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Chlorbenside		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane, alpha-		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND (0.06)	ND	ND	ND	ND
Chlordane, gamma-		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND (0.06)	ND	ND	ND	ND
Chlorfenson (Ovex)		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Chlorothalonil (Daconil)		1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Chlorpropham		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Dacthal (DCPA)		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE		0.01	ND (0.1)	ND	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND	ND (0.1)	ND	ND (0.1)	ND	ND	ND (0.1)	ND	ND
DDT - orthopara (2,4')		0.01	ND (0.2)	ND	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND	ND (0.2)	ND	ND (0.2)	ND	ND	ND (0.2)	ND	ND
DDT - parapara (4,4')		0.01	ND (0.2)	ND	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND	ND (0.2)	ND	ND (0.2)	ND	ND	ND (0.2)	ND	ND
Diallate(e/z)		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Dichlobenil		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Dichloran		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Dichlofluanid		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Dicofol		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND (0.2)	ND	ND	ND	ND
Endosulfan II		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND (0.2)	ND	ND	ND	ND
Endosulfan Sulphate		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND (0.2)	ND	ND	ND	ND
Endrin		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND (0.02)	ND	ND	ND	ND
Folpet		1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND (0.1)	ND	ND	ND	ND
Lindane (BHC), gamma-		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND (0.1)	ND	ND	ND	ND
Methidathion		0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	900	0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Mirex		0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Nitrofen		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin-cis/trans		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Procymidone		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Pronamide		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Quintozene (Pentachloronitrobenzene)		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Tecnazene		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Tetradifon		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Tolylfluanid		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Vinclozolin		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Organophosphorus Pesticides																	
Aspon		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Azinphos ethyl		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Azinphos methyl	20	1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Bromacil		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Benfluralin		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Bromophos		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Bromophos-ethyl		0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Carbophenothion		0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Chlorfenvinphos(e/z)		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Chlormephos		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Chlorpyrifos	90	0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND (0.01)	ND	ND	ND	ND
Chlorpyriphos-methyl		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Chlorthiophos		0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Cyanophos		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Demeton		1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Diazinon	20	0.3	ND	ND	ND	ND	ND	ND	ND (5)	ND	ND	ND	ND (0.02)	ND	ND	ND	ND
Dichlofenthion		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorvos/Naled		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Dicrotophos		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Dimethoate	20	0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Dioxathion		1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Disulfoton (Di-Syston)		1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
EPN		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Ethion		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Fenchlorphos (Ronnel)		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Fenitrothion		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Fensulfothion		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Fenthion		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Fonofos		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Iodofenphos		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Isofenphos		0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Malaoxon		1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Malathion	190	0.5	ND	ND	ND	ND	ND	ND	ND (5)	ND	ND	ND	ND	ND	ND	ND	ND
Mevinphos-cis/trans (Phosdrin)		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Omethoate		1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Parathion	50	0.5	ND	ND	ND	ND	ND	ND	ND (5)	ND	ND	ND	ND	ND	ND	ND	ND
Parathion methyl		0.5	ND	ND	ND	ND	ND	ND	ND (5)	ND	ND	ND	ND	ND	ND	ND	ND
Phorate (Thimet)	2	0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Phosalone		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Phosmet		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Phosphamidon		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Pirimiphos-ethyl		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Pirimiphos-methyl		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Profenophos		0.5	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Pyrazophos		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Quinalphos		0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Sulfotep		0.1	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Terbufos	1	0.3	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachlorvinphos (Stirophos)		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Other																	
Hexachlorobenzene		0.2	ND	ND	ND	ND	ND	ND	-	ND	ND	ND	ND	ND	ND	ND	ND
Iprodione		1	-	-	-	-	ND	ND	-	-	-	-	ND	-	-	-	-
Propiconazole		0.5	-	-	-	-	ND	ND	-	-	-	-	ND	-	-	-	-

Notes:
AO = Aesthetic Objective.
ND = not detected
ND( ) = not detected at the elevated detection limit shown brackets ( )
All guidelines are health-based MACs or IMACs, unles otherwise indicated.
Shaded values exceed guidelines.

Table C4: Pesticide Results (ug/L)

Parameter	Drinking Water Guideline	Detection Limit	Kelley River (073)		Atlanta (074)		Sheffield Mills (075)		Fall River (076)	West Northfield (077)	Musquodoboit Hbr (078)	Lewis Lake (079)
			12-Jan-2007	9-Jun-2009	3-Sep-2007	8-Jun-2010	10-Sep-2007	9-Jun-2010	20-May-2008	12-Jun-2008	22-May-2008	31-Jul-2008
Herbicides												
Atrazine	5	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
De-ethyl Atrazine		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butylate		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanazine	10	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Desmetryn		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diphenylamine		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Eptam		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethalfluralin		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexazinone		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metalaxyl		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metribuzin	80	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metolachlor	50	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pirimicarb		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Profluralin		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Prometryn		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Propazine		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Simazine	10	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Terbuthylazine		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Terbutryn		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Triallate		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Triadimefon		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trifluralin	45	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Organochlorine Pesticides												
Alachlor		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aldrin + Dieldrin	0.7	0.5	ND	ND (0.02)	ND	ND	ND	ND	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
BHC, alpha-		0.3	ND	ND (0.1)	ND	ND	ND	ND	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
BHC, beta-		0.3	ND	ND (0.1)	ND	ND	ND	ND	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Captan		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorbenside		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlordane, alpha-		0.5	ND	ND (0.06)	ND	ND	ND	ND	ND (0.06)	ND (0.06)	ND (0.06)	ND (0.06)
Chlordane, gamma-		0.5	ND	ND (0.06)	ND	ND	ND	ND	ND (0.06)	ND (0.06)	ND (0.06)	ND (0.06)
Chlorfenson (Ovex)		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorothalonil (Daconil)		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorpropham		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dacthal (DCPA)		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4'-DDE		0.01	ND (0.1)	ND	ND	ND	ND	ND	ND	ND	ND	ND
DDT - orthopara (2,4')		0.01	ND (0.2)	ND	ND	ND	ND	ND	ND	ND	ND	ND
DDT - parapara (4,4')		0.01	ND (0.2)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diallate(e/z)		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlobenil		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichloran		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlofluanid		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dicofol		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Endosulfan I		0.5	ND	ND (0.2)	ND	ND	ND	ND	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Endosulfan II		0.5	ND	ND (0.2)	ND	ND	ND	ND	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Endosulfan Sulphate		0.5	ND	ND (0.2)	ND	ND	ND	ND	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)
Endrin		0.5	ND	ND (0.02)	ND	ND	ND	ND	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Folpet		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Heptachlor		0.5	ND	ND (0.1)	ND	ND	ND	ND	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Lindane (BHC), gamma-		0.5	ND	ND (0.1)	ND	ND	ND	ND	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Methidathion		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methoxychlor	900	0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mirex		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrofen		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Permethrin-cis/trans		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Procymidone		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pronamide		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Quintozene (Pentachloronitrobenzene)		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tecnazene		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetradifon		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tolylfluanid		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinclozolin		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Organophosphorus Pesticides												
Aspon		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Azinphos ethyl		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Azinphos methyl	20	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromacil		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benfluralin		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromophos		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromophos-ethyl		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbophenothion		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorfenvinphos(e/z)		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlormephos		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorpyrifos	90	0.2	ND	ND (0.01)	ND	ND	ND	ND	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
Chlorpyriphos-methyl		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorthiophos		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cyanophos		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Demeton		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diazinon	20	0.3	ND	ND (0.02)	ND	ND	ND	ND	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)
Dichlofenthion		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorvos/Naled		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dicrotophos		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dimethoate	20	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dioxathion		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Disulfoton (Di-Syston)		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
EPN		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethion		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fenchlorphos (Ronnel)		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fenitrothion		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fensulfothion		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fenthion		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fonofos		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iodofenphos		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isofenphos		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Malaoxon		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Malathion	190	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mevinphos-cis/trans (Phosdrin)		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Omethoate		1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Parathion	50	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Parathion methyl		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phorate (Thimet)	2	0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phosalone		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phosmet		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phosphamidon		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pirimiphos-ethyl		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pirimiphos-methyl		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Profenophos		0.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrazophos		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Quinalphos		0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Sulfotep		0.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Terbufos	1	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachlorvinphos (Stirophos)		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Other												
Hexachlorobenzene		0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Iprodione		1	-	ND	-	-	-	-	ND	ND	ND	ND
Propiconazole		0.5	-	ND	-	-	-	-	ND	ND	ND	ND

Notes:
AO = Aesthetic Objective.
ND = not detected
ND( ) = not detected at the elevated detection limit shown brackets ( )
All guidelines are health-based MACs or IMACs, unles otherwise indicated.
Shaded values exceed guidelines.

Table C4: Pesticide Results (ug/L)

Parameter	Drinking Water Guideline	Detection Limit	Arisaig (080)	Coldbrook (081)	Long Point (082)	Tatamagouche (083)	St. Peters (085)
			8-Sep-2009	5-Aug-2009	12-Aug-2009	21-Jul-2008	19-Jul-2011
Herbicides							
Atrazine	5	0.2	ND	ND	ND	ND	ND
De-ethyl Atrazine		0.3	ND	ND	ND	ND	ND
Butylate		0.5	ND	ND	ND	ND	ND
Cyanazine	10	0.5	ND	ND	ND	ND	ND
Desmetryn		0.3	ND	ND	ND	ND	ND
Diphenylamine		0.1	ND	ND	ND	ND	ND
Eptam		0.5	ND	ND	ND	ND	ND
Ethalfluralin		0.5	ND	ND	ND	ND	ND
Hexazinone		0.1	ND	ND	ND	ND	ND
Metalaxyl		0.3	ND	ND	ND	ND	ND
Metribuzin	80	0.3	ND	ND	ND	ND	ND
Metolachlor	50	0.2	ND	ND	ND	ND	ND
Pirimicarb		0.5	ND	ND	ND	ND	ND
Profluralin		0.5	ND	ND	ND	ND	ND
Prometryn		0.2	ND	ND	ND	ND	ND
Propazine		0.1	ND	ND	ND	ND	ND
Simazine	10	0.5	ND	ND	ND	ND	ND
Terbuthylazine		0.1	ND	ND	ND	ND	ND
Terbutryn		0.2	ND	ND	ND	ND	ND
Triallate		0.3	ND	ND	ND	ND	ND
Triadimefon		0.3	ND	ND	ND	ND	ND
Trifluralin	45	0.2	ND	ND	ND	ND	ND
Organochlorine Pesticides							
Alachlor		0.5	ND	ND	ND	ND	ND
Aldrin + Dieldrin	0.7	0.5	ND (0.02)	ND (0.05)	ND (0.05)	ND (0.02)	ND
BHC, alpha-		0.3	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND
BHC, beta-		0.3	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND
Captan		1	ND	ND	ND	ND	ND
Chlorbenside		0.1	ND	ND	ND	ND	ND
Chlordane, alpha-		0.5	ND (0.06)	ND (0.06)	ND (0.06)	ND (0.06)	ND
Chlordane, gamma-		0.5	ND (0.06)	ND (0.06)	ND (0.06)	ND (0.06)	ND
Chlorfenson (Ovex)		0.2	ND	ND	ND	ND	ND
Chlorothalonil (Daconil)		1	ND	ND	ND	ND	ND
Chlorpropham		0.2	ND	ND	ND	ND	ND
Dacthal (DCPA)		0.1	ND	ND	ND	ND	ND
4,4'-DDE		0.01	ND	ND	ND	ND	ND
DDT - orthopara (2,4')		0.01	ND	ND	ND	ND	ND
DDT - parapara (4,4')		0.01	ND	ND	ND	ND	ND
Diallate(e/z)		0.5	ND	ND	ND	ND	ND
Dichlobenil		0.2	ND	ND	ND	ND	ND
Dichloran		0.5	ND	ND	ND	ND	ND
Dichlofluanid		0.5	ND	ND	ND	ND	ND
Dicofol		0.2	ND	ND	ND	ND	ND
Endosulfan I		0.5	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND
Endosulfan II		0.5	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND
Endosulfan Sulphate		0.5	ND (0.2)	ND (0.2)	ND (0.2)	ND (0.2)	ND
Endrin		0.5	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND
Folpet		1	ND	ND	ND	ND	ND
Heptachlor		0.5	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND
Lindane (BHC), gamma-		0.5	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND
Methidathion		0.3	ND	ND	ND	ND	ND
Methoxychlor	900	0.1	ND	ND	ND	ND	ND
Mirex		0.3	ND	ND	ND	ND	ND
Nitrofen		0.2	ND	ND	ND	ND	ND
Permethrin-cis/trans		0.5	ND	ND	ND	ND	ND
Procymidone		0.2	ND	ND	ND	ND	ND
Pronamide		0.2	ND	ND	ND	ND	ND
Quintozene (Pentachloronitrobenzene)		0.5	ND	ND	ND	ND	ND
Tecnazene		0.5	ND	ND	ND	ND	ND
Tetradifon		0.2	ND	ND	ND	ND	ND
Tolylfluanid		0.5	ND	ND	ND	ND	ND
Vinclozolin		0.5	ND	ND	ND	ND	ND
Organophosphorus Pesticides							
Aspon		0.2	ND	ND	ND	ND	ND
Azinphos ethyl		0.5	ND	ND	ND	ND	ND
Azinphos methyl	20	1	ND	ND	ND	ND	ND
Bromacil		0.1	ND	ND	ND	ND	ND
Benfluralin		0.1	ND	ND	ND	ND	ND
Bromophos		0.1	ND	ND	ND	ND	ND
Bromophos-ethyl		0.3	ND	ND	ND	ND	ND
Carbophenothion		0.3	ND	ND	ND	ND	ND
Chlorfenvinphos(e/z)		0.1	ND	ND	ND	ND	ND
Chlormephos		0.5	ND	ND	ND	ND	ND
Chlorpyrifos	90	0.2	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND
Chlorpyriphos-methyl		0.1	ND	ND	ND	ND	ND
Chlorthiophos		0.3	ND	ND	ND	ND	ND
Cyanophos		0.2	ND	ND	ND	ND	ND
Demeton		1	ND	ND	ND	ND	ND
Diazinon	20	0.3	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND
Dichlofenthion		0.2	ND	ND	ND	ND	ND
Dichlorvos/Naled		0.1	ND	ND	ND	ND	ND
Dicrotophos		0.5	ND	ND	ND	ND	ND
Dimethoate	20	0.5	ND	ND	ND	ND	ND
Dioxathion		1	ND	ND	ND	ND	ND
Disulfoton (Di-Syston)		1	ND	ND	ND	ND	ND
EPN		0.5	ND	ND	ND	ND	ND
Ethion		0.2	ND	ND	ND	ND	ND
Fenchlorphos (Ronnel)		0.1	ND	ND	ND	ND	ND
Fenitrothion		0.5	ND	ND	ND	ND	ND
Fensulfothion		0.1	ND	ND	ND	ND	ND
Fenthion		0.1	ND	ND	ND	ND	ND
Fonofos		0.1	ND	ND	ND	ND	ND
Iodofenphos		0.1	ND	ND	ND	ND	ND
Isofenphos		0.3	ND	ND	ND	ND	ND
Malaoxon		1	ND	ND	ND	ND	ND
Malathion	190	0.5	ND	ND	ND	ND	ND
Mevinphos-cis/trans (Phosdrin)		0.1	ND	ND	ND	ND	ND
Omethoate		1	ND	ND	ND	ND	ND
Parathion	50	0.5	ND	ND	ND	ND	ND
Parathion methyl		0.5	ND	ND	ND	ND	ND
Phorate (Thimet)	2	0.5	ND	ND	ND	ND	ND
Phosalone		0.2	ND	ND	ND	ND	ND
Phosmet		0.2	ND	ND	ND	ND	ND
Phosphamidon		0.2	ND	ND	ND	ND	ND
Pirimiphos-ethyl		0.5	ND	ND	ND	ND	ND
Pirimiphos-methyl		0.2	ND	ND	ND	ND	ND
Profenophos		0.5	ND	ND	ND	ND	ND
Pyrazophos		0.1	ND	ND	ND	ND	ND
Quinalphos		0.3	ND	ND	ND	ND	ND
Sulfotep		0.1	ND	ND	ND	ND	ND
Terbufos	1	0.3	ND	ND	ND	ND	ND
Tetrachlorvinphos (Stirophos)		0.2	ND	ND	ND	ND	ND
Other							
Hexachlorobenzene		0.2	ND	ND	ND	ND	ND
Iprodione		1	ND	ND	ND	ND	ND
Propiconazole		0.5	ND	ND	ND	ND	ND

Notes:
AO = Aesthetic Objective.
ND = not detected
ND( ) = not detected at the elevated detection limit shown brackets ( )
All guidelines are health-based MACs or IMACs, unles otherwise indicated.
Shaded values exceed guidelines.

Table C5: Tritium Results

Observation Well	Date Sampled	Tritium Level (TU)	Accuracy (+/- TU)	Age Estimate (Recent is >1952)
Wolfville (010)	22-Dec-2004	4.7	0.4	Mix/Recent
Hayden Lake (059)	9-Jun-2005	3.4	0.3	Mix
Hebron (063)	9-Jun-2005	4.6	0.4	Mix/Recent
Kentville (048)	15-Jun-2005	3.8	0.3	Mix
Point Aconi (030)	15-Sep-2005	3.62	0.34	Mix
Sydney (050)	15-Sep-2005	4.92	0.43	Mix/Recent
Durham (045)	5-Oct-2005	2.04	0.28	Mix
Annapolis Royal (062)	9-Nov-2005	0.27	0.17	Old
Greenwood (003)	23-Nov-2005	5.76	0.47	Recent
Meteghan (060)	12-Dec-2006	0.46	0.14	Old
North Grant (054)	13-Dec-2006	1.95	0.22	Mix
Stillwater (055)	13-Dec-2006	3.82	0.34	Mix
Margaree (064)	14-Dec-2006	0.41	0.14	Old
Dalem Lake (069)	14-Dec-2006	3.61	0.3	Mix
Monastery (028)	15-Dec-2006	0.94	0.17	Old
Amherst (071)	16-Dec-2006	4.0	0.32	Mix/Recent
Kelley River (073)	12-Jan-2007	3.78	0.32	Mix

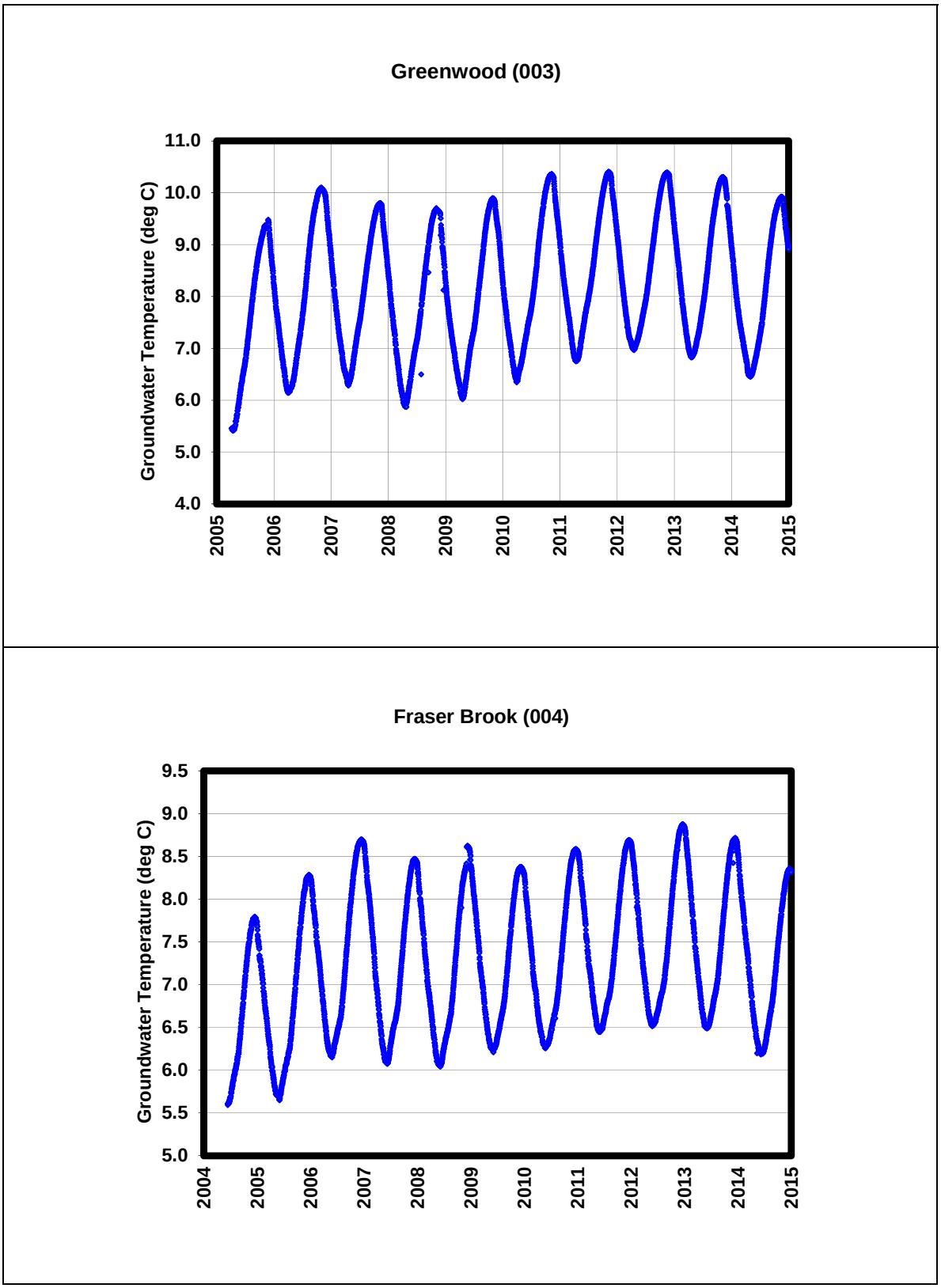
Age Estimate Guide	Tritium Level (TU)
Recent (recharged after 1952)	>5
Mixture of recent and old	1 to 5
Old (recharged before 1952)	<1
Source: Clark and Fritz, 1997	

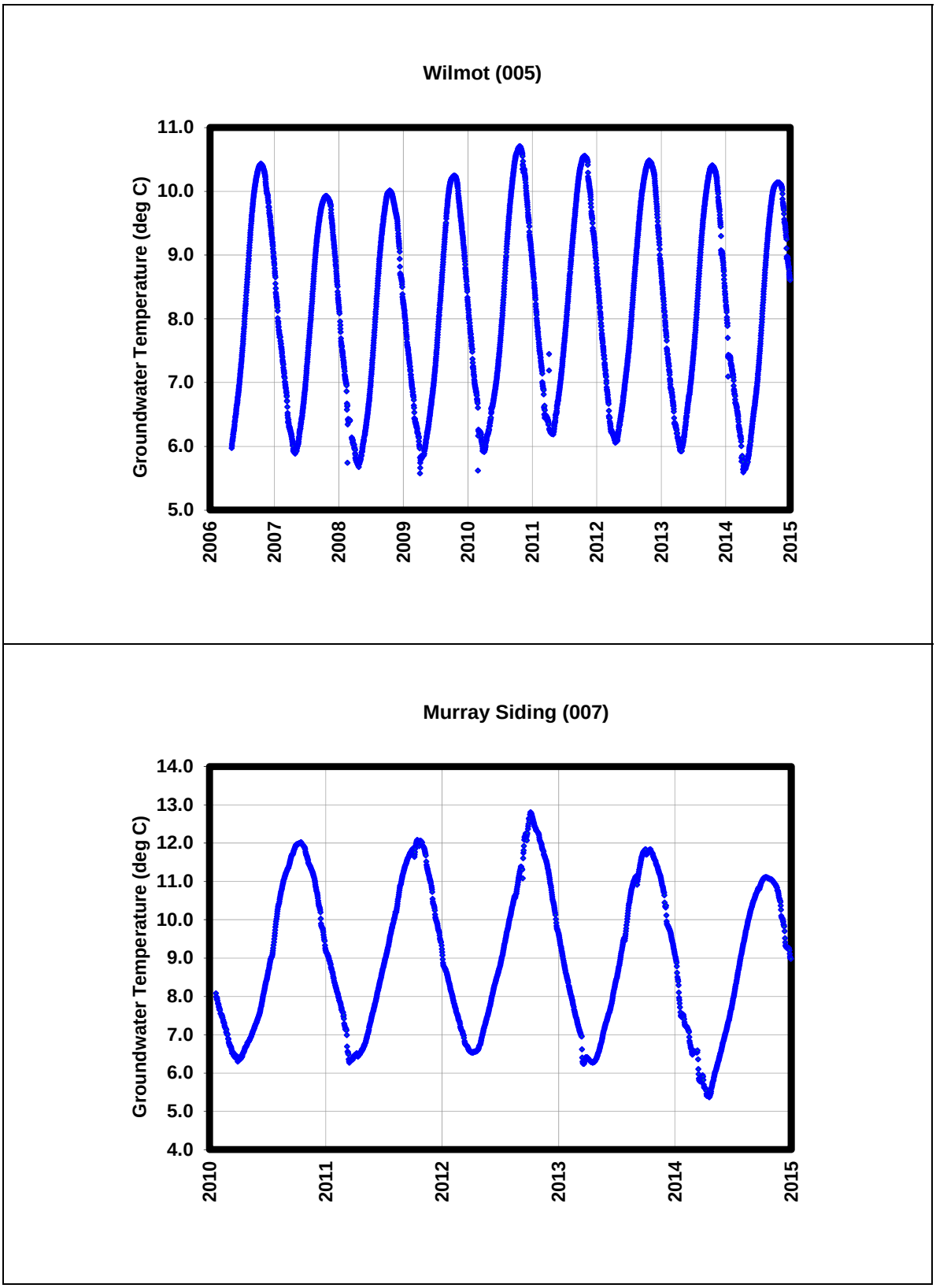
Table C6: Perchlorate Results

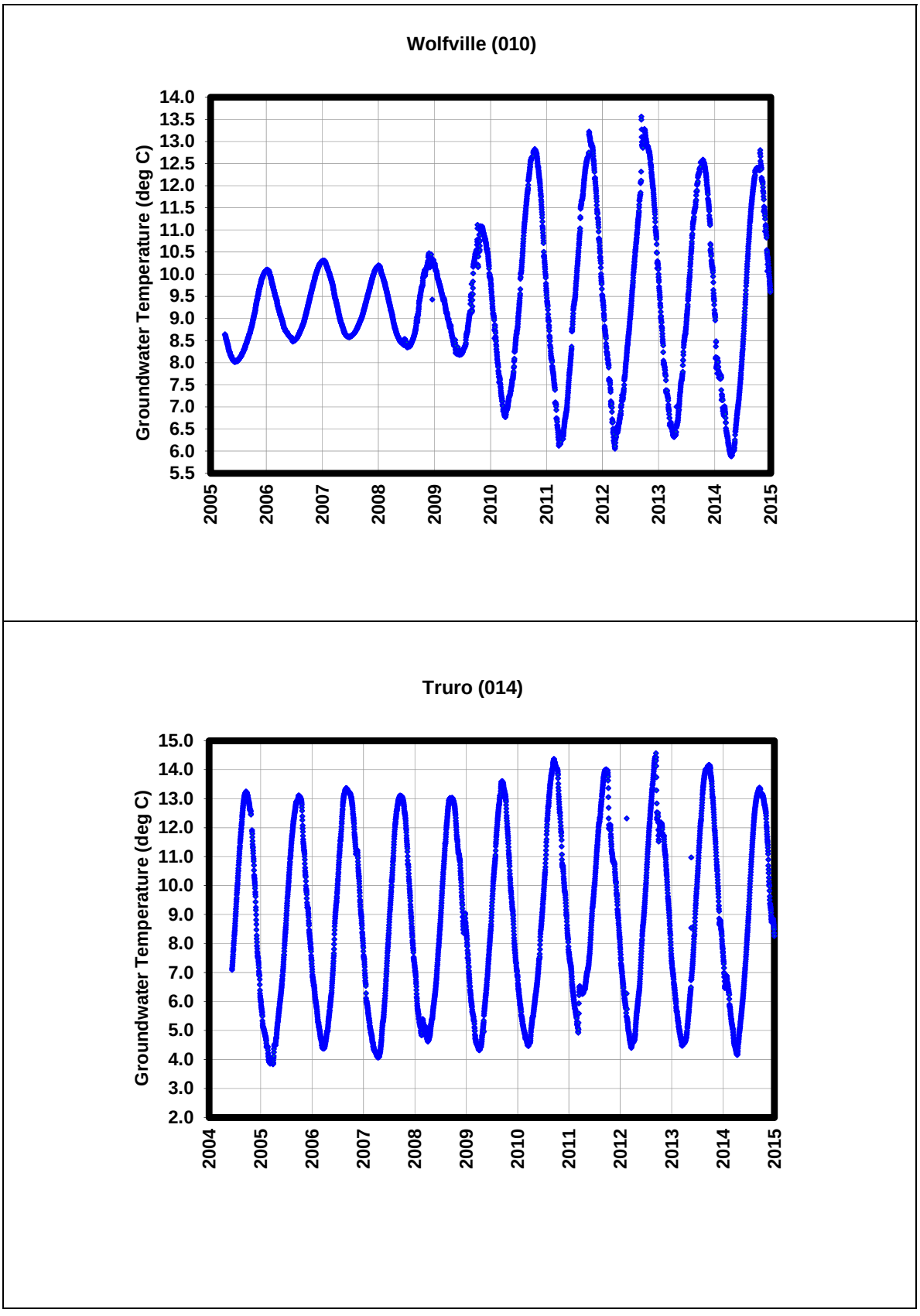
Observation Well	Date Sampled	Recommended Guidance Value (Health Canada, 2007) (ug/L)	Detection Limit (ug/L)	Perchlorate Result (ug/L)
Fraser Brook (004)	10-Dec-2004	6	0.2	ND
Wolfville (010)	22-Dec-2004	6	0.2	ND
Hayden Lake (059)	9-Jun-2005	6	0.011	0.014
Hebron (063)	9-Jun-2005	6	0.011	ND
Kentville (048)	15-Jun-2005	6	0.011	0.05
Point Aconi (030)	15-Sep-2005	6	0.011	ND
Sydney (050)	15-Sep-2005	6	0.011	ND
Durham (045)	5-Oct-2005	6	0.011	ND
Annapolis Royal (062)	9-Nov-2005	6	0.011	ND
Greenwood (003)	23-Nov-2005	6	0.011	ND
Monastery (028)	15-Dec-2006	6	0.011	ND

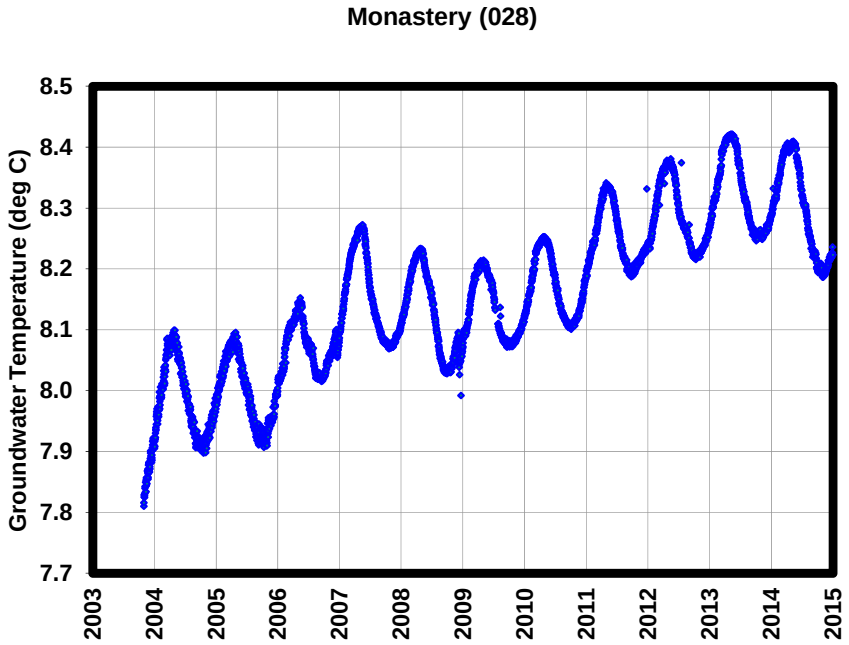
ND = Not Detected

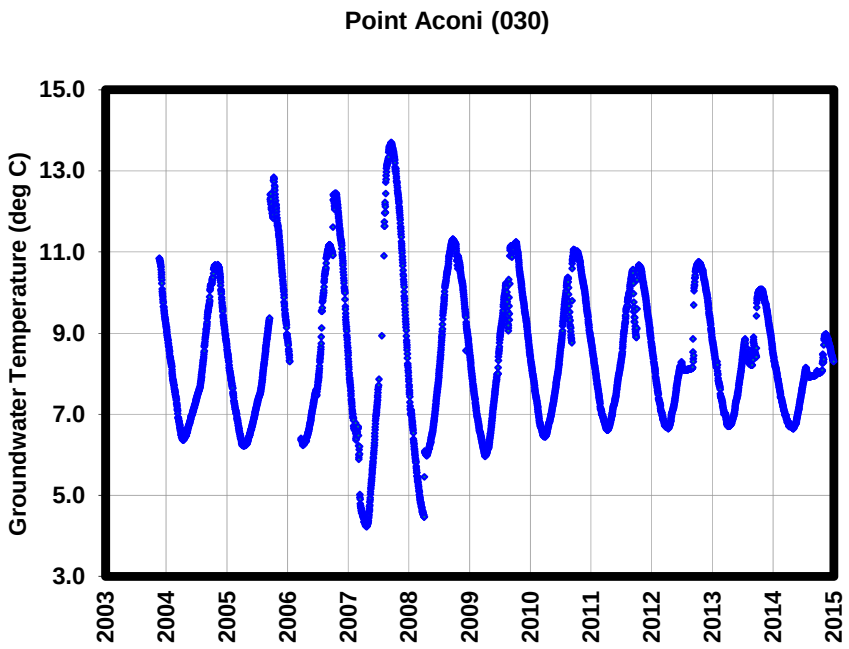
APPENDIX D
GROUNDWATER TEMPERATURE GRAPHS

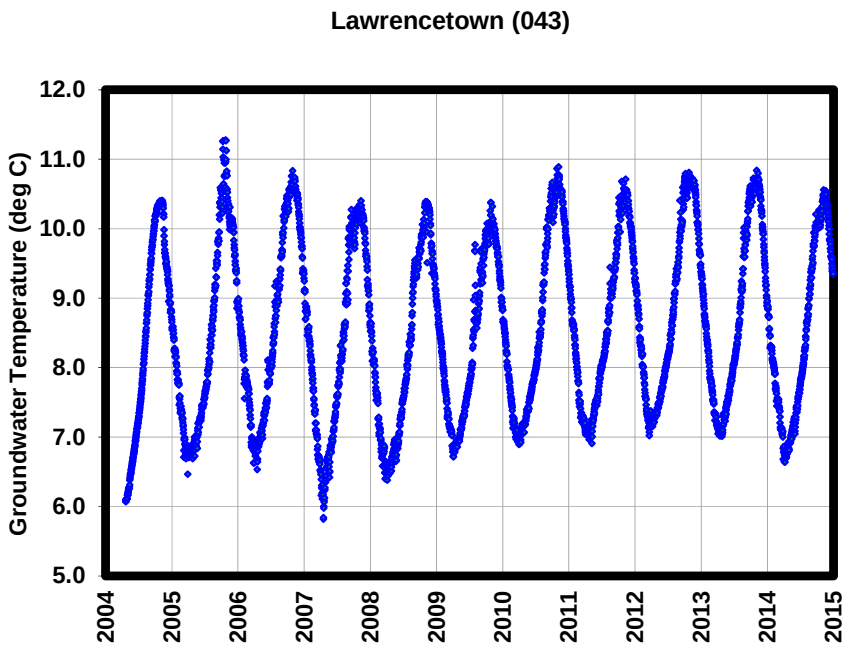

Greenwood (003)
Groundwater Temperature (deg C)
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Fraser Brook (004)
Groundwater Temperature (deg C)
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

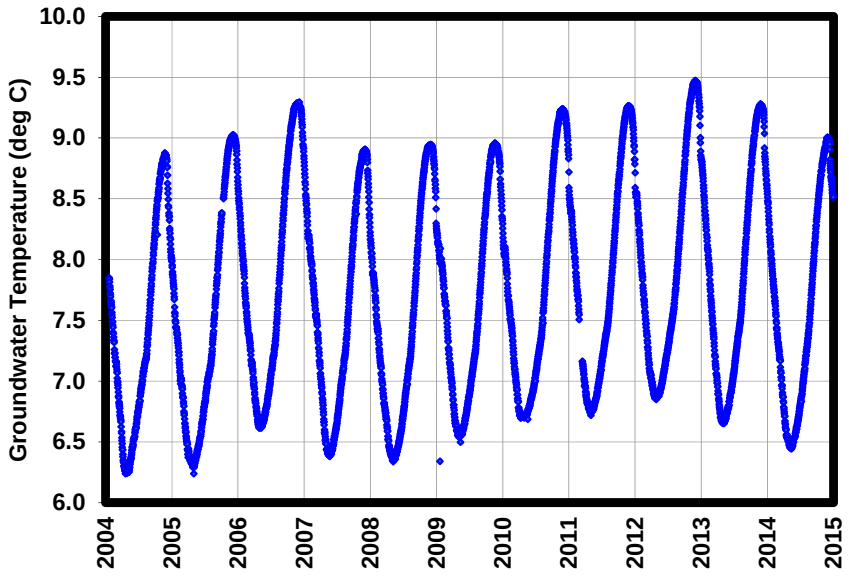

Wilmot (005)
Groundwater Temperature (deg C)
11.0
10.0
9.0
8.0
7.0
6.0
5.0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Murray Siding (007)
Groundwater Temperature (deg C)
14.0
13.0
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
2010
2011
2012
2013
2014
2015

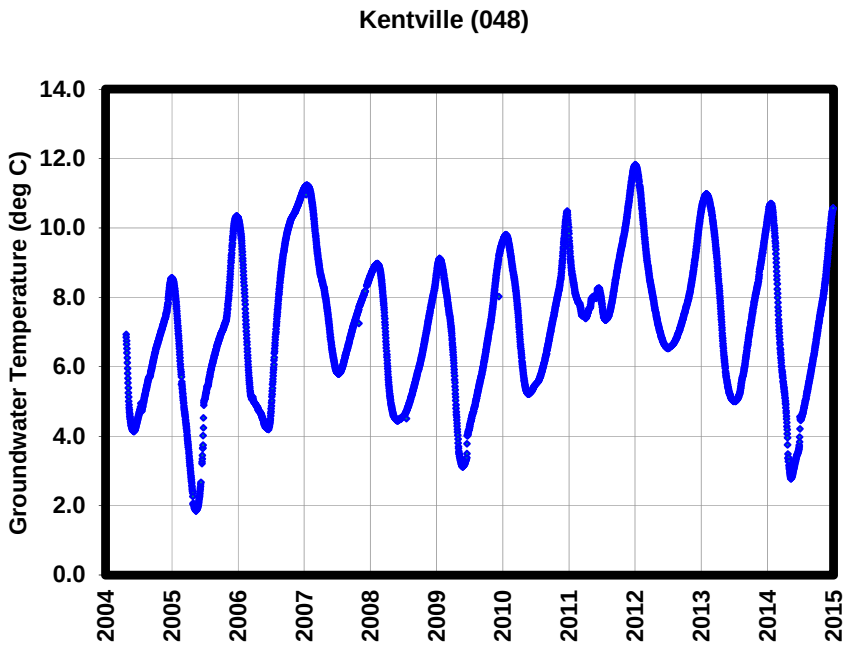

Wolfville (010)
Groundwater Temperature (deg C)
14.0
13.5
13.0
12.5
12.0
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Truro (014)
Groundwater Temperature (deg C)
15.0
14.0
13.0
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

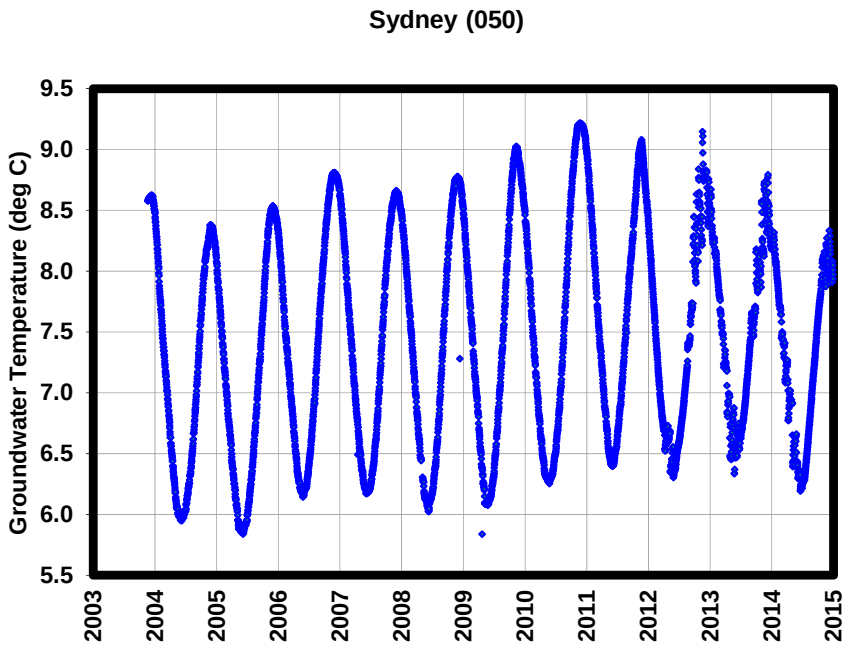

Monastery (028)
Groundwater Temperature (deg C)
8.5
8.4
8.3
8.2
8.1
8.0
7.9
7.8
7.7
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

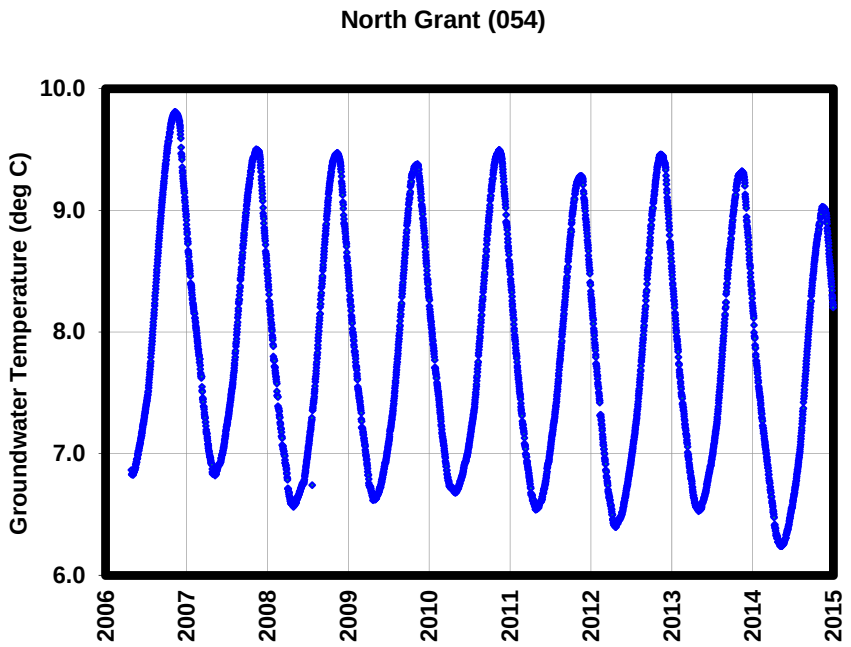

Point Aconi (030)
Groundwater Temperature (deg C)
15.0
13.0
11.0
9.0
7.0
5.0
3.0
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

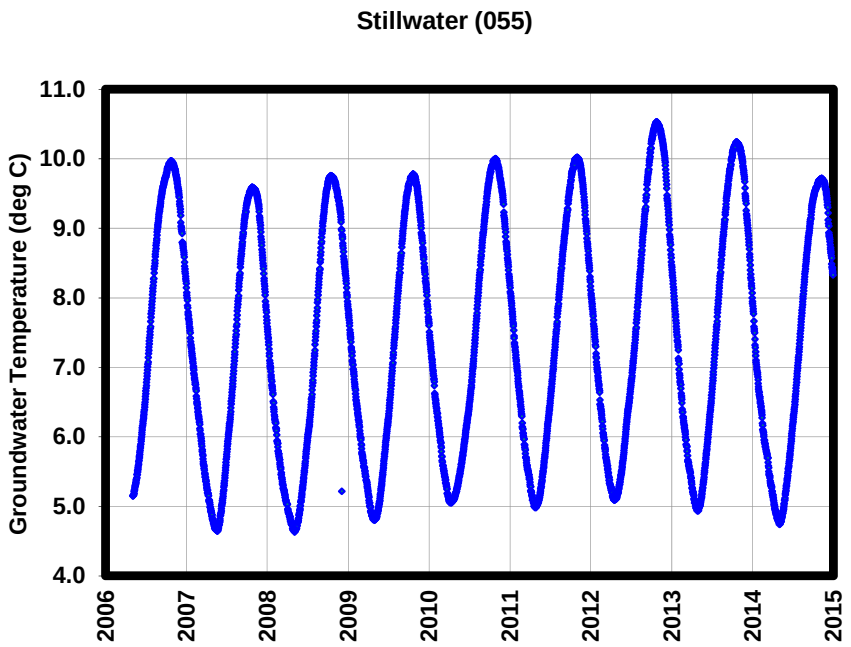

Lawrencetown (043)
Groundwater Temperature (deg C)
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

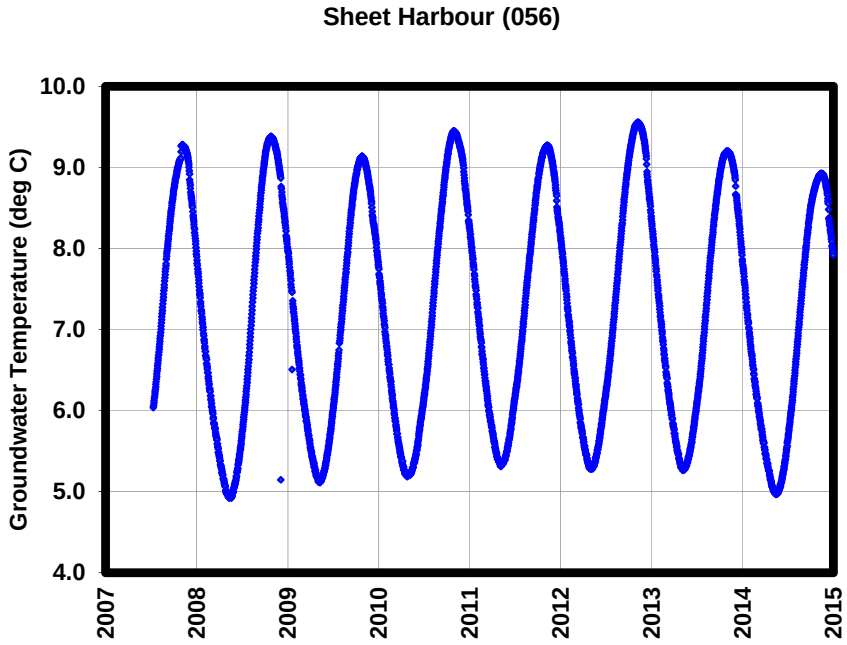

Durham (045)
Groundwater Temperature (deg C)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

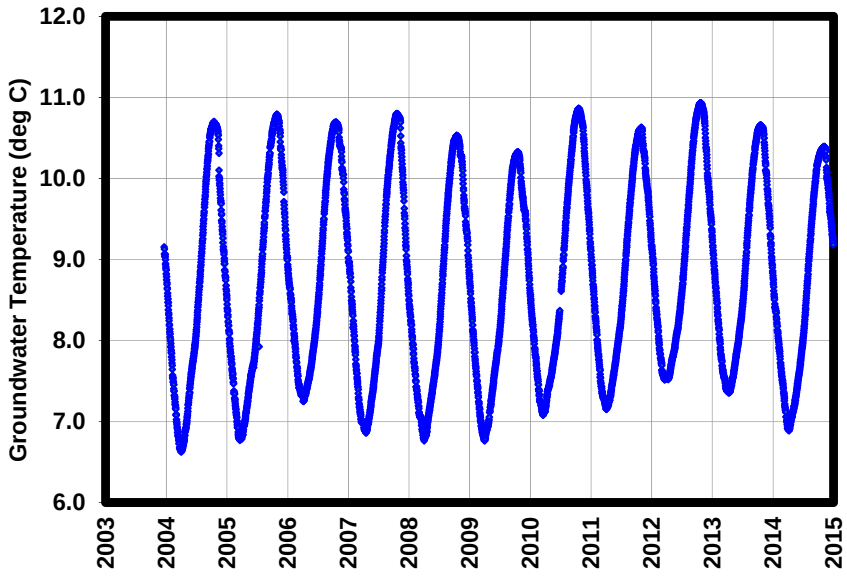

Kentville (048)
Groundwater Temperature (deg C)
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

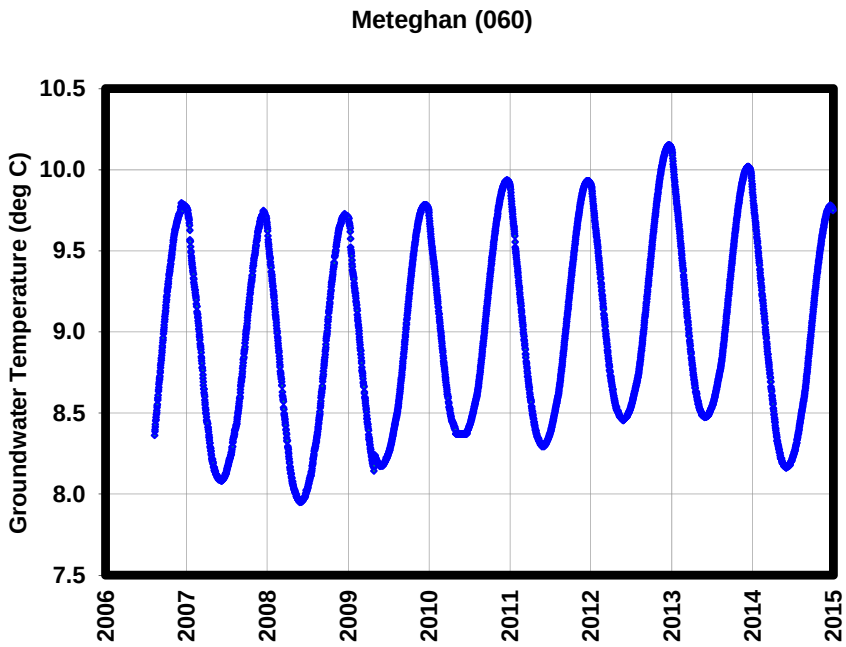

Sydney (050)
Groundwater Temperature (deg C)
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

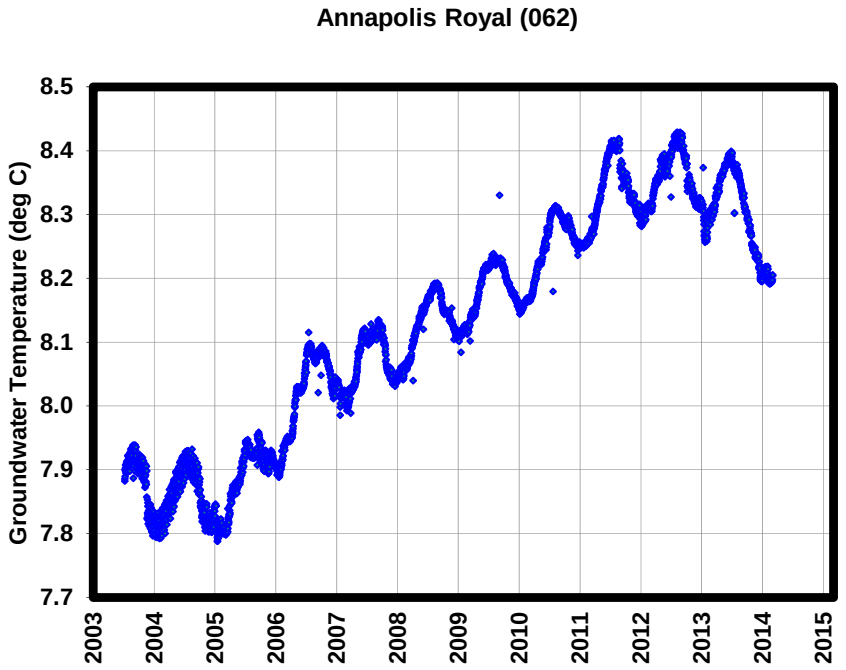

North Grant (054)
Groundwater Temperature (deg C)
10.0
9.0
8.0
7.0
6.0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

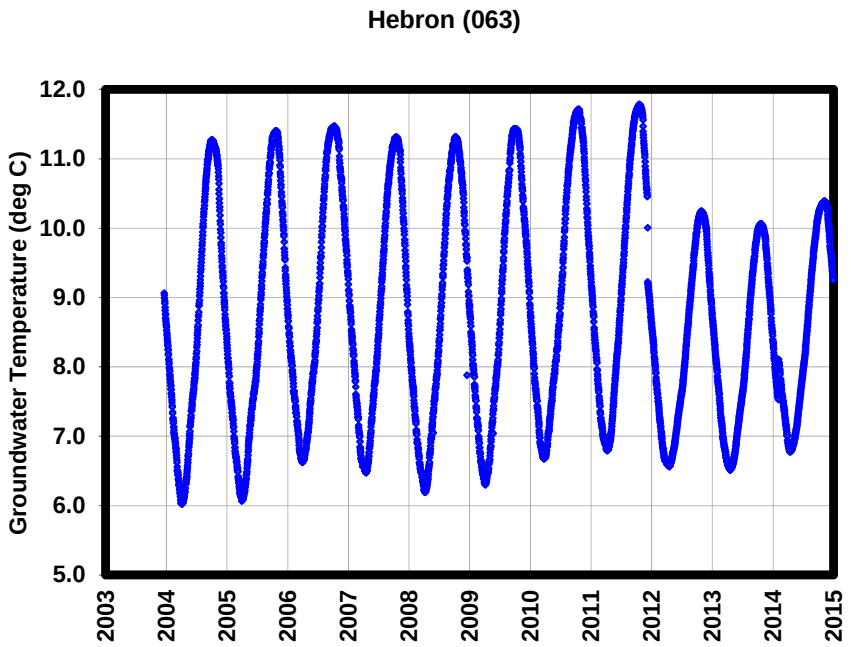

Stillwater (055)
Groundwater Temperature (deg C)
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

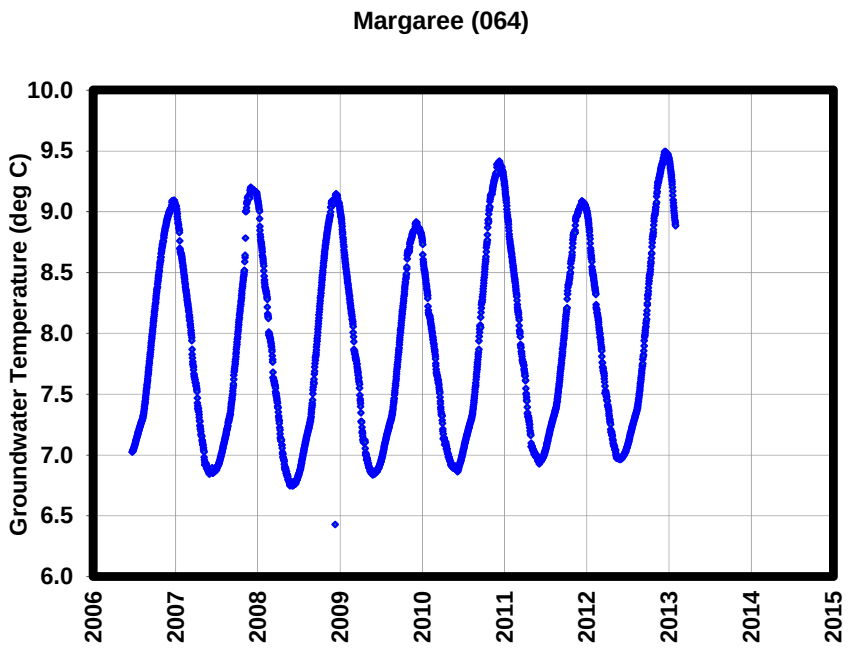

Sheet Harbour (056)
Groundwater Temperature (deg C)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
2007
2008
2009
2010
2011
2012
2013
2014
2015

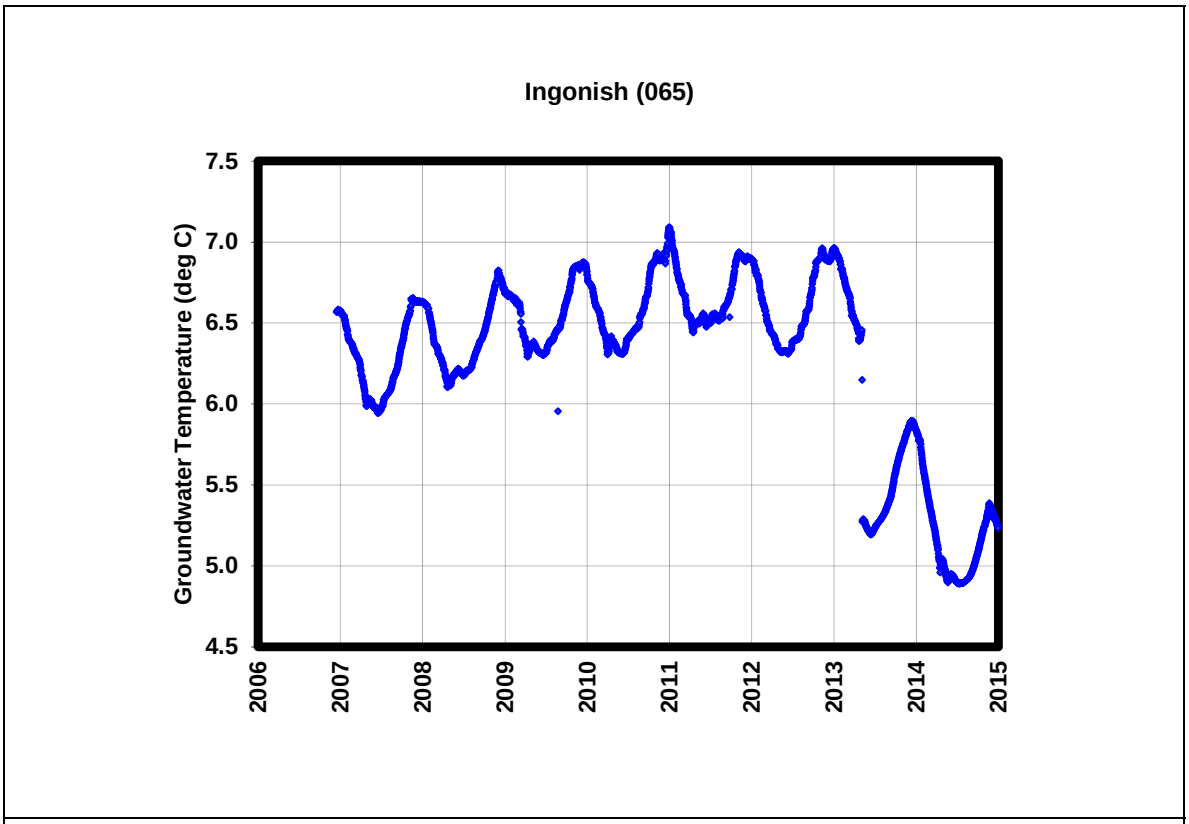

Hayden Lake (059)
Groundwater Temperature (deg C)
12.0
11.0
10.0
9.0
8.0
7.0
6.0
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

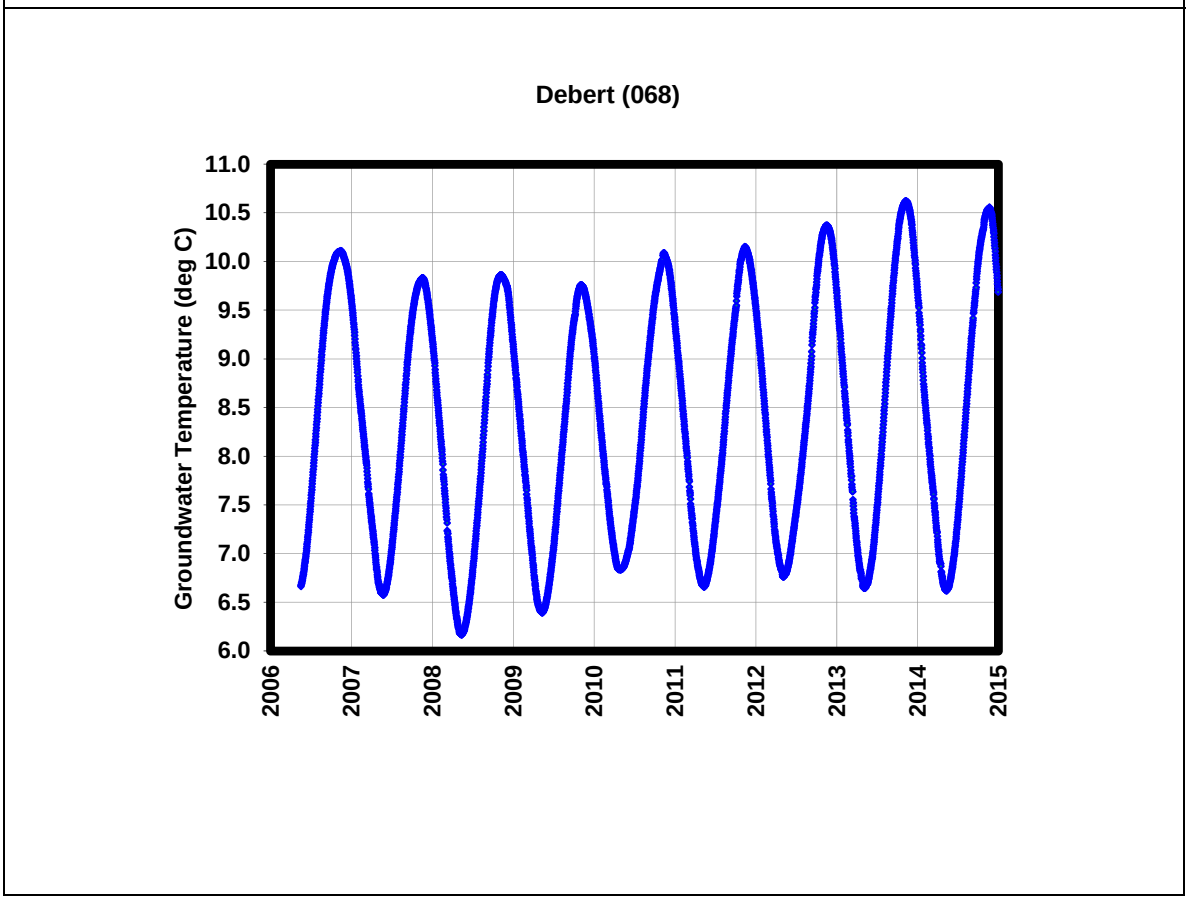

Meteghan (060)
Groundwater Temperature (deg C)
10.5
10.0
9.5
9.0
8.5
8.0
7.5
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

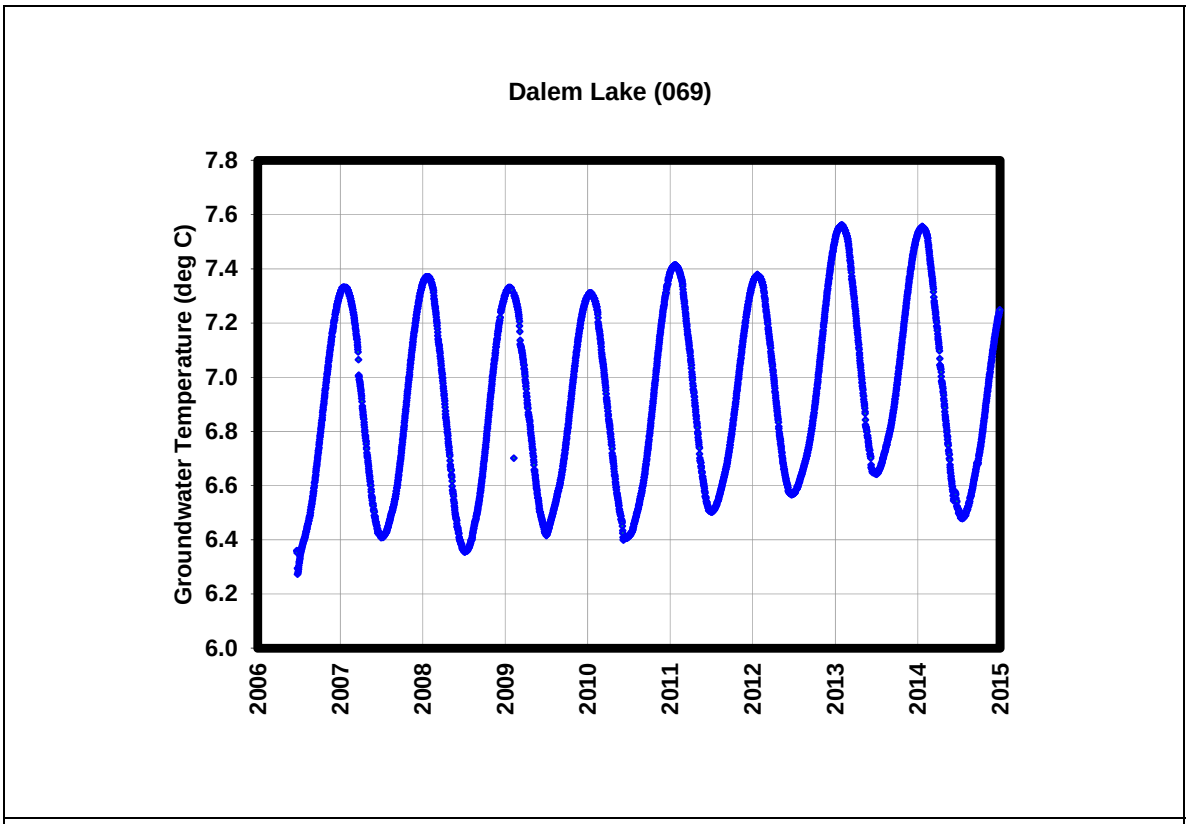

Annapolis Royal (062)
Groundwater Temperature (deg C)
8.5
8.4
8.3
8.2
8.1
8.0
7.9
7.8
7.7
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

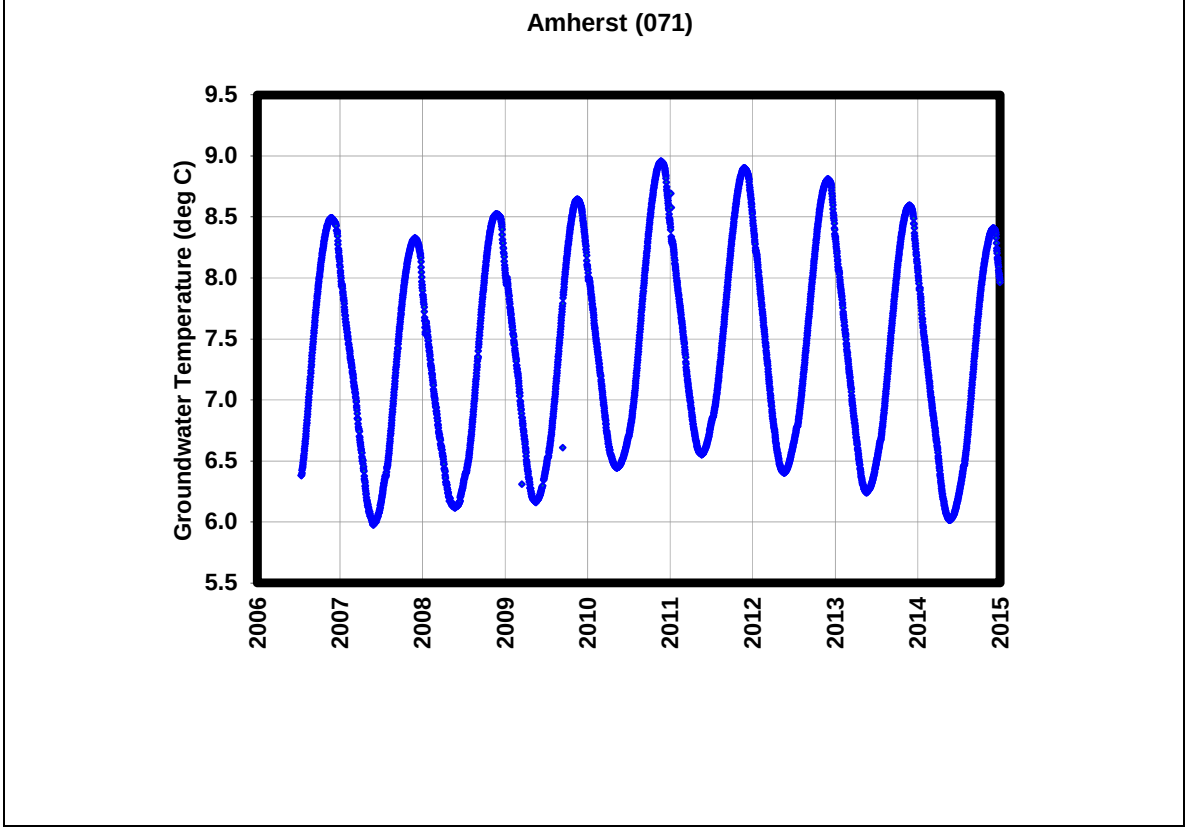

Hebron (063)
Groundwater Temperature (deg C)
12.0
11.0
10.0
9.0
8.0
7.0
6.0
5.0
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

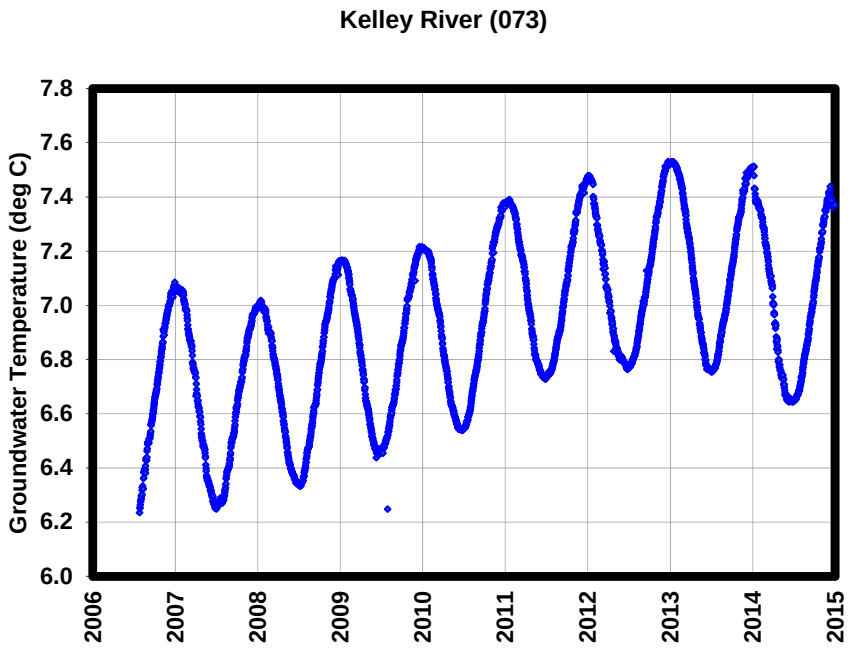

Margaree (064)
Groundwater Temperature (deg C)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

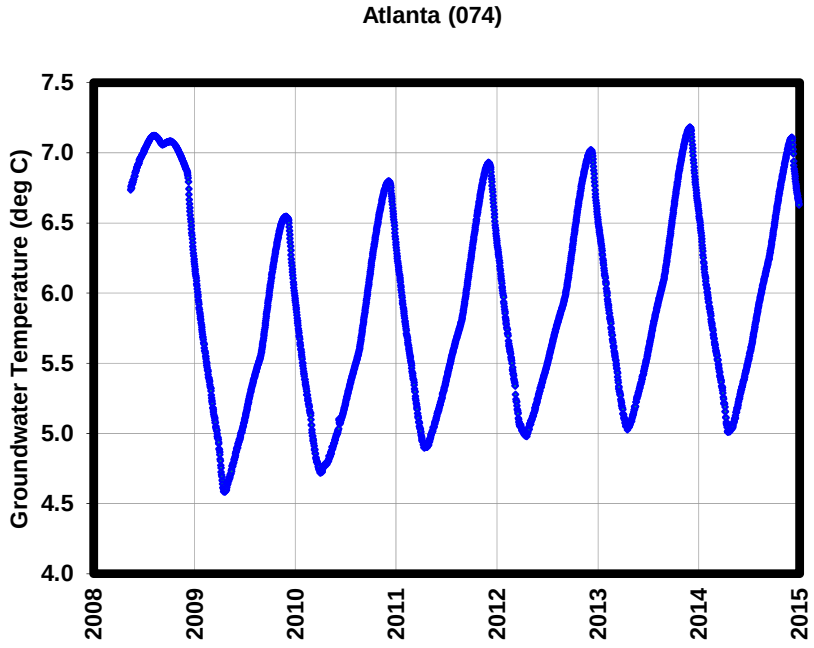

Ingonish (065)
Groundwater Temperature (deg C)
7.5
7.0
6.5
6.0
5.5
5.0
4.5
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

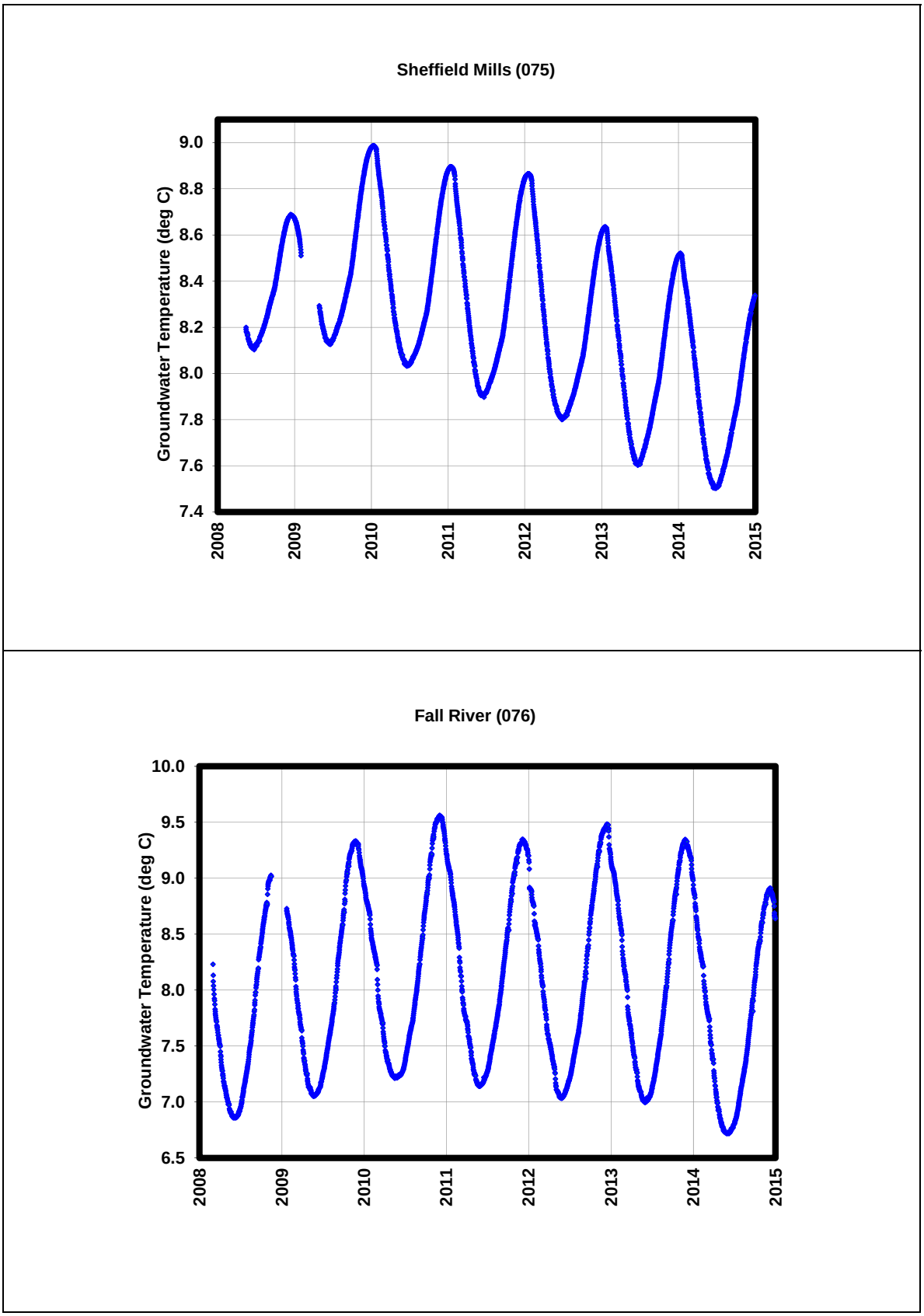

Debert (068)
Groundwater Temperature (deg C)
11.0
10.5
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

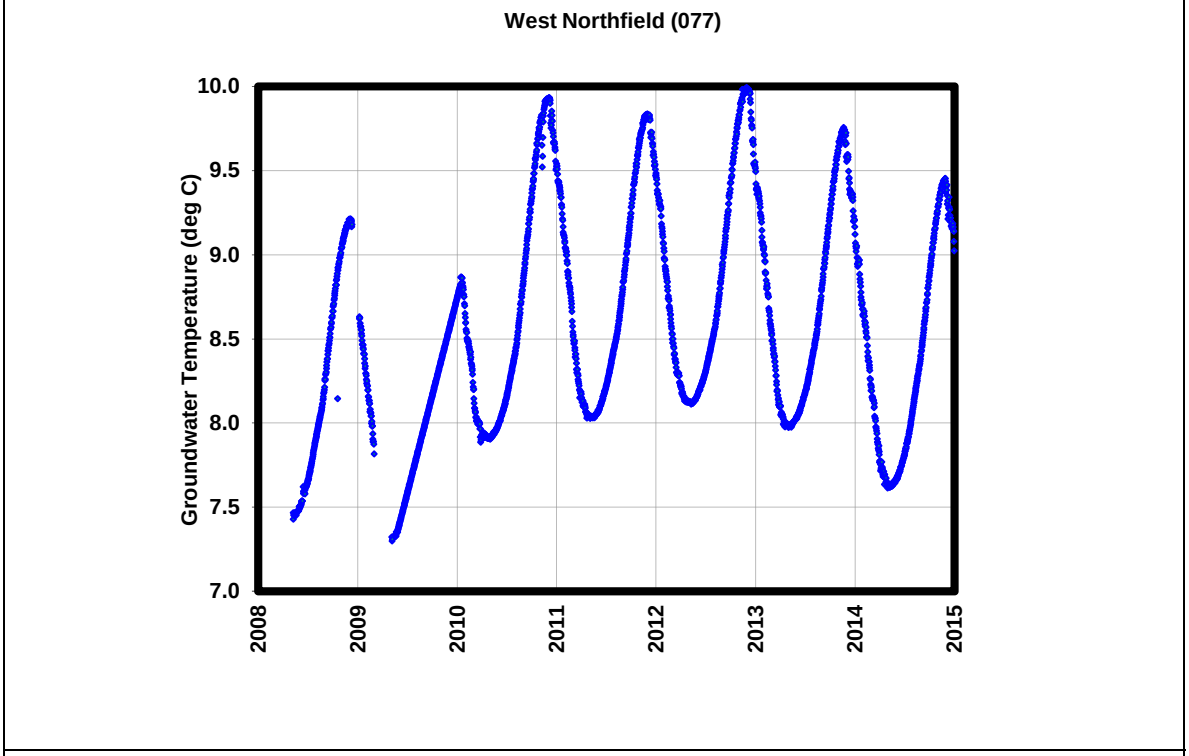

Dalem Lake (069)
Groundwater Temperature (deg C)
7.8
7.6
7.4
7.2
7.0
6.8
6.6
6.4
6.2
6.0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

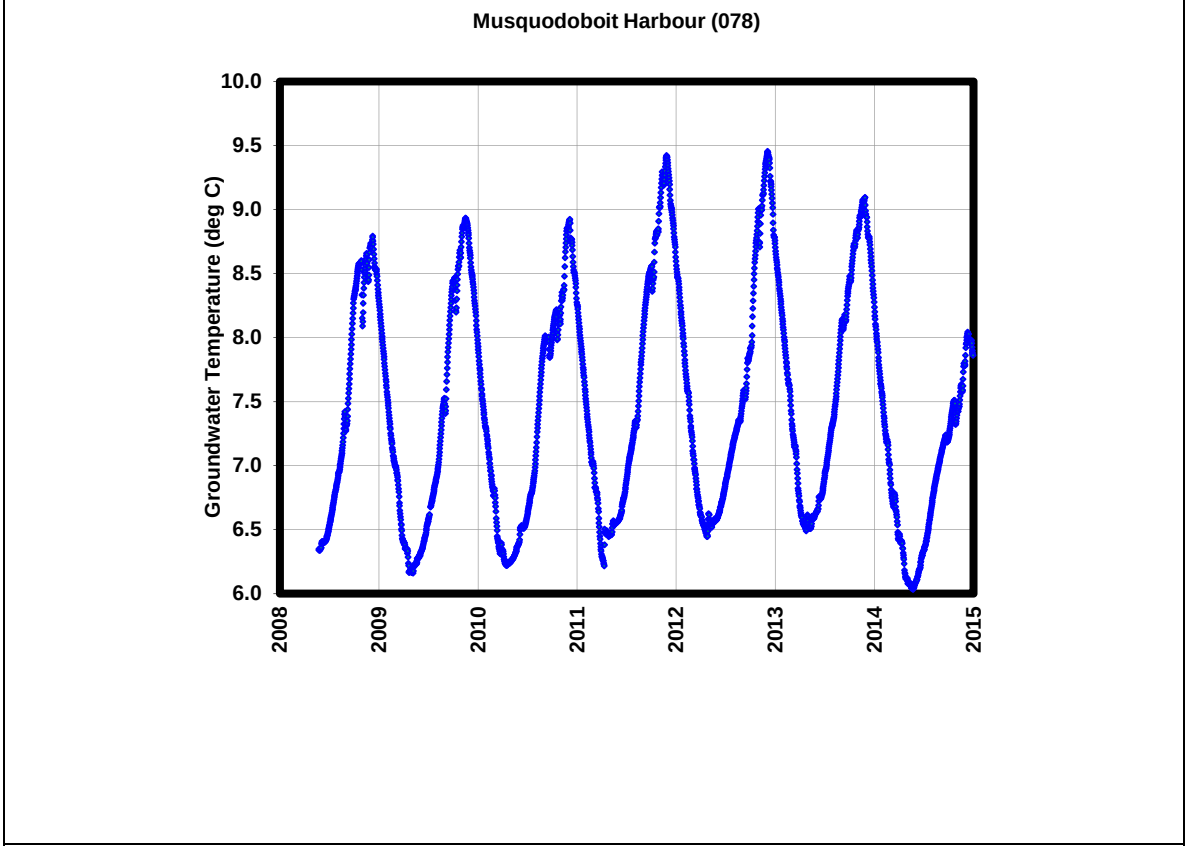

Amherst (071)
Groundwater Temperature (deg C)
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

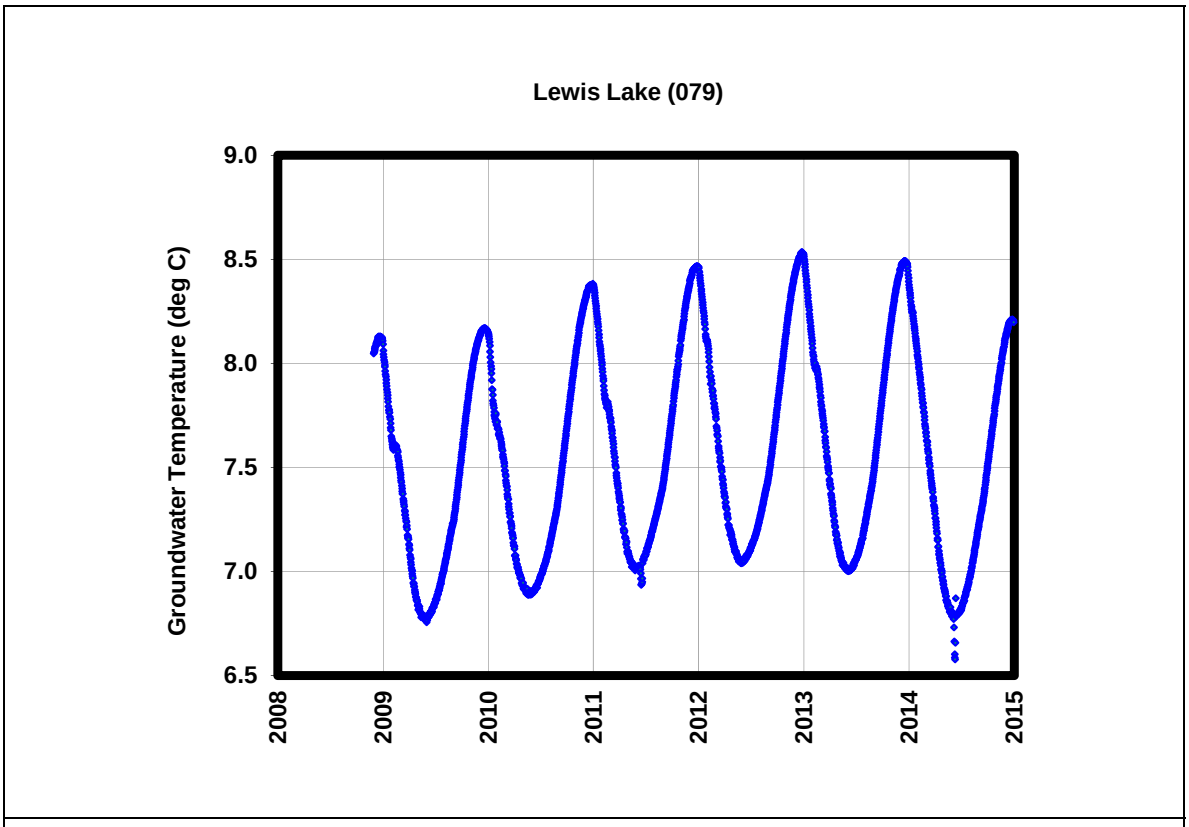

Kelley River (073)
Groundwater Temperature (deg C)
7.8
7.6
7.4
7.2
7.0
6.8
6.6
6.4
6.2
6.0
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

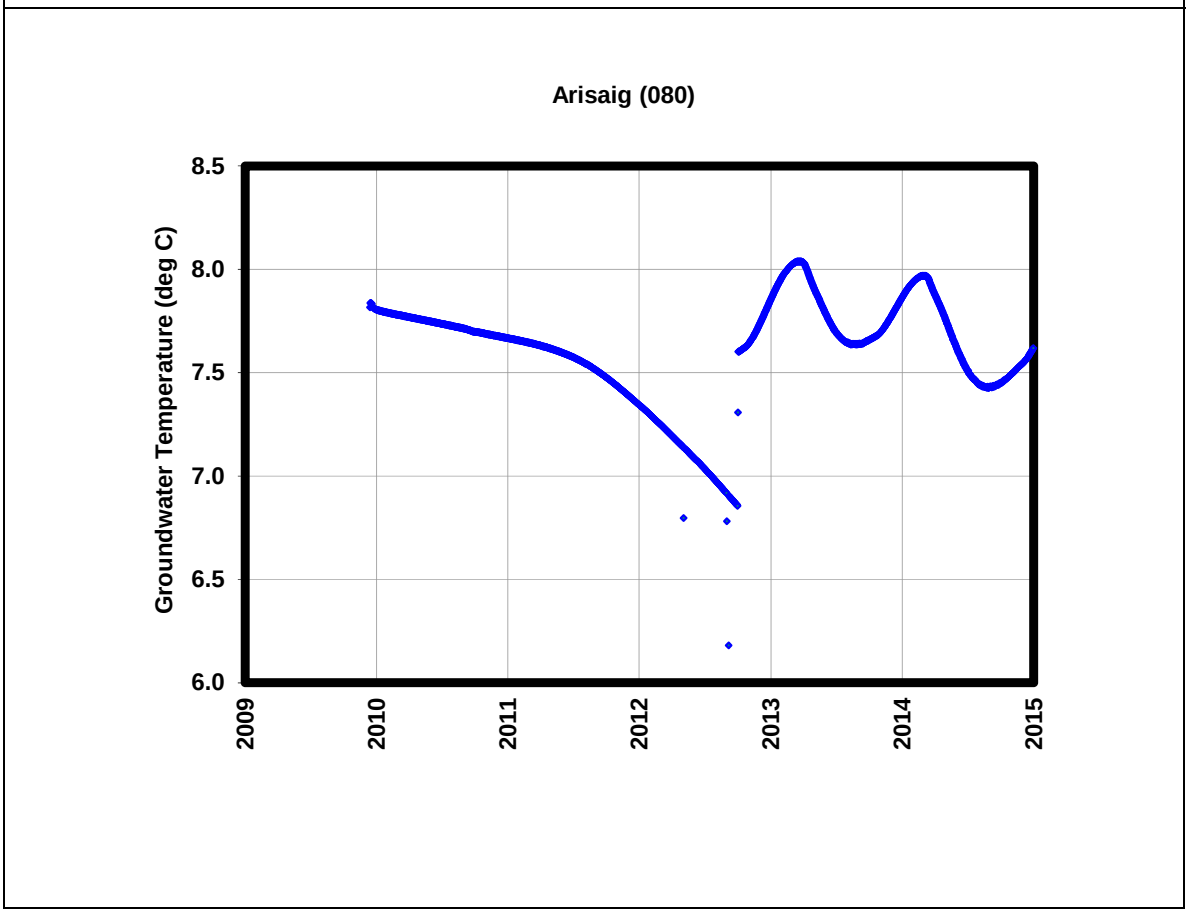

Atlanta (074)
Groundwater Temperature (deg C)
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
2008
2009
2010
2011
2012
2013
2014
2015

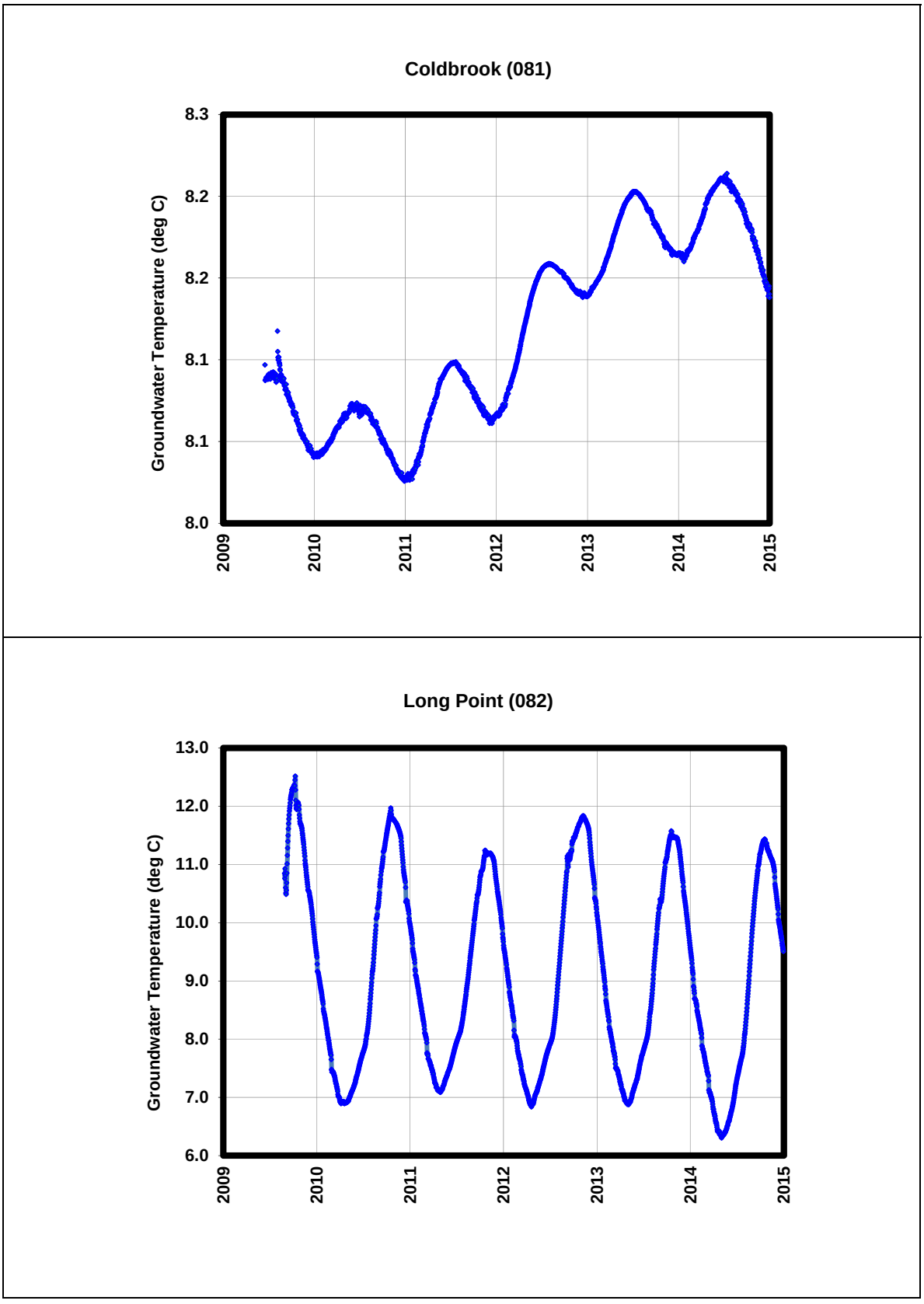

Sheffield Mills (075)
Groundwater Temperature (deg C)
9.0
8.8
8.6
8.4
8.2
8.0
7.8
7.6
7.4
2008
2009
2010
2011
2012
2013
2014
2015
Fall River (076)
Groundwater Temperature (deg C)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
2008
2009
2010
2011
2012
2013
2014
2015

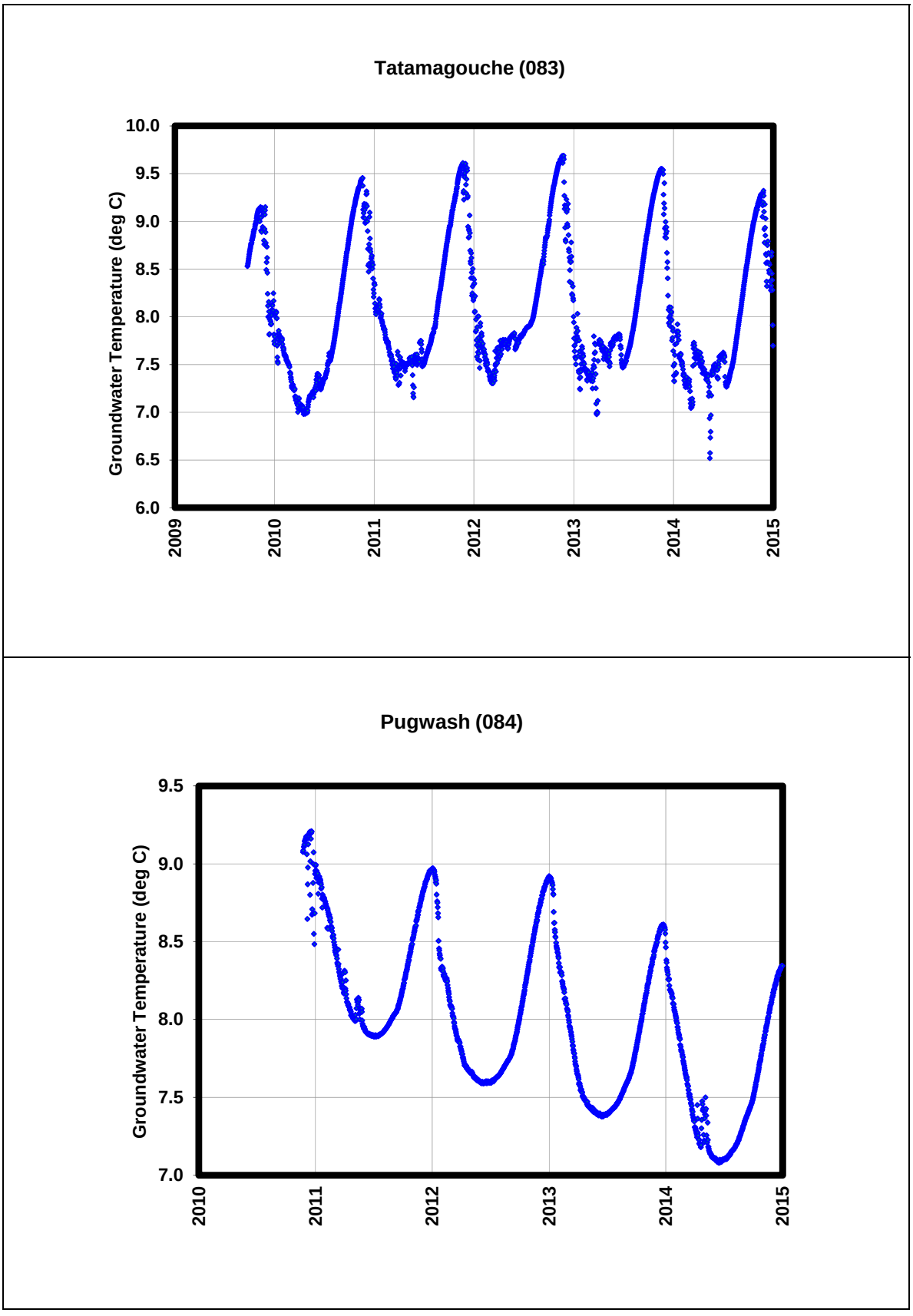

West Northfield (077)
Groundwater Temperature (deg C)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
2008
2009
2010
2011
2012
2013
2014
2015

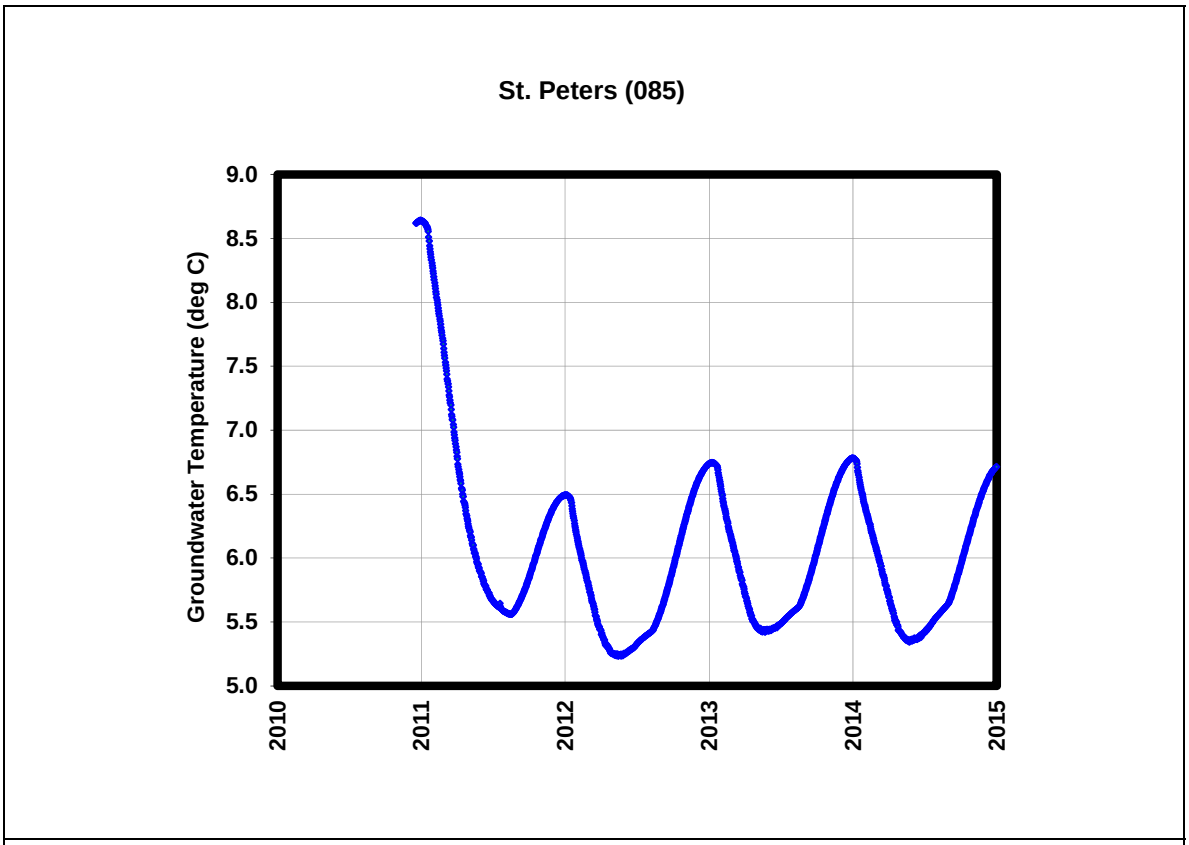

Musquodoboit Harbour (078)
Groundwater Temperature (deg C)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
2008
2009
2010
2011
2012
2013
2014
2015

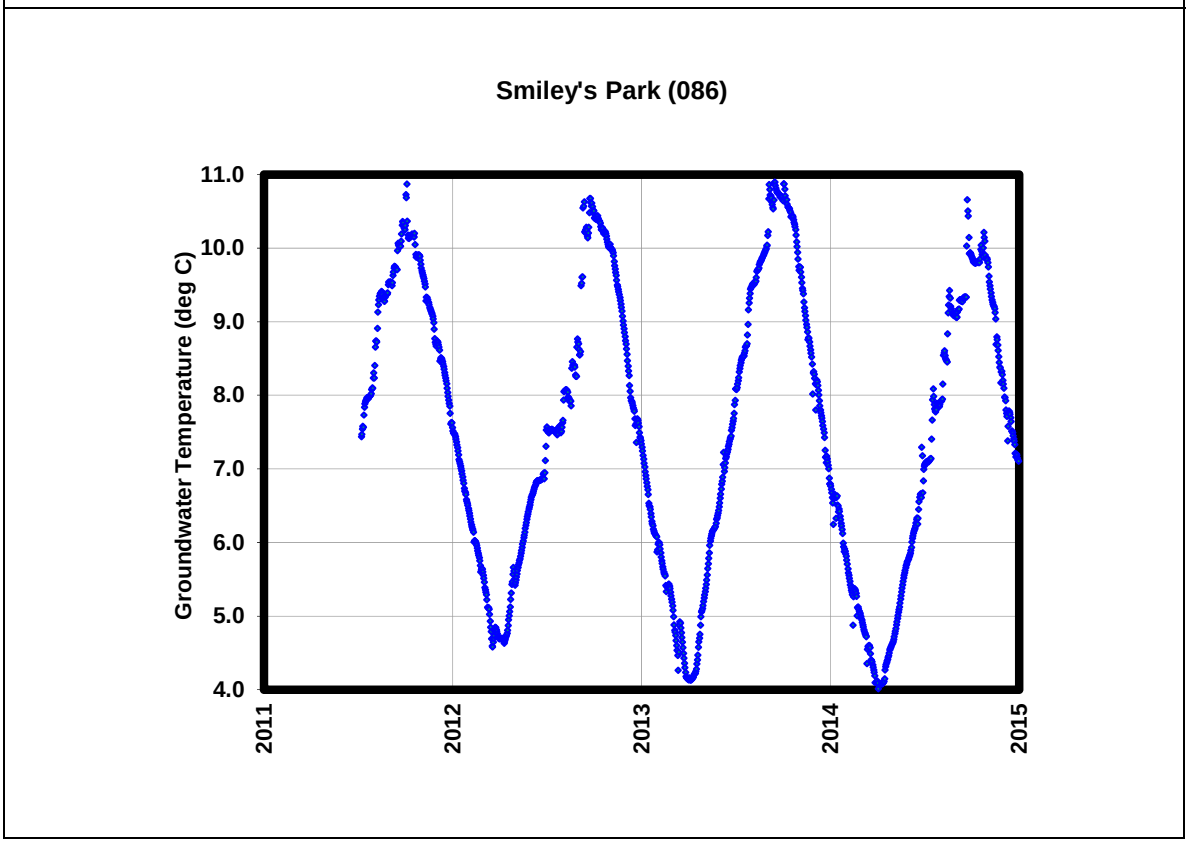

Lewis Lake (079)
Groundwater Temperature (deg C)
9.0
8.5
8.0
7.5
7.0
6.5
2008
2009
2010
2011
2012
2013
2014
2015

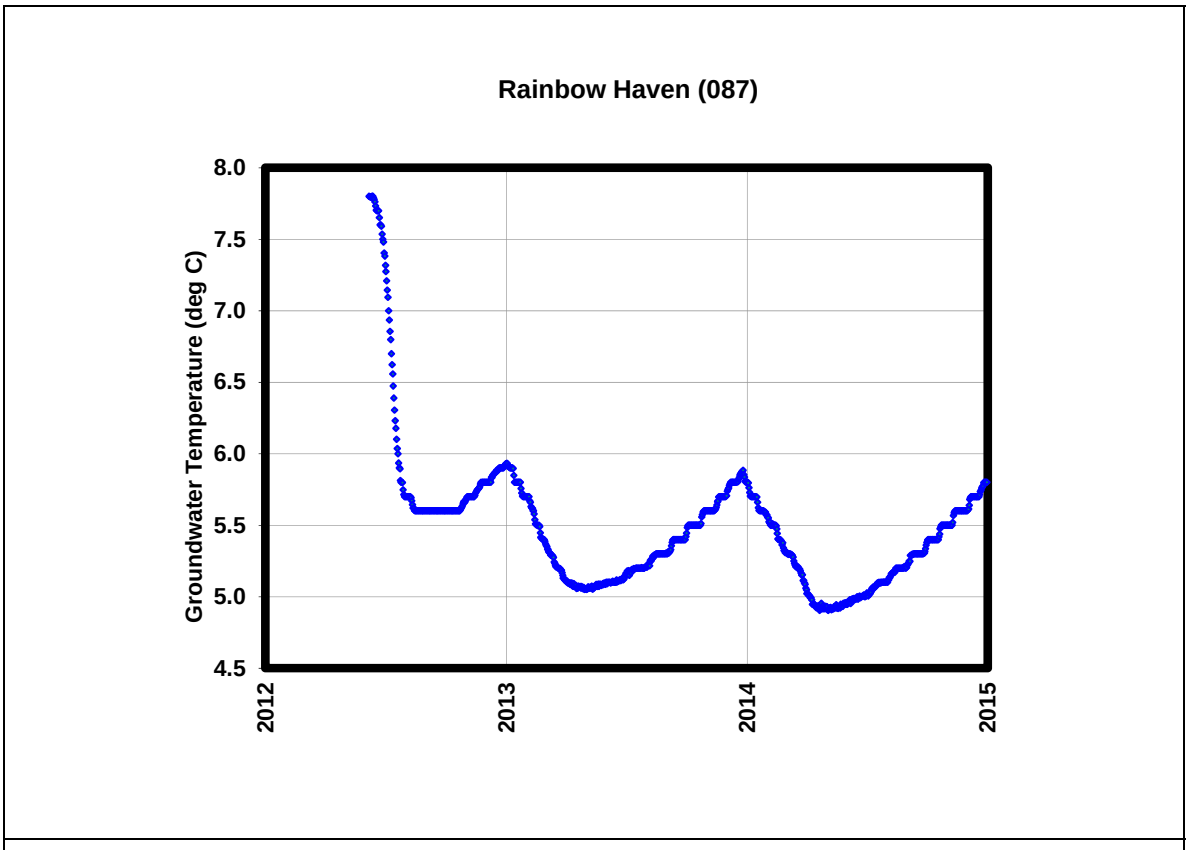

Arisaig (080)
Groundwater Temperature (deg C)
8.5
8.0
7.5
7.0
6.5
6.0
2009
2010
2011
2012
2013
2014
2015

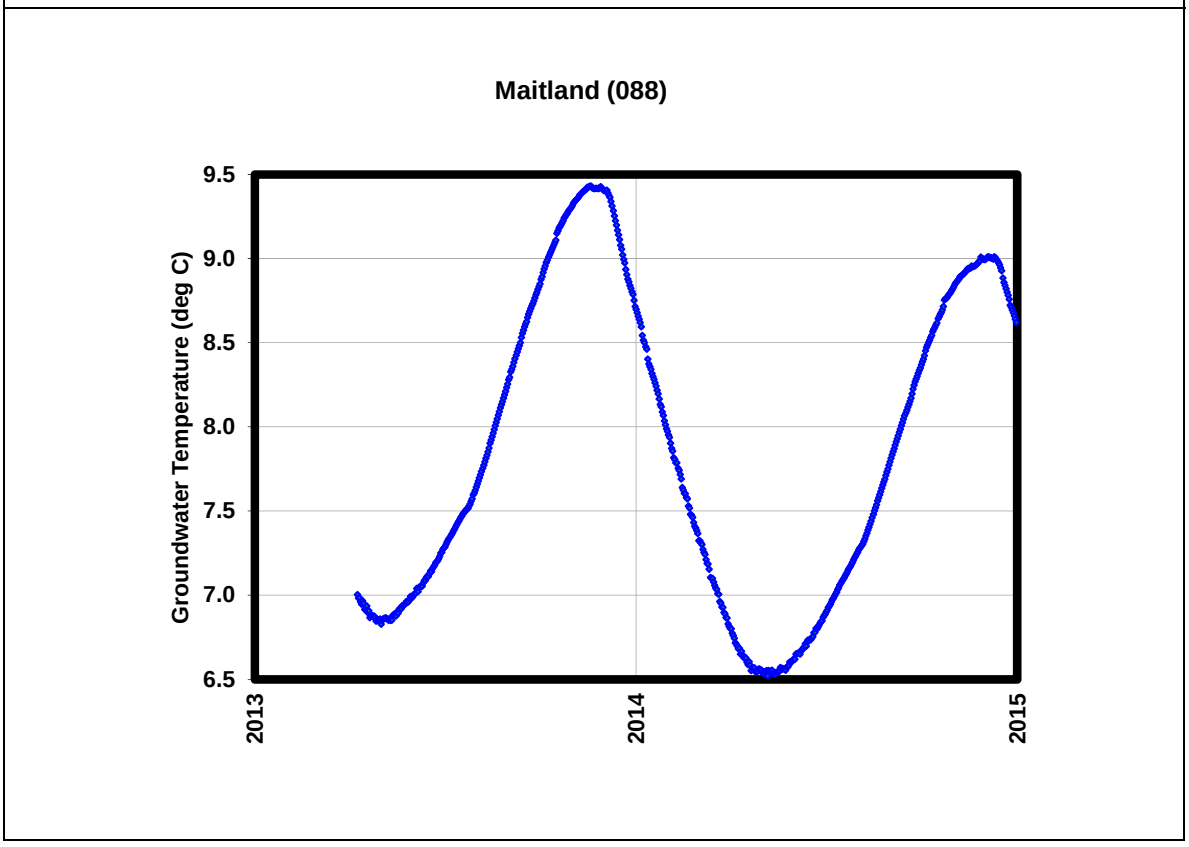

Coldbrook (081)
Groundwater Temperature (deg C)
8.3
8.2
8.2
8.1
8.1
8.0
2009
2010
2011
2012
2013
2014
2015
Long Point (082)
Groundwater Temperature (deg C)
13.0
12.0
11.0
10.0
9.0
8.0
7.0
6.0
2009
2010
2011
2012
2013
2014
2015

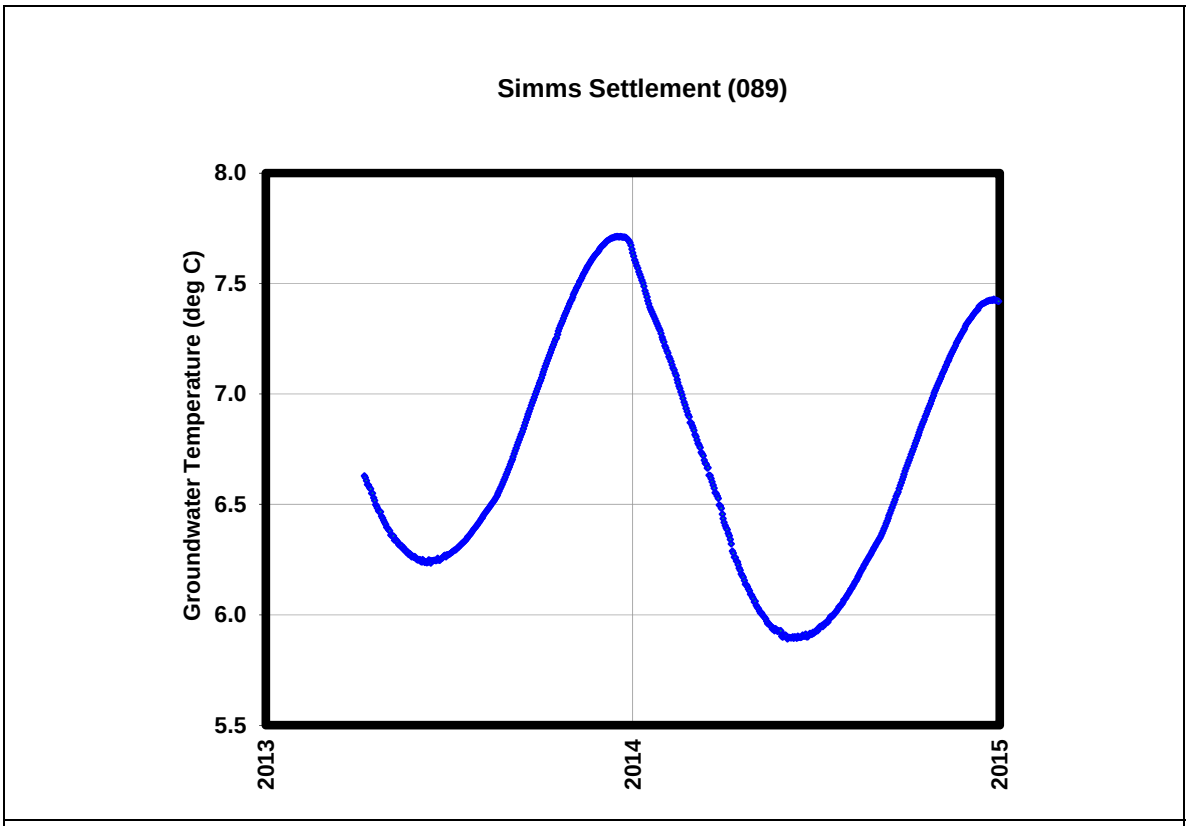

Tatamagouche (083)
Groundwater Temperature (deg C)
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
2009
2010
2011
2012
2013
2014
2015
Pugwash (084)
Groundwater Temperature (deg C)
9.5
9.0
8.5
8.0
7.5
7.0
2010
2011
2012
2013
2014
2015


St. Peters (085)
Groundwater Temperature (deg C)
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
2010
2011
2012
2013
2014
2015


Smiley's Park (086)
Groundwater Temperature (deg C)
11.0
10.0
9.0
8.0
7.0
6.0
5.0
4.0
2011
2012
2013
2014
2015


Rainbow Haven (087)
Groundwater Temperature (deg C)
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
2012
2013
2014
2015


Maitland (088)
Groundwater Temperature (deg C)
9.5
9.0
8.5
8.0
7.5
7.0
6.5
2013
2014
2015


Simms Settlement (089)
Groundwater Temperature (deg C)
8.0
7.5
7.0
6.5
6.0
5.5
2013
2014
2015

APPENDIX E
WATER LEVEL TREND ANALYSIS

Table E1. Water Level Statistical Trend Analyses

Observation Well	Well Number	First Year	Last Year	n[1]	Mann-Kendall Statistics		Confidence Level[4]
					S^2	Q^3 (cm/year)	
Greenwood	003	1966	2014	26	75	0.3	90%
Fraser Brook	004	1966	2014	25	106	0.2	99%
Wilmot	005	1966	2014	24	56	0.4	90%
Murray Siding	007	1968	2014	18	-44	-0.6	95%
Wolfville	010	1969	2014	26	-30	-0.5	<80%
Truro	014	1971	2014	22	84	2.5	99%
Monastery	028	1976	2014	16	-66	-3.9	99%
Point Aconi	030	1976	2014	22	-78	-1.7	95%
Lawrencetown	043	1978	2014	18	-46	-1.9	95%
Durham	045	1979	2014	29	95	1.5	95%
Kentville	048	1980	2014	21	-60	-0.6	95%
Sydney	050	1984	2014	20	-120	-5.5	99%
North Grant	054	1987	2014	10	-31	-1.9	99%
Stillwater	055	1987	2014	10	-9	-2.0	<80%
Sheet Harbour	056	1987	2014	9	NA	NA	NA
Hayden Lake	059	1988	2014	20	-4	0.0	<80%
Meteghan	060	1987	2014	14	12	0.4	<80%
Annapolis Royal	062	1990	2014	10	11	1.1	80%
Hebron	063	1990	2014	12	16	1.0	80%
Margaree	064	1990	2013	13	-21	-1.5	95%
Ingonish	065	1990	2014	11	29	1.7	95%
Debert	068	1993	2014	9	NA	NA	NA
Dalem Lake	069	1992	2014	11	11	0.4	<80%
Amherst	071	1993	2014	8	NA	NA	NA
Kelley River	073	2006	2014	8	NA	NA	NA
Atlanta	074	2008	2014	6	NA	NA	NA
Sheffield Mills	075	2008	2014	6	NA	NA	NA
Fall River	076	2008	2014	6	NA	NA	NA
West Northfield	077	2008	2014	6	NA	NA	NA
Musquodoboit Hbr	078	2008	2014	6	NA	NA	NA
Lewis Lake	079	2008	2014	6	NA	NA	NA
Arisaig	080	2009	2014	5	NA	NA	NA
Coldbrook	081	2009	2014	5	NA	NA	NA
Long Point	082	2009	2014	5	NA	NA	NA
Tatamagouche	083	2009	2014	5	NA	NA	NA
Pugwash	084	2010	2014	4	NA	NA	NA
St. Peters	085	2010	2014	4	NA	NA	NA
Smileys Park	086	2011	2014	6	NA	NA	NA
Rainbow Haven	087	2012	2014	2	NA	NA	NA
Maitland	088	2013	2014	1	NA	NA	NA
Simms Settlement	089	2013	2014	1	NA	NA	NA

Notes:

1. n is the number of "usable" years. For a year of data to be considered a "usable", data must be available for at least 75% of the year, unless otherwise noted. Trend analyses were not completed for wells with less than 10 years of usable data.
2. S is the Mann-Kendall statistic, which is based on the differences between data values. Positive values indicate upward trends and negative values indicate downward trends (Gilbert, 1987).
3. Q is Sen's estimator of slope. Positive values indicate upward trends and negative values indicate downward trends (Gilbert, 1987).
4. For a water level trend (increasing or decreasing) to be considered valid, the Mann-Kendall analyses should indicate a “confidence level” of at least 90% (Aziz etal, 2003)
5. NA = Not Applicable (there were insufficient data to complete a trend analysis at this well).

APPENDIX F
WELL LOCATION MAPS &
SITE PHOTOGRAPHS

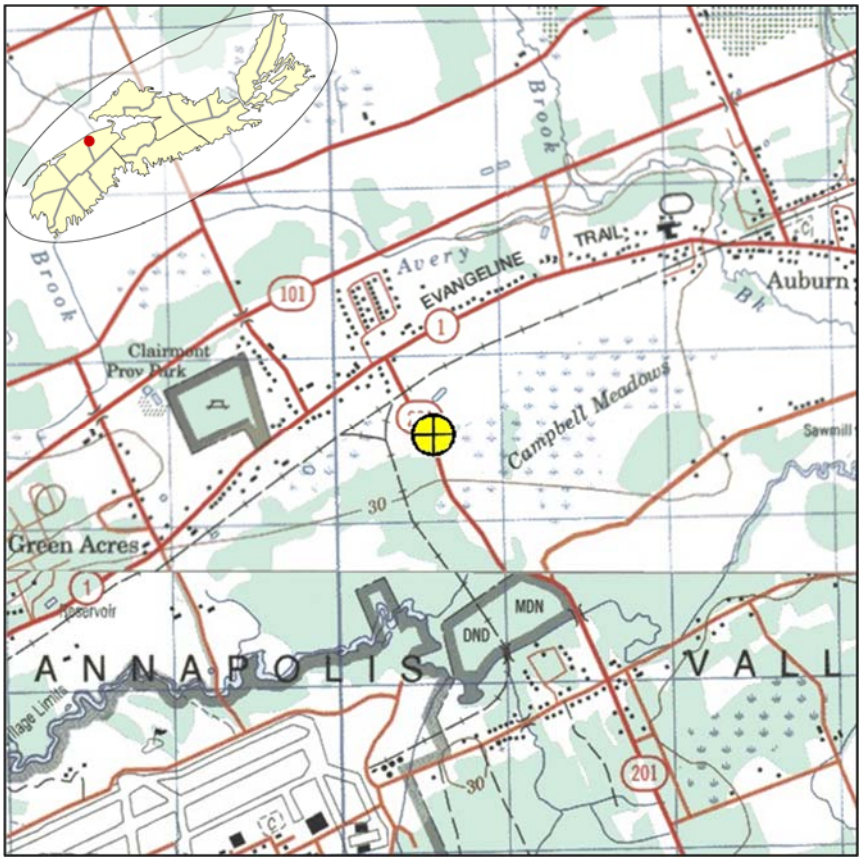


Figure F.1a: Greenwood (003) Well Location

Figure F.1b: Greenwood (003) Site Photograph

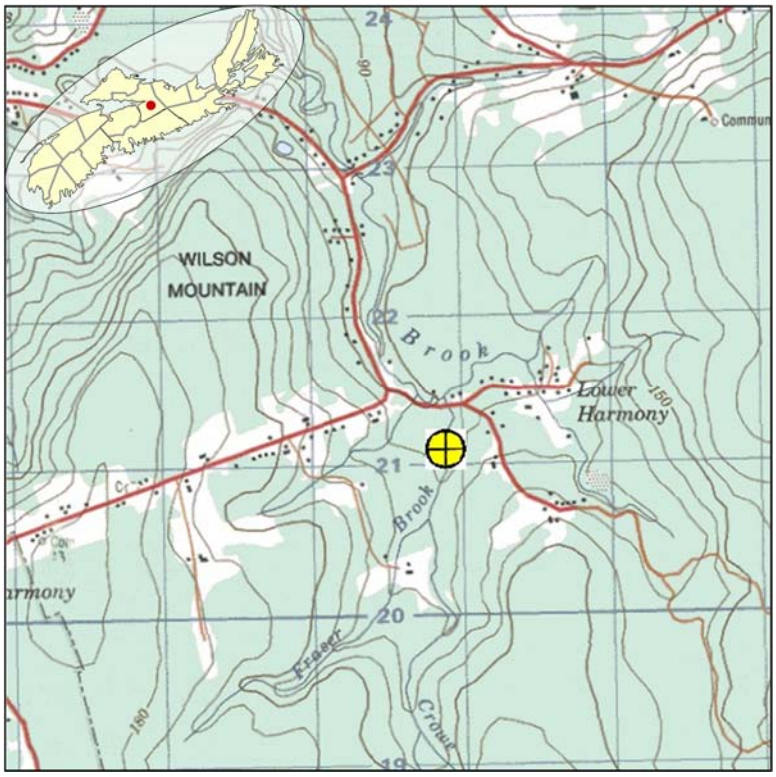


Figure F.2a: Fraser Brook (004) Well Location

Figure F.2b: Fraser Brook (004) Site Photograph

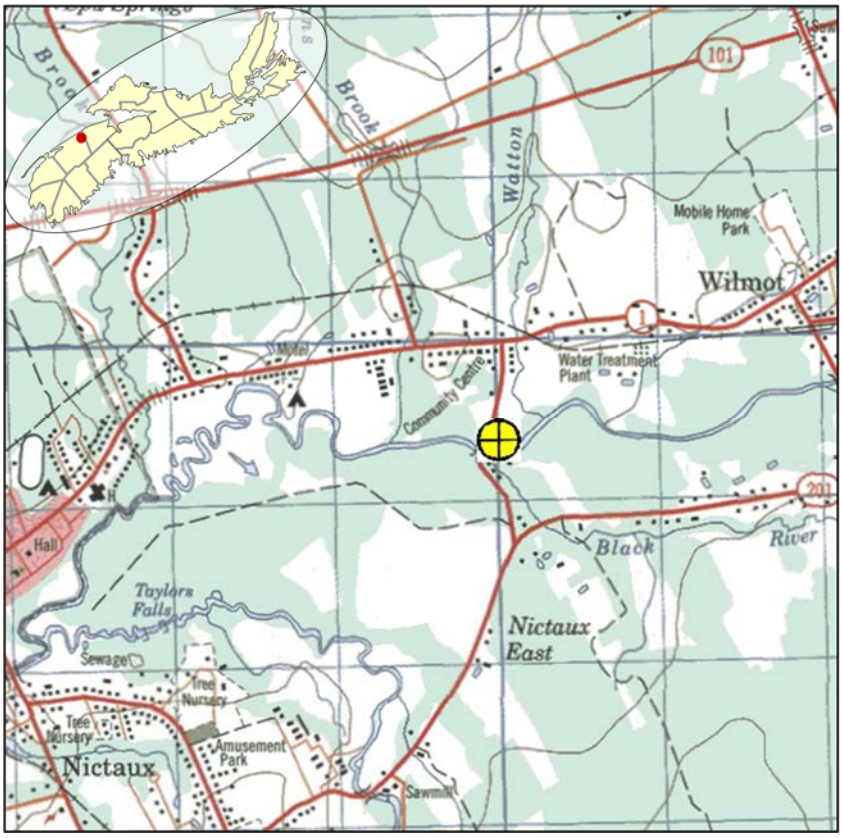


Figure F.3a: Wilmot (005) Well Location

Figure F.3b: Wilmot (005) Site Photograph

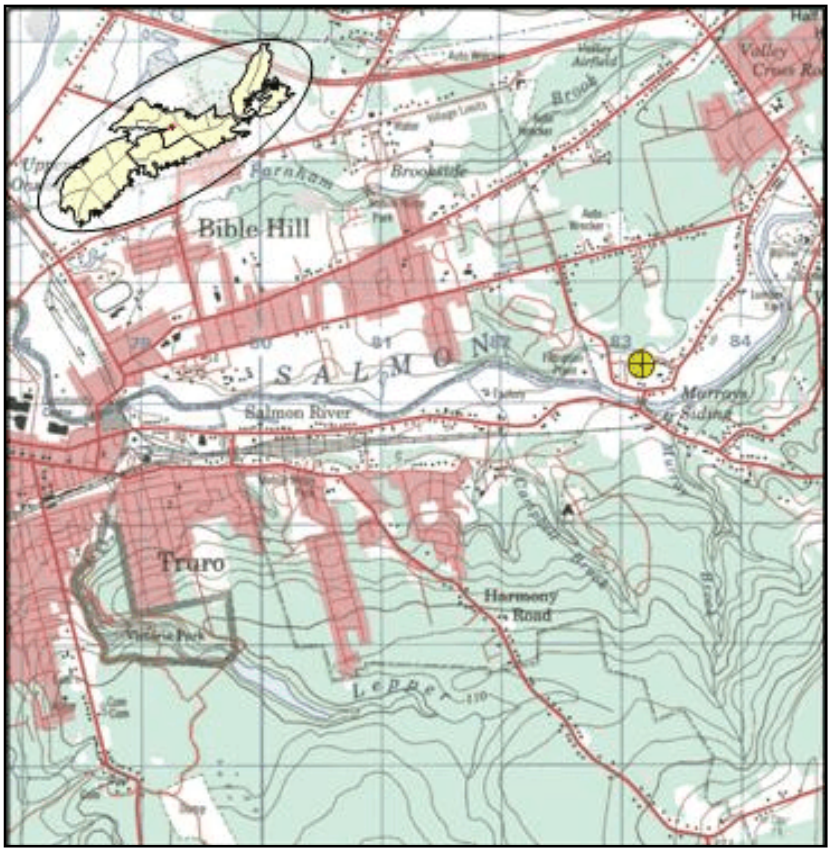


Figure F.4a: Murray Siding (007) Well Location

Figure F.4b: Murray Siding (007) Site Photograph

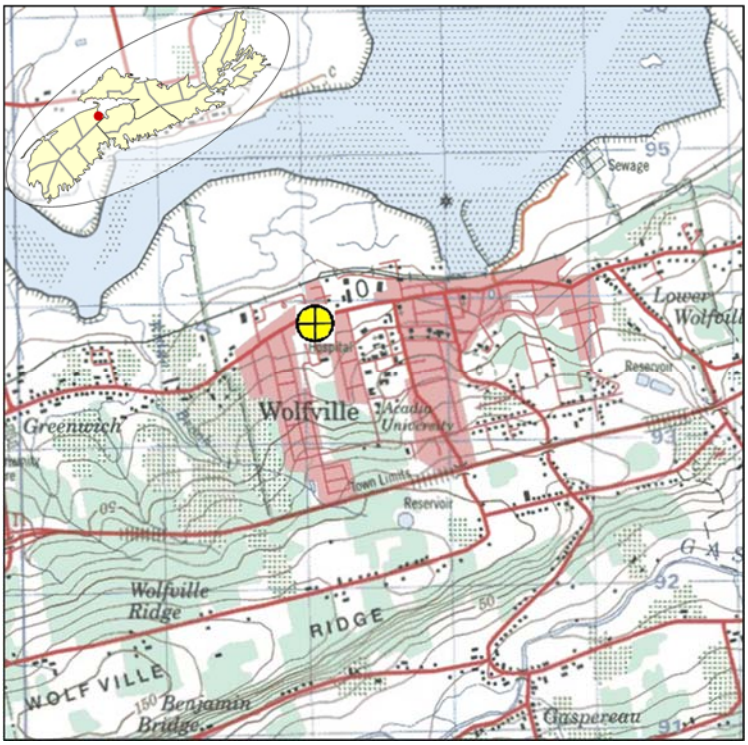


Figure F.5a: Wolfville (010) Well Location

Figure F.5b: Wolfville (010) Site Photograph

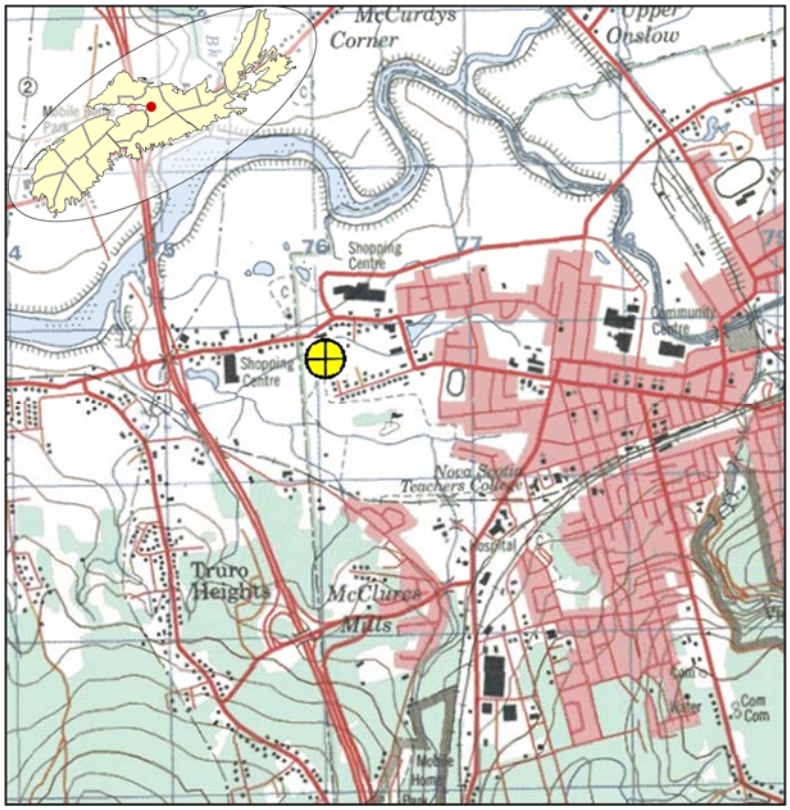


Figure F.6a: Truro (014) Well Location

Figure F.6b: Truro (014) Site Photograph

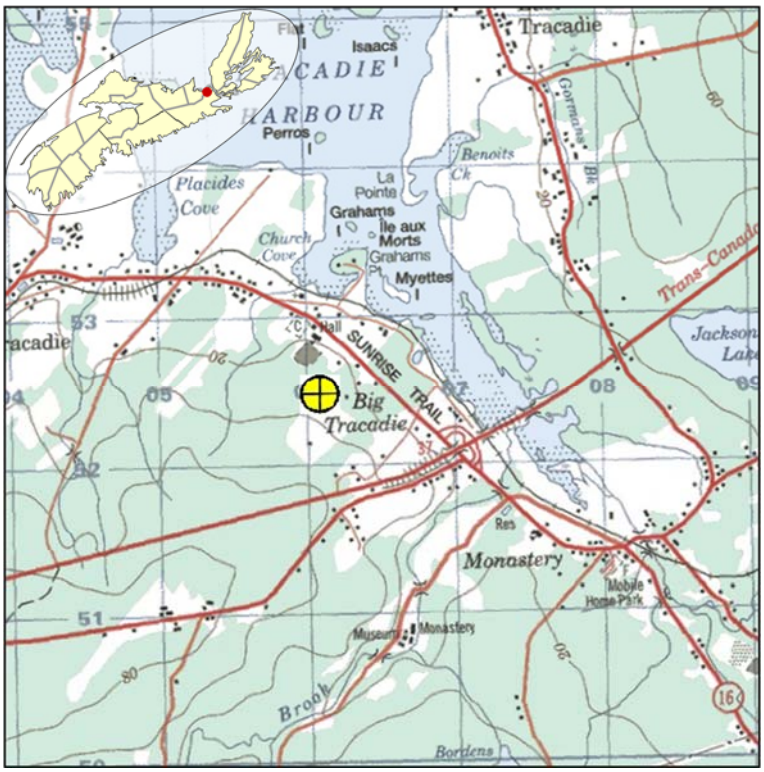


Figure F.7a: Monastery (028) Well Location

Figure F.7b: Monastery (028) Site Photograph

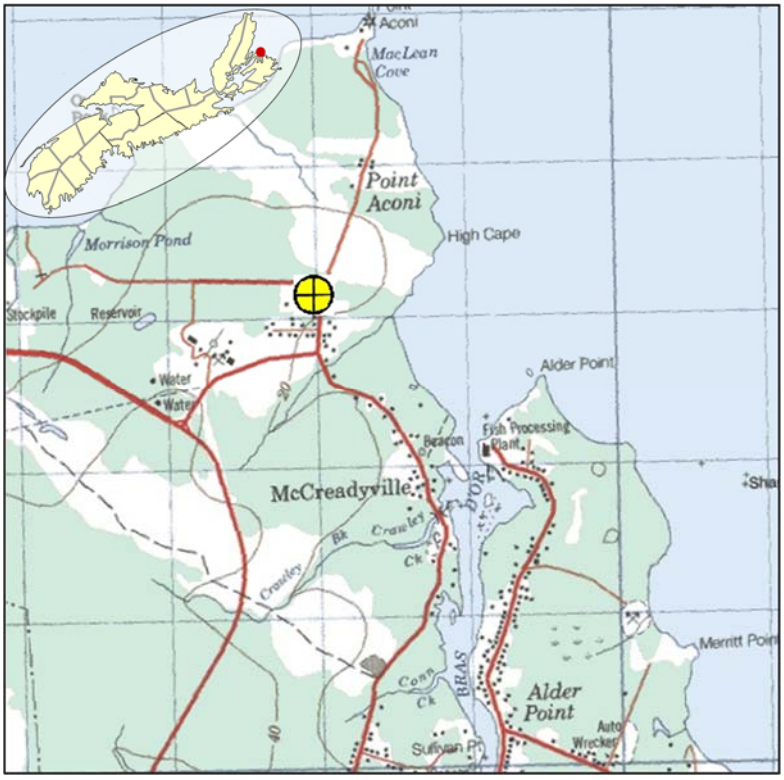


Figure F.8a: Point Aconi (030) Well Location

Figure F.8b: Point Aconi (030) Site Photograph

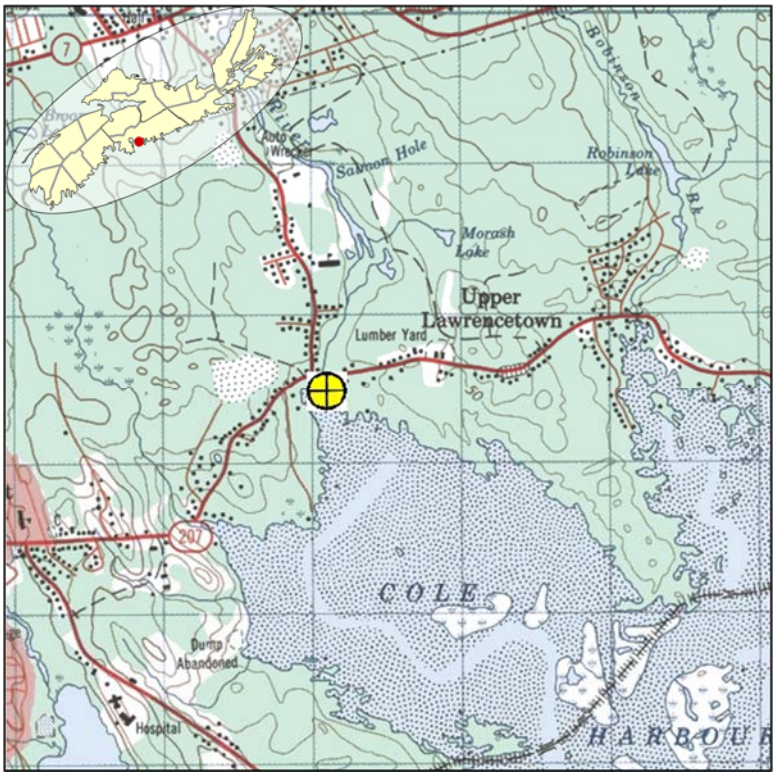


Figure F.9a: Lawrencetown (043) Well Location

Figure F.9b: Lawrencetown (043) Site Photograph

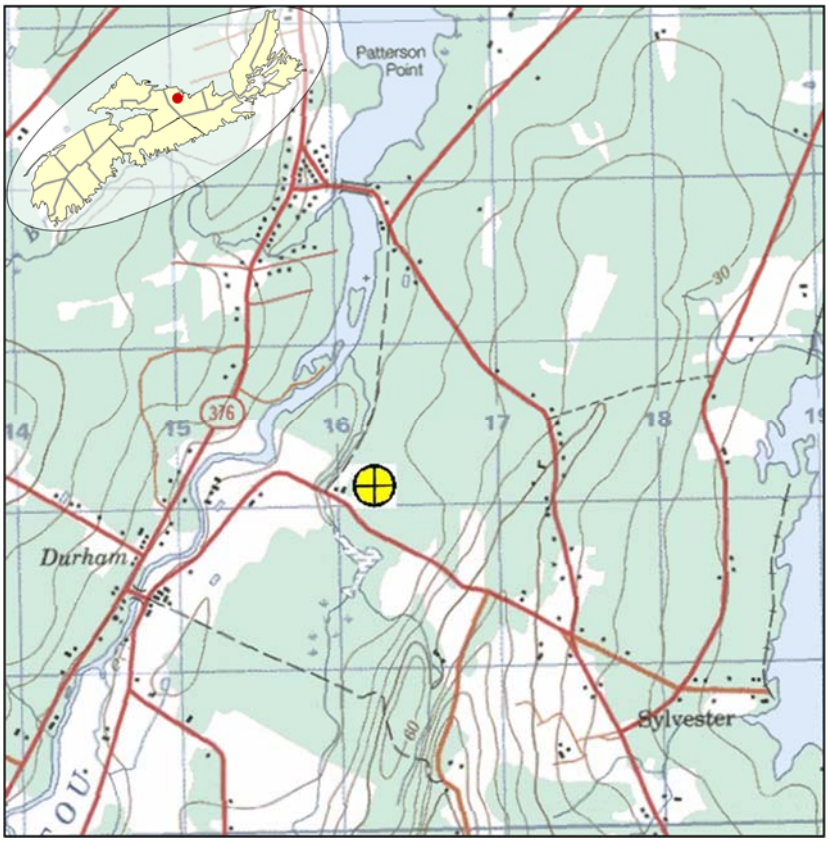


Figure F.10a: Durham (045) Well Location

Figure F.10b: Durham (045) Site Photograph

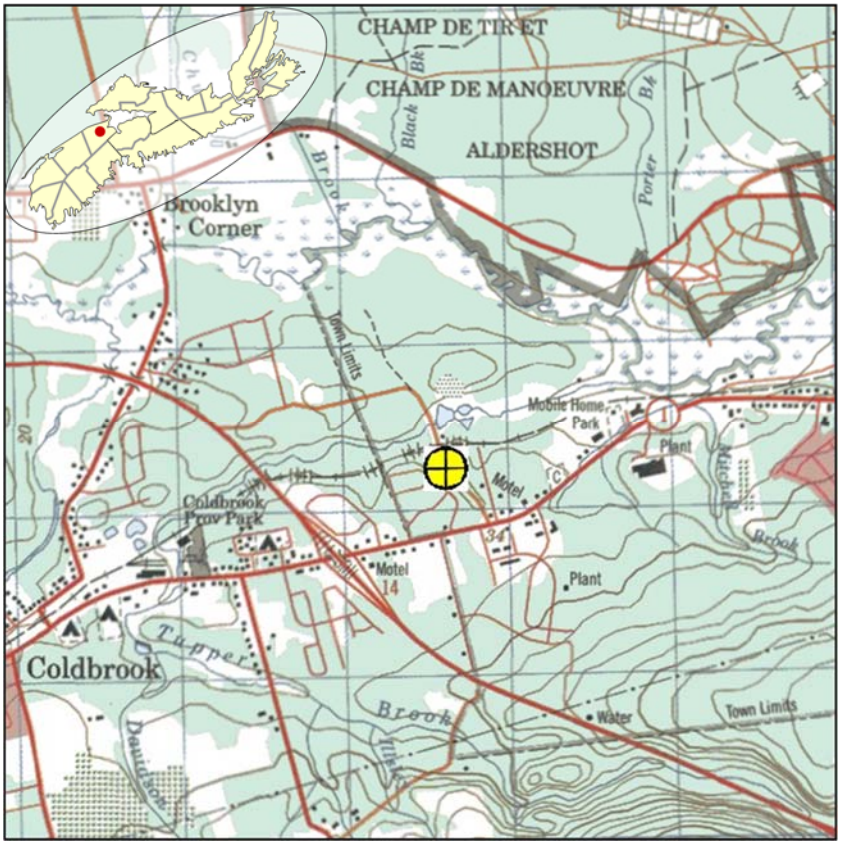


Figure F.11a: Kentville (048) Well Location

Figure F.11b: Kentville (048) Site Photograph

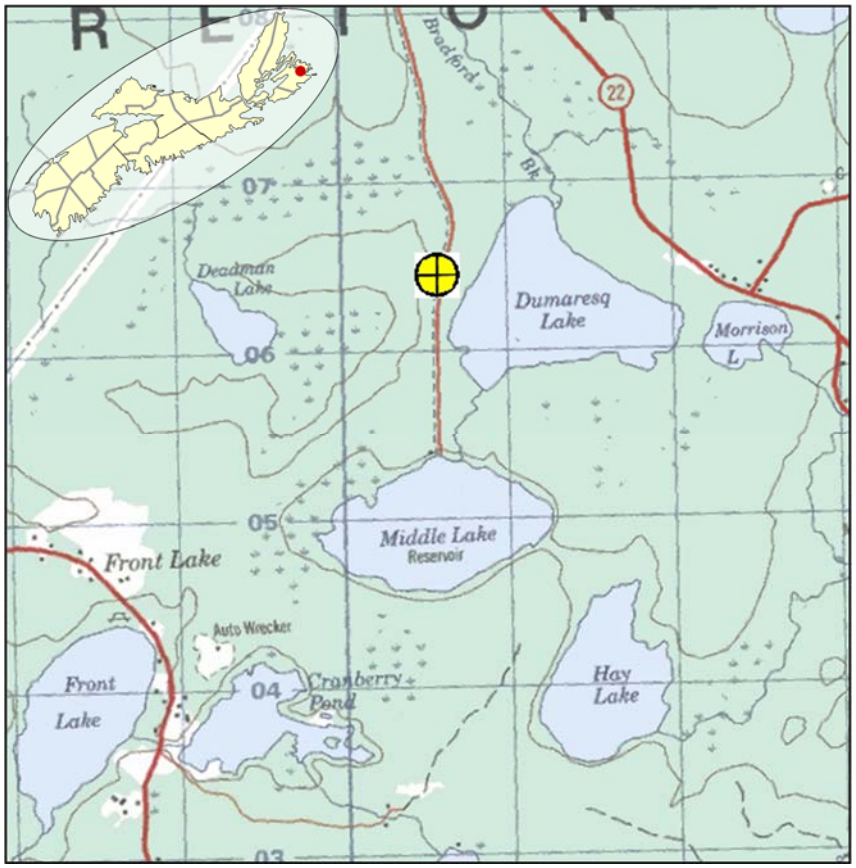


Figure F.12a: Sydney (050) Well Location

Figure F.12b: Sydney (050) Site Photograph

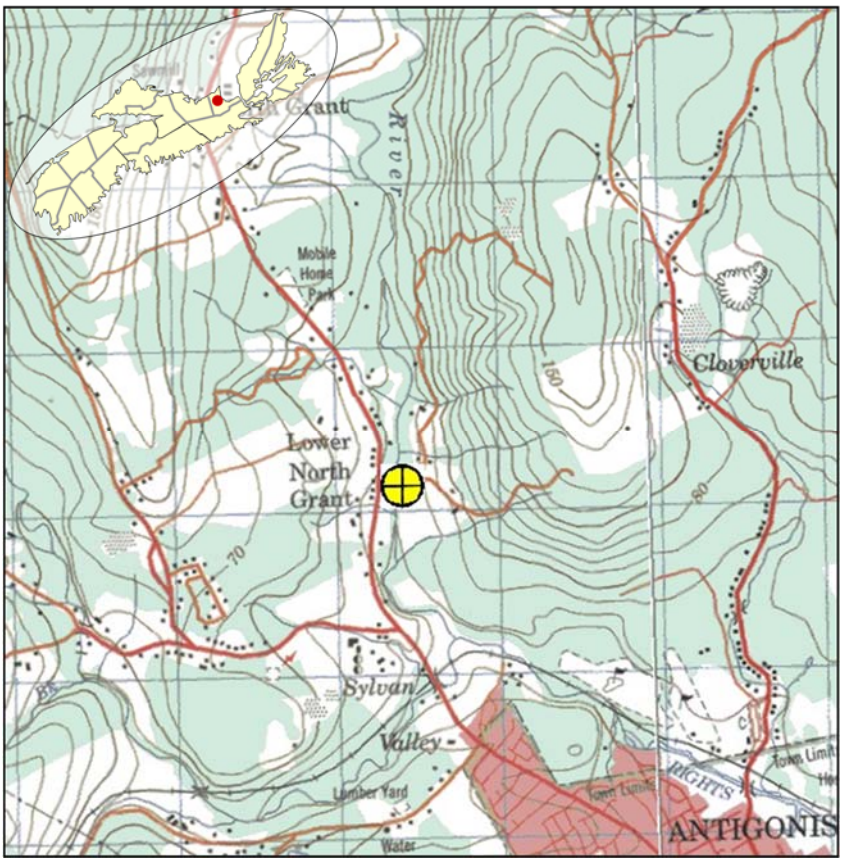


Figure F.13a: North Grant (054) Well Location

Figure F.13b: North Grant (054) Site Photograph

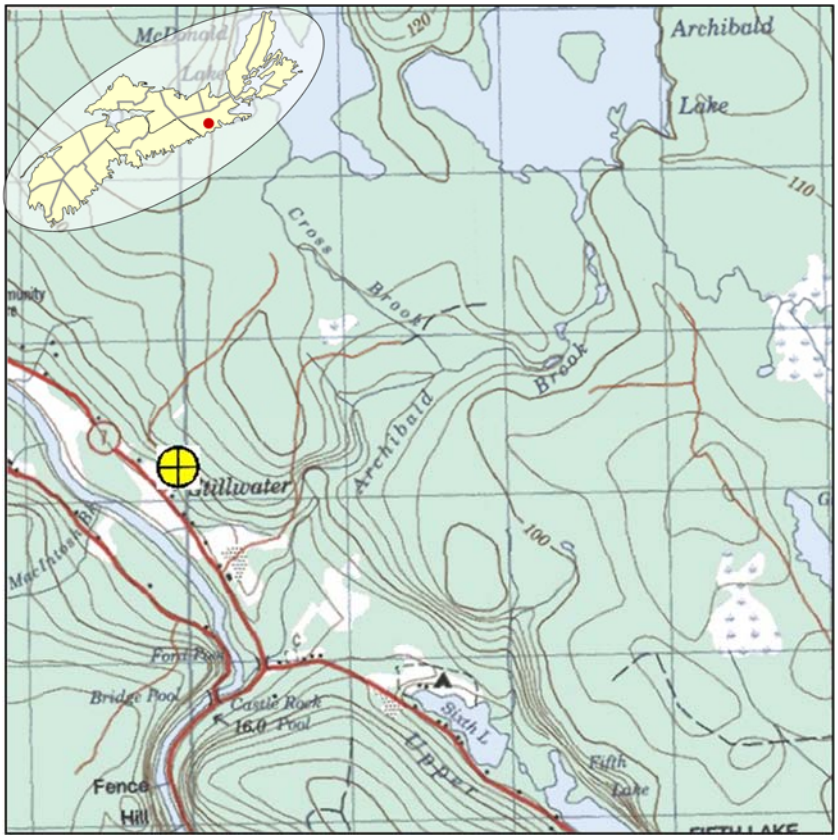


Figure F.14a: Stillwater (055) Well Location

Figure F.14b: Stillwater (055) Site Photograph

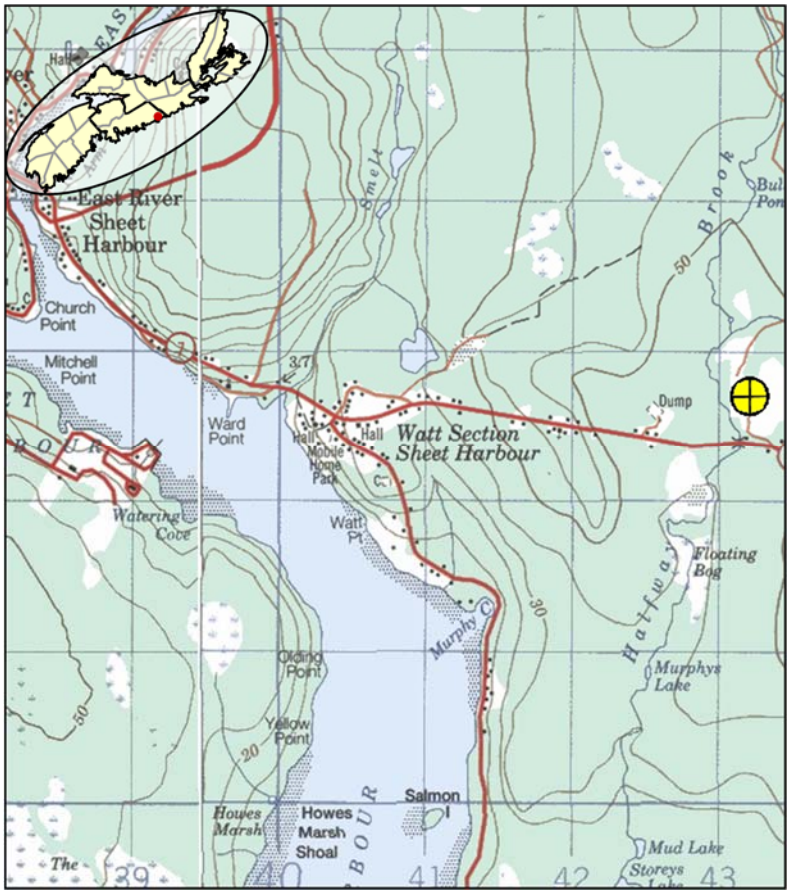


Figure F.15a: Sheet Harbour (056) Well Location

Figure F.15b: Sheet Harbour Site Photograph

Figure F.16a: Hayden Lake (059) Well Location

Figure F.16b: Hayden Lake (059) Site Photograph

Figure F.17a: Meteghan (060) Well Location

Figure F.17b: Meteghan (060) Site Photograph

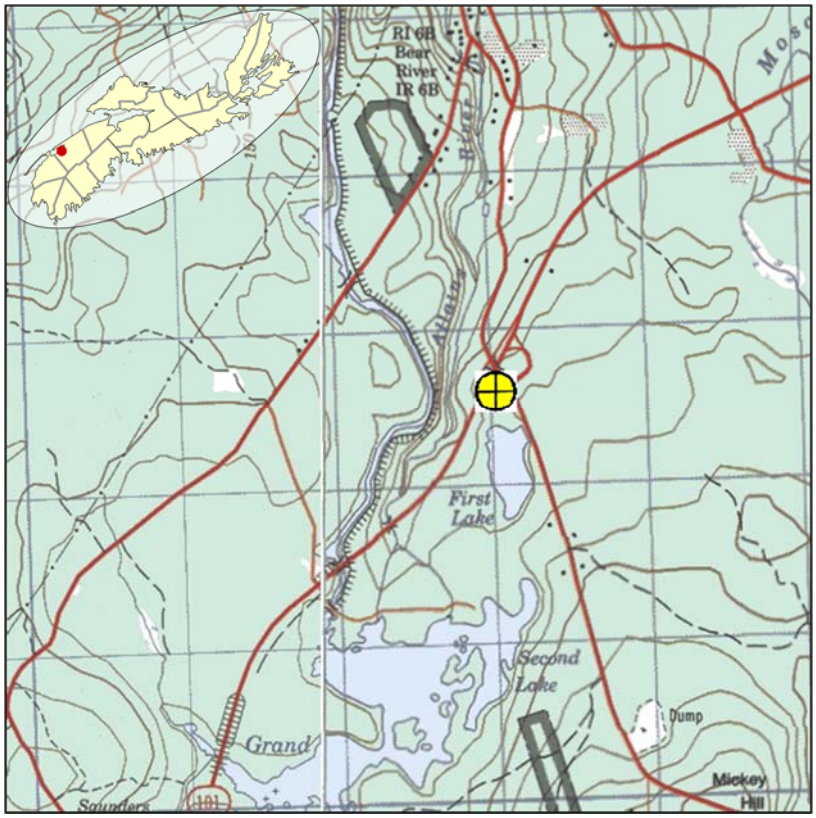


Figure F.18a: Annapolis Royal (062) Well Location

Figure F.18b: Annapolis Royal (062) Site Photograph

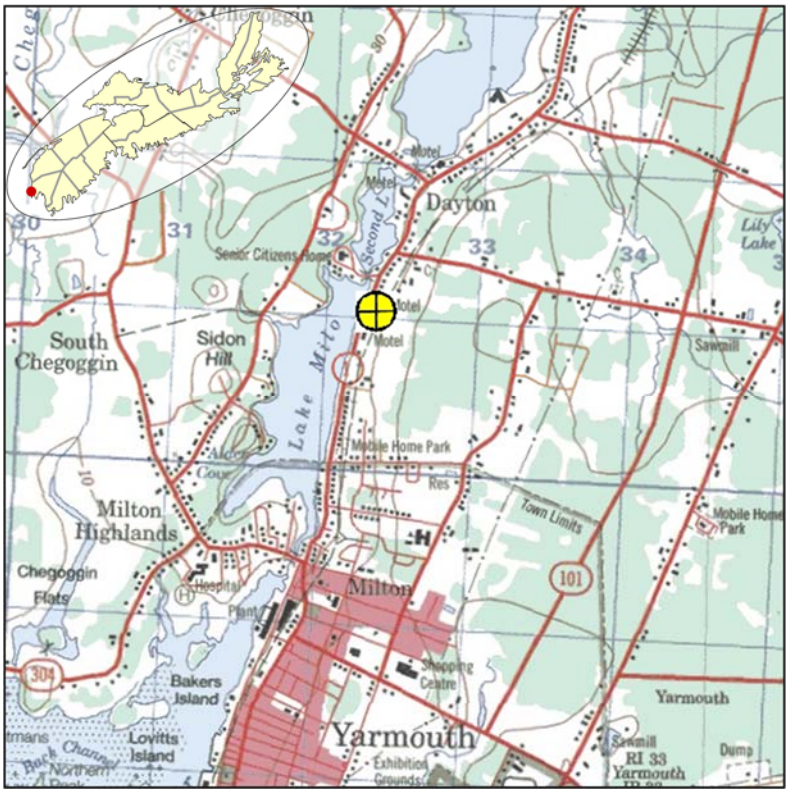


Figure F.19a: Hebron (063) Well Location

Figure F.19b: Hebron (063) Site Photograph

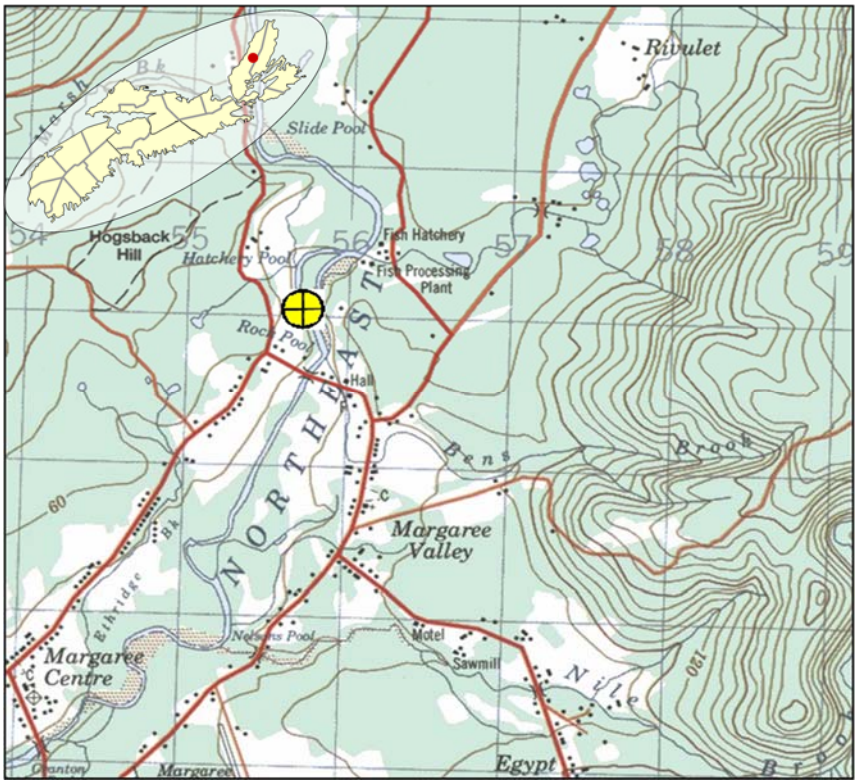


Figure F.20a: Margaree (064) Well Location

Figure F.20b: Margaree (064) Site Photograph

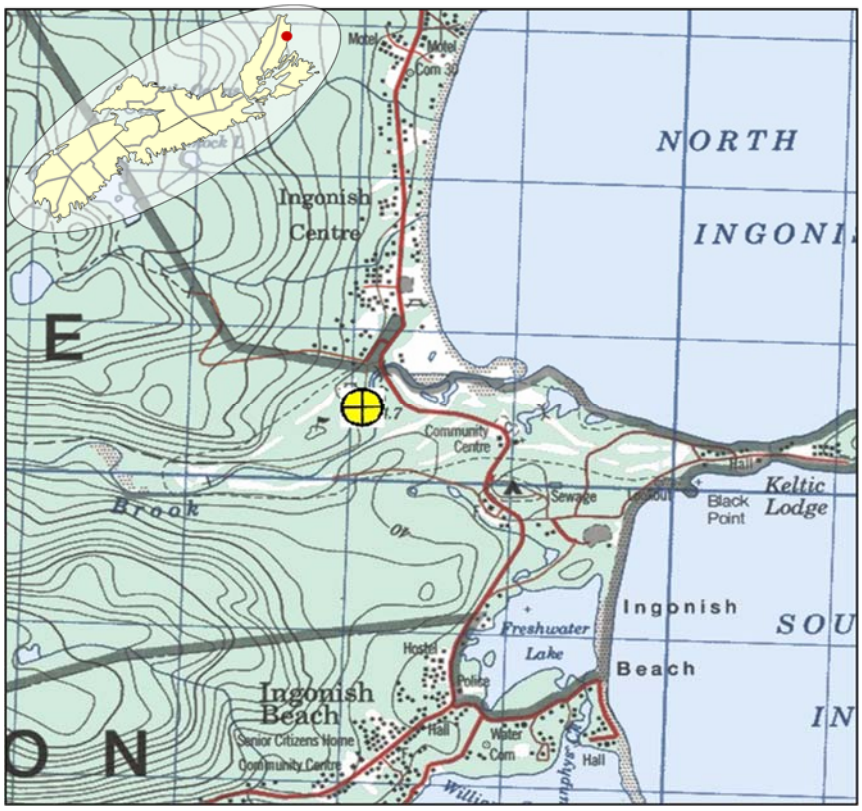


Figure F.21a: Ingonish (065) Well Location

Figure F.21b: Ingonish (065) Site Photograph

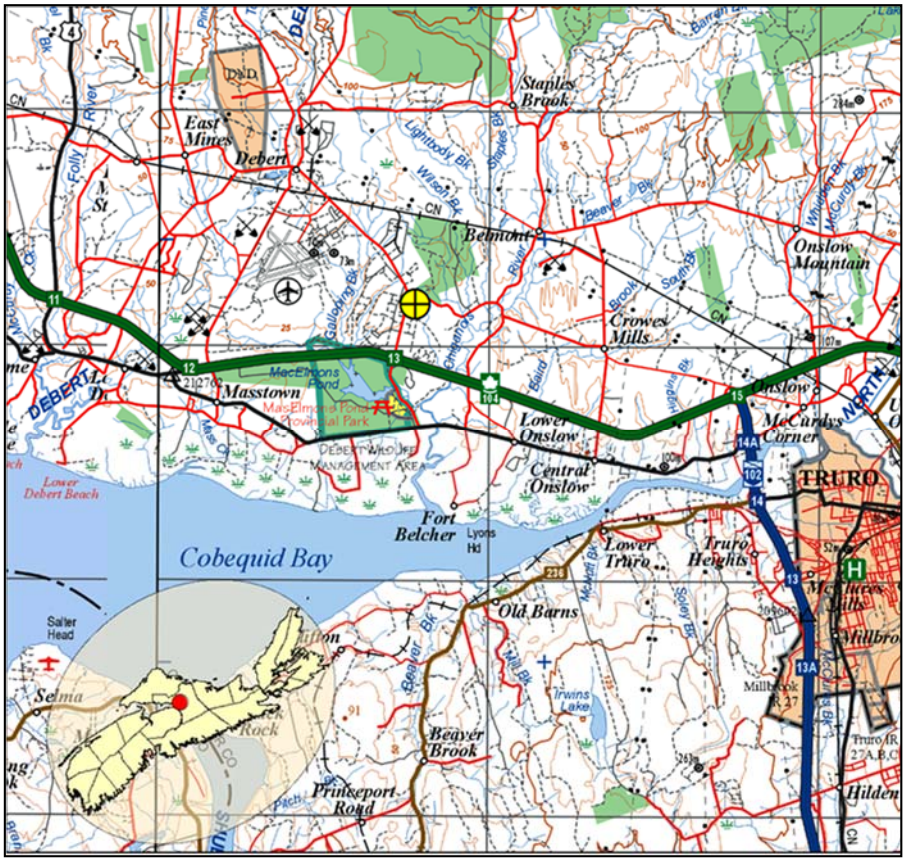


Figure F.22a: Debert (068) Well Location

Figure F.22b: Debert (068) Site Photograph

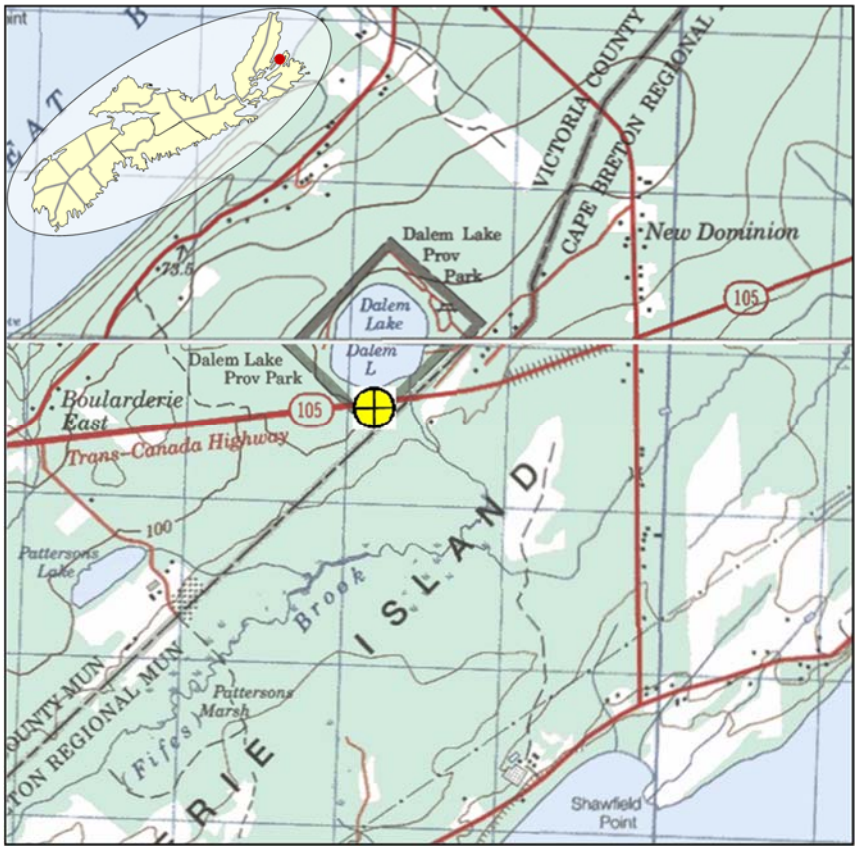


Figure F.23a: Dalem Lake (069) Well Location

Figure F.23b: Dalem Lake (069) Site Photograph

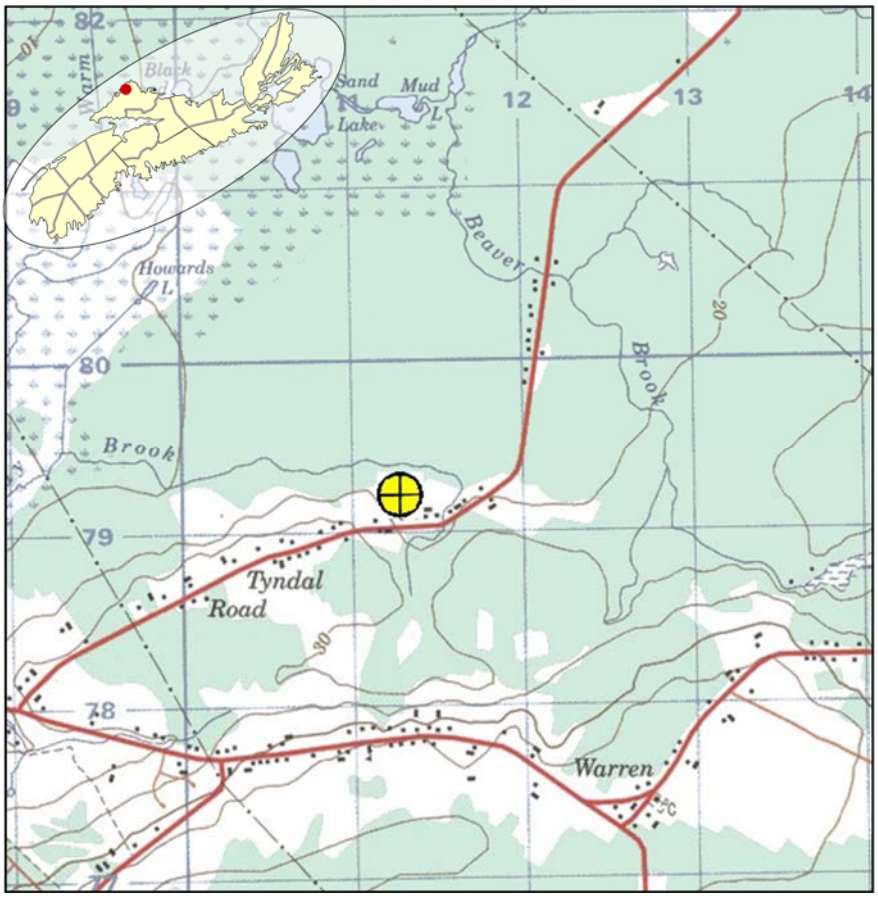


Figure F.24a: Amherst (071) Well Location

Figure F.24b: Amherst (071) Site Photograph

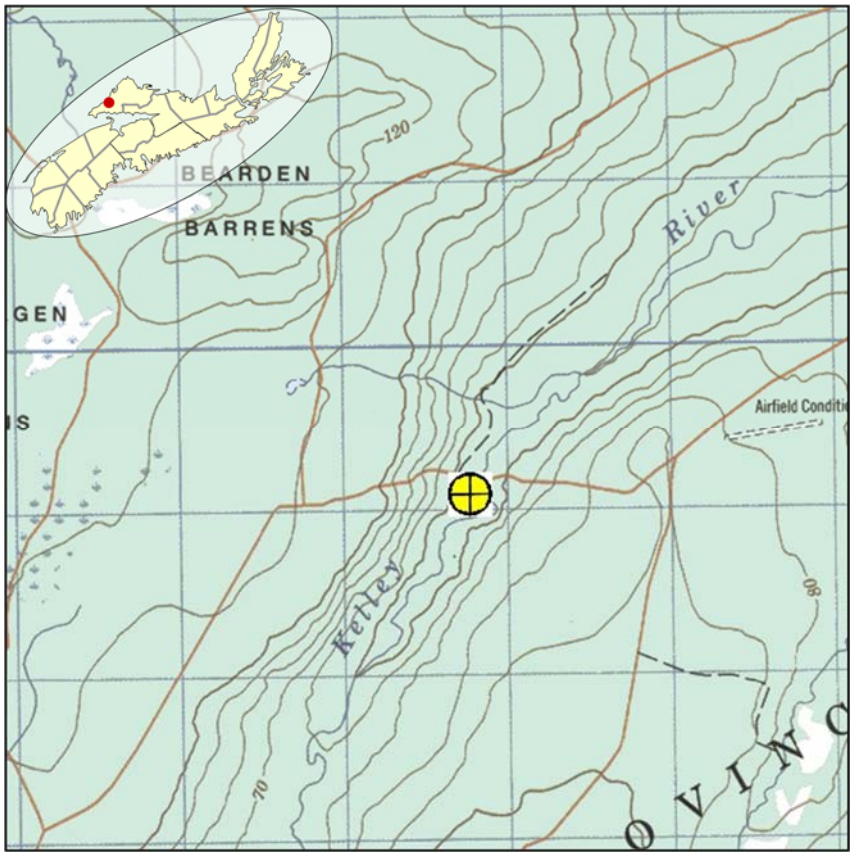


Figure F.25a: Kelley River (073) Well Location

Figure F.25b: Kelley River (073) Site Photograph

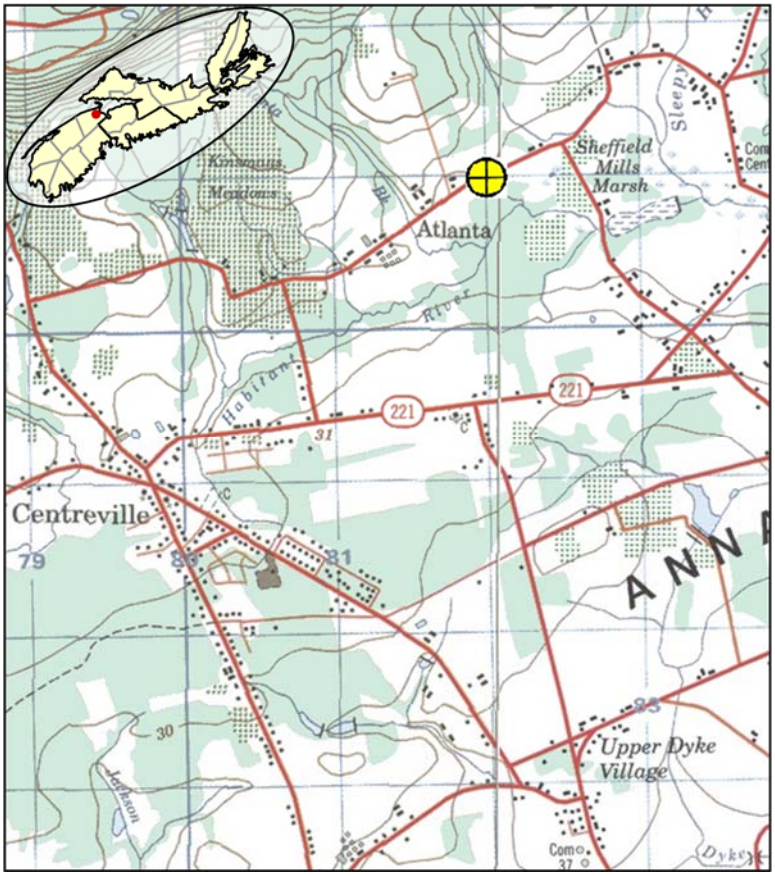


Figure F.26a: Atlanta (074) Well Location

Figure F.26b: Atlanta (074) Site Photograph

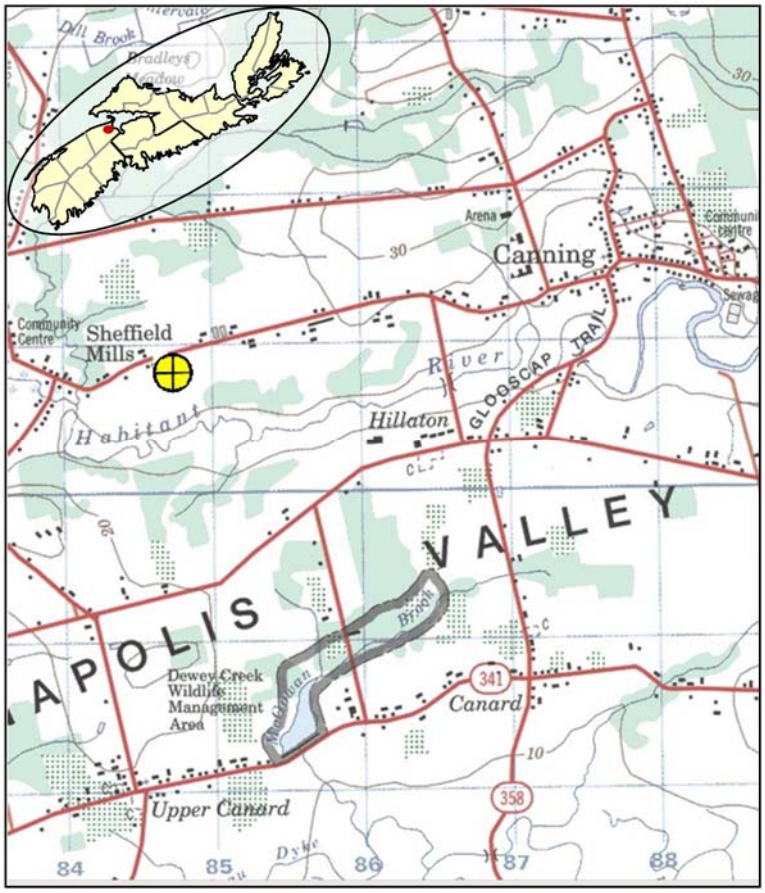


Figure F.27a: Sheffield Mills (075) Well Location

Figure F.27b: Sheffield Mills (075) Site Photograph

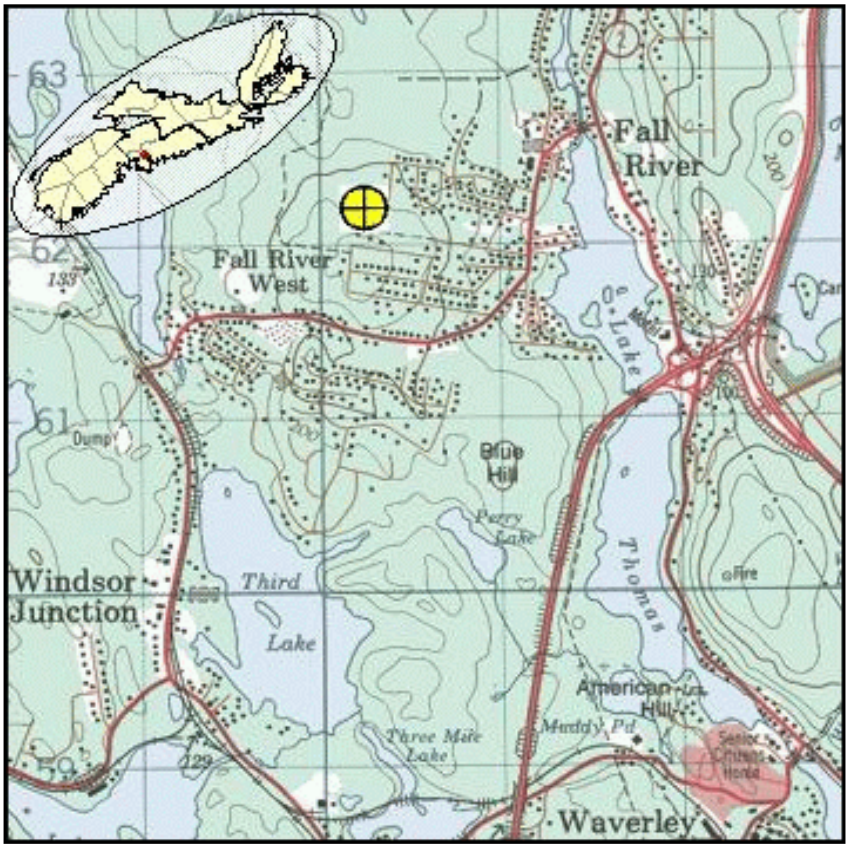


Figure F.28a: Fall River (076) Well Location

Figure F.28b: Fall River (076) Site Photograph

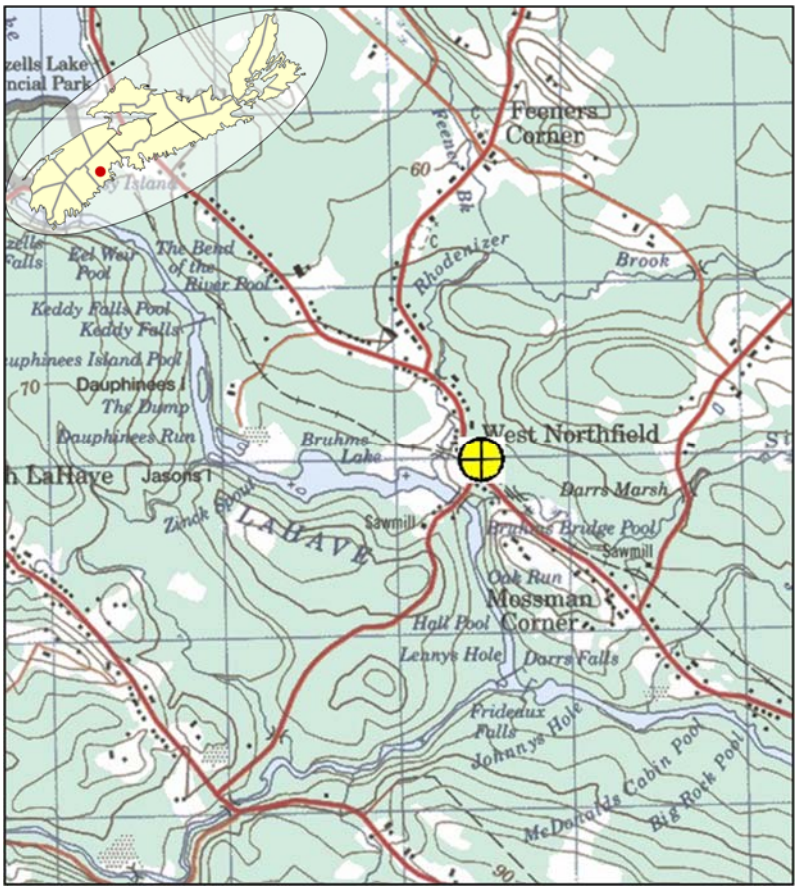


Figure F.29a: West Northfield (077) Well Location

Figure F.29b: West Northfield (077) Site Photograph

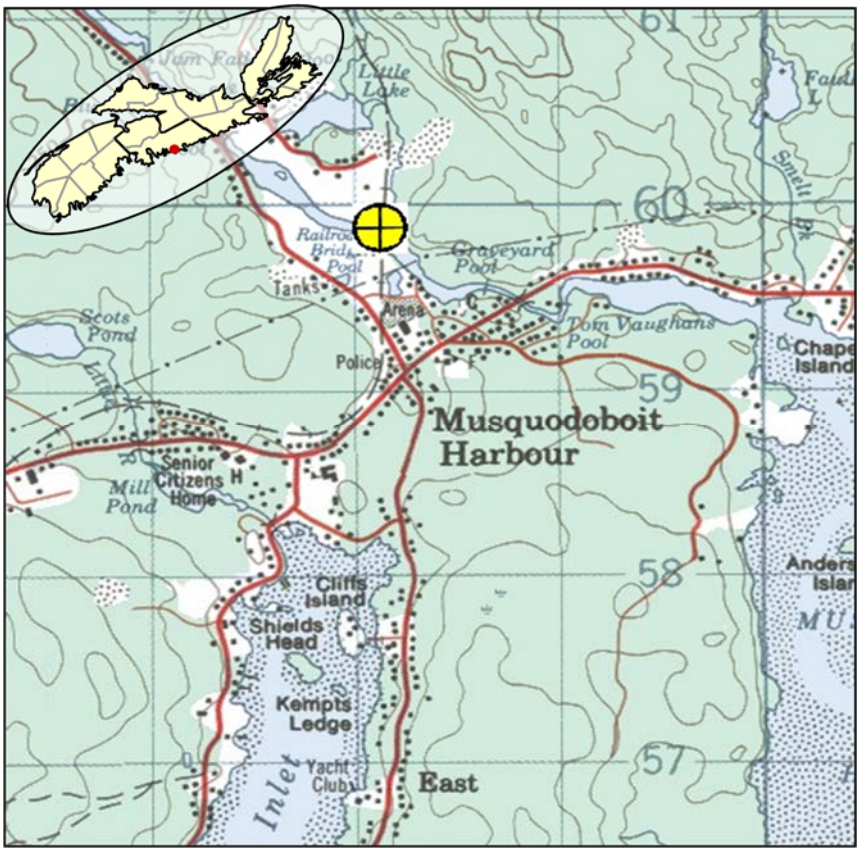


Figure F.30a: Musquodoboit Harbour (078) Well Location

Figure F.30b: Musquodoboit Harbour (078) Site Photograph

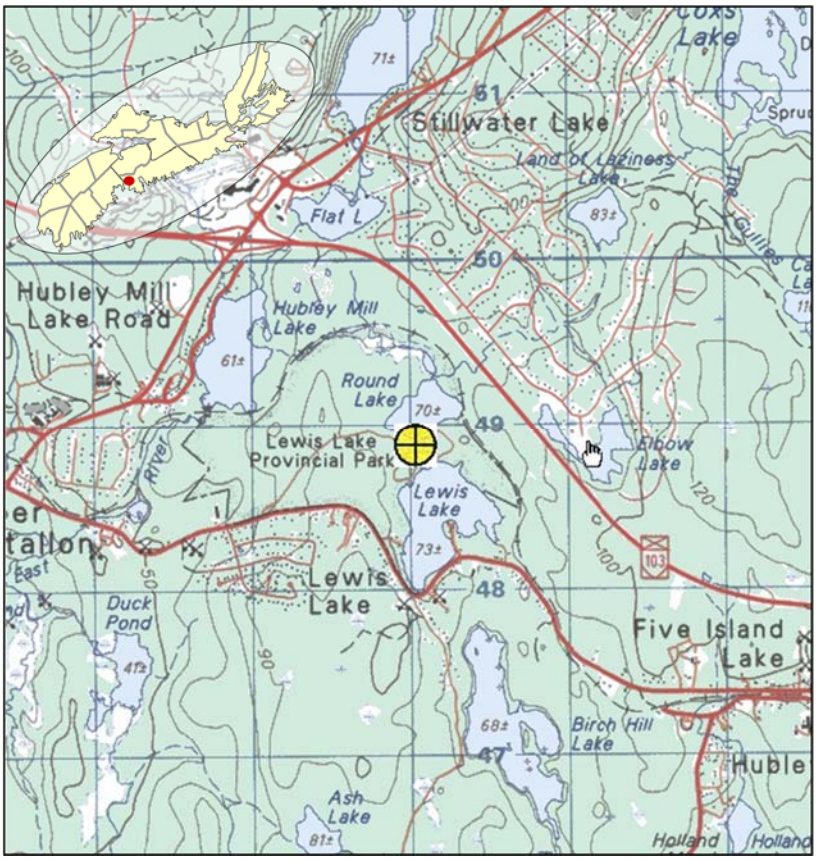


Figure F.31a: Lewis Lake (079) Well Location

Figure F.31b: Lewis Lake (079) Site Photograph

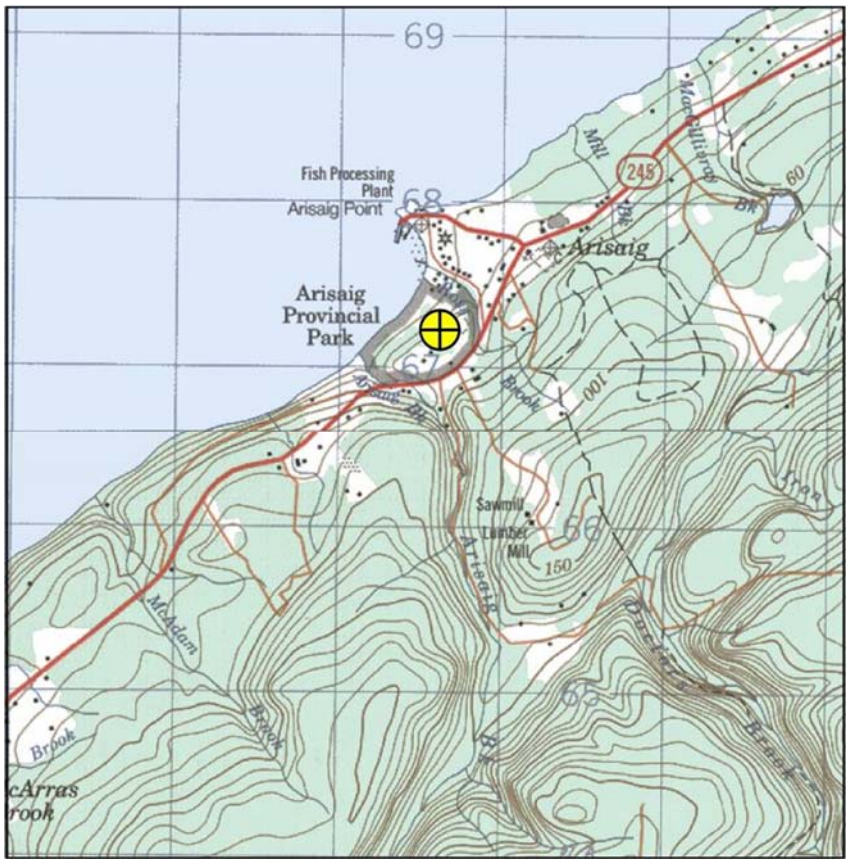


Figure F.32a: Arisaig (080) Well Location

Figure F.32b: Arisaig (080) Site Photograph

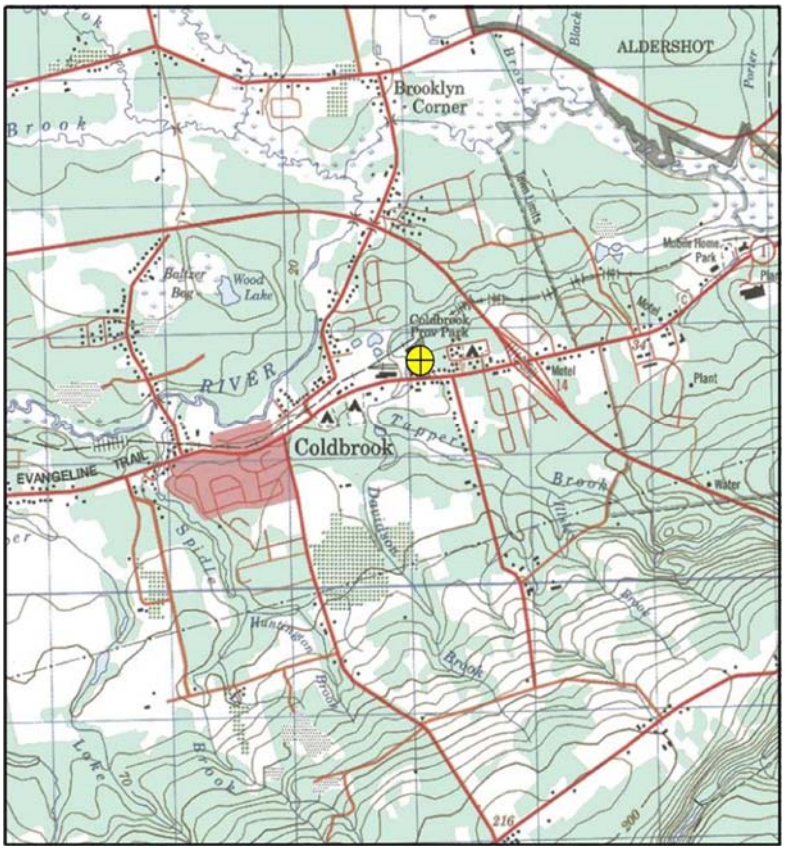


Figure F.33a: Coldbrook (081) Well Location

Figure F.33b: Coldbrook (081) Site Photograph

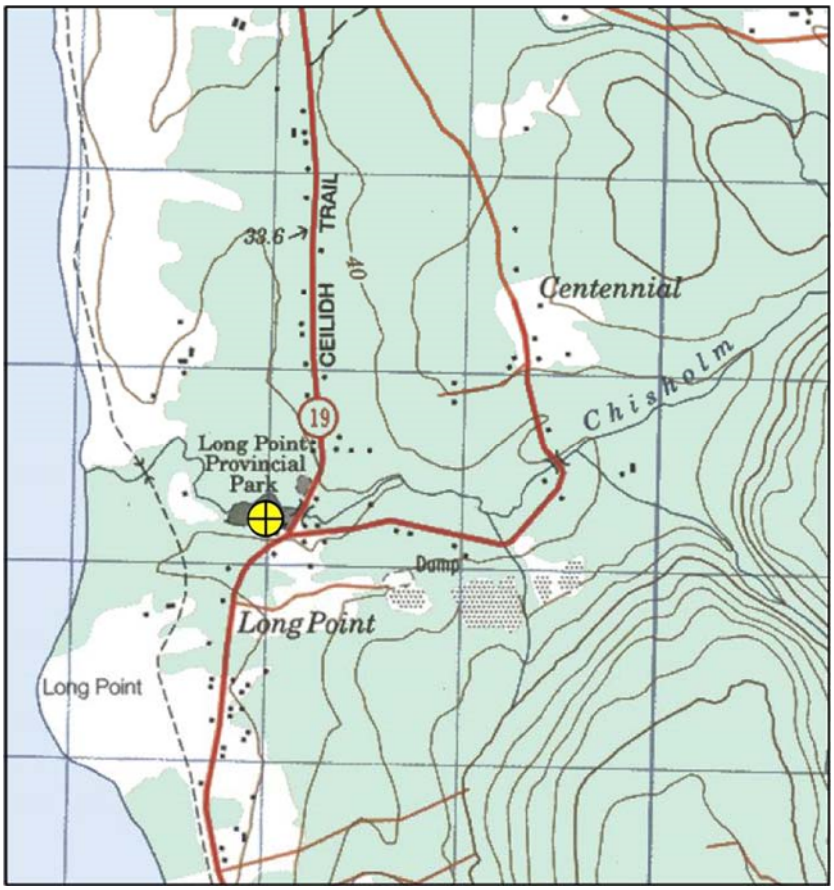


Figure F.34a: Long Point (082) Well Location

Figure F.34b: Long Point (082) Site Photograph

Figure F.35a: Tatamagouche (083) Well Location

Figure F.35b: Tatamagouche (083) Site Photograph

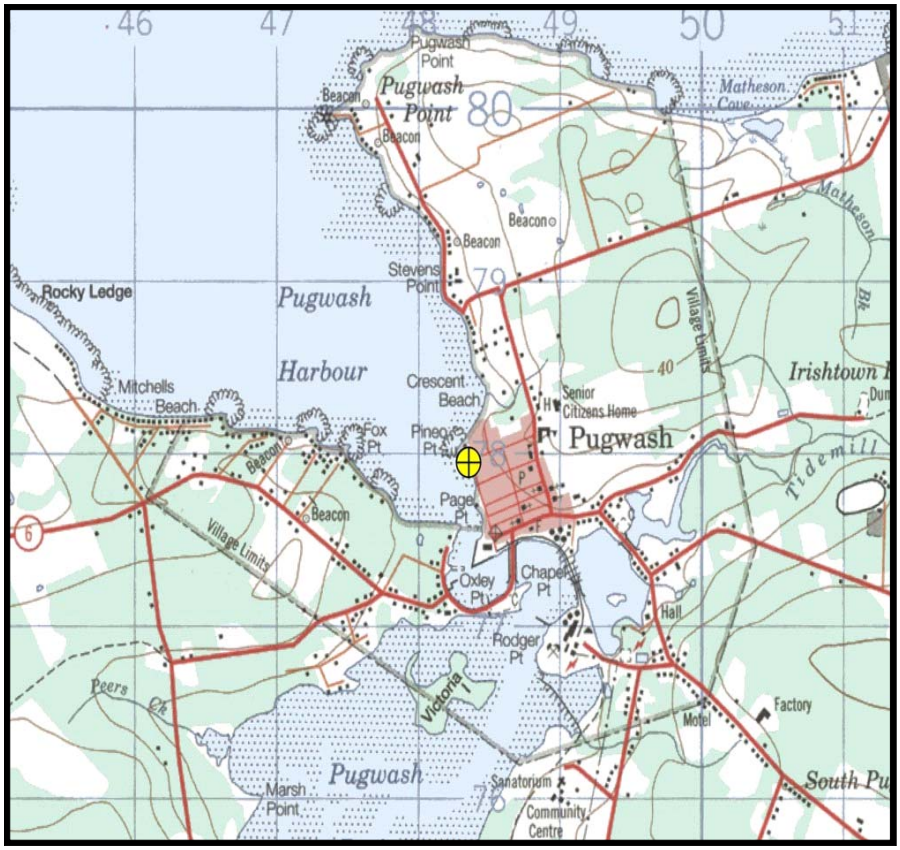


Figure F.36a: Pugwash (084) Well Location

Figure F.36b: Pugwash (084) Site Photograph

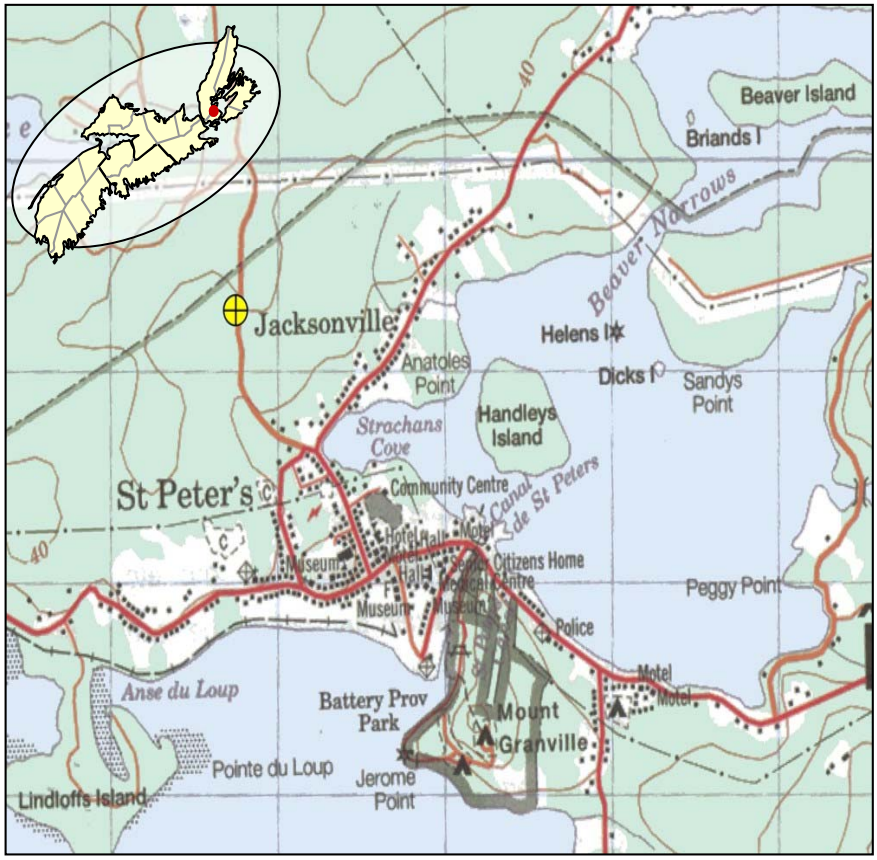


Figure F. 37a: St. Peters (085) Well Location

Figure F. 37b: St. Peters (085) Site Photograph

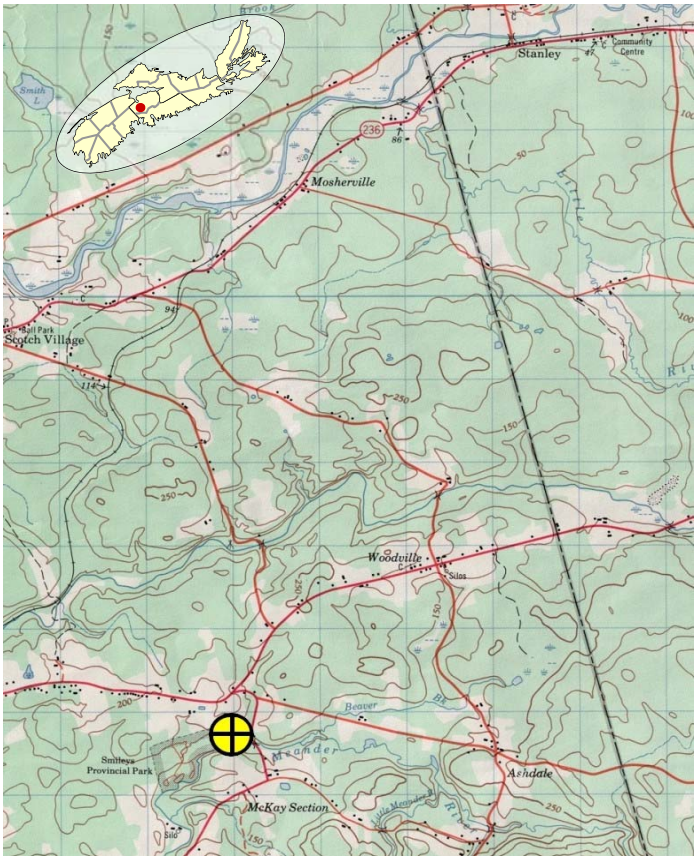


Figure F. 38a: Smileys Park (086) Well Location

Figure F. 38b: Smileys Park (086) Site Photograph

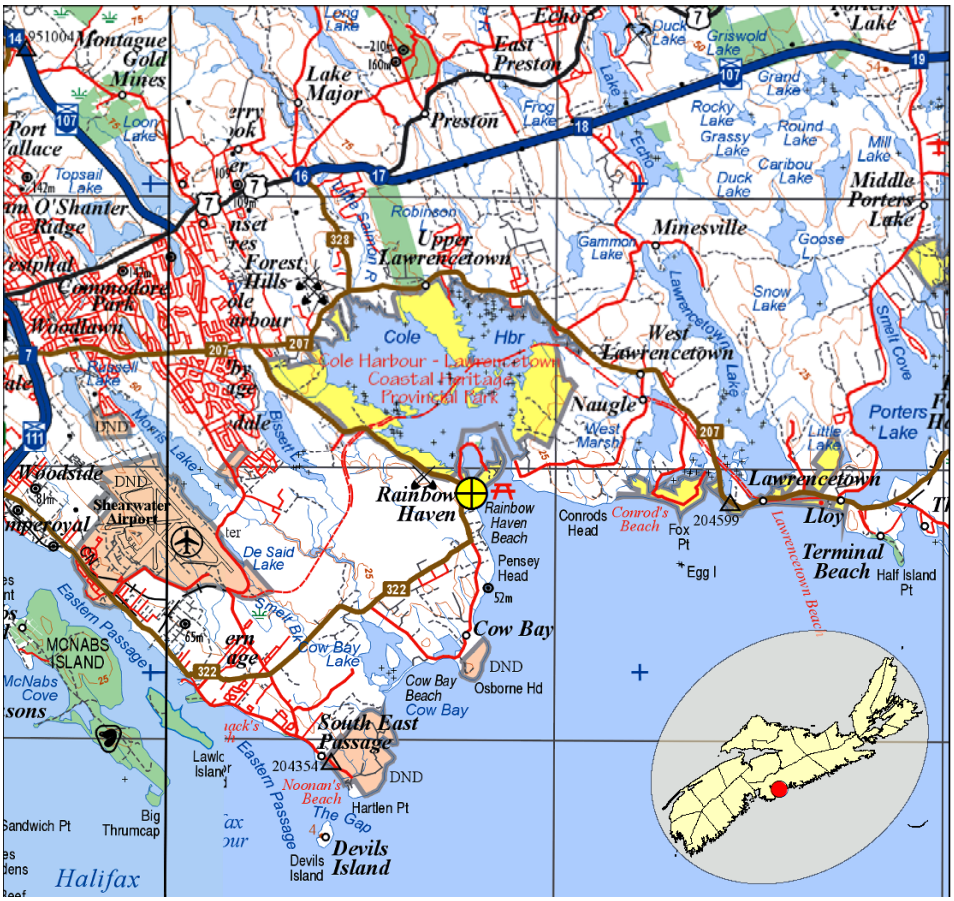


Figure F. 39a: Rainbow Haven (087) Well Location

Figure F. 39b: Rainbow Haven (087) Site Photograph

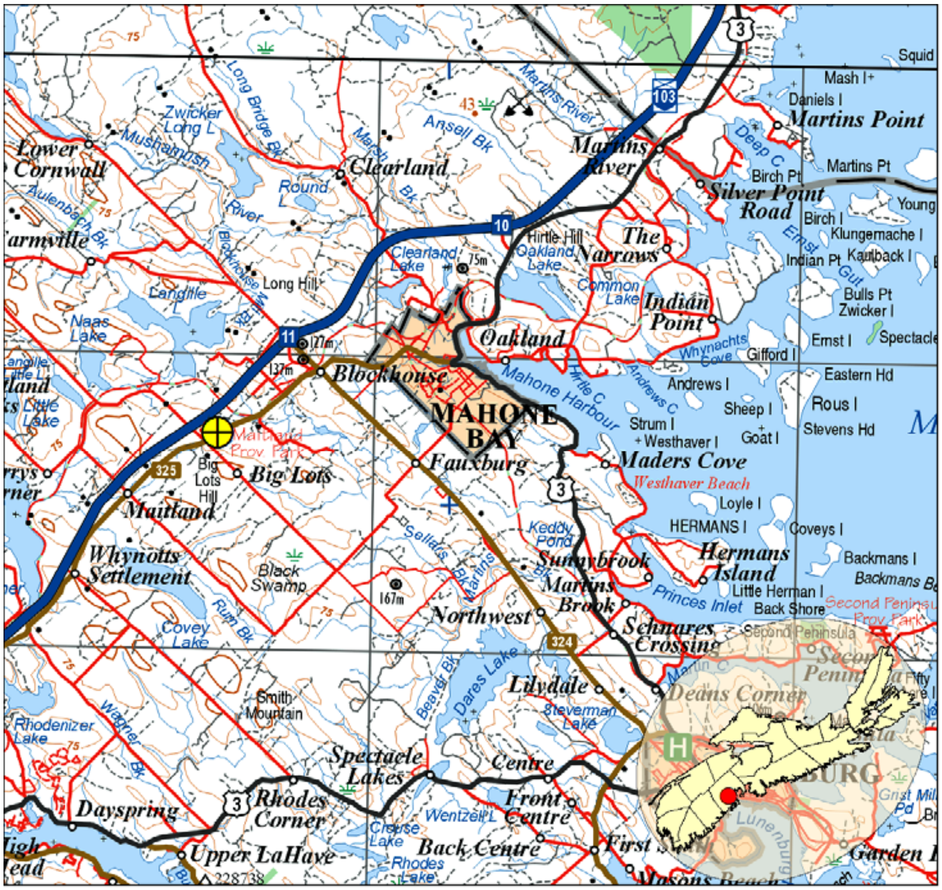


Figure F.40a: Maitland (088) Well Location

Figure F. 40b: Maitland (088) Site Photograph

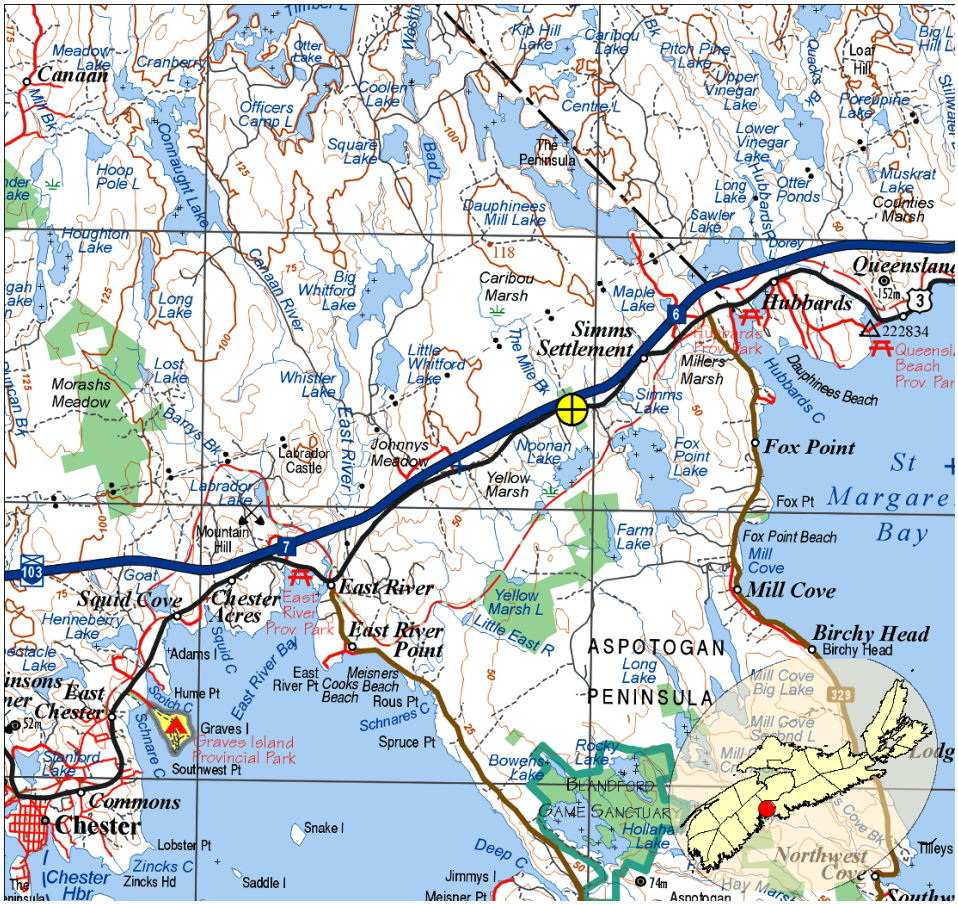


Figure F.41a: Simms Settlement (089) Well Location

Figure F.41b: Simms Settlement (089) Site Photograph