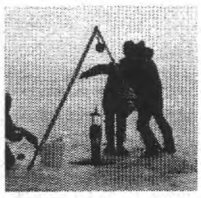
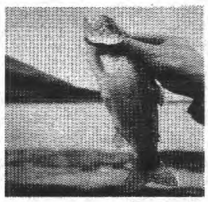
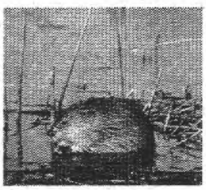
Canada Alberta Northwest Territories

Northern River Basins Study



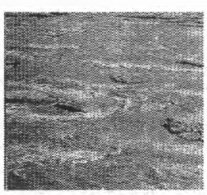




NORTHERN RIVER BASINS STUDY PROJECT REPORT NO. 115

AN ASSESSMENT OF DRINKING WATER QUALITY FOR ALBERTA COMMUNITIES IN THE PEACE, ATHABASCA AND SLAVE RIVER BASINS



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by

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PREFACE:

The Northern River Basins Study was initiated through the "Canada-Alberta-Northwest Territories Agreement Respecting the Peace-Athabasca-Slave River Basin Study, Phase II - Technical Studies" which was signed September 27, 1991. The purpose of the Study is to understand and characterize the cumulative effects of development on the water and aquatic environment of the Study Area by coordinating with existing programs and undertaking appropriate new technical studies.

This publication reports the method and findings of particular work conducted as part of the Northern River Basins Study. As such, the work was governed by a specific terms of reference and is expected to contribute information about the Study Area within the context of the overall study as described by the Study Final Report. This report has been reviewed by the Study Science Advisory Committee in regards to scientific content and has been approved by the Study Board of Directors for public release.

It is explicit in the objectives of the Study to report the results of technical work regularly to the public. This objective is served by distributing project reports to an extensive network of libraries, agencies, organizations and interested individuals and by granting universal permission to reproduce the material.

This report contains referenced data obtained from sources external to the Northern River Basins Study. Individuals interested in using external data must obtain permission to do so from the donor agency.

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Whereas the above publication is the result of a project conducted under the Northern River Basins Study and the terms of reference for that project are deemed to be fulfilled,
IT IS THEREFORE REQUESTED BY THE STUDY OFFICE THAT;
this publication be subjected to proper and responsible review and be considered for release to the public.

(Dr. Fred J. Wrona, Science Director) — (Date) 16 May 96

Whereas it is an explicit term of reference of the Science Advisory Committee "to review, for scientific content, material for publication by the Board",
IT IS HERE ADVISED BY THE SCIENCE ADVISORY COMMITTEE THAT;
this publication has been reviewed for scientific content and that the scientific practices represented in the report are acceptable given the specific purposes of the project and subject to the field conditions encountered.
SUPPLEMENTAL COMMENTARY HAS BEEN ADDED TO THIS PUBLICATION: [ ] Yes [ ] No

(Dr. P. A. Larkin, Ph.D., Chair) — (Date) May 10/96

Whereas the Study Board is satisfied that this publication has been reviewed for scientific content and for immediate health implications,
IT IS HERE APPROVED BY THE BOARD OF DIRECTORS THAT;
this publication be released to the public, and that this publication be designated for: **[ ] STANDARD AVAILABILITY [ ] EXPANDED AVAILABILITY**

(Lucille Partington, Co-chair) — (Date) May 9/96

(Robert McLeod, Co-chair) — (Date) May 21/96

AN ASSESSMENT OF DRINKING WATER QUALITY FOR ALBERTA COMMUNITIES IN THE PEACE, ATHABASCA AND SLAVE RIVER BASINS

STUDY PERSPECTIVE

Water is essential to life and it can be an important vector for conveying contaminants into humans. To assist the Northern River Basins Study (NRBS) Board in making recommendations about the safety of drinking water supplies, the Drinking Water component designed a five-step program of studies. The steps included:

1. synthesis of existing data on water use and water quality;
2. investigation of odour in water and tainting in fish;
3. review of health records for water borne diseases;
4. assessment of conventionally treated and non-conventional water; and
5. preparation of a synthesis report.

Related Study Questions

2) What is the current state of water quality in the Peace, Athabasca and Slave River basins, including the Peace-Athabasca Delta?

8) Recognizing that people drink water and eat fish from these river systems, what is the current concentration of contaminants in water and edible fish tissue and how are these levels changing through time and by location?

This project report addresses the conventional component of step four. Based on the results, a review and analysis of existing Alberta data on drinking water quality and treatment facilities (NRBS Project Report Number 55), 38 water treatment facilities were visited to assess the treatment processes used, to collect water samples from the raw, treated and distributed water, and to assess the operation and maintenance of the treatment facilities. To obtain a good cross section of facilities in the basin, the sites were selected based on the raw water source, treatment processes used, size of facility and treated water quality.

Results indicated that smaller facilities (hamlets and water points) tended to produce poorer water quality than larger facilities based on microbiological quality, turbidity and historical trihalomethane (THM) data. Many of the smaller communities showed higher than acceptable levels of indicator organisms and turbidity in the treated water. Observations from the site visits indicate that many of the drinking water difficulties noted with small facilities are related to operation practices. Remedial action is required by many smaller communities in the Northern River Basin Study area to bring the drinking water into compliance with the current drinking water standards.

Information from this report will be combined with information collected in "A Review and Analysis of Existing Alberta Data on Drinking Water Quality and Treatment Facilities for the Northern River Basin Study," (NRBS Project Report Number 55) to provide an overview of drinking water quality in the Northern River Basins. Together with the other Drinking Water projects, these studies will form the basis for the Drinking Water Synthesis report (NRBS Synthesis Report Number 9). Information from this project is also being made available to the Human Health Monitoring Program that is examining health issues in Northern Alberta.

REPORT SUMMARY

The World Health Organization (WHO, 1993) states that:

> "Water is essential to sustain life and a satisfactory supply must be made to achieve a drinking water quality as high as practicable"

The primary purpose of drinking water treatment is the protection of public health. The quantity of drinking water and the efficiency of treatment can be assessed through comparison to guidelines. In Canada, the applicable document is the Guidelines for Canadian Drinking Water Quality (1993) which has been adopted as minimum drinking water quality for licensed facilities in the province of Alberta. Most other developed countries have similar guidelines or regulations. The World Health Organization has also developed "Guidelines for Drinking Water Quality" (WHO, 1993) with a primary aim of protecting public health.

To assess drinking water quality in the Northern River Basin Study area results obtained from existing information and that obtained during this study were compared to both sets of guidelines discussed above. Of the sites investigated many were licensed facilities by Alberta Environmental Protection (AEP) and are required to meet as a minimum the Guidelines for Canadian Drinking Water. Other sites although not licensed by AEP still supply water to consumers, who tend to assure the water is of potable quality. As stated in the guidelines for Canadian Drinking Water:

> "The guidelines and recommendations listed herein are intended to apply to all drinking water supplies, public and private. ... Judicious use of the guidelines will result in the provision of drinking water which is both wholesome and protective of public health."

As a result both licensed and unlicensed facilities were assessed based on comparison to guidelines.

Based on site visits to 38 facilities, water quality analyses completed for the site visit and analysis of existing water quality information a number of conclusions can be made on the drinking water quality in the Northern River Basin Study area.

1. Small facilities in the study area tend to produce poorer water quality than larger facilities. This was found to be the case in terms of microbiological quality, turbidity (a good overall measure of treatment performance), and historical THM data.

2. As stated by the World Health Organization (1993):

   > "Infectious diseases caused by pathogenic bacteria, viruses and protozoa or by parasites are the most common and wide spread health risk associated with drinking water."

   As it is not possible or feasible to test for all pathogenic organisms, microbiological quality of drinking water is assessed based on indicator organisms. If these indicator organisms are present in the finished drinking water it then must be assumed that pathogens could also be present. The most common microbiological indicator used in

drinking water is the coliform group of organisms. Due to difficulties in sampling, transporting and analysis a single coliform positive sample may not truly reflect the microbial quality of the drinking water. As a result the Guidelines for Canadian Drinking Water Quality (GCDWQ,1993) state that not more than 10% of samples taken should be coliform positive. The WHO (1993) uses a more stringent guideline of not more than 5% be coliform positive. As the number of samples in small facilities are not great the 10% value was used in this study to assess microbial water quality to avoid unwarranted concerns to be raised for a facility based on a couple of bad samples. Analysis of a large database obtained from AEP of coliform results from communities in the Northern River Basin Study area was completed. This database consisted of roughly 270,00 total and 270,000 fecal coliform analyzes taken over the last seven years. Of the smallest facilities, watering points, 30% of them exceeded the 10% coliform positive guideline. If one includes samples which are considered poor by the GCDWQ (1993) this increases to 45%. Of particular concern was the finding that a number of facilities had high coliform positive percentages for all of the seven years the data was analyzed.

The occurrence of fecal streptococci, another indicator of fecal contamination, in 6 of the 28 surface water sites visited adds additional concern on the microbiological quality of water in many communities in the NRBS area.

3. It was also found that small facilities in the study area tended to have higher turbidity than larger communities. Although turbidity is only a measure of the clarity of water, high turbidity has been shown to negatively impact the performance of disinfection. In addition the most effective method of removal of protozoan cysts such as Giardia and Cryptospordium is through physical-chemical treatment processes for which there performance can be related to turbidity removal. The importance of turbidity as a parameter to indicate microbial quality is evident in the USEPA using turbidity to justify pathogen removal credits in their most recent standard. In these standards, maximum credits are earned with turbidity of $\leq$ 0.5 NTU 95% of the time.

   Results from existing data indicated that surface water facilities serving populations less than 500 have a significantly higher turbidity than facilities serving populations greater than 500. Because these samples were obtained from the distribution system and the small number of samples collected, compliance with guidelines could not be assessed.

   During the site visits 6 of the 38 sites had turbidity greater than 1 NTU, which in included the two watering points visited. These grab samples cannot be compared to standards which specify the maximum average turbidity 95% of the time must be below 1 NTU but they indicate that there may be problems at these sites.

4. Chemical parameters associated with raw water quality were found to be below guideline values based both on existing data and site visit data. However, for disinfection by-products (THMs) which are produced during treatment, the site visit

data found, that 60% (12 0f 21) of the surface water sites exceeded the guideline value of 100ug/L for THM. Analysis of existing data for THMs was complicated by the fact that most samples taken occurred under the old value of 350ug/L. The analysis did show however, if levels remained unchanged, 20 of the 62 sites analyzed by AEP would have difficulty meeting the lower standard value that is now in place.

5. Observation from site visits tended to indicate that much of the difficulties associated with small facilities may be related to operation of the facilities. Generally this can be related to the allotted time the operator is given to operate the facility, with smaller facilities having less time than larger facilities. The attitude of the people in decision making positions related to water treatment may also be an important factor. Operation performance may also be related to training as in larger facilities the majority or sole duty of the operator is to run the facility. As a result the opportunity for these operators to receive training is much greater. In small facilities, the operation of the treatment facility may be one of numerous tasks the operator may have to do. As many other tasks may be part of their daily routine the opportunity and incentive for these operators for training tends to be less.

6. Based on results of this study, remedial action is required in many small communities in the Northern River Basin Study area to bring the drinking water into compliance with current standards which are based on the protection of public health. Many communities are currently drinking water that may not meet Guidelines for Canadian Drinking Water Quality. Areas of concern are both the microbiological quality of the water and high levels of disinfection by-products. Of these the microbiological quality of the drinking water is by far of greatest concern. Many of the small communities showed higher than acceptable levels of indicator organisms as well as high turbidity. The occurrence of both would indicate that if pathogenic organisms are present in the raw water source they probably will not be removed by the treatment system.

   In the time needed for remedial actions to rectify the problems it is of utmost importance that consumers of water be notified immediately as to the status of their drinking water with respect to standards along with recommendations of prudent courses of action available to them. In the case of microbiological problems that are not rectified consumers should be advised to boil their drinking water as recommended in Guidelines for Canadian Drinking Water Quality (1993) and World Health Organization (1993).

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

The task of the Drinking Water Component of the Northern River Basin Study (NRBS) is to assess drinking water quality in the NRBS area. This report is one of a series of studies which have been undertaken which will help to assess the drinking water quality. Presented in this report are results of site visits to 38 water treatment facilities located in the NRBS area. In addition further analysis of existing drinking water quality data beyond that completed in the report entitled "Review and Synthesis of Existing Information on Consumptive Use of Drinking Water and Available Drinking Water Quality Data" (Prince, *el. al.*, 1995) is also presented. Most of the additional information involves analysis of microbial data which was not complete earlier as well as reanalysis of previously presented data to determine if trends in data from the site visits were evident in the larger data base.

The quality of drinking water is dependent on the quality of raw water used, treatment processes used to treat the water and the efficiency of the treatment processes. The last factor is highly dependent on the operator and operation of the facility. As a result the primary objective of the site visits were to:

1. Assess treatment processes used in the facilities in the NRBS area. This information was compared to existing information which was obtained from Alberta Environmenta Protection (AEP) facility survey which was summarized in the previous Prince, *et. al.* (1995) report.

2. Collect water samples from the raw, treated and distributed water to provide an independent assessment of water quality.

3. Assess operation and maintenance of treatment facilities as both can significantly impact treated water quality.

Ideally all 180 drinking water facilities in the NRBS could have been visited. However given constraints in time and budget this was not possible. A representative number of sites, 38 in total were selected and visited. Based on existing data on raw water source, treatment process used, size of facility and treated water quality, site were selected such that they represent an overall cross-section of the types of facilities found in the NRBS area. The criteria used in the selection of the sites is discussed in this report.

Based on the initial results from the site visits it was found that there appeared to be a trend that smaller facilities had a more difficult time producing a high quality drinking water in comparison to larger facilities. To investigate this further existing water quality data which had been previously analyzed was reanalyzed to specifically assess trends based on size of the facility. However this data was only for chemical parameters and a few bulk water quality parameters such as turbidity. Although analysis of this data showed similar trends in comparing smaller and larger facilities, other than turbidity and trihalomethans (THMs) all other parameters of health concern were well within drinking water guidelines. As outlined in Prince, *et. al.* 1995 the vast majority of drinking water facilities must be

considered of good quality in terms of their chemical quality. Generally, however the greatest risk to the consumer of drinking water can be related to the microbiological quality of the water (WHO, 1993). The previous report (Prince, *et. al.* 1995) did not assess microbiological quality of the facilities. A large data base (containing 270,000 samples) on microbial data was obtained from AEP and analyzed to assess trends in this data. As is discussed, similar trends were found in this analysis with smaller facilities tending to produce poorer quality drinking water than larger facilities. This report summarizes the selections of sites to be visited, results from the site visits as well as comparisons of results and trends in the results from the site visits to that found in the existing water quality information. Although some conclusions are made based on the results, the purpose of this report is to summarize the collected data in a format that will be usable in the overall assessment of drinking water quality in the NRBS area. This overall assessment will be completed as a synthesis document in the final year of the NRBS. Information from this report as well as others completed for the Drinking Water Component will be used in preparing the synthesis document.

2.0 SELECTION OF SITES

2.1 SELECTION CRITERION

As it was not possible to visit all facilities in the NRBS area, a number of sites were selected that would be representative of the types of water treatment facilities found in the NRBS area. In total 38 sites were selected out of approximately 180 facilities that are located in the study area. It was felt 38 sites were a large enough number to give accurate overview of the treatment facilities found in the NRBS area. Sites were selected based on factors such as treatment process used, size of facility, water source, location and historical water quality. Care was taken not to bias the results by choosing sites that represented both good and poor performance characteristics for the various treatment type categories. Details of the selection criterion are presented below. Data used in the selection process was obtained from information summarized in the previous report by Prince, *et. al.* (1995).

2.2 INFORMATION FROM EXISTING DATA

The use of historical effluent quality data in the selection of sites to visit was narrowed to five parameters of interest; total dissolved solids (TDS), pH, turbidity, total hardness, Langelier saturation index, and chloroform. In Appendix A, Table A-1 the data from the AEP's treated water survey for the NRBS facilities and the five parameters of interest are presented. The table lists the mean, upper and lower 95 percentile value, the number of samples greater than the method detection limit (MDL), the number of samples taken and the percentile of the facility within the set (surface or ground water source). The percentile of the facility indicates how the facility compares to other facilities of the same type. A low percentile indicates that the facilities average for that parameter is lower than most other facilities in that set while a high percentile indicates that the facility average is

higher than most in the set. A percentage of 50 indicates that the facility average is in the middle of the set. In selecting the group of sites to be visited, the investigators ensured that there was a good distribution of these percentiles.

Another database of drinking water quality data collected by AEP and stored in the NAQUADAT format was analyzed for four of the effluent quality parameters excluding chloroform. The results of the analysis are presented in Appendix A Table A-2 which contains the same format as the previous table. This data is particularly useful because it contains more information on raw water quality which helps in the selection of sites by ensuring that the sites are not all the worst or the best with respect to historical raw water quality.

The information on facilities population served and treatment processes use is shown in Appendix A Table A-3 which has been reprinted from an earlier drinking water component report (Prince, *et. al.* 1995). The information given in the three tables in appendix A represent the background information used in the selection process.

2.3 SELECTED SITES

Table 1 gives a list of the sites selected for the visits. As mentioned these were selected based on historical raw and treated water quality, treatment process used and population served. Table 2 presents a summary of treatment processes used at all facilities in the NRBS area as well as the treatment processes used at the selected sites. As indicated by the table, the distribution of treatment processes used at the selected sites are comparable. One significant deviation is the split between ground water and surface water sites. In the whole NRBS area about 43% are ground water facilities where only 25% of the selected sites have ground water source. This was purposely done as ground water normally has minimal treatment and it was felt the assessment of treatment performance for surface water sites was much more important as it has a greater impact on finished water quality.

3.0 SUMMARY OF INDIVIDUAL SITE VISITS

3.1 SITE VISIT PROTOCOLS AND PROCEDURES

The purpose of the site visit was to evaluate drinking water at the selected communities. To accomplish this goal information in the areas of water quality, plant operations, weekly sampling routines, chemical dosing and operating strategies was collected. A complete list of the type of information under these categories can be found by the categories in the Table 3. At some facilities not all the information was available. Table 3 contains a complete summary of information for each site visited.

A number of water quality parameters in Table 3 can be directly related to guidelines to assess quality. These include turbidity , chlorine residual, trihalomethanes (THM), total

and fecal coliforms and heterotrophic plate count. Details on these parameters and the related guidelines are discussed below. In addition other parameters measured include temperature, pH, conductivity, colour and ammonia. To assess taste and odour the site investigator provided an odour descriptions well as an odour intensity using procedures from Standard Methods, 1992. However this assessment must only be considered an indication of the odour as the result is based on a single investigator who visited the site rather than a complete panel as suggested in Standard Methods (1992).

In addition to the microbial parameters described above that relate directly to guidelines, additional microorganisms were numerated to give a better indication of microbial quality. These include Klebsiella, which have been associated with pulpmill effluents; fecal streptococcus, another indicator of fecal contamination; molds and yeasts, which have been related to taste and odour problems; and a series of corrosion organisms which relate to biofilm development in the distribution system.

Under the category of plant operations, the number of hours spent operating the plant was determined as well as the operator was asked about taste and odour problems throughout the year , as the assessment during the site visit only represents a single point in time.

At one time it was common to recycle backwash water to the front of the plant. However this practice has been linked to disease outbreaks due to both Giardia and Cryptospordium as filters are one of the most effective method to remove these protozoan cysts. Cysts removed during filtration will be concentrated in the backwash water and continued recycling of backwash water may result in overloading of the filtration and disinfection processes. As a result it was assessed whether the facilities recycled the backwash water.

Biofilms in the distribution system can cause a deterioration of the water quality. An effective means to try to control biofilm development is through a distribution system flushing program. Table 3 indicates if such a program exists in the community. The final information contained in the plant operation category is information on storage, flow and theoretical hydraulic detention time at the plant. The effectiveness of a disinfectant to inactivate microorganisms is dependent on the disinfectant dose and the contact time. The theoretical hydraulic detention time can give a rough estimate of whether there is sufficient contact time. It should be noted however that the actual detention time that can be determined only through tracer tests can vary substantially from the theoretical value.

The next category of information contained in Table 3 is on the sampling program of the facility. The sampling program is important both in terms of finish water quality and process control. The final category contained in Table 3 relates to treatment chemicals used, there dosage ranges and the method by which they are adjusted.

To assess drinking water quality, results for certain parameters were compared to those outlined in "Guidelines for Canadian Drinking Water Quality" (GCDWQ, 1993). It should be noted that the Canadian guidelines (GCDWQ) have been adopted as drinking water quality standards in Alberta legislation (Province of Alberta, 1993), the only province to

do so. Reference should be made to the legislation for complete understanding of how it applies in this regard, the following exerts provides an indication of the intent:

Environmental Protection and Enhancement Act: Potable Water Regulation 122/93, Water Treatment Requirements, section 7) :

> "A waterworks system must meet at least the minimum potable water treatment requirements set out in the latest edition of *Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems* published by the Department."

Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems (Alberta Environment, 1988), section 4.4:

> "The availability and quality of drinking water can have a significant impact on both the public health and the overall quality of life within a community. A major objective of Alberta Environment is to ensure that drinking water supplies and treatment systems provide a high level of public health protection while being able to meet the water supply needs of the community
>
> In developing a drinking water supply system the following three requirements must be satisfied:
>
> 1. The water to consumers shall meet the health related quality standards as outlined in the Health and Welfare Canada *Guidelines for Canadian Drinking Water Quality.* For those standards based on aesthetic considerations, less stringent requirements may be adopted by Alberta Environment;
>
> 2. The water system shall provide a basic level of protection against all possible sources and types of raw and treated water contamination; and,
>
> 3. Sufficient water must be available to meet the needs of the consumers, which may include fire protection."

The parameters investigated during the site visits for comparison to the drinking water standards were turbidity, chlorine residual, trihalomethanes (THMs), and the microbial water quality. The standards given for these parameters are as follows:

> **Turbidity** - maximum average of 1 NTU 95% of the time in treated water and an aesthetic limit of 5 NTU in the distribution system (GCDWQ,1993)
>
> **Chlorine Residual** - maintain a free chlorine residual of 0.5 mg/L at the plant, maintain a free chlorine residual of 0.1 mg/L or a total chlorine residual of

0.5 mg/L in the distribution system (Standards and Guidelines for Municipal Waterworks, Wastewater and Storm Drainage Systems)

THMs - maximum allowable concentration of 100 ug/L in the drinking water system at any location (GCDWQ,1993). The old limit for THM was 350 ug/L and it applies to the historical data.

Microbial Water Quality - All drinking water supplies should be analyzed routinely for coliform bacteria and the general bacteria population. This general population can be estimated from either background colony counts on total coliform membrane filters or heterotrophic plate counts (HPC), as outlined in *Standard Methods for the Examination of water and Wastewater.* Excessive concentrations of the general bacteria population can hinder the recovery of coliforms and thereby prevent the detection of a potential threat to public health.

The maximum acceptable concentration for total coliforms in drinking water is zero organisms detectable per 100 mL. Because coliforms are not uniformly distributed in water and are subject to considerable variation in enumeration, drinking water that fulfills the following conditions is considered to be in compliance with the total coliform maximum acceptable concentration:

1. No sample should contain more than 10 total coliform organisms per 100 mL, none of which should be fecal coliforms;

2. No consecutive sample from the same site should show the presence of total coliform organisms; and

3. For community drinking water supplies:
   a) not more than one sample from a set of samples taken from the community on a given day should show the presence of coliform organisms; and
   b) not more than 10% of the samples based on a minimum of 10 samples should show the presence of coliform organisms.

If any of the above criteria are exceeded, corrective action should be taken immediately, in consultation with the local authority responsible for drinking water supplies. The most common immediate actions include resampling, increasing disinfection dosage, flushing water mains, using alternative source of water and advising consumers to boil their drinking water.

If up to 10 total coliform organisms per 100 mL are detected from a single sample, or if sample contains either more than 500 HPC colonies per mL or more than 200 background colonies on a total coliform membrane filter (i.e. overgrowth), the water should be resampled. If the presence of coliforms is

reconfirmed (see 2, above), the cause should be determined and corrective action taken as appropriate. If there is a recurrence of the unacceptable background or heterotrophic plate counts, the system should be inspected to determine the cause. If remedial action is deemed necessary, special sampling should continue until consecutive samples comply with guidelines."

3.2 SITE VISIT SUMMARIES

Presented below is a brief summary of the comments related to the site visits. As mentioned, details regarding water quality, plant operations, sampling routine and chemical dosing and operating strategy is presented in Table 3 for each community in alphabetical order. Comments below provide additional information which could not be easily put in tabular form. It should be noted that the summaries presented are only for conditions found during the site visit. Water quality can change drastically due to upsets in the treatment processes and changes in raw water quality.

3.2.1 Athabasca

This facility relies on the operators to manually perform filter backwashes (manually opening and closing valves) and clearing the reservoirs of sludge. On-line monitoring equipment is being installed at this facility to help the operators cope with changing raw water quality. The summary of the data from the site visit shows that the water quality parameters are all within limits. The historical data on THMs and microbial indicators are also within limits.

3.2.2 Barrhead

Two full time people share the responsibilities of operating the water plant, the sewage lagoons and the pump houses. The water plant runs roughly 15 hr per day with the start up and shut down regulated by distribution system reservoir levels.

The disinfection residual in the distribution system is boosted at the field reservoir because of difficulty of maintaining an adequate residual from the plant alone.

The information from the site visit show the only parameter of concern is colour which is an aesthetic concern however it can be an indications of high natural organic matter in the water which may cause taste and odour problems and the formation of disinfection by-products. The historical THM data shows two of nine samples greater than the current standard which means the plant may have occasional THM problems. The historical microbial data showed an acceptable frequency of coliform positive microbial samples. The theoretical hydraulic retention time in the onsite reservoir is three hours and there may be a concern with having adequate disinfectant contact time. An interesting point from this community is that the town offices use a special filter on their water tap.

3.2.3 Berwyn

This ground water facility currently has no treatment but the operator says by 1997 they are required to disinfect the water. The operator states that he doesn't believe that disinfection is necessary but samples taken during the site visit were coliform positive (82 cfu/100 mL) and the frequency of coliform positive samples in the last two years has been 4% and 5% respectively. While this frequency is within guidelines the addition of disinfection to the system will provide better protection of the drinking water to contamination.

3.2.4 Caddote Lake

There was a very strong odour in the treated water that was not present in the raw water during the site visit. The levels of ammonia increased dramatically as well from the raw to the treated water. The resulting aesthetic quality of the drinking water at this site is poor. A possible explanation for this occurring may be the high concentrations of algae in the raw water that settles to the sludge blanket during treatment and may possibly decompose in the plant and taint the water. If this is the case the solution is to withdraw the sludge blanket at a higher rate and not allow the time to decompose.

The operator doesn't keep track of current chemical doses but records the weights of chemical used. The actual dosages are calculated monthly and submitted on reports. If the dosages were calculated on a current basis it would provide another tool for the operator to control the plant with.

The site visit data showed high turbidity (2.1 NTU) and a low free chlorine (0.08 mg/L) residual which is due to the high ammonia values. The operator stated that most people in area use bottled water. Historical microbial samples at this site show an acceptable frequency of coliform positive samples.

3.2.5 Colinton

There was trouble in determining the chlorine dose at this faciltiy, it is not calculated by the operator regularly. The practice of flushing the distribution system with a strong chlorine solution at this facility is uncommon and may cause public complaints.

This facility had high turbidity (1.6 mg/L) in the treated water and high THM values in both the treated and distributed water (223 ug/L and 198 ug/L, respectively). One of the historical THM samples (239 ug/L) confirms the levels found during the site visits while the other historical sample (42 ug/L) shows lower levels of THMs. Since Colinton is a ground water facility with fairly constant raw water quality operational factors would be the only significant factor impacting the treated water quality. The lower historical THM value is an indication that there may be operational strategies that can help the facility meet THM standards. The microbial sampling shows a 7% frequency of poor samples (see explanation of poor in section 5.3) in the years 1988 and 1989 and 0% since that time which indicates compliance with standards for the period of record.

3.2.6 Cynthia

This is a small ground water facility with disinfection as the only treatment. During the site visit it was found that the chlorine pump had been unoperational for a while and that the operator would add NaOCL to the reservoir by hand during his weekly visits. The data from the site visit showed the free chlorine value from the distribution system was low (0.05 mg/L). There is one historical THM sample taken from this site and it shows that THM levels were below the detection limit of 1 ug/L. The historical frequency of microbial samples was greater than 10% in four of the last seven years and is at 3% in the current year. The high historical frequency of poor microbial samples is a concern and it is important to maintain the low frequency in the current year.

3.2.7 Desmarais

This facility had a turbidity of 3.0 NTU (above the limit of 1 NTU) during the site visit inspite of the fact that it is a fairly new facility. The eutrophic Wabasca Lake used for the raw water source has significant algae growth in the summer which causes water treatment and taste and odour problems. Changes in the wind can cause significant raw water changes in a short period of time by stirring up bottom sediments and moving algae blooms into the area of the raw water intake. This makes it very difficult to treat the water. The THM values from the treated and distributed water did not meet current standards with treated and distributed water having THM concentrations of 161 ug/L and 174 ug/L respectively. The high THM concentration can probable be related to the high organic content due to the algae. Two of the five historical THM samples were over the current standards which indicates that this facility may problems meeting the current standards at all times. The historical microbial sampling shows a frequency of 0% poor samples for the past six years

3.2.8 Edson

This facility has access to a good ground water supply that requires some degasification and is chlorinated. The system requires minimal operational effort because of instrumentation and data acquisition equipment. All the water quality parameters were within limits during the site visit. The historical frequency of poor microbial samples are acceptable and the historical samples of THMs are all very low (less than 5 ug/L). There were no problems identified at this facility.

3.2.9 Fairview

The operator states that the aesthetic water quality of this facility has greatly improved since a 17 km raw water intake line was run to the peace river. Previously the operators would fill the raw water reservoir in the spring by laying out irrigation pipe and drawing water from near by ponds and ditches. This water was associated with taste and odour problems and high demand for water treatment chemicals. While the new line was costly the operator feels that the savings in chemicals and the benefit of improved aesthetic water quality out weigh the costs. All the water quality parameters were within limits during the site visit. The historical THM samples were within acceptable limits as was the historical frequency of poor microbial samples.

3.2.10 Falher

The operator estimates that 50% of the people in the Town of Falher use bottled water from the local IGA store which treats the water with reverse osmosis. The aesthetic quality of the drinking water at Falher has a reputation with outsiders for being poor but local residence that use tap water are acustom to it. The operator does not receive complaints directly from the public.

The distribution system is flushed once per year and due to soil conditions some of the hydrants do not drain so they are partially pumped out and non toxic RV antifreeze added. The operator indicated that methyl hydrate was use until they learned of the potential for contaminating the water supply.

The raw water source for the facility is a lake that experiences blue green algae blooms in the summer to the extent that access is restricted at times. The distance to the lake is roughly 35 km and the water is transmitted through a man-made cannel that also supplies water to McLennan, Donnely, and Girovxville. The filling of the facilities raw water reservoir occurs in the spring (May and June) and the fall (October) to avoid these algae problems. The growth of algae is controlled in the raw water reservoir by the application of copper sulfate in a mixture sprayed on the reservoir with the town fire truck.

The filters in the plant are backwashed once per week in the summer and twice per week in the winter. The operator states that the cold water in the winter is difficult to treat so the Town spends roughly $10,000 per month in natural gas bills to heat the water a few degrees.

All the water quality parameters were within limits during the site visit however the presents of fecal streptococcus in the treated water is a concern (see section 4.2). There is no record of a poor microbial water sample from this facility in the seven years of record. The historical THM sampling shows 4 of the 8 samples had levels of THM above the current standards which indicates that this facility may have difficulty meeting the current standards on occasion.

3.2.11 Fort Chipewyan

This is a fairly new facility that is well run and maintained. All the water quality parameters were within limits during the site visit. There is only a minor concern with practice recycling of the filter backwash water to the raw water reservoirs at this facility. The historical frequency of poor microbial samples from this facility is within standards and the levels of THM in the historical samples is also below current standards.

3.2.12 Fort McMurray

This is a well run and maintained facility and during the site visit all the water quality parameters of interest were within limits and the historical THM and microbial samples meet the current standards. There is only a minor concern with the practice recycling of the filter backwash water to the raw water reservoirs at this facility.

3.2.13 Fort McKay

The operator of this facility spent a great deal of time at the facility. The water quality parameters of concern during the site visit were the chlorine residual in the distribution system (0.02 and 0.39 mg/L free and total) and the level of THMs in the treated and distributed water (301 and 317 ug/L respectively). The frequency of poor microbial sampling has been low for all the years except 1988 when it was 10%. There was one of the two historical THM samples that was above current standards. The concerns at this facility are THMs and chlorine residual.

3.2.14 Fort Vermillion

This facility has an excellent raw water source in the Peace River and has no problems with taste and odour or hardness. The raw water quality from the river is subject to rapid change but these changes are suppressed in the raw water reservoirs. During the site visit the water quality parameters tested were within limits and the historical microbial and THM sampling is also within current standards.

3.2.15 Fox Creek

This is a ground water facility with two operating wells. The configuration of the system is such that the raw water storage mixes with the treated water making it possible to double doses some of the water with chlorine. The operator takes a sample from the distribution system and uses that information to adjust his chlorine dose.

During the site visit it was found that the operator had been using the reagents for free chlorine instead of total chlorine. The result was that he thought the residual was around 1.0 mg/L when it was actually over 2 mg/L. The operator was not calculating the chlorine dose being applied based on quantities of chemicals used but was only watching the residual. During the visit the water quality parameters tested were within the limits and the historical microbial and THM sampling is also within current standards.

3.2.16 Gift Lake

This facility appears to be well run and maintained. There are periodic problems caused by algae growth from the lake. During the visit the water quality parameters tested were within limits. The historical data shows that two of the five THM samples were above current standards and two (1988 and 1989) of the seven years of microbial standards did not meet standards.

3.2.17 Grande Cache

This plant uses pressure filters with a coagulant aid, there is no clarification. There is a problem of contact time after disinfection. The operators add there chlorine at the raw water pump house in order to get some contact time before it goes to the distribution system because the treated water reservoir is offsite. During the site visit the parameters outside the limits were the chlorine residual in the distribution system (0.02 and 0.15 mg/L free and total) and the THM levels in the treated and distributed water (100 and 143 ug/L respectively). The historical data shows that one of 10 THM samples would not

have meet current standards and the microbial sampling meet standards for the seven years of record.

3.2.18 Grande Prairie

This facility is fairly new and appeared to be well maintained. The parameters that were outside of the limits during the visit were chlorine residual in the distribution system (0.09 and 0.16 mg/L free and total) and the turbidity in the treated water (2.22 NTU). The historical frequency of poor microbial samples from this facility is within standards and the levels of THM in the historical samples is also below current standards.

3.2.19 Grimshaw

This facility is fortunate to have a good reliable ground water source that with minimal treatment and cost provides an excellent drinking water. All the water quality parameters tested during the site visit were within limits. The frequency of poor microbial samples from the historical data is near the 4% level for all seven years of record which is within limits. The THM levels in the historical samples are very low (less than 5 ug/L).

3.2.20 Highlevel

There was a serious odour problem with the water at this facility which was due inpart to an activated carbon pump that was broken down and waiting for a part. The operator felt the current odour problem was due to the minnows that were numerous in the raw water reservoir and the plant tanks. Odour problems could also be associated with algae growth in the raw water reservoir and Footner Lake (the raw water source). During the visit the level of THM in the treated and distributed water (181 and 185 ug/L respectively) was over the standards while historically one of the four samples were over the current standard. The frequency of poor microbial samples historically is near the 2% level which is within the standards.

3.2.21 High Prairie

During the site visit to this facility the water quality parameters tested were within the limits. The results of historical microbial sampling were within standards and two of the 10 THM samples would not have meet current standards. At this facility the operator did not calculate actual mg/L doses of the chemicals being added but used volumes of chemical slurries being added. The facility seemed to be running well.

3.2.22 Hinton

The pulp mill owned by Weldwood of Canada Ltd. treats the drinking water for the town of Hinton. Roughly 90% of the treated water goes to the pulp mill while 10% is chlorinated and fluoridated and distributed to the Town. This is a good relationship for the town in terms of economics. During the site visit all the water quality parameters tested were within limits as were the historical samples.

3.2.23 Janvier

This facility has limited treated water storage. The operator states that when trucks fill they draw down the water levels drastically. During the site visit the chlorine residual in

the distribution system did not meet standards (0.02 and 0.08 mg/L free and total). This is not a surprising result as the distribution system consisted of roughly two km of pipe with only a few services which mean the water may stay in the pipe long periods. The THM levels in the treated and distributed water (223 and 269 ug/L respectively) also exceeded standards.

3.2.24 Jasper

The operator of this facility doesn't submit reports to AEP and is not under their jurisdiction. The operator samples manually weekly but has on-line analyzers that continuously records the free chlorine residual. The operator is not required report the results of the water tests to any group. This facility has a good water source and is producing good drinking water with minimal supervision. During the site visit all the water quality parameters tested were within limits and the recorded historical samples are also within limits.

3.2.25 Lac La Biche

The facility has not experiences any major problems for the last two years. The last problem was with an abandoned raw water line that was connected to an intake in shallow water. It was found that this line was taking water into the plant and this was the cause of taste and odour problems in the spring.

There is a subdivision roughly 10 km away that is connected to the system that is difficult to maintain a disinfection residual at. There are plans to install a combine chlorine boost in the system to help maintain the residual.

There has been pilot plant work done on investigating the application of dissolved air floatation at this facility, that option was not pursued.

The theoretical detention time in the onsite reservoirs is 0.7 hours. Depending on the actual hydraulic retention time in the on site reservoir there may be inadequate contact time for the disinfectant (0.33 hours required).

The historical and site visit samples show the water quality parameters were within standards however the present of fecal streptococcus in the treated water is cause for concern.

3.2.26 Manning

The operator receives public complaints due to taste and odour episodes in the spring and when the colour goes above 15 NTU. The operator feels the taste and odour episodes are out of his control.

During the site visit the turbidity in the treated water was 2.4 NTU which is over the limit of 1 NTU and the level of THMs in the treated and distributed water (183 and 182 ug/L respectively) was also over the limit. The historical data showed two of seven THM samples at the current standard and no problems with the microbial sampling.

3.2.27 Peace River

This is a well run and maintained facility. Historical and site visit all the water quality parameters tested were within the limits.

3.2.28 Peerless Lake

During the site visit to this facility the treated water did not meet turbidity (1.7 NTU), free chlorine residual (0.02 mg/L), and total coliforms (195 col/100mL) standards. This facility requires improved operation and repair of the existing equipment as a minimum. The high turbidity in the treated water and the coliform positive samples are indicative of the poor quality of the treated water. Historically three of the seven years (including the current year) of microbial sampling show higher than acceptable frequency of poor microbial sampling .

3.2.29 Sexsmith

This facility has a good raw water source and no extra treatment. Without disinfection the distribution system is not protected from contamination and there is no way of knowing if contamination is occurring. Two of the last seven years of microbial sampling did not meet the standards. During the site visit the turbidity in the treated water was 4.4 which is not within the limits.

3.2.30 Slave Lake

This facility has on-line analyzers for free chlorine, turbidity and a streaming current meter which enables the operator to reacted to changing water conditions that occur on the Slave Lake. The dosing of the coagulant aid is tied in directly to the streaming current meter which allows the plant to react to changing raw water character. Algae growth in the lake cause taste and odour problems for the plant. These problems are the most challenging in the spring and fall. The practice of recycling backwash water is a concern in drinking water treatment. During the site visit the level of THMs in the distribution sample was 107 ug/L which is over the limit while one of the seven historical THM samples was at the current limit. This indicates there may be occasional THM problems.

3.2.31 Smith

The person operating this facility daily had the title of administrative support. The supervising operator that was making weekly visits to this plant has been on long term sick leave for possibly more than one year. There is support from I.D. #124 in Slave Lake if there were any problems and extra people come out to fill the raw water reservoir and maintain the site. It was unclear from the visit if the daily operator had been provided the appropriate training for the tasks required including a Scott air pack that was located on site. The operator stated that if the chlorine bottles ran empty then a quantity of NaOCl was thrown into the reservoir however they try not to let the bottles run empty. During the site visit all the water quality parameters where within the limits. Historically, all seven years of record meet the microbial requirements except 1990 and the were no THM samples over current limits.

3.2.32 Swan Hills

This facility has the benefit of a great deal of operator hours. It seems like a well run and maintained facility. During the site visit all the water quality parameters where within the limits as were the levels with the historical samples.

3.2.33 Tangent

This is a pressure filter facility that was built when turbidity standards were less stringent. The plant has difficulty meeting current turbidity standards, AEP recommends the plant be upgraded. The operator states that with only 100 people in the hamlet the I.D. administration cannot justify spending large amounts of money to upgrade the plant when the current water quality is probable superior to what the rest of 1600 people in the I.D. area drink.

There is a problem in the summer when the water use can be very high because the treated water reservoirs are drawn down and there insufficient time for the chlorine to react which results in a high chlorine concentration in the water going to the distribution system this results in public complaint about the taste of chlorine. There is a person in the Hamlet with access to the water plant that goes to the plant and turns down the chlorine dose if the water has strong chlorine taste and odour. The THMs in the treated and distributed water (201 and 230 ug/L respectively) was the only water quality parameter exceeded however the presents of fecal streptococcus in the distributed water is of concern. The frequency of poor microbial sampling in the seven years of record is around 9% which is of concern but not over the limit of 10%.

3.2.34 Teepee Creek

There was some confusion at this site in that the visit was intended to be to the Teepee Creek School but the facility that was visited was a small ground water facility that supplies the seven house in the area, the school is on a separate well. The guidelines do not apply to this facility and so further discussion here is unwarranted.

3.2.35 Wandering River

During the site visit the operator asked if I would wait to take my sample because the NaOCl pump was air locked and there was no chlorine being added. The operator fix the pump and said my sample should OK now. He then threw a quantity of NaOCl into the reservoir. It is obvious that the disinfection system is unreliable at this facility, the operator says the plant doesn't run with out someone there unless there is a fire. This is a fairly new facility. The only parameter to outside of the limits was THMs in the treated and distributed samples (141 and 128 ug/L respectively). The presents of fecal streptococcus in the distributed water is also a concern. The frequency of poor microbial samples in the historical data was within limits for every year except 1989 (18%). One of the three historical THM samples was at the current limit which indicates THM may be a problem.

3.2.36 Westlock

There is no serious taste and odour problems in the spring but there is some related to algae growth in the raw water reservoir. The algae growth is controlled by copper sulfate which used to be added by boat but now is added at the raw water intake. The facility recycles 80% of the filter backwash water with the remainder going to the sewer this may be a concern. The chlorine residual leaving the plant is affected greatly by the water level in the clear well. In dosing the chlorine the operator takes into account the clear well level and the test results and bumps the dose up or down in order to maintain a residual of 1.0 mg/L leaving the plant.

The only parameter to outside of the limits during the site visit was THMs in the treated and distributed samples (101 and 169 ug/L respectively) and the presence of fecal streptococcus in the treated water is of concern. Historically the data shows that two of the six THM samples were at the limit and the microbial samples were within limits.

3.2.37 Whitecourt

The configuration of the onsite storage at this facility is such that treated water can go directly from the clear well to the distribution system without having to go through the reservoir. There may be inadequate contact time under these conditions. A great improvement in disinfection contact time is available by making the piping correction necessary to have the treated water go through the reservoir before going to distribution.

The poor raw water quality is associated with rain events rather than spring breakup. The operator has noticed on one occasion foam on the river and felt it was coming from the pulp mill up stream because he could feel fibers in the foam. The operator call AEP about the matter.

The only parameter to outside of the limits was THMs in the treated and distributed samples (133 and 142 ug/L respectively) and the presence of fecal streptococcus in the treated and distributed water is a concern. The historical data shows that the recorded THM and microbial samples were within current limits.

3.2.38 Woking

This facility appears to be well run. During the site visit all the water quality parameters where within the limits. The historical data shows that seven of the 10 THM samples taken were above current limits which indicates there is likely a problem with THMs at this facility. There were no problems revealed in the historical microbial data.

3.2.39 Worslev

One comment that the operator made that was of concern was that the chlorine line works its way out of the feed tank at times so that there is no chlorine being fed. The only parameter outside of the limits was THMs in the treated and distributed samples (180 and 290 ug/L respectively). The historical data showed no problems with THM and the microbial sampling.

4.0 SUMMARY OF DRINKING WATER QUALITY DATA COLLECTED FROM SITE VISITS

In the previous section the data collected from the site visits was presented. The following subsections summaries specific water quality parameters and identifies and trends that are important based on results from site visits.

4.1 TURBIDITY DATA

The turbidity data collected from the site visits has been sorted and summarized based on community status (town or hamlet etc.), sample type (raw, treated or distributed) and type of source water for the facility (surface or ground water). The summary is in Table 4.

The standard for turbidity in treated water is 1 NTU 95% of the time. The samples taken during the site visits were grab samples and compliance with the guidelines could no be determined based on one sample. A turbidity value over the standard of 1 NTU in the treated water does give a strong indication that the facility may have difficulty meeting the turbidity standard at times. The table lists the number of samples over 1 NTU in the distributed water and it should be noted that the standard in the distributed water is 5 NTU and it is an aesthetic objective.

The table shows that there were six sites were the treated water turbidity was over the 1 NTU limit. Four of the sites are small communities (hamlets and water points) with both water points visited in the group being over 1 NTU. The other sites were the Town of Manning and the City of Grande Prairie. It was surprising that Grande Prairie was above 1 NTU given the quality of the facility and the staffing levels. Analysis of historical data seems to indicate that the high turbidity may be the result of a plant upset as generally turbidity is within guidelines. However, given the size of the facility and the population served the cause of the high turbidity should be determined.

There appears to be a trend in the average turbidity in that towns have lower turbidity than the hamlets or water points. The only statistically significant relationship found is that the water points have a higher average turbidity than both the hamlets and the towns at a 95% confidence level.

The turbidity data indicates that 6 of the 32 treated water samples taken were above the 1 NTU limit which would indicate that these sites may have difficulty meeting the standards. The results also show that the average turbidity from the treated water samples taken at water points were significantly higher the averages of those taken at hamlets and towns.

4.2 MICROBIAL DATA

The microbial data collected has been sorted and summarized based of the status of the community be it a town or hamlet etc.; the type of sample (raw, treated or distributed); and the type of source whether surface or ground water for the 13 microbial parameters analyzed. The summary can be found Table 5.

The data on coliforms indicates there was only one ground water sample taken that was total coliform (TC) positive and there were none that were fecal coliform (FC) positive. The total coliform positive sample was from Berwyn and it was taken from the distribution system which would suggest a problem in the distribution system and not in the raw water. This is fairly serious occurrence as coliforms are used in the drinking water standards as indicators of microbial water quality. The sample taken from Berwyn distribution system (82 cfu/100 mL) is not in compliance with standards. The rest of the ground water sites have no indication of coliforms in the water.

As expected the coliforms data from the surface water facilities identified TC in 26 of the 28 raw water samples and found FC in 19 of 29 raw water samples. The average count in the samples was 20 and 4 cfu/100 mL for TC and FC respectively and there were 8 samples where TC were uncountable because they were either too numerous to count (tntc) or confluent growth (confl). The recommendation for TC counts in raw drinking water is 5000 cuf/100 mL for conventional treatment and 500 cuf/100 mL for direct filtration facilities (Zhou *et al.*, 1995). For the sites where TC values were determined the raw water quality is adequate for a conventional treatment plant and there were four sites that exceeded the 500 cfu/100 mL guideline for a direct filtration plant. Of the four sites over the 500 cfu/100 mL value all were equipped with conventional treatment except at Peerless Lake were the clarifier was broken down and the plant was essential a direct filtration plant. Comment cannot be made on the raw water quality based on total coliforms at the 8 sites where the colonies were uncountable.

The only treated or distributed water sample taken from a surface water facility that showed the presents of any coliforms was the treated sample at Peerless Lake with 195 cfu/100 mL. It is interesting that this is the site that did not meet the raw water TC guideline for the processes in use.

The heterotrophic plate count (HPC) data for both the 48 hour test and the seven day tests show expectantly that the ground water sites have fairly low colony counts compared to the surface water sites.

The HPC data from the surface water sites indicates a marked reduction from the raw water levels to the treated and distributed water levels which reflects the treatment and disinfection processes effect. There is some evidence of regrowth in the distribution system when comparing the 7 day HPC average for the treated and distributed waters. All the surface water sites comply with standards on HPC counts (500 cfu/1 mL, GCDWQ) in the treated and distributed water except for Peerless Lake with 774 cfu/1 mL in the treated water.

Klebsiella is one of the coliform group of organisms and the data shows that it is present in 14 of the 28 surface water samples and one of the seven ground water samples. The data demonstrates that coliforms are always present when klebsiella is present except in the two cases of Hinton treated and Janvier distributed.

The data on fecal streptococcus indicates that none were found in any ground water samples but were present in all but one raw surface water sample. A somewhat surprising result was that six communities contained fecal streptococcus in their treated water. These communities include Falher, Lac La Biche, Tangent, Wandering River, Westlock, and Whitecourt. Although there are no guidelines for the occurrence of fecal streptococcus in drinking water, these organisms are used as an indicator of fecal contamination. It has generally been thought that the fecal streptococcus group occur only in the feces of human and other warm blooded animals and therefore constitute a more specific test for fecal contamination than the coliforms group (Velz, 1984). It has also been found that fecal streptococci are more persistent than coliform bacteria and therefore may be a more sensitive indicator of treatment efficiency (WHO, 1993, and Velz, 1984). Although as discussed no standard is given for fecal streptococci the World Health Organization (WHO, 1993) states if fecal indicators are shown to be present, then it must be assumed that pathogens could also be present. For this reason, fecal indicator bacteria must never be present in the treated water delivered to the consumer and any detection should prompt immediate action to discover the cause and take remedial action. As a result the findings of fecal streptococci in 6 of the sites tested is a cause for concern. However it should also be noted that samples taken only represent grab samples and further analysis of these sites is required.

The presents of yeasts and molds was found in all raw surface water samples and roughly 30% of the treated and distributed samples taken from surface water facilities. Molds were found in two of the 6 ground water sites sampled and yeasts were found in all but one of the ground water sites. High concentrations of yeasts and molds can be related to taste and odour problems.

The iron, sulfate, sulfite, and thiosulfate reducing bacteria and the iron oxidizing bacteria are associated with biofilms in distribution systems and play an important role in some corrosion processes in distribution systems. Some of these organism, particularly iron oxidizers can affect the aesthetic quality of the water. The data shows that the iron and sulfite reducing bacteria and the iron oxidizing bacteria are present in roughly 30 of the 35 raw water samples taken. The treated samples showed these organisms present at only 4 of the sites. There is some evidence of regrowth within the distribution system as at 10 sites the iron and sulfite reducing bacteria were present in the distributed water samples and 17 of the sites showed iron oxidizing bacteria were present in the distributed sample. The sulfate and thiosulfate reducing organisms were present in most raw water samples and fewer but similar number of treated and distributed water samples. It is difficult to relate these finding to the aesthetic water quality from the distribution system as the aesthetic quality of the raw water tends to overshadows these factors.

The microbial data shows that the raw water quality of the samples were within the guideline recommended for the treatment practices used except for Peerless Lake were the plant was operating as a direct filtration plant. There were 8 raw water samples that were uncountable for TC and no assessment can be made of these waters. The treated and distributed samples all complied with standards except for Peerless Lake (TC=195 cfu/100 mL and HPC=774 cfu/1 mL) and Berwyn (TC=82 cfu/100 mL). Additionally there are some concerns due to the occurrence of fecal streptococcus in the treated water of six sites.

The microbial quality of the water related to the status of the community (town or hamlet etc.) did not provide significant distinctions. While the two water points visited had some of the lowest quality raw water and one of the sites did not meet requirements of treated water standards, there was not enough data to establish the significance of this trend.

4.3 THM DATA

The trihalomethane (THM) data has been sorted by the status of the community (town or hamlet etc.), the type of sample (treated or distributed) and the type of source water (ground or surface). The raw water was not analyzed for THM because they are formed as by-products of chlorine disinfection and therefore not an issue in raw water. The summary of the data can be found in Table 6.

The standard for THM is 100 ug/L (GCDWQ) in the drinking water at any point in the system. The table shows that over half the samples taken from the distribution systems of the facilities visited were over the 100 ug/L standard. There was one of the four distribution samples taken from a ground water facility was over the limit and 12 of the 21 samples taken from surface water facilities were over the limit. There is not a significant relationship with the THM data and the status of the community with 60% of both the towns and hamlets exceeding the standard in the distributed samples and neither of the water points exceeding the standard. This would indicate that the levels of THMs are not related to the size of community in the NRBS area but seem to be a concern for many communities as the data indicates that over half of the communities visited may have difficulty meeting the THM standards.

THM are a group of chemicals which are characterized by halogen-substituted single carbon compounds. With respect to drinking water four of these compounds tend to be important: bromoform, dibromochloromethane (DBCM), bromodichloromethane (BDCM) and chloroform. The most commonly occurring constituent is chloroform (WHO 1993).

The guideline value is based on health effects related to the various compounds. It should be noted however that THM may also act as indicators for the presents of other chlorination by products. Both bromoform and dibromochloromethan are classed as agents which are not classified as to its carcinogencity to humans by the International

Agency for Research on Cancer (IARC) (WHO, 1993). This category is used for agents for which evidence of carcinogencity is inadequate in humans and inadequate or limited in experimental animals. Bromodichloromethane and chloroform are classed by IARC as agents which are possible carcinogenic to humans. This category is used for agents which there is limited or inadequate evidence of carcinogencity in humans but there is less than sufficient or sufficient evidence in experimental animals.

The guideline value of 100 ug/L is based on an excess risk of 10^{-5} (WHO,1993), Although the number of sites which exceed the THM guideline is of concern, the risks to health from these by-products are small in comparison with the risks associated with inadequate disinfection. As a result the WHO (1993) states that if local circumstances require that a choice must be made between meeting either microbial guidelines or guidelines for disinfectants or disinfectant by-products, the microbiological quality must always take precedence. Efficient disinfection must never be compromised. Generally however, with proper treatment both requirements can and should be met. The level of disinfection by-products can be reduced by optimizing the treatment process. Removal of organic substances prior to disinfection reduces the formation of these by-products.

4.4 SUMMARY OF TREATMENT PRACTICES

The information collected during the site visits and other information provided by operators indicates that there is a lower level of care at the smaller facilities (hamlets and water points) compared to the larger ones (towns and cities). This is not to say that the difference is in the operators themselves but rather in the managerial support the operators receive in terms of time allocated for operating the plant and training provided. There is one case at a small facility were the operator received one half hour training when they started the job and then the supervising operator went on holidays for two weeks leaving the new operator to run the plant. Another situation at a small plant had an clerk operating the water plant with a qualified operator visiting weekly except the qualified operator had been on sick leave for one year.

5.0 SUMMARY OF EXISTING DRINKING WATER QUALITY DATA

Based on results and observations from the site visits there appeared to be a trend that smaller facilities were having a more difficult time producing good quality water than larger facilities. However, due to the small sample size (38 sites) and only one set of samples taken at each site, it was not possible to prove whether the trend was significant. As a result data bases obtained from AEP were analyzed to assess this trend.

The data in this analysis came from two Alberta Environmental Protection (AEP) sources, the treated water survey (460 samples in the NRBS area) and the database of microbial sampling (72,000 samples in NRBS area 270,000 samples in all Alberta). The treated water survey had been analyzed before (Prince *et al.* 1995) but not for trends based on facility size. The microbial database had not been studied in earlier reports.

The analysis of the data in AEP's treated water survey shows that chemically the drinking water in the NRBS area meets GCDWQ maximum acceptable concentrations (MAC) for all parameters except for some trihalomethanes (THMs) violations at the older limit of 350 ug/L (see previous NRBS report "Review and Synthesis of Existing Information on Consumptive Use of Drinking Water and Available Drinking Water Quality Data"). While the turbidity data in the treated water survey are not comparable to the standards because the samples are taken from the distribution systems the data is useful in assessing drinking water quality. A summary of the THM data and the turbidity data from the treated water survey is included to provides insights into water quality in the NRBS area.

An analysis of the historical microbial data provides an in-depth insight into the drinking water quality.

5.1 SUMMARY OF EXISTING THM DATA

Figure 1 is a figure taken from the Review and Synthesis of Existing Information and it demonstrates the distribution of site average chloroform (one of the THMs) values. The THM standard has just recently changed and at the time these treated water survey samples were taken the standard was 350 ug/L meaning that these site averages were in compliance. If the levels of THMs in the drinking water in the NRBS continue unchanged and this figure is compared to the current standard of 100 ug/L it shows that 20 of the 62 surface water sites will have difficulty meeting the standards. Table 7 is a summary of the THM values from the 460 NRBS area samples in the treated water survey. The table summarizes the samples by the status of the community and whether it is a ground or surface water source and compares to see the number and percent of samples that would not meet current standards (again the old standard applies to these samples). This gives an indication that if water quality does not improve with regard to THMs the percent of the surface water sites that have difficulty meeting standards is 0% of cities, 8% of towns, 34% of villages, 42% of hamlets and 50% of water points and Metis settlements (the last two categories are based on only a few samples). The ground water sites were not as big a concern with regard to THMs with only 1 of the 66 samples being over the current guideline. There seems to be a trend that generally the smaller surface water communities will have more difficulty with the THM standards than the larger ones (towns and cities).

5.2 SUMMARY OF EXISTING TURBIDITY DATA

The 389 turbidity samples from AEP's treated water survey were collected from the distribution systems of the facilities so that the GCDWQ standard of 1 NTU does not apply. However, it is still enlightening to compare the means of the turbidity for communities with population greater than 500 to those less than 500. Table 8 is the summary of the comparison. The table shows that surface water facilities with populations greater than 500 have significantly lower turbidity (α=0.02) than facilities greater than 500 population. The difference in the ground water facilities is not statistically significant.

5.3 SUMMARY OF EXISTING MICROBIAL DATA

Currently the strategy for controlling the microbial quality of drinking water is based on turbidity and the presence and quantity of indicator organisms like total and fecal coliforms (TC and FC) and heterotrophic plate count (HPC). The success of this strategy is evident historically by the dramatic decline in epidemic and endemic waterborne diseases like typhoid fever and cholera (Sobsey *et al.*, 1993). There are some pathogenic microorganisms that are not well represented by TC, FC and HPC indicators, such as *Giardia* (responsible for beaver fever). New strategies are evolving to control these other waterborne risks to public health. These new strategies look at several of the current treatment processes as barriers to pathogenic microbes and continue to use turbidity as the critical parameter to assess treatment process performance. The importance of turbidity as a parameter to indicate microbial quality of drinking water is evident in the USEPA using turbidity to justify pathogen removal credits in their most recent standards (Letterman, 1994). In these standards maximum credits are earned with turbidity of $\leq$ 0.5 NTU 95% of the time.

It should be noted that the risk associated with microbial contaminants are normally much greater than those associated with chemical contaminants. The World Health Organization (WHO,1993) in their "Guidelines for Drinking Water Quality" state:

> "The potential consequences of microbial contamination are such that its control must always be of paramount importance and must never be compromised."

There is also concern that current guidelines based on indicator organisms and turbidity may not be rigorous enough. Endemic and community wide gastrointestinal illness have been attributed to drinking water meeting current guidelines (Sobsey *et al.*, 1993).

The microbiological standards in the GCDWQ (pg. 11) were checked against the large database (270,000 samples) of microbial data for compliance. Pertinent sections of the GCDWQ were given previously in Section 3 and will be referred to:

The AEP database gives information taken from microbial analysis records in the form of either affirmative or negative indications of the following categories; 0 < TC > 10, TC >10, FC > 0, too numerous to count, confluent growth (overgrown), samples late for analysis, broken bottles, and incorrectly labeled. Note, no actual numbers were given and only the month and year of the sample date are known. The last three categories were excluded from the analysis.

A summary of the microbial database for the NRBS area and all Alberta is in Tables 9 and 10. The tables list the number of samples taken and number in the categories mentioned previously. The percent of samples that were coliform positive and the percent of sample that were poor (defined later) are calculated. It is interesting to note that the ground water facilities with no disinfection have a high incidence of coliform positive

samples. There is also a trend of higher percent of coliform positive samples with the smaller communities and a lower percent coliform positive with the larger communities.

Items 2 and 3a. under section 3.1 of the GCDWQ could not be investigated because of a lack of data. Under item 1 the database showed several samples exceeding concentration values with TC concentrations greater than 10 cfu/100mL or positive FC but again there is not enough information to examine this item. To investigate item 3b (no more than 10% of samples can be coliform positive) the percent of samples from a site that were coliform positive over a calendar year were calculated. Tables 11 and 12 show a summary of the sites that had more than 10% of samples coliform positive (exceeding standards). Table 11 shows that the smaller communities have more sites exceeding standards than the larger ones with 30% of the water points exceeding standards in 1994. Figures 2 and 3 shows the graphical representation of this data in the NRBS area and all Alberta. As indicated by the figures communities that have a highest percent of coliform positive samples are those with population less than 500. The World Health Organization and the USEPA standards for microbial quality of drinking water stipulate that no more than 5% of the microbial samples from a water system can have the presents of coliforms (WHO,1993 and USEPA) which is more stringent than the GCDWQ standard. As mentioned the situation is common to the NRBS area and all Alberta. Goodrich *et al.* (1992) found a similar situation in the United States.

In the lab analysis for TC and FC a situation can arise where other bacteria overgrow the plates making it impossible to identify the presents of coliforms. As stated in the excerpt of GCDWQ in section 3 above this is considered an unsatisfactory sample and the reoccurrence of these samples should be investigated and corrected. The rate of the recurrence of overgrown samples and coliform positive samples was combined and referred to as the % poor and summarized in Tables 13 and 14 and Figures 4 and 5. While the use of the 10% limit in the Tables 13 and 14 was an arbitrary choice and does not reflect standards exactly, a strong argument can be made the facilities over the 10% poor samples limit are a concern and have a problem. The Figures 4 and 5 and Tables 13 and 14 demonstrate that there is a more pronounced difference between large and small communities with this comparison. There were 45% of Water Points that had over 10% poor samples in 1994. The figures show that more small communities have shifted to the right (higher % poor) than have the larger communities which is comparable to all Alberta sites. Table 15 gives a listing of the NRBS area water treatment facilities and the percent of samples that were poor and coliform positive. Of particular concern is the fact that a number of facilities continuously have sampling which exceeds the CDWQG.

6.0 CORRELATION OF SITE VISIT DATA WITH EXISTING DATA

The information on turbidity seems to agree in both the historical and site visit data. The existing data shows significantly higher turbidity levels in communities less than 500 populations and the site visit data show that turbidity in the treated water at water points is significantly higher than towns and hamlets.

The historical THM data and the site visit THM data both suggest that many facilities will have difficulty meeting the THM standard of 100 ug/L. The historical data suggests that roughly 30% of the sites tested would not meet current standards with smaller facilities having up to 50% having difficulty meeting standards. The site visit data found roughly 50% of the sites tested over the 100 ug/L limit and there was no trends based on the size of community.

Comparing the historical and the site visit microbial data does not provide clear agreement because the number of site visit samples was very limited compared the extensive historical database and given that only one sample was taken during the site visit the assessment of 10% of the samples being coliform positive was not possible. The two sites with coliform positive samples of treated water from the site visit data are in the categories of sites identified by the microbial database as having a high incidence of poor microbial samples. Berwyn is a ground water site with no disinfection and Peerless Lake is a water point.

The data collected from site visits seems to correlate reasonable well with the historical data.

7.0 CONCLUSIONS

The World Health Organization (WHO, 1993) states that:

> "Water is essential to sustain life and a satisfactory supply must be made to achieve a drinking water quality as high as practicable"

The primary purpose of drinking water treatment is the protection of public health. The quantity of drinking water and the efficiency of treatment can be assessed through comparison to guidelines. In Canada, the applicable document is the Guidelines for Canadian Drinking Water Quality (1993) which has been adopted as minimum drinking water quality for licensed facilities in the province of Alberta. Most other developed countries have similar guidelines or regulations. The World Health Organization has also developed "Guidelines for Drinking Water Quality" (WHO, 1993) with a primary aim of protecting public health.

To assess drinking water quality in the Northern River Basin Study area results obtained from existing information and that obtained during this study were compared to both sets of guidelines discussed above. Of the sites investigated many were licensed facilities by Alberta Environmental Protection (AEP) and are required to meet as a minimum the Guidelines for Canadian Drinking Water. Other sites although not licensed by AEP still supply water to consumers, who tend to assure the water is of potable quality. As stated in the guidelines for Canadian Drinking Water:

> "The guidelines and recommendations listed herein are intended to apply to all drinking water supplies, public and private. ... Judicious use of the guidelines will result in the provision of drinking water which is both wholesome and protective of public health."

As a result both licensed and unlicensed facilities were assessed based on comparison to guidelines.

Based on site visits to 38 facilities, water quality analyses completed for the site visit and analysis of existing water quality information a number of conclusions can be made on the drinking water quality in the Northern River Basin Study area.

1. Small facilities in the study area tend to produce poorer water quality than larger facilities. This was found to be the case in terms of microbiological quality, turbidity (a good overall measure of treatment performance), and historical THM data.

2. As stated by the World Health Organization (1993):

   > "Infectious diseases caused by pathogenic bacteria, viruses and protozoa or by parasites are the most common and wide spread health risk associated with drinking water."

   As it is not possible or feasible to test for all pathogenic organisms, microbiological quality of drinking water is assessed based on indicator organisms. If these indicator organisms are present in the finished drinking water it then must be assumed that pathogens could also be present. The most common microbiological indicator used in drinking water is the coliform group of organisms. Due to difficulties in sampling, transporting and analysis a single coliform positive sample may not truly reflect the microbial quality of the drinking water. As a result the Guidelines for Canadian Drinking Water Quality (GCDWQ,1993) state that not more than 10% of samples taken should be coliform positive. The WHO (1993) uses a more stringent guideline of not more than 5% be coliform positive. As the number of samples in small facilities are not great the 10% value was used in this study to assess microbial water quality to avoid unwarranted concerns to be raised for a facility based on a couple of bad samples. Analysis of a large database obtained from AEP of coliform results from communities in the Northern River Basin Study area was completed. This database consisted of roughly 270,00 total and 270,000 fecal coliform analyzes taken over the last seven years. Of the smallest facilities, watering points, 30% of them exceeded the 10% coliform positive guideline. If one includes samples which are considered poor by the GCDWQ (1993) this increases to 45%. Of particular concern was the finding that a number of facilities had high coliform positive percentages for all of the seven years the data was analyzed.

   The occurrence of fecal streptococci, another indicator of fecal contamination, in 6 of the 28 surface water sites visited adds additional concern on the microbiological quality of water in many communities in the NRBS area.

3. It was also found that small facilities in the study area tended to have higher turbidity than larger communities. Although turbidity is only a measure of the clarity of water, high turbidity has been shown to negatively impact the performance of disinfection. In addition the most effective method of removal of protozoan cysts such as Giardia and Cryptospordium is through physical-chemical treatment processes for which there

performance can be related to turbidity removal. The importance of turbidity as a parameter to indicate microbial quality is evident in the USEPA using turbidity to justify pathogen removal credits in their most recent standard. In these standards, maximum credits are earned with turbidity of ≤ 0.5 NTU 95% of the time.

Results from existing data indicated that surface water facilities serving populations less than 500 have a significantly higher turbidity than facilities serving populations greater than 500. Because these samples were obtained from the distribution system and the small number of samples collected, compliance with guidelines could not be assessed.

During the site visits 6 of the 38 sites had turbidity greater than 1 NTU, which in included the two watering points visited. These grab samples cannot be compared to standards which specify the maximum average turbidity 95% of the time must be below 1 NTU but they indicate that there may be problems at these sites.

4. Chemical parameters associated with raw water quality were found to be below guideline values based both on existing data and site visit data. However, for disinfection by-products (THMs) which are produced during treatment, the site visit data found, that 60% (12 0f 21) of the surface water sites exceeded the guideline value of 100ug/L for THM. Analysis of existing data for THMs was complicated by the fact that most samples taken occurred under the old value of 350ug/L. The analysis did show however, if levels remained unchanged, 20 of the 62 sites analyzed by AEP would have difficulty meeting the lower standard value that is now in place.

5. Observation from site visits tended to indicate that much of the difficulties associated with small facilities may be related to operation of the facilities. Generally this can be related to the allotted time the operator is given to operate the facility, with smaller facilities having less time than larger facilities. The attitude of the people in decision making positions related to water treatment may also be an important factor. Operation performance may also be related to training as in larger facilities the majority or sole duty of the operator is to run the facility. As a result the opportunity for these operators to receive training is much greater. In small facilities, the operation of the treatment facility may be one of numerous tasks the operator may have to do. As many other tasks may be part of their daily routine the opportunity and incentive for these operators for training tends to be less.

6. Based on results of this study, remedial action is required in many small communities in the Northern River Basin Study area to bring the drinking water into compliance with current standards which are based on the protection of public health. Many communities are currently drinking water that may not meet Guidelines for Canadian Drinking Water Quality. Areas of concern are both the microbiological quality of the water and high levels of disinfection by-products. Of these the microbiological quality of the drinking water is by far of greatest concern. Many of the small communities showed higher than acceptable levels of indicator organisms as well as high turbidity.

The occurrence of both would indicate that if pathogenic organisms are present in the raw water source they probably will not be removed by the treatment system.

In the time needed for remedial actions to rectify the problems it is of utmost importance that consumers of water be notified immediately as to the status of their drinking water with respect to standards along with recommendations of prudent courses of action available to them. In the case of microbiological problems that are not rectified consumers should be advised to boil their drinking water as recommended in Guidelines for Canadian Drinking Water Quality (1993) and World Health Organization (1993).

8.0 REFERENCES

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FACILITY	STATUS	POPULATION	TYPE	SOURCE
ATHABASCA	T	1975	S	Athabasca River
BARRHEAD	T	4014	S	Paddle River
BERWYN	V	606	G	
CADOTTE LAKE	WP	241	G	
COLINTON	H	126	G	
CYNTHIA	H	56	G	
DESMARAIS	H	350	S	South Wabasca Lake
EDSON	T	7323	G	
FAIRVIEW	T	3281	S	Peace River
FALHER	T	1183	S	Winagami Lake via canal
FORT CHIPEWYAN	H	1200	S	Lake Athabasca
FORT MACKAY	H	267	S	Ells River
FORT MCMURRAY	C	33698	S	Athabasca River
FORT VERMILION	H	823	S	Peace River
FOX CREEK	T	2068	G	
GIFT LAKE	MS	424	S	Gift Lake
GRANDE CACHE	T	3842	S	Victor Lake
GRANDE PRAIRIE	C	28350	S	Wapiti River
GRIMSHAW	T	2812	G	
HIGH LEVEL	T	2921	S	Footner Lake
HIGH PRAIRIE	T	2932	S	West Prairie River
HINTON	T	9893	S	Athabasca River
JANVIER	H	435	S	Christina River
JASPER NATIONAL PAR	NP	4475	S&G	Cabin Lake
LAC LA BICHE	T	2553	S	Lac La Biche
MANNING	T	1144	S	Notikiwin River
PEACE RIVER	T	6696	S	Peace River
PEERLESS LAKE	WP	253	S	Peerless Lake
SEXSMITH	T	1256	G	
SLAVE LAKE	T	5607	S	Lesser Slave Lake
SMITH	H	323	S	Athabasca River
SWAN HILLS	T	2407	S	Freeman Lake
TANGENT	H	60	S	Surface runoff
TEEPEE CREEK	S	18	G	
WANDERING RIVER	H	43	S	Wandering River
WESTLOCK	T	4463	S	Pembina River
WHITECOURT	T	6692	S	Macleod River
WOKING	H	77	S	Surface Runoff
WORSLEY	H	51	S	Eureka River

STATUS CODES

C	City
T	Town
V	Village
H	Hamlet
WP	Watering Point
MS	Metis Settlement
S	School

Table 1: Sites Selected For Site Visits

TYPE OF PROCESS	TOTAL FACILITIES	TOTAL SURFACE WATER	TOTAL GROUND WATER		TOTAL SELECTED FACILITIES	SELECTED SURFACE WATER	SELECTED GROUND WATER
No Treatment	38	0	38		1	0	1
Raw water reservoir	48	48	1		19	18	1
Treated Water Reservoir	67	51	16		28	22	6
Cistern	0	0	0		0	0	0
Algae control	0	0	0		0	0	0
Oxidation	1	1	0		0	0	0
Aeration	19	17	2		7	6	1
Taste and Odour control	14	14	0		9	9	0
Coagulation	55	53	2		26	25	1
Coagulant aid	42	40	2		20	19	1
Flocculation	16	16	0		5	5	0
Clarification	24	22	2		11	10	1
Sedimentation	21	20	1		8	8	0
Carbon adsorption filtration	2	2	0		0	0	0
Micro strainer filtration	0	0	0		0	0	0
Pressure filtration	11	11	0		4	4	0
Slow sand filtration	25	21	4		6	4	2
Rapid sand filtration	34	33	1		18	18	0
Manganese greensand filtration	15	4	11		1	0	1
Multi-media filtration	4	4	0		0	0	0
Dual-media filtration	2	2	0		1	1	0
Cyclonic separation	0	0	0		0	0	0
Softening	8	5	3		3	3	0
pH control	37	36	1		18	17	1
Iron removal	19	5	14		5	3	2
Iron sequestering	3	0	3		1	0	1
Scale Control	1	0	1		0	0	0
Fluoridation	20	19	1		16	15	1
Disinfection with NaOCl	52	30	22		13	9	4
Pre & post disinfection with NaOCl	6	3	3		3	2	1
Disinfection by chlorine gas	24	20	4		13	11	2
Pre & post disinfection with chlorine gas	18	18	0		8	8	0
Disinfection with CaOCl	2	1	1		0	0	0
Pre & post disinfection with CaOCl	0	0	0		0	0	0
Disinfection by ultra-violet	0	0	0		0	0	0
Supplemental chlorination	0	0	0		0	0	0
Disinfection by combined chlorination	1	1	0		1	1	0
Activated Carbon	9	8	1		5	4	1
Disinfection	158	108	50		37	30	7
Total Facilities	198	114	84		39	29	10

Table 2: Summary of Treatment Processes for Selected Sites

Table 3: Sumarry of Site Visits Continued

		ATHABASCA 10-Aug-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	19.2	18.8	19.2
pH		8.2	7.8	7.5
Conductivity	Miro ohms/c	250	350	350
Turbidity	NTU	214	0.39	1.2
Total Chlorine	mg/L	NA	0.8	0.53
Free Chlorine	mg/L	NA	0.71	0.41
Color	TCU	90	0	0
Ammonia	mg/L	0.15	-	-
Odour Type		none	chlorine	chlorine
Odour Intensity	out of 3	0	1	1
Flavour Profile	out of 10	NA	7.5	7.5
Flavour Comment				
		ammonia number due to turb interferance		
THMs	ug/L	-	42	36
Total Coliforms	cfu/100ml	<1	<1	<1
Fecal Coliforms	cfu/100ml	50	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	tntc	1	1
Heterotropic Plate Count (7 days)	cfu/1 mL	1706	3	17
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	84	<1	<1
Molds	cfu/1 mL	17	<1	<1
Yeast	cfu/1 mL	-	<1	<1
Iron Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	15	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Iron Oxidizing Bacteria	org/1 mL	>110	<0.3	<0.3
Plant Operations				
Person hours to operate plant per week			28	
T & O problems			yes	
			in spring	
Hardness	high		170	
	low		120	
			high in winter	
Recycel Filter Backwash			no	
Distribution system flushing program			yes	
Storage	m3			
Average Daily Production	m3			
Ave. Theoretical Hydraulic Detention, hr.				
Treatment				Carp
Weekly Sampling Routine		Raw	Treated	
free Cl2				
total Cl2				
turbidity				
temperature				
pH				
Floride				
Color				
Hardness				
Mn				
Fe				
Alkalinity				
Microbial	per month			
Chemical Dosing and Operating Strategy				
Coagulants	current		77	
	low		60	
	high		400	
	type		alum	
	adjustment		based on turbidity	
Polymer	current		0.29	
	low		0.2	
	high		0.5	
	type		?	
	adjustment		based on floc character	
Soda Ash	current		48	
	low		30	
	high		100	
	adjustment		based on alum	
Disinfection	current		1.12	
	low		1	
	high		2.7	
	type		Cl2 gas	
	adjustment		based on residual	
T & O control	current		4	
	low		0.1	
	high		70	
	type		PAC	
	adjustment		based on taste and odour	
Floride	current		0.8	
	low		0.8	
	high		0.8	
	adjustment		constant	
Copper sulfate	in RWR		no	

Table 3: Sumarry of Site Visits Continued

		BARRHEAD 22-Jun-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	15.8	15.8	13.1
pH		8.1	8.1	8.2
Conductivity	Miro ohms/c	400	630	600
Turbidity	NTU	57	0.38	0.55
Total Chlorine	mg/L	NA	1.05	0.41
Free Chlorine	mg/L	NA	0.8	0.13
Color	TCU	155	20	20
Ammonia	mg/L	0.058	-	-
Odour Type		sweet smell	chlorine	-
Odour Intensity	out of 3	0.1	2	-
Flavour Profile	out of 10	NA	5	-
Flavour Comment				
THMs	ug/L	-	-	-
Total Coliforms	cfu/100ml	-	-	-
Fecal Coliforms	cfu/100ml	6	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	119	2	3
Heterotropic Plate Count (7 days)	cfu/1 mL	233	2	44
Klebsiella	cfu/100ml	-	-	-
Fecal Streptococcus	cfu/100ml	16	<1	0
Molds	cfu/1 mL	4	<1	<1
Yeast	cfu/1 mL	143	<1	confl
Iron Reducing Bacteria	org/1 mL	110	<0.3	0.4
Sulfate Reducing Bacteria	org/1 mL	46	0.4	<0.3
Sulfite Reducing Bacteria	org/1 mL	9	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	2	>110
Iron Oxidizing Bacteria	org/1 mL	110	0.4	2
Plant Operations				
Person hours to operate plant per week			80	
			water and wastewater	
T & O problems			yes	
			water tainted in raw water resivoir	
Hardness	high		-	
	low		-	
Recycel Filter Backwash			no	
Distribution system flushing program			?	
Storage	m3		241	
Average Daily Production	m3		1950	
Ave. Theoretical Hydraulic Detention, hr.			3.0	
Treatment			RWR/Aer/CgA/Flc/Clr/pH/Flu/Rflt/Cl2	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			7	
turbidity			7	
temperature			-	
pH			7	
Floride			0.25	
Color			7	
Hardness			-	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month		4	
Chemical Dosing and Operating Strategy				
Coagulants	current		137	
	low		125	
	high		180	
	type		alum	
	adjustment		based on turbidity	
Polymer	current		0.3	
	low		0.3	
	high		0.4	
	type		?	
	adjustment		fairly constant	
Soda Ash	current		105	
	low		90	
	high		150	
	adjustment		based on pH	
Disinfection	current		2.4	
	low		2	
	high		3	
	type		Cl2 gas	
	adjustment		based on residual	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		1	
	low		1	
	high		1	
	adjustment		constant	
Copper sulfate	in RWR		yes	

Table 3: Sumarry of Site Visits Continued

		BERWYN 19-Jul-94	
Type of Sample		Raw	Distributed
Temperature	deg C	-	-
pH		6.9	7.2
Conductivity	Miro ohms/c	610	610
Turbidity	NTU	0.16	0.22
Total Chlorine	mg/L	NA	NA
Free Chlorine	mg/L	NA	NA
Color	TCU	10	10
Ammonia	mg/L	-	-
Odour Type		-	-
Odour Intensity	out of 3	-	-
Flavour Profile	out of 10	-	-
Flavour Comment			
THMs	ug/L	no Cl	no Cl
Total Coliforms	cfu/100ml	<1	82
Fecal Coliforms	cfu/100ml	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	-	10
Heterotropic Plate Count (7 days)	cfu/1 mL	67	17
Klebsiella	cfu/100ml	<1	8
Fecal Streptococcus	cfu/100ml	<1	<1
Molds	cfu/1 mL	<1	2
Yeast	cfu/1 mL	26	3
Iron Reducing Bacteria	org/1 mL	0.9	2
Sulfate Reducing Bacteria	org/1 mL	<0.3	2
Sulfite Reducing Bacteria	org/1 mL	<0.3	0.9
Thiosulfate Reducing Bacteria	org/1 mL	21	46
Iron Oxidizing Bacteria	org/1 mL	,0.3	2
Plant Operations			
Person hours to operate plant per week			4
T & O problems			none
Hardness	high		-
	low		-
Recycel Filter Backwash			-
Distribution system flushing program			yes
Storage	m3		1091
Average Daily Production	m3		326
Ave. Theoretical Hydraulic Detention, hr.			80.3
Treatment			none
Weekly Sampling Routine		Raw	Distributed
free Cl2			-
total Cl2			-
turbidity			-
temperature			-
pH			-
Floride			-
Color			-
Hardness			-
Mn			-
Fe			-
Alkalinity			-
Microbial	per month		8
Chemical Dosing and Operating Strategy			
Coagulants	current		-
	low		-
	high		-
	type		-
	adjustment		-
Polymer	current		-
	low		-
	high		-
	type		-
	adjustment		-
Soda Ash	current		-
	low		-
	high		-
	adjustment		-
Disinfection	current		-
	low		-
	high		-
	type		-
	adjustment		-
T & O control	current		-
	low		-
	high		-
	type		-
	adjustment		-
Floride	current		-
	low		-
	high		-
	adjustment		-
Copper sulfate	in RWR		-

Table 3: Sumarry of Site Visits Continued

		CADOTTE LAKE 24-Aug-94	
Type of Sample		Raw	Treated
Temperature	deg C	17.5	19
pH		8.3	6.6
Conductivity	Miro ohms/c	305	590
Turbidity	NTU	33	2.1
Total Chlorine	mg/L	-	2.5
Free Chlorine	mg/L	-	0.08
Color	TCU	50	<0
Ammonia	mg/L	0.45	2.7
Odour Type		mint	chemical
Odour Intensity	out of 3	1	3
Flavour Profile	out of 10	NA	4
Flavour Comment			
THMs	ug/L	-	27
Total Coliforms	cfu/100ml	2525	<1
Fecal Coliforms	cfu/100ml	72	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	2317	<1
Heterotropic Plate Count (7 days)	cfu/1 mL	3567	27
Klebsiella	cfu/100ml	confl	<1
Fecal Streptococcus	cfu/100ml	19	<1
Molds	cfu/1 mL	2	1
Yeast	cfu/1 mL	15	28
Iron Reducing Bacteria	org/1 mL	>110	<0.3
Sulfate Reducing Bacteria	org/1 mL	>110	<0.3
Sulfite Reducing Bacteria	org/1 mL	>110	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	0.9
Iron Oxidizing Bacteria	org/1 mL	>110	0.7
Plant Operations			
Person hours to operate plant per week			14
T & O problems			yes
			both summer and w
Hardness	high		-
	low		-
Recycel Filter Backwash			no
Distribution system flushing program			no
			only to get rid of ba
Storage	m3		455
Average Daily Production	m3		100
Ave. Theoretical Hydraulic Detention, hr.			109.1
Treatment			TO/Aer/C;A/Flc/Sd/pH/Rflt/N
Weekly Sampling Routine		Raw	Treated
free Cl2			7
total Cl2			7
turbidity		7	7
temperature		7	-
pH		7	7
Floride			-
Color		7	7
Hardness			-
Mn			1
Fe			1
Alkalinity			-
Microbial	per month		
Chemical Dosing and Operating Strategy			
Coagulants	current		?
	low		?
	high		?
	type		?
	adjustment		based on turbidity
Polymer	current		?
	low		?
	high		?
	type		?
	adjustment		not adjusted
Soda Ash	current		?
	low		?
	high		?
	adjustment		little adjustment
Disinfection	current		?
	low		?
	high		?
	type		NaOCl
	adjustment		based on residual
T & O control	current		?
	low		?
	high		?
	type		PAC
	adjustment		based on odour
Floride	current		-
	low		-
	high		-
	adjustment		-
Copper sulfate	in RWR		-

Table 3: Sumarry of Site Visits Continued

		COLINTON 25-Jul-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	5.9	7.6	8.9
pH		7.6	7.6	7.7
Conductivity	Miro ohms/c	1520	1580	1590
Turbidity	NTU	7.2	1.6	1.6
Total Chlorine	mg/L	NA	0.99	0.76
Free Chlorine	mg/L	NA	0.69	0.59
Color	TCU	0	0	0
Ammonia	mg/L	0.92	-	-
Odour Type		-	-	-
Odour Intensity	out of 3	-	-	-
Flavour Profile	out of 10	-	-	-
Flavour Comment				
THMs	ug/L	-	223	198
Total Coliforms	cfu/100ml	<1	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	2	<1	<1
Heterotropic Plate Count (7 days)	cfu/1 mL	29	9	3
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	<1	<1	<1
Molds	cfu/1 mL	<1	<1	<1
Yeast	cfu/1 mL	<1	<1	1
Iron Reducing Bacteria	org/1 mL	<0.3	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	<0.3	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	<0.3	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	24	2	<0.3
Iron Oxidizing Bacteria	org/1 mL	0.4	<0.3	<0.3
Plant Operations				
Person hours to operate plant per week			10	
T & O problems			yes	
		ater	Chlorine taste	
Hardness	high		-	
	low		-	
Recycel Filter Backwash			no	
Distribution system flushing program			yes	
		water	flushes with 100 mg/L chlorinated water	
Storage	m3		100	
Average Daily Production	m3		48	
Ave. Theoretical Hydraulic Detention, hr.			50.0	
Treatment		OCl/TWR	Fe re/GSfit/NaOCl/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			5	
total Cl2			-	
turbidity			-	
temperature			-	
pH			5	
Floride			-	
Color			-	
Hardness			-	
Mn			5	
Fe			5	
Alkalinity			-	
Microbial	per month		4	
Chemical Dosing and Operating Strategy				
Coagulants	current		4.1	
	low		2.7	
	high		4.8	
	type		KMnO4	
	adjustment		based on Mn concentration	
Polymer	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Soda Ash	current		-	
	low		-	
	high		-	
	adjustment		-	
Disinfection	current		?	
	low		?	
	high		?	
	type		NaOCl	
	adjustment		base on residual	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		no	

Table 3: Sumarry of Site Visits Continued

		CYNTHIA 31-May-94	
Type of Sample		Raw	Distributed
Temperature	deg C	11	13
pH		8.6	8.2
Conductivity	Miro ohms/c	1100	1075
Turbidity	NTU	2	1
Total Chlorine	mg/L	NA	0.15
Free Chlorine	mg/L	NA	0.05
Color	TCU	10	10
Ammonia	mg/L	-	0.23
Odour Type		-	-
Odour Intensity	out of 3		
Flavour Profile	out of 10	-	-
Flavour Comment			
THMs	ug/L	no Cl	no Cl
Total Coliforms	cfu/100ml	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	40	182
Heterotropic Plate Count (7 days)	cfu/1 mL	437	253
Klebsiella	cfu/100ml	-	-
Fecal Streptococcus	cfu/100ml	-	-
Molds	cfu/1 mL	-	-
Yeast	cfu/1 mL	-	-
Iron Reducing Bacteria	org/1 mL	46	>110
Sulfate Reducing Bacteria	org/1 mL	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	<0.3	0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	>110
Iron Oxidizing Bacteria	org/1 mL	46	>110
Plant Operations			
Person hours to operate plant per week			3
T & O problems			yes
			Chlorine
Hardness	high		-
	low		-
Recycel Filter Backwash			-
Distribution system flushing program			?
Storage	m3		60
Average Daily Production	m3		35
Ave. Theoretical Hydraulic Detention, hr.			41.1
Treatment			NaOCl/TWR
Weekly Sampling Routine		Raw	Distributed
free Cl2			?
total Cl2			?
turbidity			?
temperature			?
pH			?
Floride			-
Color			-
Hardness			-
Mn			-
Fe			-
Alkalinity			-
Microbial	per month		
Chemical Dosing and Operating Strategy			
Coagulants	current		-
	low		-
	high		-
	type		-
	adjustment		-
Polymer	current		-
	low		-
	high		-
	type		-
	adjustment		-
Soda Ash	current		-
	low		-
	high		-
	adjustment		-
Disinfection	current		?
	low		
	high		
	type		
	adjustment		NaOCl added once
T & O control	current		-
	low		-
	high		-
	type		-
	adjustment		-
Floride	current		-
	low		-
	high		-
	adjustment		-
Copper sulfate	in RWR		-

Table 3: Sumarry of Site Visits Continued

		DESMARAIS 23-Aug-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	19	20	11
pH		8.2	7.4	7.4
Conductivity	Miro ohms/c	280	590	590
Turbidity	NTU	4.7	3	3.2
Total Chlorine	mg/L	-	1.36	0.8
Free Chlorine	mg/L	-	0.86	0.53
Color	TCU	20	>0	>0
Ammonia	mg/L	0.028	-	0.023
Odour Type		grassy	chlorine + swamp	swampy / grassy
Odour Intensity	out of 3	0.1	1	1
Flavour Profile	out of 10	NA	3.5	4
Flavour Comment				
THMs	ug/L	-	161	174
Total Coliforms	cfu/100ml	699	<1	<1
Fecal Coliforms	cfu/100ml	1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	111	0	<1
Heterotropic Plate Count (7 days)	cfu/1 mL	45	1	<1
Klebsiella	cfu/100ml	confl	<1	-
Fecal Streptococcus	cfu/100ml	5	<1	<1
Molds	cfu/1 mL	5	<1	<1
Yeast	cfu/1 mL	21	<1	1
Iron Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	4	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	46	2
Iron Oxidizing Bacteria	org/1 mL	>110	<0.3	<0.3
Plant Operations				
Person hours to operate plant per week			14	
				hpc (me 35 , 48 hr)
T & O problems			yes	
			in the spring there is a fisfy smell allthe ti	
Hardness	high		-	
	low		-	
			not measured	
Recycel Filter Backwash			no	
Distribution system flushing program			yes	
Storage	m3		1137	
Average Daily Production	m3		300	
Ave. Theoretical Hydraulic Detention, hr.			91.0	
Treatment			TO/CgA/Flc/Clr/Rfil/pH/Cl2/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			7	
turbidity		7	7	
temperature			-	
pH			7	
Floride				
Color			-	
Hardness			-	
Mn			1	
Fe			1	
Alkalinity			-	
Microbial	per month			
Chemical Dosing and Operating Strategy				
Coagulants	current		120	
	low		80	
	high		150	
	type		alum	
	adjustment		based on floc settling in clarifier	
Polymer	current		0.5	
	low		-	
	high		-	
	type		?	
	adjustment		never change	
Soda Ash	current		100	
	low		60	
	high		240	
	adjustment		based on pH	
Disinfection	current		3.8	
	low		1	
	high		5.2	
	type		Cl2 gas	
	adjustment	er week during visit	based on residual	
T & O control	current		1	
	low		-	
	high		-	
	type		KMnO4	
	adjustment		not changed	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		-	

Table 3: Sumarry of Site Visits Continued

		EDSON 11-Aug-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	12.6	11.6	13.3
pH		8.9	8.1	8.7
Conductivity	Miro ohms/c	950	890	900
Turbidity	NTU	0.22	0.6	0.58
Total Chlorine	mg/L	NA	1.43	0.59
Free Chlorine	mg/L	NA	0.65	0.1
Color	TCU	0	0	0
Ammonia	mg/L	0.26	-	0.1
Odour Type		sulfur	none	none
Odour Intensity	out of 3	3	0	0
Flavour Profile	out of 10	NA	6	6
Flavour Comment				
THMs	ug/L	-	24	15
Total Coliforms	cfu/100ml	<1	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	<1	2	<1
Heterotropic Plate Count (7 days)	cfu/1 mL	18	<1	11
Klebsiella	cfu/100ml	1	<1	<1
Fecal Streptococcus	cfu/100ml	<1	<1	<1
Molds	cfu/1 mL	<1	<1	<1
Yeast	cfu/1 mL	<1	1	0
Iron Reducing Bacteria	org/1 mL	>110	<0.3	0.4
Sulfate Reducing Bacteria	org/1 mL	<0.3	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	<0.3	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	0.4	<0.3	24
Iron Oxidizing Bacteria	org/1 mL	<0.3	<0.3	0.7
Plant Operations				
Person hours to operate plant per week			21	
T & O problems			no	
		e	noe since degas plant	
Hardness	high		?	
	low		?	
			mian well soft, the others are hard	
Recycel Filter Backwash			-	
Distribution system flushing program			yes	
Storage	m3		7115	
Average Daily Production	m3		2958	
Ave. Theoretical Hydraulic Detention, hr.			57.7	
Treatment			NaOCl/Aer/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			-	
turbidity			-	
temperature			-	
pH			-	
Floride			0.25	
Color			-	
Hardness			-	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month		8	
Chemical Dosing and Operating Strategy				
Coagulants	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Polymer	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Soda Ash	current		-	
	low		-	
	high		-	
	adjustment		-	
Disinfection	current		0.5	
	low		0.5	
	high		0.5	
	type		NaOCl	
	adjustment		constant	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		-	

Table 3: Sumarry of Site Visits Continued

		FAIRVIEW 18-Jul-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	13.8	15	13.1
pH		7.7	7	7.2
Conductivity	Miro ohms/c	250	270	300
Turbidity	NTU	4.6	0.11	0.15
Total Chlorine	mg/L	NA	0.42	0.53
Free Chlorine	mg/L	NA	0.33	0.36
Color	TCU	15	0	0
Ammonia	mg/L	-	-	-
Odour Type		none	chlorine	chlorine
Odour Intensity	out of 3	0	2	1.5
Flavour Profile	out of 10	NA	8	8
Flavour Comment				
THMs	ug/L	-	56	61
Total Coliforms	cfu/100ml	confl	<1	<1
Fecal Coliforms	cfu/100ml	17	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	194	<1	6
Heterotropic Plate Count (7 days)	cfu/1 mL	2800	1	8
Klebsiella	cfu/100ml	confl	<1	<1
Fecal Streptococcus	cfu/100ml	77	<1	<1
Molds	cfu/1 mL	1	<1	<1
Yeast	cfu/1 mL	260	<1	1
Iron Reducing Bacteria	org/1 mL	>110	<0.3	7
Sulfate Reducing Bacteria	org/1 mL	2	0.4	0.9
Sulfite Reducing Bacteria	org/1 mL	110	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	0.9	2
Iron Oxidizing Bacteria	org/1 mL	9	<0.3	21
Plant Operations				
Person hours to operate plant per week			42	
T & O problems			none	
Hardness	high		low	
	low		low	
			constant	
Recycel Filter Backwash			no	
Distribution system flushing program			yes	
Storage	m3		1137	
Average Daily Production	m3		1420	
Ave. Theoretical Hydraulic Detention, hr.			19.2	
			gal	
Treatment			RWR/Aer/Cga/pH/Cls/R.flt/Cl2/Flu/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2		-	7	
total Cl2		-	7	
turbidity		7	7	
temperature		7	-	
pH		7	7	
Floride		-	-	
Color		7	7	
Hardness		-	-	
Mn		7	7	
Fe		7	7	
Alkalinity		-	-	
Microbial	per month		9	
Chemical Dosing and Operating Strategy				
Coagulants	current		33	
	low		33	
	high		33	
	type		alum	
	adjustment		water doesn't change much	
Polymer	current		0.36	
	low		-	
	high		-	
	type		praestol 2515 tr	
	adjustment		none	
Soda Ash	current		16	
	low		-	
	high		-	
	adjustment		roughly constant	
Disinfection	current		1.5	
	low		1.2	
	high		1.7	
	type		Cl2 gas	
	adjustment		based on maintaining 0.6 mg/L	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		0.8	
	low		0.8	
	high		0.8	
	adjustment		constant	
Copper sulfate	in RWR		yes	

Table 3: Sumarry of Site Visits Continued

		FALHER 16-Jun-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	14.1	15.1	9.3
pH		7.35	6.6	6.6
Conductivity	Miro ohms/c	480	530	550
Turbidity	NTU	3.05	0.13	0.16
Total Chlorine	mg/L	NA	1.09	0.59
Free Chlorine	mg/L	NA	0.54	0.13
Color	TCU	50	10	5
Ammonia	mg/L	0.044	-	-
Odour Type		grassy	chlorine / grassy	-
Odour Intensity	out of 3	1	1	-
Flavour Profile	out of 10	NA	4	-
Flavour Comment				
THMs	ug/L	-	-	-
Total Coliforms	cfu/100ml	1062	<1	<1
Fecal Coliforms	cfu/100ml	1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	52	14	46
Heterotropic Plate Count (7 days)	cfu/1 mL			
Klebsiella	cfu/100ml	348	<1	<1
Fecal Streptococcus	cfu/100ml	2	1	<1
Molds	cfu/1 mL	12	<1	0
Yeast	cfu/1 mL	93	<1	1
Iron Reducing Bacteria	org/1 mL	>110	<0.3	0.4
Sulfate Reducing Bacteria	org/1 mL	9	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	24	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	2	>110
Iron Oxidizing Bacteria	org/1 mL	110	<0.3	<0.3
Plant Operations				
Person hours to operate plant per week			21	
T & O problems			yes bottled water popular	
Hardness	high		450	
	low		175	
			high in the winter	
Recycel Filter Backwash			no	
Distribution system flushing program			yes	
Storage	m3		1364	
Average Daily Production	m3		475	
Ave. Theoretical Hydraulic Detention, hr.			68.9	
Treatment			RWR/Aer/CgA/AC/Clr/pH/Rflt/Cl2/Flu/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			7	
turbidity			7	
temperature			7	
pH			7	
Floride			7	
Color			7	
Hardness			-	
Mn			1	
Fe			1	
Alkalinity			-	
Microbial	per month		4	
Chemical Dosing and Operating Strategy				
Coagulants	current		165	
	low		80	
	high		220	
	type		alum	
	adjustment		based on turbidity	
Polymer	current		0.4	
	low		?	
	high		-	
	type		Aqua floc 6465	
	adjustment		constant	
Soda Ash	current		22.8	
	low		-	
	high		-	
	adjustment		based on pH	
Disinfection	current		6.41	
	low		?	
	high		?	
	type		Cl2 gas	
	adjustment		based on residual	
T & O control	current		3.3	
	low		-	
	high		-	
	type		PAC	
	adjustment		constant	
Floride	current		1	
	low		1	
	high		1	
	adjustment		constant	
Copper sulfate	in RWR		yes	

Table 3: Sumarry of Site Visits Continued

		FORT CHIPEWYAN 31-Aug-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	15.7	16.7	15.9
pH		7.8	7.4	7.4
Conductivity	Miro ohms/c	160	210	220
Turbidity	NTU	5.2	0.11	0.09
Total Chlorine	mg/L	-	0.93	0.95
Free Chlorine	mg/L	-	0.74	0.78
Color	TCU	10	<0	<0
Ammoma	mg/L	0.008	-	0.004
Odour Type		none	chlorine	-
Odour Intensity	out of 3	0	0.5	-
Flavour Profile	out of 10	NA	7	7
Flavour Comment				
THMs	ug/L	-	65	85
Total Coliforms	cfu/100ml	3	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	161	<1	0
Heterotropic Plate Count (7 days)	cfu/1 mL	320	0	1
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	4	<1	<1
Molds	cfu/1 mL	4	0	<1
Yeast	cfu/1 mL	83	<1	<1
Iron Reducing Bacteria	org/1 mL	46	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	2	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	24	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Iron Oxidizing Bacteria	org/1 mL	110	<0.3	<0.3
Plant Operations				
Person hours to operate plant per week			17	
T & O problems			yes due to pond turnover	
Hardness	high		-	
	low		-	
Recycel Filter Backwash			yes to raw water reaivour	
Distribution system flushing program			yes once per year	
Storage	m3		865	
Average Daily Production	m3		905	
Ave. Theoretical Hydraulic Detention, hr.			22.9	
Treatment				
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			-	
turbidity		7	7	
temperature		7	7	
pH		7	7	
Floride			-	
Color			-	
Hardness			-	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month			
Chemical Dosing and Operating Strategy				
Coagulants	current		40	
	low		30	
	high		50	
	type		alum	
	adjustment		based on turbidity	
Polymer	current		0.24	
	low		-	
	high		-	
	type		?	
	adjustment		not adjusted	
Soda Ash	current		36	
	low		35	
	high		39	
	adjustment		based on pH	
Disinfection	current		2.5	
	low		2	
	high		3	
	type		Cl2 gas	
	adjustment		based on residual	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		no	

Table 3: Sumarry of Site Visits Continued

		FORT MACKAY 30-Aug-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	17.4	18.4	13.8
pH		8.3	7.3	7.2
Conductivity	Miro ohms/c	220	300	300
Turbidity	NTU	0.81	0.35	0.37
Total Chlorine	mg/L	-	0.57	0.39
Free Chlorine	mg/L	-	0.25	0.02
Color	TCU	10	<0	<0
Ammonia	mg/L	0.009	-	0.001
Odour Type		pine	chlorine	chlorine + ??
Odour Intensity	out of 3	0.1	0.5	1
Flavour Profile	out of 10	NA	7	5
Flavour Comment				
THMs	ug/L	-	301	317
Total Coliforms	cfu/100ml	1	<1	<1
Fecal Coliforms	cfu/100ml	1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	37	<1	<1
Heterotropic Plate Count (7 days)	cfu/1 mL	16	<1	<1
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	1	<1	<1
Molds	cfu/1 mL	1	1	<1
Yeast	cfu/1 mL	18	<1	<1
Iron Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	24	2	<0.3
Sulfite Reducing Bacteria	org/1 mL	>110	4	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	>110	>110
Iron Oxidizing Bacteria	org/1 mL	>110	<0.3	9
Plant Operations				
Person hours to operate plant per week			56	
T & O problems			no	
Hardness	high		-	
	low		-	
Recycel Filter Backwash			no	
Distribution system flushing program			yes	
Storage	m3		727	
Average Daily Production	m3		200	
Ave. Theoretical Hydraulic Detention, hr.			87.3	
Treatment			RWR/CgA/Flc/Clr/pH/Rflt/NaOCl/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			7	
turbidity		7	7	
temperature			-	
pH		7	7	
Floride			-	
Color		7	7	
Hardness			-	
Mn			-	
Fe		7	7	
Alkalinity			-	
Microbial	per month			
Chemical Dosing and Operating Strategy				
Coagulants	current		64	
	low		48	
	high		100	
	type		alum	
	adjustment		based on turbidity befor filter	
Polymer	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Soda Ash	current		32	
	low		-	
	high		-	
	adjustment		based on pH	
Disinfection	current		3	
	low		-	
	high		-	
	type		NaOCl	
	adjustment		based on residual	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		no	

Table 3: Sumarry of Site Visits Continued

		FORT McMURRAY 29-Aug-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	-	-	17.7
pH		7.7	7.5	7.6
Conductivity	Miro ohms/c	230	310	310
Turbidity	NTU	2	0.12	0.17
Total Chlorine	mg/L	-	1.15	1.4
Free Chlorine	mg/L	-	0.18	12
Color	TCU	20	<0	<0
Ammonia	mg/L	<0	-	0.55
Odour Type		-	chlorine	chemical
Odour Intensity	out of 3	-	1	0.5
Flavour Profile	out of 10	-	3	4
Flavour Comment				
THMs	ug/L	-	41	45
Total Coliforms	cfu/100ml	1	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	158	<1	<1
Heterotropic Plate Count (7 days)	cfu/1 mL	9	<1	<1
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	1	<1	<1
Molds	cfu/1 mL	10	<1	-
Yeast	cfu/1 mL	14	<1	-
Iron Reducing Bacteria	org/1 mL	2	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	2	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	4	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	0.9	9
Iron Oxidizing Bacteria	org/1 mL	110	<0.3	0.4
Plant Operations				
Person hours to operate plant per week			168	
T & O problems			yes	
			spring ponds turn over	
Hardness	high		170	
	low		100	
Recycel Filter Backwash			yes	
			to raw water reservours	
Distribution system flushing program			no	
			only when recieve dirty water calls	
Storage	m3		14775	
Average Daily Production	m3		14250	
Ave. Theoretical Hydraulic Detention, hr.			24.9	
Treatment			RWR/CgA/NH3/Cl2/TO/Flc/Sd/Rfil/Flu/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			42	
total Cl2			-	
turbidity			84	
temperature		7	-	
pH			84	
Floride			42	
Color			7	
Hardness			21	
Mn			-	
Fe			-	
Alkalinity			21	
Microbial	per month			
Chemical Dosing and Operating Strategy				
Coagulants	current		60	
	low		50	
	high		70	
	type		alum	
	adjustment		based on turbidity in final	
Polymer	current		0.16	
	low		-	
	high		0.25	
	type		?	
	adjustment		not adjusted often	
Soda Ash	current		30	
	low		-	
	high		35	
	adjustment		based on pH	
Disinfection	current		2.8	
	low		2.1	
	high		-	
	type		Cl2	
	adjustment		based on residual	
T & O control	current		0.8	
	low		?	
	high		?	
	type		KMnO4	
	adjustment		based on odour	
Floride	current		1	
	low		1	
	high		1	
	adjustment		none	
Copper sulfate	in RWR		no	

Table 3: Sumarry of Site Visits Continued

		FORT VERMILION 29-Jun-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	17.7	16.7	10.9
pH		7.2	6.95	6.4
Conductivity	Miro ohms/c	250	280	-
Turbidity	NTU	65.8	0.62	2
Total Chlorine	mg/L	NA	0.63	0.37
Free Chlorine	mg/L	NA	0.5	0.31
Color	TCU	160	0	<0
Ammonia	mg/L	0.043	-	-
Odour Type		none	chlorine	-
Odour Intensity	out of 3	0	0.5	-
Flavour Profile	out of 10	NA	8	-
Flavour Comment				
THMs	ug/L	-	52	74
Total Coliforms	cfu/100ml	confl	<1	<1
Fecal Coliforms	cfu/100ml	6	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	131	3	1
Heterotropic Plate Count (7 days)	cfu/1 mL	236	<1	1
Klebsiella	cfu/100ml	confl	<1	<1
Fecal Streptococcus	cfu/100ml	12	<1	<1
Molds	cfu/1 mL	3	<1	<1
Yeast	cfu/1 mL	40	<1	1
Iron Reducing Bacteria	org/1 mL			
Sulfate Reducing Bacteria	org/1 mL			
Sulfite Reducing Bacteria	org/1 mL			
Thiosulfate Reducing Bacteria	org/1 mL			
Iron Oxidizing Bacteria	org/1 mL			
Plant Operations				
Person hours to operate plant per week			12	
T & O problems			no	
Hardness	high		low	
	low		low	
Recycel Filter Backwash			no	
Distribution system flushing program			yes	
Storage	m3		1023	
Average Daily Production	m3		520	
Ave. Theoretical Hydraulic Detention, hr.			47.2	
Treatment			RWR/CgA/Flc/Cl/Rflt/Cl2/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			7	
turbidity			7	
temperature			-	
pH			7	
Floride			-	
Color			-	
Hardness			-	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month		4	
Chemical Dosing and Operating Strategy				
Coagulants	current		90	
	low		20	
	high		120	
	type		Pass 100	
	adjustment		based on turb in raw water	
Polymer	current		0.3	
	low		0.03	
	high		0.3	
	type		preastol 2515 tr	
	adjustment		adjusted with pass 100	
Soda Ash	current		-	
	low		-	
	high		-	
	adjustment		-	
Disinfection	current		1.23	
	low		0.5	
	high		3	
	type		Cl2 gas	
	adjustment		based on residual	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		-	

Table 3: Sumarry of Site Visits Continued

		FOX CREEK 9-Jun-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	8	bad sample	10
pH		6.8		6.8
Conductivity	Miro ohms/c	1050		1230
Turbidity	NTU	0.31		0.15
Total Chlorine	mg/L	NA		2
Free Chlorine	mg/L	NA		1.4
Color	TCU	<0		0
Ammonia	mg/L	0.36		-
Odour Type		rotten eggs		muggy chemical
Odour Intensity	out of 3	2		1
Flavour Profile	out of 10	NA		4
Flavour Comment				mouth feel
THMs	ug/L	-	-	-
Total Coliforms	cfu/100ml	<1	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	<1	<1	<1
Heterotropic Plate Count (7 days)	cfu/1 mL	<1	1	2
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	<1	<1	<1
Molds	cfu/1 mL	-	-	-
Yeast	cfu/1 mL	-	-	-
Iron Reducing Bacteria	org/1 mL			
Sulfate Reducing Bacteria	org/1 mL			
Sulfite Reducing Bacteria	org/1 mL			
Thiosulfate Reducing Bacteria	org/1 mL			
Iron Oxidizing Bacteria	org/1 mL			
Plant Operations				
Person hours to operate plant per week			12	
T & O problems			no	
Hardness	high		-	
	low		-	
Recycel Filter Backwash			no	
Distribution system flushing program			?	
Storage	m3		0	
Average Daily Production	m3		936	
Ave. Theoretical Hydraulic Detention, hr.			0.0	
			m3	
Treatment			GW(1Fe re/Gsflt/NaOCl)(2Fe seq/Cl2)	
Weekly Sampling Routine		Raw	Treated	
free Cl2			-	
total Cl2			14	
turbidity			-	
temperature			-	
pH			-	
Floride			-	
Color			-	
Hardness			-	
Mn		2	2	
Fe		2	2	
Alkalinity			-	
Microbial	per month			
Chemical Dosing and Operating Strategy				
Coagulants	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Polymer	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Soda Ash	current		-	
	low		-	
	high		-	
	adjustment		-	
Disinfection	current		?	
	low		?	
	high		?	
	type		Cl2 gas and NaOCl	
	adjustment		based on residual from distribution syste	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		no	

Table 3: Sumarry of Site Visits Continued

		GIFT LAKE 23-Aug-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	19.5	20.5	13
pH		8.4	6.6	6.9
Conductivity	Miro ohms/c	290	340	310
Turbidity	NTU	11	0.22	0.28
Total Chlorine	mg/L	-	0.78	0.5
Free Chlorine	mg/L	-	0.24	0.03
Color	TCU	70	1	2
Ammonia	mg/L	0.162	-	0
Odour Type		chemical + grassy	chlorine	-
Odour Intensity	out of 3	0.1	1	-
Flavour Profile	out of 10	NA	3.5	-
Flavour Comment				
THMs	ug/L	-	88	83
Total Coliforms	cfu/100ml	confl	<1	<1
Fecal Coliforms	cfu/100ml	6	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	1950	0	16
Heterotropic Plate Count (7 days)	cfu/1 mL	3233	12	492
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	99	<1	<1
Molds	cfu/1 mL	5	<1	<1
Yeast	cfu/1 mL	confl	<1	confl
Iron Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	9	>110
Iron Oxidizing Bacteria	org/1 mL	>110	<0.3	>110
Plant Operations				
Person hours to operate plant per week			28	
T & O problems			yes assocuated with algae blooms	
Hardness	high		-	
	low		-	
Recycel Filter Backwash			no	
Distribution system flushing program			yes	
Storage	m3		864	
Average Daily Production	m3		90.9218	
Ave. Theoretical Hydraulic Detention, hr.			228.0	
Treatment				
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			7	
turbidity			7	
temperature			-	
pH			7	
Floride			-	
Color			-	
Hardness			-	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month			
Chemical Dosing and Operating Strategy				
Coagulants	current		217	
	low		180	
	high		250	
	type		alum	
	adjustment		based water clairty in settling tank	
Polymer	current		0.14	
	low		0.07	
	high		0.33	
	type		?	
	adjustment		not adjusted	
Soda Ash	current		12	
	low		0	
	high		30	
	adjustment		based on pH	
Disinfection	current		6.9	
	low		4.5	
	high		10.6	
	type		NaOCl	
	adjustment		based on residual	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		-	

Table 3: Sumarry of Site Visits Continued

		GRANDE CACHE 17-Aug-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	-	16.1	10.8
pH		8.4	8	8
Conductivity	Miro ohms/c	340	350	350
Turbidity	NTU	0.55	0.59	0.65
Total Chlorine	mg/L	-	1.33	0.15
Free Chlorine	mg/L	-	0.98	0.02
Color	TCU	0	10	0
Ammonia	mg/L	0.007	-	<0
Odour Type		-	-	??
Odour Intensity	out of 3	-	-	1
Flavour Profile	out of 10	-	-	5
Flavour Comment				
THMs	ug/L	-	100	143
Total Coliforms	cfu/100ml	3	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	35	<1	0
Heterotropic Plate Count (7 days)	cfu/1 mL	159	111	248
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	1	<1	<1
Molds	cfu/1 mL	2	1	1
Yeast	cfu/1 mL	12	<1	<1
Iron Reducing Bacteria	org/1 mL	46	0.4	<0.3
Sulfate Reducing Bacteria	org/1 mL	4	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	9	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	110	2	46
Iron Oxidizing Bacteria	org/1 mL	24	<0.3	<0.3
Plant Operations				
Person hours to operate plant per week			14	
T & O problems			yes in spring and summer	
Hardness	high		-	
	low		-	
			constant	
Recycel Filter Backwash			no	
Distribution system flushing program			yes once in four years	
Storage	m3		0	
Average Daily Production	m3		1857	
Ave. Theoretical Hydraulic Detention, hr.			0.0	
Treatment			Cl2/CgA/Pfil/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			?	
total Cl2			?	
turbidity			?	
temperature			?	
pH			?	
Floride			?	
Color			?	
Hardness			?	
Mn			?	
Fe			?	
Alkalinity			?	
Microbial	per month		4	
Chemical Dosing and Operating Strategy				
Coagulants	current		5	
	low		4	
	high		10	
	type		Naid I	
	adjustment		based on turbidity	
Polymer	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Soda Ash	current		-	
	low		-	
	high		-	
	adjustment		-	
Disinfection	current		3.66	
	low		-	
	high		-	
	type		Cl2 gas	
	adjustment		based on residual	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		no	

Table 3: Sumarry of Site Visits Continued

		GRANDE PRAIRIE 15-Jun-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	13.3	14.1	13.8
pH		7.3	7.15	7
Conductivity	Micro ohms/c	240	250	280
Turbidity	NTU	46	2.22	1.58
Total Chlorine	mg/L	NA	0.94	0.16
Free Chlorine	mg/L	NA	0.84	0.09
Color	TCU	120	0	0
Ammonia	mg/L	0.033	-	-
Odour Type		none	chlorine	chlorine
Odour Intensity	out of 3	0	2	1
Flavour Profile	out of 10	NA	5	8
Flavour Comment			chlorine	
THMs	ug/L	-	-	-
Total Coliforms	cfu/100ml	-	<1	<1
Fecal Coliforms	cfu/100ml	-	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	85	2	2
Heterotropic Plate Count (7 days)	cfu/1 mL	656	0	1550
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	18	<1	<1
Molds	cfu/1 mL	40	<1	<1
Yeast	cfu/1 mL	103	<1	<1
Iron Reducing Bacteria	org/1 mL	24	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	4	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	46	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	<0.3	>110
Iron Oxidizing Bacteria	org/1 mL	>110	<0.3	<0.3
Plant Operations				
Person hours to operate plant per week			288	
			both water and wastewater plants	
T & O problems			yes	
			chlorine	
Hardness	high		200	
	low		110	
			higher in the winter	
Recycel Filter Backwash			?	
Distribution system flushing program			?	
Storage	m3		?	
Average Daily Production	m3		?	
Ave. Theoretical Hydraulic Detention, hr.			?	
Treatment				
Weekly Sampling Routine		Raw	Treated	
free Cl2			84	
total Cl2			42	
turbidity			42	
temperature			-	
pH			42	
Floride			42	
Color			7	
Hardness			7	
Mn			-	
Fe			-	
Alkalinity			7	
Microbial	per month		32	
Chemical Dosing and Operating Strategy				
Coagulants	current		65	
	low		10	
	high		100	
	type		alum	
	adjustment		based on turbidity	
Polymer	current		0.2	
	low		0.1	
	high		0.3	
	type		?	
	adjustment		?	
Soda Ash	current		?	
	low		?	
	high		?	
	adjustment		?	
Disinfection	current		2.1	
	low		1.3	
	high		3.2	
	type		Cl2 gas	
	adjustment		based on target residual of 0.85 mg/L	
T & O control	current		?	
	low		?	
	high		?	
	type		?	
	adjustment		?	
Floride	current		1	
	low		1	
	high		1	
	adjustment		constant	
Copper sulfate	in RWR		-	

Table 3: Sumarry of Site Visits Continued

		GRIMSHAW 20-Jul-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	-	-	-
pH		8	7.8	7.8
Conductivity	Micro ohms/c	670	670	680
Turbidity	NTU	0.1	0.09	0.17
Total Chlorine	mg/L	NA	0.26	0.28
Free Chlorine	mg/L	NA	0.17	0.15
Color	TCU	0	0	2
Ammonia	mg/L	-	-	-
Odour Type		-	chemical	chemical
Odour Intensity	out of 3	-	0.5	0.5
Flavour Profile	out of 10	NA	6.5	6.5
Flavour Comment				
THMs	ug/L	-	47	42
Total Coliforms	cfu/100ml	<1	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	1	<1	12
Heterotropic Plate Count (7 days)	cfu/1 mL	52	33	61
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	<1	<1	<1
Molds	cfu/1 mL	<1	0	-
Yeast	cfu/1 mL	0	1	-
Iron Reducing Bacteria	org/1 mL	0.4	0.9	2
Sulfate Reducing Bacteria	org/1 mL	<0.3	0.4	0.9
Sulfite Reducing Bacteria	org/1 mL	<0.3	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	0.7	>110	0.4
Iron Oxidizing Bacteria	org/1 mL	<0.3	<0.3	<0.3
Plant Operations				
Person hours to operate plant per week			14	
T & O problems			yes	
			chlorine	
Hardness	high		-	
	low		-	
			constant	
Recycel Filter Backwash			no	
Distribution system flushing program			yes	
Storage	m3		5773	
Average Daily Production	m3		996	
Ave. Theoretical Hydraulic Detention, hr.			139.1	
Treatment			Flu/Cl2/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			-	
turbidity			-	
temperature			-	
pH			7	
Floride			7	
Color			-	
Hardness			-	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month		4	
Chemical Dosing and Operating Strategy				
Coagulants	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Polymer	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Soda Ash	current		-	
	low		-	
	high		-	
	adjustment		-	
Disinfection	current		0.6	
	low		0.45	
	high		0.9	
	type		Cl2 gas	
	adjustment		based on residual of .3 mg/L	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		0.9	
	low		0.9	
	high		0.9	
	adjustment		none	
Copper sulfate	in RWR		no	

Table 3: Sumarry of Site Visits Continued

		HIGH LEVEL 28-Jun-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	18.4	19.2	17.5
pH		7.4	6.5	6.7
Conductivity	Miro ohms/c	770	700	750
Turbidity	NTU	3.4	0.22	0.47
Total Chlorine	mg/L	NA	0.9	0.43
Free Chlorine	mg/L	NA	0.43	0.14
Color	TCU	35	10	0
Ammonia	mg/L	0.055	0.13	-
Odour Type		fishy	fishy	fishy
Odour Intensity	out of 3	2.5	1.5	2
Flavour Profile	out of 10	NA	2	3
Flavour Comment				
THMs	ug/L	-	181	185
Total Coliforms	cfu/100ml	confl	<1	<1
Fecal Coliforms	cfu/100ml	3	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	38	1	2
Heterotropic Plate Count (7 days)	cfu/1 mL	355	6	1158
Klebsiella	cfu/100ml	confl	<1	<1
Fecal Streptococcus	cfu/100ml	<1	<1	<1
Molds	cfu/1 mL	1	<1	<1
Yeast	cfu/1 mL	10	<1	<1
Iron Reducing Bacteria	org/1 mL	>110	<0.3	>110
Sulfate Reducing Bacteria	org/1 mL	>110	0.7	0.9
Sulfite Reducing Bacteria	org/1 mL	>110	<0.3	0.7
Thiosulfate Reducing Bacteria	org/1 mL	>110	15	>110
Iron Oxidizing Bacteria	org/1 mL	46	<0.3	110
Plant Operations				
Person hours to operate plant per week			60	
T & O problems			yes due to algae in the fall	
Hardness	high		225	
	low		225	
			constant	
Recycel Filter Backwash			yes recyceled back to RWR	
Distribution system flushing program				
Storage	m3		455	
Average Daily Production	m3		1189	
Ave. Theoretical Hydraulic Detention, hr.			9.2	
Treatment			RWR/CgA/Clr/pH/Rflt/Cl2/Flu/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			7	
turbidity			7	
temperature			7	
pH			7	
Floride			7	
Color			7	
Hardness			1	
Mn			somtimes	
Fe			-	
Alkalinity			1	
Microbial	per month		16	
Chemical Dosing and Operating Strategy				
Coagulants	current		260	
	low		200	
	high		260	
	type		alum	
	adjustment		adjustment based on minimizing color	
Polymer	current		0.3	
	low		0.1	
	high		0.3	
	type		?	
	adjustment		adjusted with alum	
Soda Ash	current		150	
	low		100	
	high		150	
	adjustment		adjusted with alum	
Disinfection	current		10	
	low		4	
	high		10	
	type		Cl2	
	adjustment		based on chlorine residual	
T & O control	current		0	
	low		0	
	high		5	
	type		PAC	
	adjustment		based on odour	
Floride	current		0.8	
	low		0.8	
	high		0.8	
	adjustment		basewd on residual	
Copper sulfate	in RWR		yes	

Table 3: Sumarry of Site Visits Continued

		HIGH PRAIRIE 13-Jun-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	-	15	15.5
pH		6.85	6.55	6.65
Conductivity	Miro ohms/c	375	440	420
Turbidity	NTU	4.5	0.11	0.12
Total Chlorine	mg/L	NA	0.86	0.6
Free Chlorine	mg/L	NA	0.69	0.37
Color	TCU	75	0	0
Ammonia	mg/L	0.01	-	-
Odour Type		?	chlorine	chlorine
Odour Intensity	out of 3	0.01	2	1
Flavour Profile	out of 10	NA	6	-
Flavour Comment				
THMs	ug/L	-	-	-
Total Coliforms	cfu/100ml	1	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	65	1	0
Heterotropic Plate Count (7 days)	cfu/1 mL			
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	3	<1	<1
Molds	cfu/1 mL	5	<1	<1
Yeast	cfu/1 mL	60	<1	<1
Iron Reducing Bacteria	org/1 mL	0.3	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	15	2	0.4
Sulfite Reducing Bacteria	org/1 mL	0.4	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	24	<0.3
Iron Oxidizing Bacteria	org/1 mL	110	2	<0.3
Plant Operations				
Person hours to operate plant per week			50	
T & O problems			no	
Hardness	high		-	
	low		-	
Recycel Filter Backwash			no	
Distribution system flushing program			?	
Storage	m3		3182	
Average Daily Production	m3		1660	
Ave. Theoretical Hydraulic Detention, hr.			46.0	
Treatment			RWR/CgA/Clr/Rflt/pH/PP Cl2/Flu/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2				
total Cl2				
turbidity				
temperature				
pH				
Floride				
Color				
Hardness				
Mn				
Fe				
Alkalinity				
Microbial	per month		8	
Chemical Dosing and Operating Strategy				
Coagulants	current		?	
	low		?	
	high		?	
	type		alum	
	adjustment		fed by ml per minite	
Polymer	current		?	
	low		?	
	high		?	
	type		praestol	
	adjustment		fed by ml per minite	
Soda Ash	current		?	
	low		?	
	high		?	
	adjustment		fed by ml per minite	
Disinfection	current		?	
	low		?	
	high		?	
	type		Cl2 gas	
	adjustment		fed by lbs/24 hr	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		?	
	low		?	
	high		?	
	adjustment		?	
Copper sulfate	in RWR		no	

Table 3: Sumarry of Site Visits Continued

		HINTON 18-Aug-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	-	4.8	-
pH		7.8	7.2	7.2
Conductivity	Miro ohms/c	200	240	240
Turbidity	NTU	83	0.75	0.31
Total Chlorine	mg/L	-	0.58	0.41
Free Chlorine	mg/L	-	0.54	0.31
Color	TCU	50	<0	<0
Ammonia	mg/L	0.071	-	0
Odour Type		-	chlorine	chlorine
Odour Intensity	out of 3	-	1	1
Flavour Profile	out of 10	NA	7	7
Flavour Comment				
THMs	ug/L	-	30	34
Total Coliforms	cfu/100ml	confl	<1	<1
Fecal Coliforms	cfu/100ml	25	-	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	199	1	<1
Heterotropic Plate Count (7 days)	cfu/1 mL	conf	2	<1
Klebsiella	cfu/100ml	confl	17	<1
Fecal Streptococcus	cfu/100ml	133	<1	<1
Molds	cfu/1 mL	18	3	<1
Yeast	cfu/1 mL	210	<1	<1
Iron Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	46	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	24	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	46	0.9	<0.3
Iron Oxidizing Bacteria	org/1 mL	>110	<0.3	<0.3
Plant Operations				
Person hours to operate plant per week			168	
			by pulpmill operators	
T & O problems			?	
			not sure	
Hardness	high		?	
	low		?	
			softening in the winter	
Recycel Filter Backwash			yes	
			in the winter	
Distribution system flushing program			?	
Storage	m3		0	
Average Daily Production	m3		11356.2	
Ave. Theoretical Hydraulic Detention, hr.			0.0	
Treatment			CgA/Flc/Clz/Rflt/Cl2/Flu	
Weekly Sampling Routine		Raw	Treated	
free Cl2			168	
total Cl2			-	
turbidity			168	
temperature			-	
pH			84	
Floride			84	
Color			-	
Hardness			-	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month		?	
Chemical Dosing and Operating Strategy				
Coagulants	current		30	
	low		?	
	high		?	
	type		alum	
	adjustment		based on raw turbidity or turb over filter	
Polymer	current		0.25	
	low		?	
	high		?	
	type		?	
	adjustment		constant	
Soda Ash	current		-	
	low		-	
	high		-	
	adjustment		-	
Disinfection	current		?	
	low		?	
	high		?	
	type		Cl2 gas	
	adjustment		based on residual	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		1.1	
	low		?	
	high		?	
	adjustment		based on residual	
Copper sulfate	in RWR		-	

Table 3: Sumarry of Site Visits Continued

		JANVIER 1-Sep-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	18	18	8.6
pH		8.4	7.8	7.75
Conductivity	Miro ohms/c	290	350	380
Turbidity	NTU	5.5	0.28	0.25
Total Chlorine	mg/L	-	1.75	0.08
Free Chlorine	mg/L	-	1.23	0.02
Color	TCU	10	<0	<0
Ammonia	mg/L	0.022	-	0.018
Odour Type		musty grassy	chlorine	??
Odour Intensity	out of 3	0.5	2	0.1
Flavour Profile	out of 10	NA	5	6
Flavour Comment				
THMs	ug/L	-	223	269
Total Coliforms	cfu/100ml	82	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	43	<1	2
Heterotropic Plate Count (7 days)	cfu/1 mL	91	<1	1300
Klebsiella	cfu/100ml	228	<1	41
Fecal Streptococcus	cfu/100ml	1	<1	<1
Molds	cfu/1 mL	1	<1	1
Yeast	cfu/1 mL	15	2	6
Iron Reducing Bacteria	org/1 mL	>110	<0.3	2
Sulfate Reducing Bacteria	org/1 mL	24	<0.3	2
Sulfite Reducing Bacteria	org/1 mL	>110	<0.3	0.9
Thiosulfate Reducing Bacteria	org/1 mL	>110	<0.3	>110
Iron Oxidizing Bacteria	org/1 mL	46	<0.3	46
Plant Operations				
Person hours to operate plant per week			14	
T & O problems			no some algae problems	
Hardness	high		-	
	low		-	
Recycel Filter Backwash			no	
Distribution system flushing program			yes	
Storage	m3		31	
Average Daily Production	m3		53	
Ave. Theoretical Hydraulic Detention, hr.			14.0	
Treatment				
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			-	
turbidity		7	7	
temperature		7	7	
pH		7	7	
Floride			-	
Color			-	
Hardness			-	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month			
Chemical Dosing and Operating Strategy				
Coagulants	current		110	
	low		?	
	high		?	
	type		alum	
	adjustment		based on turbidity	
Polymer	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Soda Ash	current		47	
	low		?	
	high		?	
	adjustment		based on pH	
Disinfection	current		11.2	
	low		?	
	high		?	
	type		NaOCl	
	adjustment		based on residual	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		yes	

Table 3: Sumarry of Site Visits Continued

		JASPER NATIONAL PARK 16-Aug-94	
Type of Sample		Raw	Distributed
Temperature	deg C	6	6.9
pH		8	8
Conductivity	Miro ohms/c	290	290
Turbidity	NTU	0.08	0.12
Total Chlorine	mg/L	NA	0.59
Free Chlorine	mg/L	NA	0.55
Color	TCU	0	0
Ammonia	mg/L	0.017	0.03
Odour Type		none	chlorine
Odour Intensity	out of 3	0	0.1
Flavour Profile	out of 10	6.5	7
Flavour Comment			
THMs	ug/L	-	29
Total Coliforms	cfu/100ml	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	1	<1
Heterotropic Plate Count (7 days)	cfu/1 mL	5	<1
Klebsiella	cfu/100ml	<1	<1
Fecal Streptococcus	cfu/100ml	<1	<1
Molds	cfu/1 mL	<1	<1
Yeast	cfu/1 mL	1	<1
Iron Reducing Bacteria	org/1 mL	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	<0.3	0.4
Iron Oxidizing Bacteria	org/1 mL	<0.3	<0.3
Plant Operations			
Person hours to operate plant per week			2
T & O problems			sometimes none none a few last year
Hardness	high		130
	low		120
			constant
Recycel Filter Backwash			-
Distribution system flushing program			no
Storage	m3		7000
Average Daily Production	m3		?
Ave. Theoretical Hydraulic Detention, hr.			?
Treatment			NaOCl/TWR
Weekly Sampling Routine		Raw	Distributed
free Cl2			1
total Cl2			-
turbidity			-
temperature			1
pH			1
Floride			-
Color			-
Hardness			1
Mn			-
Fe			-
Alkalinity			1
Microbial	per month		4
Chemical Dosing and Operating Strategy			
Coagulants	current		-
	low		-
	high		-
	type		-
	adjustment		-
Polymer	current		-
	low		-
	high		-
	type		-
	adjustment		-
Soda Ash	current		-
	low		-
	high		-
	adjustment		-
Disinfection	current		0.56
	low		?
	high		?
	type		?
	adjustment		constant
T & O control	current		-
	low		-
	high		-
	type		-
	adjustment		-
Floride	current		-
	low		-
	high		-
	adjustment		-
Copper sulfate	in RWR		-

Table 3: Sumarry of Site Visits Continued

		LAC LA BICHE 21-Jun-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	17	16.5	12.1
pH		7.9	7.8	-
Conductivity	Miro ohms/c	320	350	320
Turbidity	NTU	1.8	0.37	0.36
Total Chlorine	mg/L	NA	1.45	0.57
Free Chlorine	mg/L	NA	1.02	0.21
Color	TCU	0	0	0
Ammonia	mg/L	0.002	-	-
Odour Type		grassy	chlorine	-
Odour Intensity	out of 3	0.01	1.5	-
Flavour Profile	out of 10	-	7	-
Flavour Comment				
THMs	ug/L	-	-	-
Total Coliforms	cfu/100ml	-	-	-
Fecal Coliforms	cfu/100ml	3	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	15	2	69
Heterotropic Plate Count (7 days)	cfu/1 mL	202	2	103
Klebsiella	cfu/100ml	-	-	-
Fecal Streptococcus	cfu/100ml	2	<1	1
Molds	cfu/1 mL	1	1	1
Yeast	cfu/1 mL	5	<1	<1
Iron Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	24	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	0.4	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	0.4	9
Iron Oxidizing Bacteria	org/1 mL	>110	<0.3	110
Plant Operations				
Person hours to operate plant per week			14	
T & O problems			no there were two years ago	
Hardness	high		-	
	low		-	
Recycel Filter Backwash			no	
Distribution system flushing program			no	
Storage	m3		45	
Average Daily Production	m3		1601	
Ave. Theoretical Hydraulic Detention, hr.			0.7	
Treatment			gal Mxflt/RWR/CgA/Rflt/Cl2/Flu/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			7	
turbidity			7	
temperature			7	
pH			-	
Floride			0.25	
Color			-	
Hardness			-	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month		4	
Chemical Dosing and Operating Strategy				
Coagulants	current		4	
	low		2.4	
	high		15	
	type		pass 100	
	adjustment		based on turbidity	
Polymer	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Soda Ash	current		-	
	low		-	
	high		-	
	adjustment		-	
Disinfection	current		2.4	
	low		1.5	
	high		2.5	
	type		Cl2 gas	
	adjustment		based on residual	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		1	
	low		1	
	high		1	
	adjustment		constant	
Copper sulfate	in RWR		no	

Table 3: Sumarry of Site Visits Continued

		MANNING 27-Jun-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	21.7	21.2	21.2
pH		7.2	7.1	7
Conductivity	Miro ohms/c	350	360	370
Turbidity	NTU	1.5	2.4	0.27
Total Chlorine	mg/L	NA	0.82	0.41
Free Chlorine	mg/L	NA	0.43	0.14
Color	TCU	15	0	0
Ammonia	mg/L	0.002	-	-
Odour Type		grassy	chlorine	-
Odour Intensity	out of 3	0.5	1	-
Flavour Profile	out of 10	NA		-
Flavour Comment				
THMs	ug/L	-	183	182
Total Coliforms	cfu/100ml	18	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	75	1	2
Heterotropic Plate Count (7 days)	cfu/1 mL	1425	2	468
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	2	<1	<1
Molds	cfu/1 mL	1	0	<1
Yeast	cfu/1 mL	13	<1	2
Iron Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	2	<0.4	<0.3
Sulfite Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	2	110
Iron Oxidizing Bacteria	org/1 mL	>110	<0.3	4
Plant Operations				
Person hours to operate plant per week			25	
T & O problems			yes assosiated with pond turn over	
Hardness	high		300	
	low		150 high in winter	
Recycel Filter Backwash			no	
Distribution system flushing program			-	
Storage	m3		82	
Average Daily Production	m3		455	
Ave. Theoretical Hydraulic Detention, hr.			4.3	
Treatment			RWR/CpA/Aer/Clr/Cl2/Rflt/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			7	
turbidity		7	7	
temperature			0	
pH		7	7	
Floride			7	
Color		1	1	
Hardness		1	1	
Mn		1	1	
Fe		1	1	
Alkalinity		1	1	
Microbial	per month		8	
Chemical Dosing and Operating Strategy				
Coagulants	current		65	
	low		65	
	high		110	
	type		Niad I	
	adjustment		based on jar test	
Polymer	current		0.25	
	low		0.2	
	high		0.6	
	type		?	
	adjustment		based on jar test	
Soda Ash	current		0	
	low		0	
	high		50	
	adjustment		adjusted on pH	
Disinfection	current		3.7	
	low		1.5	
	high		5	
	type		Cl2 gas	
	adjustment		based on residual	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		1	
	low		1	
	high		1	
	adjustment		-	
Copper sulfate	in RWR			

Table 3: Sumarry of Site Visits Continued

		PEACE RIVER 21-Jul-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	19.4	19.4	-
pH		8.2	6.8	6.8
Conductivity	Miro ohms/c	270	300	300
Turbidity	NTU	70	0.2	0.14
Total Chlorine	mg/L	NA	1.01	0.42
Free Chlorine	mg/L	NA	0.93	0.32
Color	TCU	130	0	0
Ammonia	mg/L	-	-	-
Odour Type		slight	chlorine	chlorine
Odour Intensity	out of 3	0.1	0.5	0.5
Flavour Profile	out of 10	NA	8	8
Flavour Comment				
THMs	ug/L	-	44	65
Total Coliforms	cfu/100ml	confl	<1	<1
Fecal Coliforms	cfu/100ml	2	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	339	<1	<1
Heterotropic Plate Count (7 days)	cfu/1 mL	487	2	3
Klebsiella	cfu/100ml	confl	<1	<1
Fecal Streptococcus	cfu/100ml	56	<1	<1
Molds	cfu/1 mL	27	<1	<1
Yeast	cfu/1 mL	33	40	1
Iron Reducing Bacteria	org/1 mL	>110	<0.3	>110
Sulfate Reducing Bacteria	org/1 mL	24	<0.3	2
Sulfite Reducing Bacteria	org/1 mL	21	<0.3	0.4
Thiosulfate Reducing Bacteria	org/1 mL	>110	<0.3	>110
Iron Oxidizing Bacteria	org/1 mL	110	<0.3	24
Plant Operations				
Person hours to operate plant per week			35	
T & O problems			yes a little	
Hardness	high		-	
	low		-	
Recycel Filter Backwash			no	
Distribution system flushing program			yes just started	
Storage	m3		455	
Average Daily Production	m3		4059	
Ave. Theoretical Hydraulic Detention, hr.			2.7	
Treatment			CgA/AC/Cln/Rflt/Flu/pH/Cl2/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			7	
turbidity		7	7	
temperature			7	
pH		7	7	
Floride			-	
Color		7	7	
Hardness			-	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month		8	
Chemical Dosing and Operating Strategy				
Coagulants	current		95	
	low		20	
	high		400	
	type		alum	
	adjustment		based on turb of raw	
Polymer	current		0.2	
	low		0.1	
	high		0.6	
	type		preastol 25-15	
	adjustment		based on clarifier settling characteristics	
Soda Ash	current		14	
	low		0	
	high		65	
	adjustment		based on pH	
Disinfection	current		1	
	low		0.7	
	high		1.9	
	type		Cl2 gas	
	adjustment		based on chlorine residual	
T & O control	current		1.75	
	low		0	
	high		4	
	type		PAC	
	adjustment		based on odour	
Floride	current		0.83	
	low		0.8	
	high		0.8	
	adjustment		constant	
Copper sulfate	in RWR		no	

Table 3: Sumarry of Site Visits Continued

		PEERLESS LAKE 24-Aug-94	
Type of Sample		Raw	Treated
Temperature	deg C	17	20.5
pH		7.8	8
Conductivity	Miro ohms/c	205	230
Turbidity	NTU	3.6	1.7
Total Chlorine	mg/L	-	0.53
Free Chlorine	mg/L	-	0.02
Color	TCU	20	30
Ammonia	mg/L	0.125	0.043
Odour Type		lakey	chlorine
Odour Intensity	out of 3	0.1	1
Flavour Profile	out of 10	NA	4
Flavour Comment			
THMs	ug/L	-	54
Total Coliforms	cfu/100ml	1150	198
Fecal Coliforms	cfu/100ml	4	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	244	774
Heterotropic Plate Count (7 days)	cfu/1 mL	272	1175
Klebsiella	cfu/100ml	confl	79
Fecal Streptococcus	cfu/100ml	36	<1
Molds	cfu/1 mL	8	<1
Yeast	cfu/1 mL	35	17
Iron Reducing Bacteria	org/1 mL	>110	110
Sulfate Reducing Bacteria	org/1 mL	46	24
Sulfite Reducing Bacteria	org/1 mL	>110	9
Thiosulfate Reducing Bacteria	org/1 mL	>110	110
Iron Oxidizing Bacteria	org/1 mL	>110	>110
Plant Operations			
Person hours to operate plant per week			10
T & O problems			yes
			spring runoff and al
Hardness	high		-
	low		-
			-
Recycel Filter Backwash			no
Distribution system flushing program			no
			no distibution syste
Storage	m3		45
Average Daily Production	m3		15
Ave. Theoretical Hydraulic Detention, hr.			72.7
Treatment			CgA/Flc/Rflt/NaOCl/T
Weekly Sampling Routine		Raw	Treated
free Cl2			7
total Cl2			7
turbidity		7	7
temperature		7	7
pH		7	7
Floride			
Color		7	7
Hardness			-
Mn			-
Fe			-
Alkalinity			-
Microbial	per month		
Chemical Dosing and Operating Strategy			
Coagulants	current		?
	low		?
	high		?
	type		alum
	adjustment		settling tank broken
Polymer	current		0.3
	low		0.1
	high		0.9
	type		?
	adjustment		not adjusted
Soda Ash	current		-
	low		-
	high		-
	adjustment		-
Disinfection	current		?
	low		?
	high		?
	type		NaOCl
	adjustment		based on residual
T & O control	current		-
	low		-
	high		-
	type		-
	adjustment		-
Floride	current		-
	low		-
	high		-
	adjustment		-
Copper sulfate	in RWR		-

Table 3: Sumarry of Site Visits Continued

		SEXSMITH 14-Jun-94	
Type of Sample		Raw	Distributed
Temperature	deg C	7.2	5.9
pH		7.5	7.5
Conductivity	Miro ohms/c	1420	1480
Turbidity	NTU	1.2	4.4
Total Chlorine	mg/L	NA	NA
Free Chlorine	mg/L	NA	NA
Color	TCU	20	47
Ammonia	mg/L	0.9	0.44
Odour Type		rotten eggs	soda
Odour Intensity	out of 3	3	0.01
Flavour Profile	out of 10	6	6
Flavour Comment			
THMs	ug/L	no Cl	no Cl
Total Coliforms	cfu/100ml	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	3	4
Heterotropic Plate Count (7 days)	cfu/1 mL	-	-
Klebsiella	cfu/100ml	<1	<1
Fecal Streptococcus	cfu/100ml	<1	<1
Molds	cfu/1 mL	3	0
Yeast	cfu/1 mL	17	0
Iron Reducing Bacteria	org/1 mL	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	15	6
Sulfite Reducing Bacteria	org/1 mL	2	1
Thiosulfate Reducing Bacteria	org/1 mL	24	110
Iron Oxidizing Bacteria	org/1 mL	2	4
Plant Operations			
Person hours to operate plant per week			7
T & O problems			yes
		ne	a few about sufur
Hardness	high		-
	low		-
Recycel Filter Backwash			-
Distribution system flushing program			yes
Storage	m3		682
Average Daily Production	m3		909.218
Ave. Theoretical Hydraulic Detention, hr.			18.0
Treatment		R	none
Weekly Sampling Routine		Raw	Distributed
free Cl2			-
total Cl2			-
turbidity			-
temperature			-
pH			-
Floride			-
Color			-
Hardness			-
Mn			-
Fe			-
Alkalinity			-
Microbial	per month		4
Chemical Dosing and Operating Strategy			
Coagulants	current		-
	low		-
	high		-
	type		-
	adjustment		-
Polymer	current		-
	low		-
	high		-
	type		-
	adjustment		-
Soda Ash	current		-
	low		-
	high		-
	adjustment		-
Disinfection	current		-
	low		-
	high		-
	type		-
	adjustment		-
T & O control	current		-
	low		-
	high		-
	type		-
	adjustment		-
Floride	current		-
	low		-
	high		-
	adjustment		-
Copper sulfate	in RWR		-

Table 3: Sumarry of Site Visits Continued

		SLAVE LAKE 13-Jul-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	18.7	18.4	16
pH		7.7	7	7.2
Conductivity	Miro ohms/c	180	210	200
Turbidity	NTU	7.3	0.19	0.22
Total Chlorine	mg/L	NA	1.3	0.62
Free Chlorine	mg/L	NA	1.09	0.32
Color	TCU	75	10	15
Ammonia	mg/L	0.032	-	-
Odour Type		swampy	chlorine	grassy + fishy
Odour Intensity	out of 3	2	1	1
Flavour Profile	out of 10	NA	4	4
Flavour Comment				
THMs	ug/L	-	54	107
Total Coliforms	cfu/100ml	16	<1	<1
Fecal Coliforms	cfu/100ml	0	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	155	4	1
Heterotropic Plate Count (7 days)	cfu/1 mL	925	14	59
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	140	<1	<1
Molds	cfu/1 mL	7	<1	<1
Yeast	cfu/1 mL	153	30	29
Iron Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	46	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Iron Oxidizing Bacteria	org/1 mL	110	<0.3	<0.3
Plant Operations				
Person hours to operate plant per week			14	
			28 hr on bad weeks	
T & O problems			yes	
			worst in the spring and fall	
Hardness	high		90	
	low		80	
			constant	
Recycel Filter Backwash			yes	
			in winter	
Distribution system flushing program			yes	
Storage	m3		239	
Average Daily Production	m3		2461	
Ave. Theoretical Hydraulic Detention, hr.			2.3	
			gal	
Treatment			CgA/TO/Flc/Sd/Rflt/Cl2/Flo/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			7	
turbidity		7	7	
temperature		7	7	
pH		7	7	
Floride		7	7	
Color		7	7	
Hardness			-	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month		8	
Chemical Dosing and Operating Strategy				
Coagulants	current		110	
	low		5	
	high		120	
	type		Aluminex III	
	adjustment		dosing tie into a streaming current meter	
Polymer	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Soda Ash	current		-	
	low		-	
	high		-	
	adjustment		-	
Disinfection	current		2	
	low		1.5	
	high		3.5	
	type		Cl2 gas	
	adjustment		maintain 2 mg/L leaving plant (inline ana	
T & O control	current		0.2	
	low		0.2	
	high		0.7	
	type		KMnO4	
	adjustment		based on taste and odour	
Floride	current		1	
	low		1	
	high		1	
	adjustment		based on residual	
Copper sulfate	in RWR		none	

Table 3: Sumarry of Site Visits Continued

		SMITH 14-Jul-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	21	20.3	13.4
pH		8.4	8	7.9
Conductivity	Miro ohms/c	350	350	375
Turbidity	NTU	6.3	0.21	0.32
Total Chlorine	mg/L	NA	0.81	0.53
Free Chlorine	mg/L	NA	0.7	0.4
Color	TCU	15	0	0
Ammonia	mg/L	0.019	-	-
Odour Type		none	somthing ??	chlorine
Odour Intensity	out of 3	0	0.1	0.5
Flavour Profile	out of 10	NA	7	7
Flavour Comment				
THMs	ug/L	-	43	84
Total Coliforms	cfu/100ml	4	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	19	<1	<1
Heterotropic Plate Count (7 days)	cfu/1 mL	187	0	1
Klebsiella	cfu/100ml	2	<1	<1
Fecal Streptococcus	cfu/100ml	5	<1	<1
Molds	cfu/1 mL	0	0	<1
Yeast	cfu/1 mL	15	<1	<1
Iron Reducing Bacteria	org/1 mL	24	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	8	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	24	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	110	<0.3	<0.3
Iron Oxidizing Bacteria	org/1 mL	46	<0.3	<0.3
Plant Operations				
Person hours to operate plant per week			7	
T & O problems			none	
Hardness	high		-	
	low		-	
Recycel Filter Backwash			no	
Distribution system flushing program			yes	
Storage	m3		454	
Average Daily Production	m3		113.65225	
Ave. Theoretical Hydraulic Detention, hr.			95.9	
Treatment			RWR/CgA/Pflt/Cl2/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			-	
turbidity		7	7	
temperature			-	
pH		7	7	
Floride			-	
Color		7	7	
Hardness			-	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month		4	
Chemical Dosing and Operating Strategy				
Coagulants	current		24	
	low		24	
	high		24	
	type		pass 100	
	adjustment	linear relationship)	not adjusted, backwash frequency is cha	
Polymer	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Soda Ash	current		-	
	low		-	
	high		-	
	adjustment		-	
Disinfection	current		2	
	low		1.6	
	high		2.3	
	type		Cl2 gas	
	adjustment	zer	based on residual	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		-	

Table 3: Sumarry of Site Visits Continued

		SWAN HILLS 7-Jun-94	SWAN HILLS 7-Jun-94		
Type of Sample		Freeman Lake	Raw	Treated	Distributed
Temperature	deg C		10	10	8
pH			8	8.2	8.2
Conductivity	Miro ohms/c		140	190	285
Turbidity	NTU		1.3	0.11	0.13
Total Chlorine	mg/L		NA	0.7	0.31
Free Chlorine	mg/L		NA	0.75	0.35
Color	TCU		35	5	1
Ammonia	mg/L		0.002	-	-
Odour Type			Swampy-woody	Chlorine	-
Odour Intensity	out of 3		1.5		
Flavour Profile	out of 10		NA	6.5	-
Flavour Comment					
THMs	ug/L	-	-	-	-
Total Coliforms	cfu/100ml	6	6	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	10	7	<1	55
Heterotropic Plate Count (7 days)	cfu/1 mL	237	243	<1	185
Klebsiella	cfu/100ml	<1	<1	<1	<1
Fecal Streptococcus	cfu/100ml	1	2	<1	<1
Molds	cfu/1 mL	-	-	-	-
Yeast	cfu/1 mL	-	-	-	-
Iron Reducing Bacteria	org/1 mL				
Sulfate Reducing Bacteria	org/1 mL				
Sulfite Reducing Bacteria	org/1 mL				
Thiosulfate Reducing Bacteria	org/1 mL				
Iron Oxidizing Bacteria	org/1 mL				
Plant Operations					
Person hours to operate plant per week				80	
T & O problems				yes fishy smell	
Hardness	high			-	
	low			-	
Recycel Filter Backwash				no	
Distribution system flushing program				yes	
Storage	m3			3182	
Average Daily Production	m3			852	
Ave. Theoretical Hydraulic Detention, hr.				89.6	
Treatment				CgA/Clr/Flu/Rflt/PPCl2/NaOCl/TWR	
Weekly Sampling Routine		Freeman Lake	Raw	Treated	
free Cl2				7	
total Cl2				-	
turbidity			7	7	
temperature			7	7	
pH			7	7	
Floride				-	
Color			7	7	
Hardness				0.5	
Mn				-	
Fe				-	
Alkalinity				0.5	
Microbial	per month				
Chemical Dosing and Operating Strategy					
Coagulants	current			?	
	low			?	
	high			?	
	type			?	
	adjustment	ged		?	
Polymer	current			-	
	low			-	
	high			-	
	type			-	
	adjustment			-	
Soda Ash	current			?	
	low			?	
	high			?	
	adjustment			?	
Disinfection	current			?	
	low			?	
	high			?	
	type			?	
	adjustment			?	
T & O control	current			?	
	low			?	
	high			?	
	type			?	
	adjustment			?	
Floride	current			?	
	low			?	
	high			?	
	adjustment			?	
Copper sulfate	in RWR			no	

Table 3: Sumarry of Site Visits Continued

		TANGENT 20-Jul-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	-	-	-
pH		8.8	8.8	8.7
Conductivity	Miro ohms/c	330	395	380
Turbidity	NTU	1.1	0.42	0.53
Total Chlorine	mg/L	NA	1.3	0.99
Free Chlorine	mg/L	NA	0.9	0.53
Color	TCU	5	0	0
Ammonia	mg/L	0.023	-	-
Odour Type		swampy	swampy	swampy
Odour Intensity	out of 3	2	0.5	1
Flavour Profile	out of 10	NA	5	5
Flavour Comment				
THMs	ug/L	-	201	230
Total Coliforms	cfu/100ml	12	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	117	26	3
Heterotropic Plate Count (7 days)	cfu/1 mL	237	266	240
Klebsiella	cfu/100ml	967	<1	<1
Fecal Streptococcus	cfu/100ml	17	<1	1
Molds	cfu/1 mL	3	0	0
Yeast	cfu/1 mL	47	3	<1
Iron Reducing Bacteria	org/1 mL	>110	2	0.9
Sulfate Reducing Bacteria	org/1 mL	2	<0.3	0.4
Sulfite Reducing Bacteria	org/1 mL	46	<0.3	0.4
Thiosulfate Reducing Bacteria	org/1 mL	110	?	?
Iron Oxidizing Bacteria	org/1 mL	110	<0.3	<0.3
Plant Operations				
Person hours to operate plant per week			11	
			3 hr per wk maintenance	
T & O problems			yes	
			spring turn over	
Hardness	high		-	
	low		-	
			no complaints	
Recycel Filter Backwash			yes	
			backwash to RWR	
Distribution system flushing program			no	
Storage	m3		13	
Average Daily Production	m3		12	
Ave. Theoretical Hydraulic Detention, hr.			26.0	
Treatment			RWR/Plt/NaOCl/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			7	
turbidity		7	7	
temperature		-	-	
pH		7	7	
Floride			-	
Color			-	
Hardness			-	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month		4	
Chemical Dosing and Operating Strategy				
Coagulants	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Polymer	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Soda Ash	current		-	
	low		-	
	high		-	
	adjustment		-	
Disinfection	current		2.5	
	low		-	
	high		-	
	type		NaOCl	
	adjustment		based on residual, local person has to adj	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		-	

Table 3: Sumarry of Site Visits Continued

		TEEPEE CREEK 16-Jun-94
Type of Sample		Distributed
Temperature	deg C	7.8
pH		7
Conductivity	Miro ohms/c	2300
Turbidity	NTU	0.71
Total Chlorine	mg/L	NA
Free Chlorine	mg/L	NA
Color	TCU	10
Ammonia	mg/L	-
Odour Type		chemical / heavy
Odour Intensity	out of 3	1
Flavour Profile	out of 10	2.5
Flavour Comment		mouth feel
THMs	ug/L	-
Total Coliforms	cfu/100ml	<1
Fecal Coliforms	cfu/100ml	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	1
Heterotropic Plate Count (7 days)	cfu/1 mL	-
Klebsiella	cfu/100ml	<1
Fecal Streptococcus	cfu/100ml	<1
Molds	cfu/1 mL	<1
Yeast	cfu/1 mL	6
Iron Reducing Bacteria	org/1 mL	<0.3
Sulfate Reducing Bacteria	org/1 mL	0.4
Sulfite Reducing Bacteria	org/1 mL	0.4
Thiosulfate Reducing Bacteria	org/1 mL	4
Iron Oxidizing Bacteria	org/1 mL	0.4
Plant Operations		
Person hours to operate plant per week		1
T & O problems		yes
		when water gets clo
Hardness	high	-
	low	-
Recycel Filter Backwash		no
Distribution system flushing program		no
Storage	m3	?
Average Daily Production	m3	?
Ave. Theoretical Hydraulic Detention, hr.		?
Treatment		Pflt
Weekly Sampling Routine		Distributed
free Cl2		-
total Cl2		-
turbidity		-
temperature		-
pH		-
Floride		-
Color		-
Hardness		-
Mn		-
Fe		-
Alkalinity		-
Microbial	per month	-
Chemical Dosing and Operating Strategy		
Coagulants	current	-
	low	-
	high	-
	type	-
	adjustment	-
Polymer	current	-
	low	-
	high	-
	type	-
	adjustment	-
Soda Ash	current	-
	low	-
	high	-
	adjustment	-
Disinfection	current	-
	low	-
	high	-
	type	-
	adjustment	-
T & O control	current	-
	low	-
	high	-
	type	-
	adjustment	-
Floride	current	-
	low	-
	high	-
	adjustment	-
Copper sulfate	in RWR	-

Table 3: Sumarry of Site Visits Continued

		WANDERING RIVER 9-Aug-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	21.4	22.4	18.1
pH		8.6	-	7.9
Conductivity	Miro ohms/c	275	450	450
Turbidity	NTU	8.3	0.28	0.39
Total Chlorine	mg/L	NA	0.48	0.63
Free Chlorine	mg/L	NA	0.34	0.34
Color	TCU	20	0	0
Ammonia	mg/L	0.002	-	0
Odour Type		grassy	grassy	grassy
Odour Intensity	out of 3	2	0.1	1.5
Flavour Profile	out of 10	NA	6.5	-
Flavour Comment				
THMs	ug/L	-	141	128
Total Coliforms	cfu/100ml	tntc	<1	<1
Fecal Coliforms	cfu/100ml	2	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	61	<1	390
Heterotropic Plate Count (7 days)	cfu/1 mL	172	2	293
Klebsiella	cfu/100ml	504	<1	<1
Fecal Streptococcus	cfu/100ml	8	<1	1
Molds	cfu/1 mL	2	<1	<1
Yeast	cfu/1 mL	-	1	tntc
Iron Reducing Bacteria	org/1 mL	46	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	2	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	2	>0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	<0.3	>110
Iron Oxidizing Bacteria	org/1 mL	110	<0.3	0.4
Plant Operations				
Person hours to operate plant per week			17	
T & O problems			-	
		dy		
Hardness	high		-	
	low		-	
Recycel Filter Backwash			no	
Distribution system flushing program			yes	
Storage	m3		573	
Average Daily Production	m3		57	
Ave. Theoretical Hydraulic Detention, hr.			241.3	
Treatment			RWR/Aer/AC/CgA/Flc/Sd/pH/Rflt/NaOCl/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			7	
turbidity			7	
temperature			-	
pH			7	
Floride			-	
Color			-	
Hardness			-	
Mn			3	
Fe			3	
Alkalinity			-	
Microbial	per month		4	
Chemical Dosing and Operating Strategy				
Coagulants	current		180	
	low		105	
	high		274	
	type		alum	
	adjustment		based on turbidity	
Polymer	current		0.4	
	low		0.4	
	high		0.4	
	type		?	
	adjustment		constant	
Soda Ash	current		110	
	low		40	
	high		150	
	adjustment		based on pH	
Disinfection	current		7	
	low		2.3	
	high		17	
	type		NaOCl	
	adjustment		based on residual, there is error in these	
T & O control	current		76	
	low		0	
	high		176	
	type		PAC	
	adjustment		based on odour or complaints	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		-	

Table 3: Sumarry of Site Visits Continued

		WESTLOCK 23-Jun-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	17.2	16.3	14
pH		8.4	7.8	7.9
Conductivity	Miro ohms/c	340	380	390
Turbidity	NTU	0.46	0.22	0.29
Total Chlorine	mg/L	NA	1.21	0.55
Free Chlorine	mg/L	NA	0.97	0.33
Color	TCU	20	7	10
Ammonia	mg/L	0.04	-	-
Odour Type		-	chlorine	chlorine
Odour Intensity	out of 3	-	1	0.5
Flavour Profile	out of 10	NA	4.5	4.5
Flavour Comment				
THMs	ug/L	-	101	169
Total Coliforms	cfu/100ml	<1	<1	<1
Fecal Coliforms	cfu/100ml	<1	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	26	0	13
Heterotropic Plate Count (7 days)	cfu/1 mL	346	4	3
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	1	1	<1
Molds	cfu/1 mL	3	<1	<1
Yeast	cfu/1 mL	227	<1	<1
Iron Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	<0.3	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	0.9	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	8	<0.3	<0.3
Iron Oxidizing Bacteria	org/1 mL	0.4	<0.3	<0.3
Plant Operations				
Person hours to operate plant per week			80	
T & O problems			yes related to algae	
Hardness	high		400	
	low		180 winter is high	
Recycel Filter Backwash			yes 0.8	
Distribution system flushing program			?	
Storage	m3		909	
Average Daily Production	m3		1924	
Ave. Theoretical Hydraulic Detention, hr.			11.3	
Treatment			RWR/CgA/AC/Cls/Rflt/pH/Cl2/Flu/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			-	
turbidity			7	
temperature			7	
pH			7	
Floride			7	
Color			-	
Hardness			some	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month		4	
Chemical Dosing and Operating Strategy				
Coagulants	current		30	
	low		22	
	high		35	
	type		Aluminx 3	
	adjustment		based on turbidity and color	
Polymer	current		0.9	
	low		0.5	
	high		1	
	type		?	
	adjustment		depends on blanket characteristics	
Soda Ash	current		-	
	low		-	
	high		-	
	adjustment		-	
Disinfection	current		3	
	low		2.3	
	high		3.2	
	type		Cl2 gas	
	adjustment	numbers due to readi	based on residual	
T & O control	current		5.2	
	low		4	
	high		?	
	type		PAC	
	adjustment		based on odour	
Floride	current		0.96	
	low		-	
	high		-	
	adjustment		constant	
Copper sulfate	in RWR		yes	

Table 3: Sumarry of Site Visits Continued

		WHITECOURT 12-Jul-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	15.4	16.3	13
pH		8.1	7.5	7.3
Conductivity	Mirc ohms/c	240	330	300
Turbidity	NTU	17	0.25	0.38
Total Chlorine	mg/L	NA	0.75	0.14
Free Chlorine	mg/L	NA	0.55	0.03
Color	TCU	50	0	0
Ammonia	mg/L	0.02	-	-
Odour Type		musty	chlorine	musty pine
Odour Intensity	out of 3	0.5	1.5	1
Flavour Profile	out of 10	NA	6.5	6.5
Flavour Comment				
THMs	ug/L	-	133	142
Total Coliforms	cfu/100ml	tntc	<1	<1
Fecal Coliforms	cfu/100ml	2	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	119	126	4
Heterotropic Plate Count (7 days)	cfu/1 mL	850	1	1158
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	107	8	2
Molds	cfu/1 mL	40	<1	<1
Yeast	cfu/1 mL	127	35	34
Iron Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	24	<0.3	<0.3
Sulfite Reducing Bacteria	org/1 mL	46	<0.3	<0.3
Thiosulfate Reducing Bacteria	org/1 mL	>110	<0.3	>110
Iron Oxidizing Bacteria	org/1 mL	>110	<0.3	<0.3
Plant Operations				
Person hours to operate plant per week			28	
T & O problems			none	
Hardness	high		275	
	low		120	
			winter is high	
Recycel Filter Backwash			no	
Distribution system flushing program			yes	
Storage	m3		660	
Average Daily Production	m3		3813	
Ave. Theoretical Hydraulic Detention, hr.			4.2	
			m3	
Treatment			CgA/Flc/Clr/pH/Rflt/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			-	
turbidity			7	
temperature			7	
pH			7	
Floride			7	
Color			7	
Hardness			7	
Mn			-	
Fe			-	
Alkalinity			7	
Microbial	per month		8	
Chemical Dosing and Operating Strategy				
Coagulants	current		100	
	low		40	
	high		250	
	type		alum	
	adjustment		based on turbidity of raw water	
Polymer	current		0.3	
	low		0.2	
	high		0.3	
	type		praestol	
	adjustment		based on jar test	
Soda Ash	current		-	
	low		-	
	high		-	
	adjustment		-	
Disinfection	current		3.6	
	low		2.5	
	high		3.6	
	type		Cl2 gas	
	adjustment		based on residual	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		0.9	
	low		0.9	
	high		0.9	
	adjustment		based on raw concentration	
Copper sulfate	in RWR		none	

Table 3: Sumarry of Site Visits Continued

		WOKING 14-Jun-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	14.1	15.2	8.5
pH		7.2	6.8	6.64
Conductivity	Miro ohms/c	290	340	360
Turbidity	NTU	3.6	0.68	0.77
Total Chlorine	mg/L	NA	0.55	0.43
Free Chlorine	mg/L	NA	0.13	0.19
Color	TCU	60	10	10
Ammonia	mg/L	0.17	-	-
Odour Type		musty-(fireworks s	-	chlorine + musty
Odour Intensity	out of 3	1		2.5
Flavour Profile	out of 10	NA	-	5
Flavour Comment				
THMs	ug/L	-	-	-
Total Coliforms	cfu/100ml	10	<1	<1
Fecal Coliforms	cfu/100ml	1	<1	-
Heterotropic Plate Count (48 hr)	cfu/1 mL	1522	<1	1
Heterotropic Plate Count (7 days)	cfu/1 mL	-	-	-
Klebsiella	cfu/100ml	<1	<1	<1
Fecal Streptococcus	cfu/100ml	38	<1	<1
Molds	cfu/1 mL	6	<1	<1
Yeast	cfu/1 mL	167	<1	<1
Iron Reducing Bacteria	org/1 mL	8	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	46	4	0.4
Sulfite Reducing Bacteria	org/1 mL	>110	<0.3	0.4
Thiosulfate Reducing Bacteria	org/1 mL	>110	110	15
Iron Oxidizing Bacteria	org/1 mL	>110	0.4	0.9
Plant Operations				
Person hours to operate plant per week			14	
T & O problems			no	
Hardness	high		-	
	low		-	
Recycel Filter Backwash			?	
Distribution system flushing program			?	
Storage	m3		78	
Average Daily Production	m3		32	
Ave. Theoretical Hydraulic Detention, hr.			58.5	
Treatment			RWR/Arr/CgA/Flc/Sd/Rflt/NaOCl/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			?	
total Cl2			?	
turbidity			?	
temperature			?	
pH			?	
Floride			-	
Color			-	
Hardness			-	
Mn			1	
Fe			1	
Alkalinity			-	
Microbial	per month		4	
Chemical Dosing and Operating Strategy				
Coagulants	current		?	
	low		?	
	high		?	
	type		Pass 100	
	adjustment		based on color or turbidity	
Polymer	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Soda Ash	current		-	
	low		-	
	high		-	
	adjustment		-	
Disinfection	current		?	
	low		?	
	high		?	
	type		NaOCl	
	adjustment		based on residual	
T & O control	current		-	
	low		-	
	high		-	
	type		-	
	adjustment		-	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		no	

Table 3: Sumarry of Site Visits Continued

		WORSLEY		
		19-Jul-94		
Type of Sample		Raw	Treated	Distributed
Temperature	deg C	17.8	16.4	11
pH		7.8	7.7	7.6
Conductivity	Miro ohms/c	305	400	405
Turbidity	NTU	4.5	0.63	0.56
Total Chlorine	mg/L	NA	0.82	0.63
Free Chlorine	mg/L	NA	0.47	0.57
Color	TCU	25	0	0
Ammonia	mg/L	0.92	-	-
Odour Type		musty	musty + chlorine	musty
Odour Intensity	out of 3	2	1	0.5
Flavour Profile	out of 10	NA	5.5	5.5
Flavour Comment				
THMs	ug/L	-	180	290
Total Coliforms	cfu/100ml	15	<1	<1
Fecal Coliforms	cfu/100ml	24	<1	<1
Heterotropic Plate Count (48 hr)	cfu/1 mL	12	1	-
Heterotropic Plate Count (7 days)	cfu/1 mL	129	9	37
Klebsiella	cfu/100ml	21	<1	<1
Fecal Streptococcus	cfu/100ml	<1	<1	<1
Molds	cfu/1 mL	3	<1	<1
Yeast	cfu/1 mL	113	0	<1
Iron Reducing Bacteria	org/1 mL	>110	<0.3	<0.3
Sulfate Reducing Bacteria	org/1 mL	24	0.9	0.9
Sulfite Reducing Bacteria	org/1 mL	4	<0.3	0.4
Thiosulfate Reducing Bacteria	org/1 mL	>110	2	2
Iron Oxidizing Bacteria	org/1 mL	4	<0.3	0.3
Plant Operations				
Person hours to operate plant per week			14	
T & O problems				
Hardness	high		-	
	low		-	
Recycel Filter Backwash			no	
Distribution system flushing program			yes	
Storage	m3		418	
Average Daily Production	m3		77	
Ave. Theoretical Hydraulic Detention, hr.			130.3	
Treatment			RWR/Aer/CgA/Cl2/pH/Rfil/NaOCl/TWR	
Weekly Sampling Routine		Raw	Treated	
free Cl2			7	
total Cl2			7	
turbidity		7	7	
temperature			7	
pH			7	
Floride				
Color			-	
Hardness			-	
Mn			-	
Fe			-	
Alkalinity			-	
Microbial	per month		4	
Chemical Dosing and Operating Strategy				
Coagulants	current		80	
	low		25	
	high		100	
	type		alum	
	adjustment		based on turbidity	
Polymer	current		0.24	
	low		0.11	
	high		0.25	
	type		separan	
	adjustment		with alum	
Soda Ash	current		75	
	low		50	
	high		100	
	adjustment		with alum	
Disinfection	current		7	
	low		2	
	high		11	
	type		NaOCl	
	adjustment		based on residual	
T & O control	current		?	
	low		?	
	high		?	
	type		AC filter	
	adjustment		none	
Floride	current		-	
	low		-	
	high		-	
	adjustment		-	
Copper sulfate	in RWR		yes	

Table 4: Summary of Turbidity Data from Site Visits

ALL SITES VISITED

RAW WATER

	Number of Sites	Turbidity Ave	upper 95% C. I.	lower 95% C. I.	number > 1 NTU	0
All Sites	38	3.6	176	0.08	na	na
Cities	2	9.6	-	-	na	na
Towns	20	2.8	329	0.02	na	na
Vilages	1	0.2	-	-	na	na
Hamlets	13	4.9	55	0.45	na	na
Water Points	2	10.9	-	-	na	na

TREATED WATER

	Number of Sites	Turbidity Ave	upper 95% C. I.	lower 95% C. I.	number > 1 NTU	0
All Sites	32	0.4	3.2	0.05	6	19%
Cities	2	0.5	-	-	1	50%
Towns	17	0.3	1.7	0.04	1	6%
Vilages	0	-	-	-	-	-
Hamlets	11	0.5	4.0	0.06	2	18%
Water Points	2	1.9	-	-	2	100%

DISTRIBUTED WATER

	Number of Sites	Turbidity Ave	upper 95% C. I.	lower 95% C. I.	number > 1 NTU	0
All Sites	36	0.4	2.9	0.06	6	17%
Cities	2	0.5	-	-	1	50%
Towns	19	0.3	2.2	0.04	2	11%
Vilages	1	0.2	-	-	0	0%
Hamlets	13	0.6	4.8	0.07	3	23%
Water Points	0	-	-	-	-	-

SURFACE WATER SITES VISITED

RAW WATER

	Number of Sites	Turbidity Ave	upper 95% C. I.	lower 95% C. I.	number > 1 NTU	0
All Sites	30	6.4	164	0.25	na	na
Cities	2	9.6	-	-	na	na
Towns	15	6.5	399	0.11	na	na
Vilages	0	-	-	-	na	na
Hamlets	11	5.2	70	0.38	na	na
Water Points	2	10.9	-	-	na	na

TREATED WATER

	Number of Sites	Turbidity Ave	upper 95% C. I.	lower 95% C. I.	number > 1 NTU	0
All Sites	29	0.4	3.0	0.05	5	17%
Cities	2	0.5	-	-	1	50%
Towns	15	0.3	1.7	0.04	1	7%
Vilages	0	-	-	-	-	-
Hamlets	10	0.4	3.3	0.05	1	10%
Water Points	2	1.9	-	-	2	100%

DISTRIBUTED WATER

	Number of Sites	Turbidity Ave	upper 95% C. I.	lower 95% C. I.	number > 1 NTU	0
All Sites	27	0.4	2.3	0.06	4	15%
Cities	2	0.5	-	-	1	50%
Towns	14	0.3	1.3	0.06	1	7%
Vilages	0	-	-	-	-	-
Hamlets	11	0.5	4.6	0.05	2	18%
Water Points	0	-	-	-	-	-

GROUND WATER SITES VISITED

RAW WATER

	Number of Sites	Turbidity Ave	upper 95% C. I.	lower 95% C. I.	number > 1 NTU	0
All Sites	8	0.4	22	0.01	na	na
Cities	0	-	-	-	na	na
Towns	5	0.2	7	0.01	na	na
Vilages	1	0.2	-	-	na	na
Hamlets	2	3.8	-	-	na	na
Water Points	0	-	-	-	na	na

TREATED WATER

	Number of Sites	Turbidity Ave	upper 95% C. I.	lower 95% C. I.	number > 1 NTU	0
All Sites	3	0.4	-	-	1	33%
Cities	0	-	-	-	-	-
Towns	2	0.2	-	-	0	0%
Vilages	0	-	-	-	-	-
Hamlets	1	1.6	-	-	1	100%
Water Points	0	-	-	-	-	-

DISTRIBUTED WATER

	Number of Sites	Turbidity Ave	upper 95% C. I.	lower 95% C. I.	number > 1 NTU	0
All Sites	9	0.5	9	0.03	2	22%
Cities	0	-	-	-	-	-
Towns	5	0.4	45	0.00	1	20%
Vilages	1	0.2	-	-	0	0%
Hamlets	2	1.3	-	-	1	50%
Water Points	0	-	-	-	-	-

Table 5: Summary of Microbial Data from Site Visits

All Water Sources

		Total Coliforms (cfu/100 mL)					Fecal Coliforms (cfu/100 mL)				
		Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value	Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value
All Sites	Raw	36	26	20	8	2525	37	19	4	0	72
	Treated	32	1	198	0	198	33	0	na	0	0
	Distribution	35	1	82	0	82	36	0	na	0	0
Towns	Raw	18	11	11	5	1063	20	10	4	0	50
	Treated	16	0	na	0	0	17	0	na	0	0
	Distribution	18	0	na	0	0	20	0	na	0	0
Villages	Raw	1	0	na	0	0	1	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	1	1	82	0	82	1	0	na	0	0
Hamlets	Raw	14	12	16	3	699	13	7	3	0	24
	Treated	12	0	na	0	0	12	0	na	0	0
	Distribution	14	0	na	0	0	13	0	na	0	0
Water Points	Raw	2	2	1704	0	2525	2	2	16	0	72
	Treated	2	1	198	0	198	2	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0
Cities	Raw	1	1	1	0	1	1	0	na	0	0
	Treated	2	0	na	0	0	2	0	na	0	0
	Distribution	2	0	na	0	0	2	0	na	0	0

Surface Water Sources

		Total Coliforms (cfu/100 mL)					Fecal Coliforms (cfu/100 mL)				
		Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value	Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value
All Sites	Raw	28	26	20	8	2525	29	19	4	0	72
	Treated	28	1	198	0	198	29	0	na	0	0
	Distribution	26	0	na	0	0	27	0	na	0	0
Towns	Raw	13	11	11	5	1063	15	10	4	0	50
	Treated	13	0	na	0	0	14	0	na	0	0
	Distribution	13	0	na	0	0	15	0	na	0	0
Villages	Raw	0	0	na	0	0	0	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0
Hamlets	Raw	12	12	16	3	699	11	7	3	0	24
	Treated	11	0	na	0	0	11	0	na	0	0
	Distribution	11	0	na	0	0	10	0	na	0	0
Water Points	Raw	2	2	1704	0	2525	2	2	16	0	72
	Treated	2	1	198	0	198	2	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0
Cities	Raw	1	1	1	0	1	1	0	na	0	0
	Treated	2	0	na	0	0	2	0	na	0	0
	Distribution	2	0	na	0	0	2	0	na	0	0

Ground Water Sources

		Total Coliforms (cfu/100 mL)					Fecal Coliforms (cfu/100 mL)				
		Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value	Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value
All Sites	Raw	8	0	na	0	0	8	0	na	0	0
	Treated	4	0	na	0	0	4	0	na	0	0
	Distribution	9	1	82	0	82	9	0	na	0	0
Towns	Raw	5	0	na	0	0	5	0	na	0	0
	Treated	3	0	na	0	0	3	0	na	0	0
	Distribution	5	0	na	0	0	5	0	na	0	0
Villages	Raw	1	0	na	0	0	1	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	1	1	82	0	82	1	0	na	0	0
Hamlets	Raw	2	0	na	0	0	2	0	na	0	0
	Treated	1	0	na	0	0	1	0	na	0	0
	Distribution	3	0	na	0	0	3	0	na	0	0
Water Points	Raw	0	0	na	0	0	0	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0
Cities	Raw	0	0	na	0	0	0	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0

Table 5: Summary of Microbial Data from Site Visits

All Water Sources

		Heterotrophic Plate Count (48 hr, cfu/1 mL)					Heterotrophic Plate Count (7days, cfu/1 mL)				
		Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value	Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value
All Sites	Raw	37	35	57	1	2317	34	33	210	1	3567
	Treated	34	19	3	0	774	31	25	5	0	1175
	Distribution	36	26	5	0	390	32	27	44	0	1550
Towns	Raw	20	18	33	1	339	17	16	269	1	2800
	Treated	18	12	2	0	126	16	14	4	0	111
	Distribution	20	15	4	0	69	17	15	47	0	1158
Villages	Raw	0	0	na	0	0	1	1	67	0	67
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	1	1	10	0	10	1	1	17	0	17
Hamlets	Raw	13	13	72	0	1950	12	12	156	0	3233
	Treated	12	5	2	0	26	11	8	4	0	266
	Distribution	13	9	5	0	390	12	10	30	0	1300
Water Points	Raw	2	2	752	0	2317	2	2	985	0	3567
	Treated	2	1	774	0	774	2	2	178	0	1175
	Distribution	0	0	na	0	0	0	0	na	0	0
Cities	Raw	2	2	116	0	158	2	2	77	0	656
	Treated	2	1	2	0	2	2	1	0	0	0
	Distribution	2	1	2	0	2	2	1	1550	0	1550

Surface Water Sources

		Heterotrophic Plate Count (48 hr, cfu/1 mL)					Heterotrophic Plate Count (7days, cfu/1 mL)				
		Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value	Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value
All Sites	Raw	30	30	96	1	2317	27	27	309	1	3567
	Treated	30	18	3	0	774	27	22	4	0	1175
	Distribution	27	21	4	0	390	25	21	58	0	1550
Towns	Raw	15	15	65	1	339	13	13	538	1	2800
	Treated	15	11	2	0	126	13	12	3	0	111
	Distribution	15	13	4	0	69	13	12	68	0	1158
Villages	Raw	0	0	na	0	0	0	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0
Hamlets	Raw	11	11	105	0	1950	10	10	166	0	3233
	Treated	11	5	2	0	26	10	7	4	0	266
	Distribution	10	7	4	0	390	10	8	30	0	1300
Water Points	Raw	2	2	752	0	2317	2	2	985	0	3567
	Treated	2	1	774	0	774	2	2	178	0	1175
	Distribution	0	0	na	0	0	0	0	na	0	0
Cities	Raw	2	2	116	0	158	2	2	77	0	656
	Treated	2	1	2	0	2	2	1	0	0	0
	Distribution	2	1	2	0	2	2	1	1550	0	1550

Ground Water Sources

		Heterotrophic Plate Count (48 hr, cfu/1 mL)					Heterotrophic Plate Count (7days, cfu/1 mL)				
		Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value	Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value
All Sites	Raw	7	5	3	0	40	7	6	40	0	437
	Treated	4	1	2	0	2	4	3	7	0	33
	Distribution	9	5	10	0	182	7	6	16	0	253
Towns	Raw	5	3	1	0	3	4	3	17	0	52
	Treated	3	1	2	0	2	3	2	7	0	33
	Distribution	5	2	7	0	12	4	3	11	0	61
Villages	Raw	0	0	na	0	0	1	1	67	0	67
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	1	1	10	0	10	1	1	17	0	17
Hamlets	Raw	2	2	9	0	40	2	2	112	0	437
	Treated	1	0	na	0	0	1	1	9	0	9
	Distribution	3	2	16	0	182	2	2	26	0	253
Water Points	Raw	0	0	na	0	0	0	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0
Cities	Raw	0	0	na	0	0	0	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0

Table 5: Summary of Microbial Data from Site Visits

All Water Sources

		Klebsiella (cfu/100 mL)					Fecal Streptococcus (cfu/100 mL)				
		Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value	Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value
All Sites	Raw	35	15	56	8	967	37	28	9	0	132
	Treated	32	2	37	0	79	34	3	2	0	3
	Distribution	33	2	18	0	41	36	5	1	0	2
Towns	Raw	18	6	22	4	348	20	14	11	0	132
	Treated	16	1	17	0	17	18	3	2	0	3
	Distribution	18	0	na	0	0	20	3	1	0	2
Villages	Raw	1	0	na	0	0	1	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	1	1	8	0	8	1	0	na	0	0
Hamlets	Raw	12	7	83	2	967	12	10	7	0	101
	Treated	12	0	na	0	0	12	0	na	0	0
	Distribution	12	1	41	0	41	13	2	1	0	1
Water Points	Raw	2	2	na	2	0	2	2	26	0	33
	Treated	2	1	79	0	79	2	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0
Cities	Raw	2	0	na	0	0	2	2	3	0	18
	Treated	2	0	na	0	0	2	0	na	0	0
	Distribution	2	0	na	0	0	2	0	na	0	0

Surface Water Sources

		Klebsiella (cfu/100 mL)					Fecal Streptococcus (cfu/100 mL)				
		Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value	Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value
All Sites	Raw	28	14	105	8	967	30	28	9	0	132
	Treated	28	2	37	0	79	30	3	2	0	3
	Distribution	25	1	41	0	41	28	5	1	0	2
Towns	Raw	13	5	348	4	348	15	14	11	0	132
	Treated	13	1	17	0	17	15	3	2	0	3
	Distribution	13	0	na	0	0	15	3	1	0	2
Villages	Raw	0	0	na	0	0	0	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0
Hamlets	Raw	11	7	83	2	967	11	10	7	0	101
	Treated	11	0	na	0	0	11	0	na	0	0
	Distribution	10	1	41	0	41	11	2	1	0	1
Water Points	Raw	2	2	na	2	0	2	2	26	0	33
	Treated	2	1	79	0	79	2	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0
Cities	Raw	2	0	na	0	0	2	2	3	0	18
	Treated	2	0	na	0	0	2	0	na	0	0
	Distribution	2	0	na	0	0	2	0	na	0	0

Ground Water Sources

		Klebsiella (cfu/100 mL)					Fecal Streptococcus (cfu/100 mL)				
		Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value	Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value
All Sites	Raw	7	1	1	0	1	7	0	na	0	0
	Treated	4	0	na	0	0	4	0	na	0	0
	Distribution	8	1	8	0	8	8	0	na	0	0
Towns	Raw	5	1	1	0	1	5	0	na	0	0
	Treated	3	0	na	0	0	3	0	na	0	0
	Distribution	5	0	na	0	0	5	0	na	0	0
Villages	Raw	1	0	na	0	0	1	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	1	1	8	0	8	1	0	na	0	0
Hamlets	Raw	1	0	na	0	0	1	0	na	0	0
	Treated	1	0	na	0	0	1	0	na	0	0
	Distribution	2	0	na	0	0	2	0	na	0	0
Water Points	Raw	0	0	na	0	0	0	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0
Cities	Raw	0	0	na	0	0	0	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0

Table 5: Summary of Microbial Data from Site Visits

All Water Sources

		Molds (cfu/1 mL)					Yeast (cfu/1 mL)				
		Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value	Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value
All Sites	Raw	35	30	4	1	11	31	31	32	1	35
	Treated	32	10	1	0	3	32	11	5	0	31
	Distribution	32	7	1	0	2	32	17	2	3	30
Towns	Raw	18	15	5	0	11	16	16	30	0	30
	Treated	16	5	1	0	3	16	5	8	0	31
	Distribution	17	4	0	0	2	17	9	2	1	30
Villages	Raw	1	0	na	0	0	1	1	26	0	31
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	1	1	2	0	1	1	1	3	0	3
Hamlets	Raw	12	11	2	0	7	10	10	40	1	22
	Treated	12	4	0	0	1	12	4	1	0	3
	Distribution	13	2	1	0	1	13	7	2	2	6
Water Points	Raw	2	2	2	1	2	2	2	23	0	35
	Treated	2	1	1	0	1	2	2	21	0	30
	Distribution	0	0	na	0	0	0	0	na	0	0
Cities	Raw	2	2	20	0	10	2	2	38	0	12
	Treated	2	0	na	0	0	2	0	na	0	0
	Distribution	1	0	na	0	0	1	0	na	0	0

Surface Water Sources

		Molds (cfu/1 mL)					Yeast (cfu/1 mL)				
		Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value	Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value
All Sites	Raw	29	29	4	1	11	25	27	45	1	35
	Treated	29	9	1	0	3	29	9	7	0	31
	Distribution	26	5	1	0	2	26	12	3	3	30
Towns	Raw	14	14	5	0	11	13	13	55	0	30
	Treated	14	4	1	0	3	14	3	35	0	31
	Distribution	14	3	1	0	2	14	7	3	1	30
Villages	Raw	0	0	na	0	0	0	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0
Hamlets	Raw	11	11	2	0	7	10	10	40	1	22
	Treated	11	4	0	0	1	11	4	1	0	3
	Distribution	11	2	1	0	1	11	5	2	2	6
Water Points	Raw	2	2	2	1	2	2	2	23	0	35
	Treated	2	1	1	0	1	2	2	21	0	30
	Distribution	0	0	na	0	0	0	0	na	0	0
Cities	Raw	2	2	20	0	10	2	2	38	0	12
	Treated	2	0	na	0	0	2	0	na	0	0
	Distribution	1	0	na	0	0	1	0	na	0	0

Ground Water Sources

		Molds (cfu/1 mL)					Yeast (cfu/1 mL)				
		Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value	Number of Samples	Number >1	mean of Samples > 1	Number Uncountable	Maximum Value
All Sites	Raw	6	1	3	0	0	6	4	4	0	31
	Treated	3	1	0	0	1	3	2	1	0	3
	Distribution	6	2	1	0	1	6	5	1	0	6
Towns	Raw	4	1	3	0	0	4	3	2	0	1
	Treated	2	1	0	0	1	2	2	1	0	3
	Distribution	3	1	0	0	0	3	2	0	0	0
Villages	Raw	1	0	na	0	0	1	1	26	0	31
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	1	1	2	0	1	1	1	3	0	3
Hamlets	Raw	1	0	na	0	0	1	0	na	0	0
	Treated	1	0	na	0	0	1	0	na	0	0
	Distribution	2	0	na	0	0	2	2	2	0	6
Water Points	Raw	0	0	na	0	0	0	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0
Cities	Raw	0	0	na	0	0	0	0	na	0	0
	Treated	0	0	na	0	0	0	0	na	0	0
	Distribution	0	0	na	0	0	0	0	na	0	0

Table 5: Summary of Microbial Data from Site Visits

All Water Sources

		Iron Reducing Bacteria (org/1 mL)				Sulfate Reducing Bacteria (org/1 mL)			
		Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110	Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110
All Sites	Raw	35	31	82	21	35	28	28	3
	Treated	31	4	28	1	31	10	4	0
	Distribution	33	10	34	3	34	12	2	0
Towns	Raw	18	15	98	13	18	14	27	1
	Treated	16	2	1	0	16	6	1	0
	Distribution	17	6	37	2	18	6	2	0
Villages	Raw	1	1	1	0	1	0	na	0
	Treated	0	0	na	0	0	0	na	0
	Distribution	1	1	2	0	1	1	2	0
Hamlets	Raw	12	11	75	6	12	10	25	1
	Treated	11	1	2	0	11	3	3	0
	Distribution	13	3	38	1	13	5	1	0
Water Points	Raw	2	2	110	2	2	2	78	1
	Treated	2	1	110	1	2	1	24	0
	Distribution	0	0	na	0	0	0	na	0
Cities	Raw	2	2	13	0	2	2	3	0
	Treated	2	0	na	0	2	0	na	0
	Distribution	2	0	na	0	2	0	na	0

Surface Water Sources

		Iron Reducing Bacteria (org/1 mL)				Sulfate Reducing Bacteria (org/1 mL)			
		Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110	Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110
All Sites	Raw	28	27	89	20	28	27	29	3
	Treated	28	3	37	1	28	9	4	0
	Distribution	25	6	37	2	26	8	1	0
Towns	Raw	14	13	105	12	14	13	28	1
	Treated	14	1	0	0	14	5	1	0
	Distribution	13	4	55	2	14	4	1	0
Villages	Raw	0	0	na	0	0	0	na	0
	Treated	0	0	na	0	0	0	na	0
	Distribution	0	0	na	0	0	0	na	0
Hamlets	Raw	10	10	78	6	10	10	25	1
	Treated	10	1	2	0	10	3	3	0
	Distribution	10	2	2	0	10	4	1	0
Water Points	Raw	2	2	110	2	2	2	78	1
	Treated	2	1	110	1	2	1	24	0
	Distribution	0	0	na	0	0	0	na	0
Cities	Raw	2	2	13	0	2	2	3	0
	Treated	2	0	na	0	2	0	na	0
	Distribution	2	0	na	0	2	0	na	0

Ground Water Sources

		Iron Reducing Bacteria (org/1 mL)				Sulfate Reducing Bacteria (org/1 mL)			
		Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110	Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110
All Sites	Raw	7	4	39	1	7	1	15	0
	Treated	3	1	1	0	3	1	0	0
	Distribution	8	4	29	1	8	4	3	0
Towns	Raw	4	2	55	1	4	1	15	0
	Treated	2	1	1	0	2	1	0	0
	Distribution	4	2	1	0	4	2	4	0
Villages	Raw	1	1	1	0	1	0	na	0
	Treated	0	0	na	0	0	0	na	0
	Distribution	1	1	2	0	1	1	2	0
Hamlets	Raw	2	1	46	0	2	0	na	0
	Treated	1	0	na	0	1	0	na	0
	Distribution	3	1	110	1	3	1	0	0
Water Points	Raw	0	0	na	0	0	0	na	0
	Treated	0	0	na	0	0	0	na	0
	Distribution	0	0	na	0	0	0	na	0
Cities	Raw	0	0	na	0	0	0	na	0
	Treated	0	0	na	0	0	0	na	0
	Distribution	0	0	na	0	0	0	na	0

Table 5: Summary of Microbial Data from Site Visits

All Water Sources

		Sulfite Reducing Bacteria (org/1 mL)				Thiosulfate Reducing Bacteria (org/1 mL)			
		Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110	Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110
All Sites	Raw	35	29	55	12	35	34	91	27
	Treated	31	2	7	0	30	19	29	4
	Distribution	34	9	1	0	33	25	64	13
Towns	Raw	18	15	46	5	18	17	82	12
	Treated	16	0	na	0	16	10	16	1
	Distribution	18	3	1	0	18	13	66	7
Villages	Raw	1	0	na	0	1	1	21	0
	Treated	0	0	na	0	0	0	na	0
	Distribution	1	1	1	0	1	1	46	0
Hamlets	Raw	12	10	65	5	12	12	103	11
	Treated	11	1	4	0	10	6	46	2
	Distribution	13	5	1	0	12	9	64	5
Water Points	Raw	2	2	110	2	2	2	110	2
	Treated	2	1	9	0	2	2	55	1
	Distribution	0	0	na	0	0	0	na	0
Cities	Raw	2	2	25	0	2	2	110	2
	Treated	2	0	na	0	2	1	1	0
	Distribution	2	0	na	0	2	2	60	1

Surface Water Sources

		Sulfite Reducing Bacteria (org/1 mL)				Thiosulfate Reducing Bacteria (org/1 mL)			
		Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110	Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110
All Sites	Raw	28	28	57	12	28	28	104	26
	Treated	28	2	7	0	27	17	26	3
	Distribution	26	6	1	0	25	18	72	11
Towns	Raw	14	14	49	5	14	14	98	12
	Treated	14	0	na	0	14	9	5	0
	Distribution	14	2	1	0	14	9	80	6
Villages	Raw	0	0	na	0	0	0	na	0
	Treated	0	0	na	0	0	0	na	0
	Distribution	0	0	na	0	0	0	na	0
Hamlets	Raw	10	10	65	5	10	10	110	10
	Treated	10	1	4	0	9	5	55	2
	Distribution	10	4	1	0	9	7	66	4
Water Points	Raw	2	2	110	2	2	2	110	2
	Treated	2	1	9	0	2	2	55	1
	Distribution	0	0	na	0	0	0	na	0
Cities	Raw	2	2	25	0	2	2	110	2
	Treated	2	0	na	0	2	1	1	0
	Distribution	2	0	na	0	2	2	60	1

Ground Water Sources

		Sulfite Reducing Bacteria (org/1 mL)				Thiosulfate Reducing Bacteria (org/1 mL)			
		Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110	Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110
All Sites	Raw	7	1	2	0	7	6	30	1
	Treated	3	0	na	0	3	2	56	1
	Distribution	8	3	1	0	8	7	42	2
Towns	Raw	4	1	2	0	4	3	8	0
	Treated	2	0	na	0	2	1	110	1
	Distribution	4	1	1	0	4	4	34	1
Villages	Raw	1	0	na	0	1	1	21	0
	Treated	0	0	na	0	0	0	na	0
	Distribution	1	1	1	0	1	1	46	0
Hamlets	Raw	2	0	na	0	2	2	67	1
	Treated	1	0	na	0	1	1	2	0
	Distribution	3	1	0	0	3	2	57	1
Water Points	Raw	0	0	na	0	0	0	na	0
	Treated	0	0	na	0	0	0	na	0
	Distribution	0	0	na	0	0	0	na	0
Cities	Raw	0	0	na	0	0	0	na	0
	Treated	0	0	na	0	0	0	na	0
	Distribution	0	0	na	0	0	0	na	0

Table 5: Summary of Microbial Data from Site Visits

All Water Sources

		Iron Oxidizing Bacteria (org/1 mL)			
		Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110
All Sites	Raw	35	31	82	21
	Treated	31	5	23	1
	Distribution	34	17	33	4
Towns	Raw	18	15	79	10
	Treated	16	2	1	0
	Distribution	18	8	35	2
Villages	Raw	1	0	na	0
	Treated	0	0	na	0
	Distribution	1	1	2	0
Hamlets	Raw	12	12	76	7
	Treated	11	1	0	0
	Distribution	13	7	40	2
Water Points	Raw	2	2	110	2
	Treated	2	2	55	1
	Distribution	0	0	na	0
Cities	Raw	2	2	110	2
	Treated	2	0	na	0
	Distribution	2	1	0	0

Surface Water Sources

		Iron Oxidizing Bacteria (org/1 mL)			
		Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110
All Sites	Raw	28	28	89	21
	Treated	28	5	23	1
	Distribution	26	12	37	3
Towns	Raw	14	14	84	10
	Treated	14	2	1	0
	Distribution	14	6	45	2
Villages	Raw	0	0	na	0
	Treated	0	0	na	0
	Distribution	0	0	na	0
Hamlets	Raw	10	10	87	7
	Treated	10	1	0	0
	Distribution	10	5	33	1
Water Points	Raw	2	2	110	2
	Treated	2	2	55	1
	Distribution	0	0	na	0
Cities	Raw	2	2	110	2
	Treated	2	0	na	0
	Distribution	2	1	0	0

Ground Water Sources

		Iron Oxidizing Bacteria (org/1 mL)			
		Number of Samples	Number > 0.3	mean of Samples > 0.3	Number > 110
All Sites	Raw	7	3	16	0
	Treated	3	0	na	0
	Distribution	8	5	23	1
Towns	Raw	4	1	2	0
	Treated	2	0	na	0
	Distribution	4	2	3	0
Villages	Raw	1	0	na	0
	Treated	0	0	na	0
	Distribution	1	1	2	0
Hamlets	Raw	2	2	23	0
	Treated	1	0	na	0
	Distribution	3	2	55	1
Water Points	Raw	0	0	na	0
	Treated	0	0	na	0
	Distribution	0	0	na	0
Cities	Raw	0	0	na	0
	Treated	0	0	na	0
	Distribution	0	0	na	0

Table 6: Summary of THM Data from Site Visits

SUMMARY OF THM DATA FROM ALL SITES

TREATED WATER						
	Number of Sites	Mean ug/L	Upper 95 percentile	Lower 95 percentile	Number > 100 ug/L	Percent > 100 ug/L
All Sites	25	81.2	389	16.96	10	40%
Cities	1	41.4	-	-	0	0%
Towns	12	67.1	307	14.69	4	33%
Vilages	-	-	-	-	-	-
Hamlets	10	127.0	631	25.56	6	60%
Water Points	2	38.0	-	-	0	0%

DISTRIBUTED WATER						
	Number of Sites	Mean ug/L	Upper 95 percentile	Lower 95 percentile	Number > 100 ug/L	Percent > 100 ug/L
All Sites	25	97.6	516	18.44	13	52%
Cities	1	44.9	-	-	0	0%
Towns	13	70.7	437	11.43	6	46%
Vilages	-	-	-	-	-	-
Hamlets	11	153.2	545	43.02	7	64%
Water Points	-	-	-	-	-	-

SUMMARY OF THM DATA FROM SURFACE WATER SITES

TREATED WATER						
	Number of Sites	Mean ug/L	Upper 95 percentile	Lower 95 percentile	Number > 100 ug/L	Percent > 100 ug/L
All Sites	22	84.0	378	18.69	9	41%
Cities	1	41.4	-	-	0	0%
Towns	10	77.1	340	17.49	4	40%
Vilages	-	-	-	-	-	-
Hamlets	9	119.3	634	22.43	5	56%
Water Points	2	38.0	-	-	0	0%

DISTRIBUTED WATER						
	Number of Sites	Mean ug/L	Upper 95 percentile	Lower 95 percentile	Number > 100 ug/L	Percent > 100 ug/L
All Sites	21	113.8	458	28.23	12	57%
Cities	1	44.9	-	-	0	0%
Towns	10	95.1	431	21.00	6	60%
Vilages	-	-	-	-	-	-
Hamlets	10	149.3	575	38.75	6	60%
Water Points	-	-	-	-	-	-

SUMMARY OF THM DATA FROM GROUND WATER SITES

TREATED WATER						
	Number of Sites	Mean ug/L	Upper 95 percentile	Lower 95 percentile	Number > 100 ug/L	Percent > 100 ug/L
All Sites	3	63.1	134274443	0.00	1	33%
Cities	-	-	-	-	-	-
Towns	2	33.6	-	-	0	0%
Vilages	-	-	-	-	-	-
Hamlets	1	223.1	-	-	1	100%
Water Points	-	-	-	-	-	-

DISTRIBUTED WATER						
	Number of Sites	Mean ug/L	Upper 95 percentile	Lower 95 percentile	Number > 100 ug/L	Percent > 100 ug/L
All Sites	4	43.6	4877	0.39	1	25%
Cities	-	-	-	-	-	-
Towns	3	26.3	20576	0.03	0	0%
Vilages	-	-	-	-	-	-
Hamlets	1	198.1	-	-	1	100%
Water Points	-	-	-	-	-	-

	All NRBS Sites					Surface Water Sites					Ground Water Sites				
	Total Samples	Number Above 100 ug/L*	Percent Above 100 ug/L*	Geometric Mean ug/L	Upper 95% Confidence in Mean	Total Samples	Number Above 100 ug/L*	Percent Above 100 ug/L*	Geometric Mean ug/L	Upper 95% Confidence in Mean	Total Samples	Number Above 100 ug/L*	Percent Above 100 ug/L*	Geometric Mean ug/L	Upper 95% Confidence in Mean
City	58	0	0%	9	12	58	0	0%	9	12	0	-	-	-	-
Town	209	15	7%	23	28	196	15	8%	28	33	13	0	0%	2	2
Village	59	16	27%	35	54	47	16	34%	73	95	12	0	0%	2	3
Hamlet	89	33	37%	45	62	76	32	42%	60	82	13	1	8%	8	20
Water Point	9	3	33%	29	109	6	3	50%	82	245	3	0	0%	3	17
Metis Settlement	8	4	50%	97	128	8	4	50%	97	128	0	-	-	-	-
Total	460	71	15%	25	29	394	70	18%	32	37	66	1	2%	6	9

*This is the new standard, when these samples were taken the standard was 350 ug/L and there are only 3 samples in the NRBS area over this limit

Table 7: Summary of Historical THM Data

Table 8: Summary of Turbidity Data from the Treated Water Survey for the NRBS Area

Type of Facility	Population	Number of Sites	Geometric Mean of Site Average Turbidities	Lower 95% Confidence in Mean	Upper 95% Confidence in Mean	Lower 95 Percentile	Upper 95 Percentile	Alpha Value from t test Comparisons
Surface Water	Pop. > 500	29	0.50	0.38	0.66	0.1	2.4	2%
	Pop. < 500	37	0.79	0.57	1.09	0.1	6.1	
Ground Water	Pop. > 500	4	0.27	0.12	0.61	0.0	9.2	26%
	Pop. < 500	13	0.41	0.22	0.76	0.0	5.2	
All Sites	Pop. > 500	33	0.46	0.36	0.61	0.1	2.3	5%
	Pop. < 500	50	0.66	0.49	0.89	0.1	5.8	

Table 9: Summary of Microbiological Sampling in NRBS Area, 1988 - 1994

Status	Type	Total Samples	atisfactor Samples	Doubtful 0<TC<10	Unsat. FC > 0	V TC > 10	TNTC	Confluent Growth	24 -48 hr Old	Too Old > 48 hr	No Lable	Broken	% Poor* Samples
Hamlet	surface	14883	13909	122	37	25		280	347	107	51	5	3.2%
	ground	4817	4475	32	3	3		99	153	46	6		3.0%
	no Cl_2	2055	1876	80	3	2		60	28	5	1		7.2%
Village	surface	4045	3811	31	7	2		30	146	7	10	1	1.8%
	ground	1781	1693	6	1			17	36	9	18	1	1.4%
	no Cl_2	708	684	4				5	12			3	1.3%
Town	surface	11988	11505	91	17	10		61	247	37	15	5	1.5%
	ground	1989	1849	13	4			32	62	7	22		2.6%
	no Cl_2	1022	945	39	2	3		11	13	5	4		5.5%
City	surface	6390	6268	32	3			17	52		4	14	0.8%
Water Poi	surface	3693	3151	182	41	31		219	57	10	2		13.1%
	ground	1628	1530	30				38	20	7	1	2	4.3%
	no Cl_2	3592	3203	182	22	5		99	68	5	5	3	8.8%
Metis Settl	surface	238	232						4	1	1		0%
	ground												-
	no Cl_2	295	283	2		1		2	2	1	4		1.7%
School	surface	615	558	18	3	3		14	16	1	2		6.4%
	ground	973	918	7		3		20	20	4	1		3.2%
	no Cl_2	210	164	11				34	1				21.5%
Other	surface	1724	1645	8	3			9	37	7	15		1.2%
	ground	130	126					1		3			0.8%
	no Cl_2	414	363	14	15			17	5				11.2%
Sub-divisi	surface												-
	ground	572	548	2				4	15	3			1.1%
	no Cl_2												-
Industry	surface	1908	1715	15	12	9		28	53	3	71	2	3.6%
	ground	131	118					7	6				5.6%
	no Cl_2	59	52	1				5	1				10.3%
Regional	surface												-
Hutterite C	surface												-
	ground												-
	no Cl_2	1	1										0%
Provicial P	surface	1868	1577	88	9	13		118	48	13	2		12.6%
	ground	2017	1884	25	1	8		52	30	3	11	3	4.4%
	no Cl_2												-
Mobile Ho	surface	203	181	6	1			7	4	3	1		7.2%
	ground	558	494	10	1	3		34	7	2	6	1	8.9%
	no Cl_2	182	161	9				7	4	1			9.0%
Summer V	surface												-
	ground												-
	no Cl_2	28	25	1				1	1				7.4%
Airport	surface	668	648	5	4			3	6	2			1.8%
	ground												-
	no Cl_2												-
National P	surface	74	69	1				1	3				2.8%
	ground												-
	no Cl_2												-
71459	surface	48297	45269	599	137	93		787	1020	191	174	27	3.45%
	ground	14596	13635	125	10	17		304	349	84	65	7	3.24%
	no Cl_2	8566	7757	343	42	11		241	135	17	14	6	7.59%
	Total	71459	66661	1067	189	121		1332	1504	292	253	40	3.9%

% Poor = (Doubtful + Unsat. + V +TNTC + Confluent) / (Total - old samples - No lable - Broken)

Table 10: Summary of Microbiological Sampling in Alberta, 1988 - 1994

Status	Type	Total Samples	Satisfactory Samples	Doubtful 0<TC<10	Unsat. FC > 0	V TC > 10	TNTC	Confluent Growth	24 -48 hr Old	Too Old > 48 hr	No Lable	Broken	% Poor* Samples
Hamlet	surface	30339	28370	231	87	35		657	603	230	104	22	3.4%
	ground	14712	13771	94	14	7		323	325	133	42	3	3.1%
	no Cl_2	7957	7229	236	23	8		256	122	40	41	2	6.7%
Village	surface	17390	16223	147	42	5		204	542	116	86	25	2.4%
	ground	15468	14468	48	8	4		280	450	93	105	12	2.3%
	no Cl_2	8363	7711	173	4	17		180	198	37	33	10	4.6%
Town	surface	39837	38302	237	56	22		231	659	178	116	36	1.4%
	ground	12249	11450	65	22	6		113	387	115	80	11	1.8%
	no Cl_2	2887	2642	94	4	7		47	60	21	11	1	5.4%
City	surface	75211	74087	235	55	23		100	472	98	93	48	0.6%
Water Point	surface	4526	3894	200	45	31		270	67	14	4	1	12.3%
	ground	2174	1990	59	23	3		57	28	8	3	3	6.7%
	no Cl_2	4649	4005	212	22	11		264	116	9	7	3	11.3%
Metis Settlement	surface	565	532	8	1	2		8	7	2	5		3.4%
	ground	947	907		2			12	14	6	6		1.5%
	no Cl_2	295	283	2		1		2	2	1	4		1.7%
School	surface	1442	1315	35	12	3		20	26	5	26		5.1%
	ground	1909	1770	13		3		70	42	9	2		4.6%
	no Cl_2	1684	1415	41	1			153	49	11	14		12.1%
Other	surface	4818	4650	22	11	2		24	73	13	23		1.3%
	ground	3043	2884	25	6	7		28	42	16	33	2	2.2%
	no Cl_2	618	484	22	23	3		75	11				20.3%
Sub-division	surface	3257	3199	21	9	1		2	4	10	11		1.0%
	ground	1921	1834	13	3	1		16	32	14	8		1.8%
	no Cl_2	412	376	11	3	1		9	6	5	1		6.0%
Industry	surface	3934	3565	81	22	10		69	77	19	86	5	4.9%
	ground	131	118					7	6				5.6%
	no Cl_2	80	70	1				8	1				11.4%
Regional	surface	699	678	2	4	1		2	8	1	3		1.3%
Hutterite Colony	surface												-
	ground	24	18	2	1			3					25.0%
	no Cl_2	50	33	6	2			7	1		1		31.3%
Provicial Park	surface	3180	2824	97	12	15		147	60	15	10		8.8%
	ground	3536	3320	39	2	11		86	53	8	14	3	4.0%
	no Cl_2	405	335	18	1	3		38	3	3	4		15.2%
Mobile Home Par	surface	453	419	8	1			14	7	3	1		5.2%
	ground	558	494	10	1	3		34	7	2	6	1	8.9%
	no Cl_2	546	501	11	1			10	10	3	10		4.2%
Summer Village	surface												-
	ground												-
	no Cl_2	229	184	4				9	1	2	29		6.6%
Airport	surface	668	648	5	4			3	6	2			1.8%
	ground	279	263	7	1			6	2				5.1%
	no Cl_2												-
National Park	surface	802	756	3	1			6	23	4	9		1.3%
	ground												-
	no Cl_2												-
TOTAL	surface	187121	179462	1332	362	150		1757	2634	710	577	137	1.97%
	ground	56951	53287	375	83	45		1035	1388	404	299	35	2.81%
	no Cl_2	28175	25268	831	84	51		1058	580	132	155	16	7.42%
	Total	272247	258017	2538	529	246		3850	4602	1246	1031	188	2.7%

% Poor = (Doubtful + Unsat. + V +TNTC + Confluent) / (Total - old samples - No lable - Broken)

TABLE 11: NUMBER OF FACILITIES AND PEOPLE SERVED WHERE MORE THAN 10 % OF WATER SAMPLES WERE COLIFORM POSITIVE IN A SINGLE YEAR

NRBS

YEAR	OTHER TYPES				WATER POINTS				HAMLETS				VILLAGES				TOWNS				CITIES				ALL SITES			
	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total
1988	0	0	0	0	9	36	206	962	3	47	776	11147	0	15	0	6440	2	23	3663	69199	0	2	0	61597	14	125	4645	149645
1989	6	34	230	1402	11	37	278	1162	3	52	261	12170	0	16	0	6413	0	23	0	70764	0	2	0	60906	20	167	769	157669
1990	3	38	0	1402	12	37	137	1162	2	52	312	12170	0	16	0	6413	1	23	1256	70896	0	2	0	61256	18	171	1705	158151
1991	5	49	200	3902	9	37	194	1162	0	53	0	12220	0	16	0	6413	0	25	0	80357	0	2	0	62048	14	185	394	170954
1992	2	55	100	3769	8	36	193	1082	0	54	0	12300	0	17	0	6546	0	25	0	79850	0	2	0	62977	10	191	293	171376
1993	1	46	100	3114	5	35	165	852	1	51	80	11877	0	18	0	7010	0	25	0	79984	0	2	0	62977	7	179	345	170666
1994	6	46	300	3114	10	35	281	852	2	50	230	11669	0	18	0	7010	0	25	0	80619	0	2	0	63948	17	178	811	172064

ALL ALBERTA

YEAR	OTHER TYPES				WATER POINTS				HAMLETS				VILLAGES				TOWNS				CITIES				ALL SITES			
	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total
1988	0	0	0	0	11	49	363	1367	9	124	1241	50390	4	116	1219	44618	3	115	5146	321839	0	15	0	1568442	27	425	7969	1986807
1989	20	230	355	14635	17	51	278	1390	12	127	1169	50476	2	115	380	44648	1	111	642	314667	0	15	0	1592694	51	642	2824	2030791
1990	15	242	322	24869	14	51	137	1390	9	132	853	51390	4	118	1028	44648	2	111	2798	323790	0	15	0	1639914	42	662	5125	2089911
1991	11	286	260	28741	10	48	214	1390	0	139	0	51140	1	117	251	44648	1	111	1542	324799	0	15	0	1658782	24	700	2267	2113410
1992	11	295	290	28634	9	47	193	1310	2	143	408	51271	2	118	648	44781	2	111	2139	330563	0	15	0	1689198	27	711	3678	2149616
1993	1	245	100	23526	6	47	165	1080	1	138	80	50709	3	118	1248	44706	0	111	0	333162	0	15	0	1712736	11	662	1593	2169778
1994	9	247	300	22370	13	47	381	1080	4	137	314	50631	0	119	0	44706	2	112	2139	340416	0	15	0	1728743	27	665	3134	2192461

TABLE 12: NUMBER OF FACILITIES AND PEOPLE SERVED WHERE MORE THAN 10 % OF WATER SAMPLES WERE COLIFORM POSITIVE IN A SINGLE YEAR
SUMMARY OF THE OTHER TYPES CATEGORY

NRBS

YEAR	Huterite Colonies				Industries				Mobile Home Parks				Other				Provincial Parks				Schools				Sub-divisions				Summer Villages			
	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	1	5	130	1030	0	4	0	0	0	5	0	0	5	19	100	349	0	1	0	23	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	5	0	1030	0	4	0	0	2	7	0	0	1	20	0	349	0	1	0	23	0	1	0	0
1991	0	0	0	0	2	11	0	2500	1	5	200	1030	0	4	0	0	1	7	0	0	1	20	0	349	0	1	0	23	0	1	0	0
1992	0	0	0	0	0	12	0	2500	0	5	0	1030	0	5	0	0	0	8	0	0	2	22	100	216	0	2	0	23	0	1	0	0
1993	0	0	0	0	0	11	0	2500	0	2	0	450	0	5	0	0	0	8	0	0	1	17	100	141	0	2	0	23	0	1	0	0
1994	0	0	0	0	1	11	0	2500	1	2	300	450	0	5	0	0	1	8	0	0	2	17	0	141	0	2	0	23	1	1	0	0

ALL ALBERTA

YEAR	Huterite Colonies				Industries				Mobile Home Parks				Other				Provincial Parks				Schools				Sub-divisions				Summer Villages			
	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	2	15	95	1355	0	0	0	0	2	13	130	2530	3	27	0	1257	2	19	0	100	10	127	130	7193	1	28	0	1622	0	1	0	578
1990	3	16	96	1451	0	0	0	0	0	12	0	2130	0	33	0	1260	4	22	0	10303	5	128	213	7539	3	29	13	1608	0	2	0	578
1991	1	18	60	1511	3	41	0	3812	1	12	200	2130	1	28	0	1260	1	22	0	10303	4	130	0	7539	0	33	0	1608	0	2	0	578
1992	3	18	190	1511	3	42	0	3838	0	12	0	2130	1	29	0	1260	0	25	0	10303	4	132	100	7406	0	34	0	1608	0	3	0	578
1993	0	12	0	1321	0	40	0	3538	0	5	0	1250	0	35	0	1260	0	27	0	10303	1	91	100	3668	0	32	0	1608	0	3	0	578
1994	0	12	0	1321	2	40	0	3538	1	5	300	1250	0	37	0	1710	3	27	0	10303	2	90	0	2640	0	34	0	1608	1	2	0	0

TABLE 13: NUMBER OF FACILITIES AND PEOPLE SERVED WHERE MORE THAN 10 % OF WATER SAMPLES WERE POOR* IN A SINGLE YEAR

NRBS

YEAR	OTHER TYPES				WATER POINTS				HAMLETS				VILLAGES				TOWNS				CITIES				ALL SITES			
	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total
1988	0	0	0	0	18	36	505	962	9	47	2570	11447	1	15	704	6440	2	23	3663	69199	0	2	0	61597	30	125	7442	149645
1989	13	34	630	1402	16	37	404	1162	8	52	1222	12170	0	16	0	6413	0	23	0	70764	0	2	0	60906	37	167	2256	157669
1990	6	38	200	1402	17	37	435	1162	5	52	793	12170	0	16	0	6413	1	23	1256	70896	0	2	0	61256	29	171	2684	158151
1991	11	49	350	3902	15	37	414	1162	1	53	56	12220	0	16	0	6413	0	25	0	80357	0	2	0	62048	26	185	820	170954
1992	7	55	250	3769	9	36	203	1082	3	54	381	12300	0	17	0	6546	0	25	0	79850	0	2	0	62977	19	191	834	171376
1993	1	46	100	3114	10	35	185	852	2	51	136	11877	0	18	0	7010	1	25	1414	79984	0	2	0	62977	14	179	1835	170666
1994	8	46	300	3114	15	33	281	852	3	50	399	11669	1	18	672	7010	0	25	0	80619	0	2	0	63948	26	178	1652	172064

ALL ALBERTA

YEAR	OTHER TYPES				WATER POINTS				HAMLETS				VILLAGES				TOWNS				CITIES				ALL SITES			
	Sites >10%	Sites Total	Pop. >10%	Pop Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total
1988	0	0	0	0	23	49	662	1367	35	124	5227	50390	13	116	4204	44618	5	115	7221	321839	0	15	0	1568442	76	425	17314	1986807
1989	40	230	1225	14635	28	51	532	1390	30	127	3728	50476	14	115	4291	44648	6	111	4485	314667	0	15	0	1592694	120	642	15021	2030791
1990	31	242	1678	24869	22	50	455	1390	20	132	2029	51390	8	118	2129	44648	3	111	4364	323790	0	15	0	1639914	81	662	10064	2089911
1991	29	286	1095	28741	18	47	442	1390	8	139	627	51140	7	117	2735	44648	1	111	1542	324799	0	15	0	1658782	63	700	6441	2113410
1992	28	295	745	28634	14	46	331	1310	12	143	1439	51271	5	118	1910	44781	2	111	2139	330563	0	15	0	1689198	61	711	6559	2149616
1993	9	245	100	23526	14	45	305	1080	10	138	729	50709	5	118	2063	44706	1	111	1414	333162	0	15	0	1712736	39	662	4611	2169778
1994	22	247	800	22370	22	43	501	1080	14	137	1256	50631	11	119	3812	44706	3	112	5939	340416	0	15	0	1728743	68	665	12308	2192461

* Poor samples are those mee * Poor samples are those meeting the following criteria : Fecal Coliforms > 0
Total Coliforms > 0
Colonies too numerous to count
Confluent growth

TABLE 14: NUMBER OF FACILITIES AND PEOPLE SERVED WHERE MORE THAN 10 % OF WATER SAMPLES WERE POOR* IN A SINGLE YEAR
SUMMARY OF THE OTHER TYPES CATEGORY

NRBS

YEAR	Huterite Colonies				Industries				Mobile Home Parks				Other				Provincial Parks				Schools				Sub-divisions				Summer Villages			
	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	3	5	530	1030	1	4	0	0	1	5	0	0	8	19	100	349	0	1	0	23	0	0	0	0
1990	0	0	0	0	0	0	0	0	1	5	200	1030	0	4	0	0	3	7	0	0	2	20	0	349	0	1	0	23	0	1	0	0
1991	0	0	0	0	2	11	0	2500	2	5	350	1030	0	4	0	0	3	7	0	0	3	20	0	349	0	1	0	23	1	1	0	0
1992	0	0	0	0	0	12	0	2500	1	5	150	1030	1	5	0	0	1	8	0	0	4	22	100	216	0	2	0	23	0	1	0	0
1993	0	0	0	0	0	11	0	2500	0	2	0	450	0	5	0	0	0	8	0	0	1	17	100	141	0	2	0	23	0	1	0	0
1994	0	0	0	0	1	11	0	2500	1	2	300	450	0	5	0	0	2	8	0	0	3	17	0	141	0	2	0	23	1	1	0	0

ALL ALBERTA

YEAR	Huterite Colonies				Industries				Mobile Home Parks				Other				Provincial Parks				Schools				Sub-divisions				Summer Villages			
	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total	Sites >10%	Sites Total	Pop. >10%	Pop. Total
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	5	15	165	1355	0	0	0	0	6	13	930	2530	4	27	0	1257	5	19	0	100	19	127	130	7193	1	28	0	1622	0	1	0	578
1990	3	16	96	1451	0	0	0	0	1	12	200	2130	3	33	0	1260	8	22	0	10303	12	128	791	7539	3	29	13	1608	1	2	578	578
1991	3	18	190	1511	5	41	300	3812	2	12	350	2130	2	28	0	1260	5	22	0	10303	11	130	255	7539	0	33	0	1608	1	2	0	578
1992	4	18	190	1511	5	42	0	3838	1	12	150	2130	2	29	0	1260	3	25	0	10303	12	132	400	7406	1	34	5	1608	0	3	0	578
1993	0	12	0	1321	2	40	0	3538	0	5	0	1250	4	35	0	1260	2	27	0	10303	1	91	100	3668	0	32	0	1608	0	3	0	578
1994	1	12	0	1321	4	40	500	3538	1	5	300	1250	0	37	0	1710	6	27	0	10303	6	90	0	2640	3	34	0	1608	1	2	0	0

* Poor samples are those meeting the following criteria : Fecal Coliforms > 0
Total Coliforms > 0
Colonies too numerous to count
Confluent growth

Table 15: Listing of All NRBS Facilities With the Annual Microbial Sampling Summary

LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
ALPAC MILL (BOYLE)	1991	I	S	*	0	48	108	6	15%	18%
ALPAC MILL (BOYLE)	1992	I	S	*	0	48	71	0	1%	1%
ALPAC MILL (BOYLE)	1993	I	S	*	0	48	44	0	0%	0%
ALPAC MILL (BOYLE)	1994	I	S	*	0	48	42	0	0%	0%
ALTA.NEWSPRINT MILL,WH	1991	I	G	*	0	48	116	0	0%	6%
ALTA.NEWSPRINT MILL,WH	1992	I	G	*	0	48	12	0	0%	0%
ALTA.NEWSPRINT MILL,WH	1993	I	G	*	0	48	2	0	0%	0%
ALTA.NEWSPRINT MILL,WH	1994	I	G	*	0	48	1	0	0%	0%
AMOCO - EDSON	1991	I	S	*	0	48	0	0		
AMOCO - EDSON	1992	I	S	*	0	48	0	0		
AMOCO - EDSON	1993	I	S	*	0	48	1	0	0%	0%
AMOCO - EDSON	1994	I	S	*	0	48	0	0		
ANZAC SCHOOL	1989	S	G	*	75	24	45	0	0%	0%
ANZAC SCHOOL	1990	S	G	*	75	24	26	0	0%	0%
ANZAC SCHOOL	1991	S	G	*	75	24	2	0	0%	0%
ANZAC SCHOOL	1992	S	G	*	75	24	4	0	0%	0%
ATHABASCA	1988	T	S	*	1975	48	52	0	0%	0%
ATHABASCA	1989	T	S	*	1975	48	53	0	0%	2%
ATHABASCA	1990	T	S	*	1975	48	59	0	5%	5%
ATHABASCA	1991	T	S	*	1975	48	61	1	2%	7%
ATHABASCA	1992	T	S	*	1975	48	51	0	0%	0%
ATHABASCA	1993	T	S	*	1975	48	65	0	0%	0%
ATHABASCA	1994	T	S	*	1975	48	42	0	0%	0%
ATIKAMEG SCHOOL	1992	S	S	*	0	48	2	0	0%	0%
ATIKAMEG SCHOOL	1993	S	S	*	0	48	4	0	0%	0%
ATIKAMEG SCHOOL	1994	S	S	*	0	48	4	0	0%	0%
BARRHEAD	1988	T	S	*	3991	48	52	0	0%	2%
BARRHEAD	1989	T	S	*	4014	48	51	0	0%	0%
BARRHEAD	1990	T	S	*	4014	48	76	0	4%	4%
BARRHEAD	1991	T	S	*	4014	48	74	0	1%	1%
BARRHEAD	1992	T	S	*	4014	48	61	0	0%	0%
BARRHEAD	1993	T	S	*	4014	48	53	0	0%	0%
BARRHEAD	1994	T	S	*	4160	48	45	0	0%	0%
BEAR CANYON SCHOOL	1989	S	S	*	0	24	38	0	0%	16%
BEAR CANYON SCHOOL	1990	S	S	*	0	24	23	0	0%	5%
BEAR CANYON SCHOOL	1991	S	S	*	0	24	3	0	0%	0%
BEAR CANYON SCHOOL	1992	S	S	*	0	24	0	0		
BEAR CANYON SCHOOL	1993	S	S	*	0	24	3	0	0%	0%
BEAR CANYON SCHOOL	1994	S	S	*	0	24	0	0		
BEAR CANYON WP	1988	WP	S	*	9	24	49	0	3%	11%
BEAR CANYON WP	1989	WP	S	*	9	24	47	0	0%	4%
BEAR CANYON WP	1990	WP	S	*	9	24	53	1	17%	20%
BEAR CANYON WP	1991	WP	S	*	9	24	49	0	13%	14%
BEAR CANYON WP	1992	WP	S	*	9	24	49	1	8%	8%
BEAR CANYON WP	1993	WP	S	*	9	24	50	1	4%	6%
BEAR CANYON WP	1994	WP	S	*	9	24	46	4	16%	18%
BEAVERLODGE	1988	T	S	*	1808	48	66	0	2%	2%
BEAVERLODGE	1989	T	S	*	1808	48	62	0	3%	3%
BEAVERLODGE	1990	T	S	*	1808	48	63	0	4%	5%
BEAVERLODGE	1991	T	S	*	1808	48	67	2	5%	5%
BEAVERLODGE	1992	T	S	*	1808	48	63	1	3%	5%
BEAVERLODGE	1993	T	S	*	1808	48	60	1	2%	2%
BEAVERLODGE	1994	T	S	*	1808	48	77	0	4%	4%
BERWYN	1988	V	G		661	48	52	0	0%	0%
BERWYN	1989	V	G		661	48	51	0	0%	0%
BERWYN	1990	V	G		661	48	52	0	0%	0%
BERWYN	1991	V	G		661	48	53	0	0%	0%
BERWYN	1992	V	G		661	48	51	0	0%	0%
BERWYN	1993	V	G		661	48	55	0	4%	4%
BERWYN	1994	V	G		661	48	82	0	3%	5%
BEZANSON SCHOOL	1989	S	G		0	24	17	0	29%	29%
BEZANSON SCHOOL	1990	S	G		0	24	11	0	0%	0%
BEZANSON SCHOOL	1991	S	G		0	24	9	0	22%	22%
BEZANSON SCHOOL	1992	S	G		0	24	12	0	0%	8%

Table 15: Listing of All NRBS Facilities With the Annual Microbial Sampling Summary

LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
BEZANSON SCHOOL	1993	S	G		0	24	4	0	0%	0%
BEZANSON SCHOOL	1994	S	G		0	24	4	0	0%	0%
BISHOP ROUTHIER(PEAVINE	1992	S	G	*	0	48	30	0	0%	0%
BISHOP ROUTHIER(PEAVINE	1993	S	G	*	0	48	15	0	0%	0%
BISHOP ROUTHIER(PEAVINE	1994	S	G	*	0	48	35	1	3%	6%
BLUE RIDGE	1988	H	G	*	260	48	52	0	0%	8%
BLUE RIDGE	1989	H	G	*	260	48	52	0	0%	6%
BLUE RIDGE	1990	H	G	*	260	48	47	0	0%	4%
BLUE RIDGE	1991	H	G	*	260	48	56	0	0%	8%
BLUE RIDGE	1992	H	G	*	260	48	61	1	2%	14%
BLUE RIDGE	1993	H	G	*	260	48	53	0	0%	0%
BLUE RIDGE	1994	H	G	*	260	48	42	0	0%	0%
BLUEBERRY MOUNTAIN	1989	S	S	*	0	24	17	1	12%	12%
BLUEBERRY MOUNTAIN	1990	S	S	*	0	24	9	0	0%	11%
BLUESKY	1988	H	S	*	139	48	52	0	0%	2%
BLUESKY	1989	H	S	*	139	48	50	0	0%	2%
BLUESKY	1990	H	S	*	139	48	52	0	0%	2%
BLUESKY	1991	H	S	*	139	48	51	0	0%	0%
BLUESKY	1992	H	S	*	139	48	56	0	0%	0%
BLUESKY	1993	H	S	*	139	48	53	0	0%	0%
BLUESKY	1994	H	S	*	139	48	85	0	1%	1%
BONANZA	1989	S	S&G	*	0	24	18	0	28%	28%
BONANZA	1990	S	S&G	*	0	24	20	0	26%	30%
BONANZA	1991	S	S&G	*	0	24	19	0	0%	6%
BONANZA	1992	S	S&G	*	0	24	25	0	8%	8%
BONANZA	1993	S	S&G	*	0	24	6	0	0%	0%
BONANZA	1994	S	S&G	*	0	24	10	0	0%	0%
BORGEL WHITELAW	1988	WP	G		0	24	31	0	4%	4%
BORGEL WHITELAW	1989	WP	G		0	24	27	0	0%	0%
BORGEL WHITELAW	1990	WP	G		0	24	25	0	0%	0%
BORGEL WHITELAW	1991	WP	G		0	24	24	0	8%	8%
BORGEL WHITELAW	1992	WP	G		0	24	14	0	0%	0%
BORGEL WHITELAW	1993	WP	G		0	24	13	0	0%	0%
BORGEL WHITELAW	1994	WP	G		0	24	0	0		
BOYLE	1988	V	S	*	704	48	57	0	4%	11%
BOYLE	1989	V	S	*	704	48	56	0	2%	6%
BOYLE	1990	V	S	*	704	48	50	0	0%	6%
BOYLE	1991	V	S	*	704	48	48	0	0%	0%
BOYLE	1992	V	S	*	704	48	51	1	4%	4%
BOYLE	1993	V	S	*	704	48	47	0	0%	0%
BOYLE	1994	V	S	*	704	48	46	0	0%	0%
BROWNVALE	1988	H	G		150	48	48	0	4%	4%
BROWNVALE	1989	H	G		150	48	54	0	2%	6%
BROWNVALE	1990	H	G		150	48	62	0	28%	28%
BROWNVALE	1991	H	G		150	48	55	0	6%	6%
BROWNVALE	1992	H	G		150	48	47	0	0%	2%
BROWNVALE	1993	H	G		150	48	50	1	4%	4%
BROWNVALE	1994	H	G		150	48	52	2	10%	15%
BRULE	1988	H	S	*	82	48	46	0	0%	0%
BRULE	1989	H	S	*	82	48	45	2	4%	4%
BRULE	1990	H	S	*	82	48	67	0	0%	0%
BRULE	1991	H	S	*	82	48	60	0	0%	0%
BRULE	1992	H	S	*	82	48	53	0	0%	0%
BRULE	1993	H	S	*	82	48	52	0	0%	0%
BRULE	1994	H	S	*	82	48	44	0	0%	0%
BUFFALO HEAD PRAIRIE SC	1989	S	G		0	24	88	0	3%	3%
BUFFALO HEAD PRAIRIE SC	1990	S	G	*	0	24	87	0	0%	0%
BUFFALO HEAD PRAIRIE SC	1991	S	G	*	0	24	45	0	0%	0%
BUFFALO HEAD PRAIRIE SC	1992	S	G	*	0	24	43	0	0%	0%
BUFFALO HEAD PRAIRIE SC	1993	S	G	*	0	24	42	0	0%	0%
BUFFALO HEAD PRAIRIE SC	1994	S	G	*	0	24	30	0	0%	0%
CADOMIN	1988	WP	G		114	48	34	0	6%	6%
CADOMIN	1989	WP	G		114	48	38	0	22%	24%
CADOMIN	1990	WP	G		114	48	61	0	9%	9%

Table 15: Listing of All NRBS Facilities With the Annual Microbial Sampling Summary

LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
CADOMIN	1991	WP	G		114	48	61	1	3%	3%
CADOMIN	1992	WP	G		114	48	53	0	4%	4%
CADOMIN	1993	WP	G		114	48	48	0	2%	2%
CADOMIN	1994	WP	G		114	48	41	0	2%	2%
CADOTTE LAKE	1989	H	S	*	157	48	59	0	0%	3%
CADOTTE LAKE	1990	H	S	*	157	48	53	0	0%	0%
CADOTTE LAKE	1991	H	S	*	157	48	50	0	0%	0%
CADOTTE LAKE	1992	H	S	*	157	48	49	1	2%	2%
CADOTTE LAKE	1993	H	S	*	157	48	54	0	2%	2%
CADOTTE LAKE	1994	H	S	*	157	48	89	0	0%	0%
CALLING LAKE	1988	H	S	*	330	48	54	0	0%	6%
CALLING LAKE	1989	H	S	*	330	48	50	0	0%	2%
CALLING LAKE	1990	H	S	*	330	48	50	0	0%	6%
CALLING LAKE	1991	H	S	*	330	48	50	0	0%	0%
CALLING LAKE	1992	H	S	*	330	48	51	0	0%	0%
CALLING LAKE	1993	H	S	*	330	48	53	0	0%	0%
CALLING LAKE	1994	H	S	*	330	48	43	0	0%	0%
CANYON CREEK	1988	H	S	*	145	48	49	0	0%	0%
CANYON CREEK	1989	H	S	*	145	48	50	0	0%	0%
CANYON CREEK	1990	H	S	*	145	48	57	0	0%	2%
CANYON CREEK	1991	H	S	*	145	48	60	0	0%	4%
CANYON CREEK	1992	H	S	*	145	48	51	0	2%	6%
CANYON CREEK	1993	H	S	*	145	48	49	0	0%	0%
CANYON CREEK	1994	H	S	*	145	48	63	1	2%	3%
CHIP LAKE	1989	S	S	*	0	24	2	0	0%	0%
CHIP LAKE	1990	S	S	*	0	24	0	0		
CHIP LAKE	1991	S	S	*	0	24	0	0		
CHIP LAKE	1992	S	S	*	0	24	19	2	15%	15%
CHISHOLM	1988	H	G		100	24	4	0	0%	25%
CHISHOLM	1989	H	G		100	24	6	0	0%	17%
CHISHOLM	1990	H	G		100	24	2	0	0%	0%
CHISHOLM	1991	H	G	*	100	24	3	0	0%	0%
CHISHOLM	1992	H	G	*	100	24	1	0	0%	0%
CLAIRMONT	1988	H	G	*	950	48	53	0	4%	12%
CLAIRMONT	1989	H	G	*	950	48	70	0	0%	0%
CLAIRMONT	1990	H	G	*	950	48	84	0	1%	3%
CLAIRMONT	1991	H	G	*	950	48	76	0	0%	0%
CLAIRMONT	1992	H	G	*	950	48	78	0	0%	0%
CLAIRMONT	1993	H	G	*	950	48	66	1	2%	6%
CLAIRMONT	1994	H	G	*	950	48	42	0	0%	0%
CLEARDALE	1991	H	S	*	50	48	28	0	0%	0%
CLEARDALE	1992	H	S	*	50	48	49	0	0%	0%
CLEARDALE	1993	H	S	*	50	48	51	0	0%	0%
CLEARDALE	1994	H	S	*	50	48	44	0	0%	0%
COLINTON	1988	H	G	*	126	48	55	0	2%	7%
COLINTON	1989	H	G	*	126	48	62	0	0%	7%
COLINTON	1990	H	G	*	126	48	63	0	0%	0%
COLINTON	1991	H	G	*	126	48	63	0	0%	0%
COLINTON	1992	H	G	*	126	48	66	0	0%	0%
COLINTON	1993	H	G	*	126	48	51	0	0%	0%
COLINTON	1994	H	G	*	126	48	50	0	2%	2%
CONKLIN	1989	S	G	*	133	24	3	0	0%	0%
CONKLIN	1990	S	G	*	133	24	1	0	0%	0%
CONKLIN	1991	S	G	*	133	24	8	0	0%	0%
CONKLIN	1992	V	G	*	133	24	6	0	0%	0%
CONKLIN	1993	V	G	*	133	24	9	0	0%	0%
CONKLIN	1994	V	G	*	133	24	37	0	0%	0%
CROOKED CREEK	1988	WP	G		0	24	51	0	2%	2%
CROOKED CREEK	1989	WP	G		0	24	51	0	4%	4%
CROOKED CREEK	1990	WP	G		0	24	51	0	0%	0%
CROOKED CREEK	1991	WP	G		0	24	53	0	0%	0%
CROOKED CREEK	1992	WP	G		0	24	51	0	0%	0%
CROOKED CREEK	1993	WP	G		0	24	55	0	0%	2%
CROOKED CREEK	1994	WP	G		0	24	49	0	0%	8%

Table 15: Listing of All NRBS Facilities With the Annual Microbial Sampling Summary

LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
CYNTHIA	1988	H	G		56	48	35	0	0%	3%
CYNTHIA	1989	H	G		56	48	53	0	17%	17%
CYNTHIA	1990	H	G		56	48	57	0	5%	5%
CYNTHIA	1991	H	G		56	48	53	0	0%	15%
CYNTHIA	1992	H	G	*	56	48	62	0	4%	21%
CYNTHIA	1993	H	G	*	56	48	47	0	0%	13%
CYNTHIA	1994	H	G	*	56	48	38	0	0%	3%
DAISHOWA,PEACE RIVER P	1991	I	G	*	0	48	52	0	0%	0%
DAISHOWA,PEACE RIVER P	1992	I	G	*	0	48	53	0	0%	0%
DAISHOWA,PEACE RIVER P	1993	I	G	*	0	48	47	0	0%	0%
DAISHOWA,PEACE RIVER P	1994	I	G	*	0	48	42	0	0%	0%
DAPP	1989	S	G		0	24	1	0	0%	0%
DAPP	1990	S	G		0	24	2	0	0%	0%
DAPP	1991	S	G		0	24	0	0		
DAPP	1992	S	G		0	24	0	0		
DEADWOOD SCHOOL	1989	S	S	*	0	24	0	0		
DEADWOOD SCHOOL	1990	S	S	*	0	24	0	0		
DEADWOOD SCHOOL	1991	S	S	*	0	24	0	0		
DEADWOOD SCHOOL	1992	S	S	*	0	24	0	0		
DEADWOOD SCHOOL	1993	S	S	*	0	24	0	0		
DEADWOOD SCHOOL	1994	S	S	*	0	24	0	0		
DEADWOOD WP	1988	WP	S&G	*	13	24	28	0	0%	0%
DEADWOOD WP	1989	WP	S&G	*	13	24	28	0	4%	4%
DEADWOOD WP	1990	WP	S&G	*	13	24	25	0	0%	0%
DEADWOOD WP	1991	WP	S&G	*	13	24	27	0	11%	11%
DEADWOOD WP	1992	WP	S&G	*	13	24	31	4	32%	32%
DEADWOOD WP	1993	WP	S&G	*	13	24	29	2	18%	21%
DEADWOOD WP	1994	WP	S&G	*	13	24	18	0	6%	6%
DEBOLT	1988	H	G	*	117	48	51	0	0%	10%
DEBOLT	1989	H	G	*	117	48	55	0	0%	5%
DEBOLT	1990	H	G	*	117	48	54	0	0%	2%
DEBOLT	1991	H	G	*	117	48	53	0	0%	0%
DEBOLT	1992	H	G	*	117	48	53	0	2%	6%
DEBOLT	1993	H	G	*	117	48	58	0	0%	2%
DEBOLT	1994	H	G	*	117	48	53	0	0%	4%
DEER HILL	1988	WP	G		0	24	29	0	11%	11%
DEER HILL	1989	WP	G		0	24	24	0	0%	0%
DEER HILL	1990	WP	G		0	24	29	0	0%	4%
DEER HILL	1991	WP	G		0	24	27	0	0%	0%
DEER HILL	1992	WP	G		0	24	22	0	0%	0%
DEER HILL	1993	WP	G		0	24	20	0	0%	0%
DEER HILL	1994	WP	G		0	24	1	0	0%	0%
DESMARAIS	1988	H	S	*	350	48	52	0	4%	6%
DESMARAIS	1989	H	S	*	350	48	50	0	0%	0%
DESMARAIS	1990	H	S	*	350	48	52	0	0%	0%
DESMARAIS	1991	H	S	*	350	48	52	0	0%	0%
DESMARAIS	1992	H	S	*	350	48	49	0	0%	0%
DESMARAIS	1993	H	S	*	350	48	63	0	0%	0%
DESMARAIS	1994	H	S	*	350	48	77	0	0%	0%
DIXONVILLE 1	1988	H	G	*	74	48	50	0	0%	0%
DIXONVILLE 1	1989	H	G	*	74	48	50	0	5%	11%
DIXONVILLE 1	1990	H	G	*	74	48	34	0	0%	3%
DIXONVILLE 1	1991	H	G	*	74	48	63	1	3%	5%
DIXONVILLE 1	1992	H	G	*	74	48	95	0	1%	1%
DIXONVILLE 1	1993	H	G	*	74	48	87	0	1%	2%
DIXONVILLE 1	1994	H	G	*	74	48	78	0	0%	0%
DIXONVILLE 2	1988	WP	G		0	24	29	0	4%	18%
DIXONVILLE 2	1989	WP	G		0	24	32	0	17%	39%
DIXONVILLE 2	1990	WP	G		0	24	30	0	10%	10%
DIXONVILLE 2	1991	WP	G		0	24	29	1	7%	10%
DIXONVILLE 2	1992	WP	G		0	24	25	0	4%	4%
DIXONVILLE 2	1993	WP	G		0	24	25	0	0%	0%
DIXONVILLE 2	1994	WP	G		0	24	21	0	5%	5%
DONNELLY	1988	V	S	*	405	48	55	1	5%	5%

Table 15: Listing of All NRBS Facilities With the Annual Microbial Sampling Summary

LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
DONNELLY	1989	V	S	*	405	48	51	0	0%	2%
DONNELLY	1990	V	S	*	405	48	65	0	2%	3%
DONNELLY	1991	V	S	*	405	48	73	0	1%	1%
DONNELLY	1992	V	S	*	405	48	71	0	2%	2%
DONNELLY	1993	V	S	*	405	48	81	2	3%	3%
DONNELLY	1994	V	S	*	405	48	89	0	1%	1%
DR. MARY JACKSON	1989	S	G	*	0	24	46	0	0%	2%
DR. MARY JACKSON	1990	S	G	*	0	40	51	0	2%	7%
DR. MARY JACKSON	1991	S	G	*	0	40	48	0	0%	0%
DR. MARY JACKSON	1992	S	G	*	0	40	72	0	1%	1%
DR. MARY JACKSON	1993	S	G	*	0	40	39	0	3%	3%
DR. MARY JACKSON	1994	S	G	*	0	40	67	0	0%	3%
DUNVEGAN PROV.REC.PK.	1992	O	G	*	0	24	79	0	0%	1%
DUNVEGAN PROV.REC.PK.	1993	O	G	*	0	24	1	0	0%	0%
DUNVEGAN PROV.REC.PK.	1994	O	G	*	0	24	50	0	0%	0%
EAGLESHAM	1988	V	S	*	191	48	34	0	0%	0%
EAGLESHAM	1989	V	S	*	172	48	35	0	0%	0%
EAGLESHAM	1990	V	S	*	172	48	44	0	0%	0%
EAGLESHAM	1991	V	S	*	172	48	54	0	0%	0%
EAGLESHAM	1992	V	S	*	172	48	52	0	0%	2%
EAGLESHAM	1993	V	S	*	172	48	54	0	0%	0%
EAGLESHAM	1994	V	S	*	172	48	82	1	1%	1%
EAST MANNING	1988	WP	S	*	0	24	26	0	0%	4%
EAST MANNING	1989	WP	S	*	0	24	26	0	0%	8%
EAST MANNING	1990	WP	S	*	0	24	28	0	14%	14%
EAST MANNING	1991	WP	S	*	0	24	32	0	16%	19%
EAST MANNING	1992	WP	S	*	0	24	24	0	9%	9%
EAST MANNING	1993	WP	S	*	0	24	23	1	9%	9%
EAST MANNING	1994	WP	S	*	0	24	17	0	0%	0%
EAST PRAIRIE SETTLEMT	1989	MS	G		400	48	53	0	0%	0%
EAST PRAIRIE SETTLEMT	1990	MS	G		400	48	56	0	2%	4%
EAST PRAIRIE SETTLEMT	1991	MS	G		400	48	52	0	0%	0%
EAST PRAIRIE SETTLEMT	1992	MS	G		400	48	46	0	0%	0%
EAST PRAIRIE SETTLEMT	1993	MS	G		400	48	44	0	0%	0%
EAST PRAIRIE SETTLEMT	1994	MS	G		400	48	44	1	5%	7%
EDSON	1988	T	G	*	7323	84	91	0	0%	0%
EDSON	1989	T	G	*	7323	96	135	0	0%	4%
EDSON	1990	T	G	*	7323	96	122	0	1%	5%
EDSON	1991	T	G	*	7323	96	141	0	1%	3%
EDSON	1992	T	G	*	7323	96	107	0	0%	0%
EDSON	1993	T	G	*	7323	96	105	0	1%	1%
EDSON	1994	T	G	*	7323	96	100	0	0%	4%
ELMWORTH	1989	S	G	*	0	24	19	0	0%	32%
ELMWORTH	1990	S	G	*	0	24	10	0	10%	10%
ELMWORTH	1991	S	G	*	0	24	6	0	0%	0%
ELMWORTH	1992	S	G	*	0	24	14	0	0%	21%
ELMWORTH	1993	S	G	*	0	24	4	0	0%	0%
El MWORTH	1994	S	G	*	0	24	12	2	29%	58%
ENILDA	1988	H	S	*	141	48	42	0	5%	5%
ENILDA	1989	H	S	*	141	48	42	0	0%	0%
ENILDA	1990	H	S	*	141	48	48	0	0%	0%
ENILDA	1991	H	S	*	141	48	48	0	0%	0%
ENILDA	1992	H	S	*	141	48	49	0	0%	0%
ENILDA	1993	H	S	*	141	48	46	0	0%	0%
ENILDA	1994	H	S	*	141	48	42	0	0%	0%
ENTWISTLE	1988	V	G	*	478	48	51	0	0%	0%
ENTWISTLE	1989	V	G	*	478	48	59	0	0%	3%
ENTWISTLE	1990	V	G	*	478	48	60	0	0%	0%
ENTWISTLE	1991	V	G	*	478	48	53	0	0%	0%
ENTWISTLE	1992	V	G	*	478	48	48	1	4%	4%
ENTWISTLE	1993	V	G	*	478	48	50	0	0%	0%
ENTWISTLE	1994	V	G	*	478	48	42	0	0%	0%
EUREKA RIVER	1988	WP	G		4	24	33	1	13%	13%
EUREKA RIVER	1989	WP	G		4	24	28	0	0%	0%

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LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
EUREKA RIVER	1990	WP	G		4	24	28	0	0%	0%
EUREKA RIVER	1991	WP	G		4	24	28	0	0%	0%
EUREKA RIVER	1992	WP	G		4	24	23	0	0%	0%
EUREKA RIVER	1993	WP	G		4	24	20	0	0%	0%
EUREKA RIVER	1994	WP	G		4	24	1	0	0%	0%
EVANSBURG	1988	V	G	*	750	48	52	0	0%	6%
EVANSBURG	1989	V	G	*	750	48	51	0	0%	2%
EVANSBURG	1990	V	G	*	750	48	49	0	0%	0%
EVANSBURG	1991	V	G	*	750	48	49	0	0%	0%
EVANSBURG	1992	V	G	*	750	48	50	0	0%	0%
EVANSBURG	1993	V	G	*	750	48	51	0	0%	0%
EVANSBURG	1994	V	G	*	750	48	43	0	0%	5%
EVERGREEN PARK,AGR.SO	1989	O	G		0	24	39	0	3%	13%
EVERGREEN PARK,AGR.SO	1990	O	G		0	24	28	0	0%	4%
EVERGREEN PARK,AGR.SO	1991	O	G		0	24	10	0	0%	0%
EVERGREEN PARK,AGR.SO	1992	O	G		0	24	10	0	0%	30%
EVERGREEN PARK,AGR.SO	1993	O	G		0	24	3	0	0%	0%
EVERGREEN PARK,AGR.SO	1994	O	G	*	0	48	0	0		
FAIRVIEW	1988	T	S&G	*	3281	48	52	0	0%	2%
FAIRVIEW	1989	T	S&G	*	3281	48	53	0	0%	0%
FAIRVIEW	1990	T	S&G	*	3281	48	55	0	2%	2%
FAIRVIEW	1991	T	S&G	*	3281	48	51	0	0%	2%
FAIRVIEW	1992	T	S&G	*	3281	48	53	0	0%	0%
FAIRVIEW	1993	T	S&G	*	3281	48	65	0	2%	2%
FAIRVIEW	1994	T	S&G	*	3281	48	93	1	1%	1%
FALHER	1988	T	S	*	1178	48	44	0	0%	0%
FALHER	1989	T	S	*	1178	48	48	0	0%	0%
FALHER	1990	T	S	*	1178	48	49	0	0%	0%
FALHER	1991	T	S	*	1178	48	46	0	0%	0%
FALHER	1992	T	S	*	1178	48	48	0	0%	0%
FALHER	1993	T	S	*	1178	48	55	0	0%	0%
FALHER	1994	T	S	*	1178	48	44	0	0%	0%
FAUST	1988	H	S	*	399	48	51	0	0%	2%
FAUST	1989	H	S	*	399	48	49	0	0%	4%
FAUST	1990	H	S	*	399	48	52	0	0%	2%
FAUST	1991	H	S	*	399	48	51	0	0%	0%
FAUST	1992	H	S	*	399	48	53	0	0%	0%
FAUST	1993	H	S	*	399	48	51	0	0%	0%
FAUST	1994	H	S	*	399	48	49	0	0%	0%
FAWCETT	1988	H	G	*	144	48	53	0	0%	2%
FAWCETT	1989	H	G	*	144	48	52	0	4%	4%
FAWCETT	1990	H	G	*	144	48	49	0	0%	0%
FAWCETT	1991	H	G	*	144	48	50	0	0%	2%
FAWCETT	1992	H	G	*	144	48	48	0	0%	0%
FAWCETT	1993	H	G	*	144	48	48	0	0%	0%
FAWCETT	1994	H	G	*	144	48	43	0	5%	5%
FOOTNER LAKE	1988	H	S	*	0	48	48	0	0%	0%
FOOTNER LAKE	1989	H	S	*	0	48	34	0	0%	3%
FOOTNER LAKE	1990	H	S	*	0	48	53	0	0%	0%
FOOTNER LAKE	1991	H	S	*	0	48	83	0	0%	0%
FOOTNER LAKE	1992	H	S	*	0	48	83	0	0%	0%
FOOTNER LAKE	1993	H	S	*	0	48	81	0	0%	0%
FOOTNER LAKE	1994	H	S	*	0	48	91	0	0%	0%
FORT ASSINIBOINE	1988	V	G	*	214	48	48	0	0%	0%
FORT ASSINIBOINE	1989	V	G	*	214	48	43	0	0%	0%
FORT ASSINIBOINE	1990	V	G	*	214	48	44	0	0%	0%
FORT ASSINIBOINE	1991	V	G	*	214	48	29	0	0%	0%
FORT ASSINIBOINE	1992	V	G	*	214	48	49	0	0%	0%
FORT ASSINIBOINE	1993	V	G	*	214	48	53	0	2%	2%
FORT ASSINIBOINE	1994	V	G	*	214	48	41	0	3%	3%
FORT CHIPEWYAN	1988	H	S		1200	48	49	0	0%	0%
FORT CHIPEWYAN	1989	H	S		1200	48	73	0	2%	5%
FORT CHIPEWYAN	1990	H	S		1200	48	74	2	3%	3%
FORT CHIPEWYAN	1991	H	S	*	1200	48	92	0	0%	0%

Table 15: Listing of All NRBS Facilities With the Annual Microbial Sampling Summary

LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
FORT CHIPEWYAN	1992	H	S	*	1200	48	96	0	1%	4%
FORT CHIPEWYAN	1993	H	S	*	1200	48	79	4	6%	6%
FORT CHIPEWYAN	1994	H	S	*	1200	48	55	2	4%	4%
FORT MACKAY	1988	H	S	*	267	24	69	0	2%	10%
FORT MACKAY	1989	H	S	*	267	48	130	0	0%	2%
FORT MACKAY	1990	H	S	*	267	48	105	0	0%	0%
FORT MACKAY	1991	H	S	*	267	48	94	0	0%	0%
FORT MACKAY	1992	H	S	*	267	48	77	0	0%	0%
FORT MACKAY	1993	H	S	*	267	48	72	1	1%	1%
FORT MACKAY	1994	H	S	*	267	48	71	0	0%	0%
FORT MCMURRAY	1988	C	S	*	34949	420	655	1	3%	3%
FORT MCMURRAY	1989	C	S	*	33698	408	581	0	0%	1%
FORT MCMURRAY	1990	C	S	*	33698	408	565	0	0%	0%
FORT MCMURRAY	1991	C	S	*	33698	420	541	0	0%	1%
FORT MCMURRAY	1992	C	S	*	34706	408	560	0	0%	1%
FORT MCMURRAY	1993	C	S	*	34706	420	487	0	0%	0%
FORT MCMURRAY	1994	C	S	*	34706	420	407	0	0%	0%
FORT VERMILION	1988	H	S		752	48	61	0	0%	0%
FORT VERMILION	1989	H	S		752	48	72	0	0%	0%
FORT VERMILION	1990	H	S	*	752	48	98	0	0%	1%
FORT VERMILION	1991	H	S	*	752	48	96	1	1%	1%
FORT VERMILION	1992	H	S	*	752	48	101	0	0%	0%
FORT VERMILION	1993	H	S	*	752	48	109	0	0%	1%
FORT VERMILION	1994	H	S	*	752	48	88	0	0%	0%
FOX CREEK	1988	T	G	*	2068	48	83	0	0%	3%
FOX CREEK	1989	T	G	*	2068	48	79	0	1%	3%
FOX CREEK	1990	T	G	*	2068	48	68	0	0%	0%
FOX CREEK	1991	T	G	*	2068	48	56	1	2%	2%
FOX CREEK	1992	T	G	*	2068	48	54	0	0%	2%
FOX CREEK	1993	T	G	*	2068	48	48	0	0%	2%
FOX CREEK	1994	T	G	*	2068	48	43	0	0%	0%
GIFT LAKE	1988	H	S	*	514	48	53	0	33%	41%
GIFT LAKE	1989	H	S	*	514	48	58	0	4%	14%
GIFT LAKE	1990	H	S	*	514	48	51	0	0%	0%
GIFT LAKE	1991	H	S	*	514	48	52	0	0%	0%
GIFT LAKE	1992	H	S	*	514	48	71	1	1%	1%
GIFT LAKE	1993	H	S	*	514	48	63	0	0%	0%
GIFT LAKE	1994	H	S	*	514	48	73	0	0%	0%
GIROUXVILLE	1988	V	S	*	367	48	45	0	0%	2%
GIROUXVILLE	1989	V	S	*	367	48	44	0	0%	2%
GIROUXVILLE	1990	V	S	*	367	48	54	0	0%	7%
GIROUXVILLE	1991	V	S	*	367	48	52	0	0%	0%
GIROUXVILLE	1992	V	S	*	367	48	44	0	0%	0%
GIROUXVILLE	1993	V	S	*	367	48	45	0	0%	0%
GIROUXVILLE	1994	V	S	*	367	48	62	0	0%	0%
GOODWIN	1988	WP	G	*	0	24	50	0	0%	6%
GOODWIN	1989	WP	G	*	0	24	53	0	0%	0%
GOODWIN	1990	WP	G	*	0	24	51	0	0%	2%
GOODWIN	1991	WP	G	*	0	24	54	0	10%	13%
GOODWIN	1992	WP	G	*	0	48	53	0	0%	4%
GOODWIN	1993	WP	G	*	0	48	51	0	0%	0%
GOODWIN	1994	WP	G	*	0	48	46	0	0%	0%
GRANDE CACHE	1988	T	S	*	3646	48	68	0	0%	0%
GRANDE CACHE	1989	T	S	*	3646	48	65	0	0%	3%
GRANDE CACHE	1990	T	S	*	3646	48	72	0	0%	1%
GRANDE CACHE	1991	T	S	*	3646	48	67	0	0%	2%
GRANDE CACHE	1992	T	S	*	3646	48	66	0	0%	5%
GRANDE CACHE	1993	T	S	*	3646	48	62	0	2%	2%
GRANDE CACHE	1994	T	S	*	3646	48	81	0	0%	0%
GRANDE PRAIRIE	1988	C	S	*	26648	324	368	0	0%	1%
GRANDE PRAIRIE	1989	C	S	*	27208	324	345	1	1%	1%
GRANDE PRAIRIE	1990	C	S	*	27558	324	371	0	1%	2%
GRANDE PRAIRIE	1991	C	S	*	28350	336	347	1	1%	1%
GRANDE PRAIRIE	1992	C	S	*	28271	336	400	0	0%	0%

Table 15: Listing of All NRBS Facilities With the Annual Microbial Sampling Summary

LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
GRANDE PRAIRIE	1993	C	S	*	28271	348	414	0	0%	0%
GRANDE PRAIRIE	1994	C	S	*	29242	348	349	0	1%	1%
GRASSLAND	1988	H	S&G	*	66	48	55	0	0%	4%
GRASSLAND	1989	H	S&G	*	66	48	69	2	3%	4%
GRASSLAND	1990	H	S&G	*	66	48	63	0	3%	3%
GRASSLAND	1991	H	S&G	*	66	48	62	0	0%	2%
GRASSLAND	1992	H	S&G	*	66	48	60	0	0%	0%
GRASSLAND	1993	H	S&G	*	66	48	53	0	0%	0%
GRASSLAND	1994	H	S&G	*	66	48	46	0	2%	2%
GRIFFIN CREEK	1988	WP	G		0	24	24	0	0%	0%
GRIFFIN CREEK	1989	WP	G		0	24	25	0	0%	0%
GRIFFIN CREEK	1990	WP	G		0	24	25	0	0%	0%
GRIFFIN CREEK	1991	WP	G		0	24	27	0	0%	0%
GRIFFIN CREEK	1992	WP	G		0	24	23	0	0%	0%
GRIFFIN CREEK	1993	WP	G		0	24	25	0	0%	0%
GRIFFIN CREEK	1994	WP	G		0	24	21	1	5%	5%
GRIMSHAW	1988	T	G	*	2625	48	55	1	4%	7%
GRIMSHAW	1989	T	G	*	2625	48	57	0	2%	2%
GRIMSHAW	1990	T	G	*	2625	48	56	0	4%	4%
GRIMSHAW	1991	T	G	*	2625	48	57	0	2%	4%
GRIMSHAW	1992	T	G	*	2625	48	54	0	0%	4%
GRIMSHAW	1993	T	G	*	2625	48	50	0	0%	0%
GRIMSHAW	1994	T	G	*	2625	48	92	1	2%	5%
GROUARD	1988	H	S	*	490	48	41	0	0%	5%
GROUARD	1989	H	S	*	490	48	42	0	0%	3%
GROUARD	1990	H	S	*	490	48	64	0	3%	6%
GROUARD	1991	H	S	*	490	48	67	0	0%	0%
GROUARD	1992	H	S	*	490	48	54	0	0%	0%
GROUARD	1993	H	S	*	490	48	46	0	0%	0%
GROUARD	1994	H	S	*	490	48	48	0	0%	0%
GUY	1988	H	S	*	62	48	50	0	0%	4%
GUY	1989	H	S	*	62	48	48	0	0%	0%
GUY	1990	H	S	*	62	48	48	0	0%	0%
GUY	1991	H	S	*	62	48	49	0	2%	2%
GUY	1992	H	S	*	62	48	59	0	0%	2%
GUY	1993	H	S	*	62	48	87	0	1%	7%
GUY	1994	H	S	*	62	48	61	1	2%	5%
HARMON VALLEY	1988	WP	S	*	0	24	24	0	4%	4%
HARMON VALLEY	1989	WP	S	*	0	24	26	0	13%	23%
HARMON VALLEY	1990	WP	S	*	0	24	29	0	17%	34%
HARMON VALLEY	1991	WP	S	*	0	24	28	0	4%	14%
HARMON VALLEY	1992	WP	S	*	0	24	27	0	0%	7%
HARMON VALLEY	1993	WP	S	*	0	24	24	0	0%	0%
HARMON VALLEY	1994	WP	S	*	0	24	24	0	0%	29%
HAWK HILLS	1988	WP	S&G	*	10	24	27	1	4%	19%
HAWK HILLS	1989	WP	S&G	*	10	24	30	0	0%	17%
HAWK HILLS	1990	WP	S&G	*	10	24	35	4	29%	35%
HAWK HILLS	1991	WP	S	*	10	24	50	6	51%	55%
HAWK HILLS	1992	WP	S	*	10	24	28	1	4%	11%
HAWK HILLS	1993	WP	S	*	10	24	23	0	9%	13%
HAWK HILLS	1994	WP	S	*	10	24	24	1	11%	26%
HIGH LEVEL	1988	T	S	*	3004	48	67	0	0%	0%
HIGH LEVEL	1989	T	S	*	3004	48	149	0	0%	3%
HIGH LEVEL	1990	T	S	*	3004	48	149	0	0%	2%
HIGH LEVEL	1991	T	S	*	3004	48	144	0	1%	2%
HIGH LEVEL	1992	T	S	*	3004	48	123	0	1%	1%
HIGH LEVEL	1993	T	S	*	3004	48	96	0	1%	1%
HIGH LEVEL	1994	T	S	*	3004	48	107	2	6%	7%
HIGH PRAIRIE	1991	T	S	*	2817	48	58	0	0%	0%
HIGH PRAIRIE	1992	T	S	*	2817	48	54	0	0%	0%
HIGH PRAIRIE	1993	T	S	*	2817	48	81	0	0%	0%
HIGH PRAIRIE	1994	T	S	*	2817	48	87	0	0%	0%
HIGH PRAIRIE AIRPORT	1988	AP	S	*	0	24	51	3	10%	10%
HIGH PRAIRIE AIRPORT	1989	AP	S	*	0	24	51	0	2%	4%

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LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
HIGH PRAIRIE AIRPORT	1990	AP	S	*	0	24	50	0	2%	6%
HIGH PRAIRIE AIRPORT	1991	AP	S	*	0	24	52	0	2%	2%
HIGH PRAIRIE AIRPORT	1992	AP	S	*	0	24	49	0	0%	0%
HIGH PRAIRIE AIRPORT	1993	AP	S	*	0	24	42	1	2%	2%
HIGH PRAIRIE AIRPORT	1994	AP	S	*	0	24	0	0		
HIGH PRAIRIE NW CO-OP	1989	O	S&G	*	0	48	0	0		
HIGH PRAIRIE NW CO-OP	1990	O	S&G	*	0	48	0	0		
HIGH PRAIRIE NW CO-OP	1991	O	S	*	0	48	0	0		
HIGH PRAIRIE NW CO-OP	1992	O	S	*	0	48	0	0		
HIGH PRAIRIE NW CO-OP	1993	O	S	*	0	48	0	0		
HIGH PRAIRIE NW CO-OP	1994	O	S	*	0	48	0	0		
HILLIARD BAY PROV. PK	1989	PP	G	*	0	48	74	0	1%	1%
HILLIARD BAY PROV. PK	1990	PP	G	*	0	48	79	0	4%	4%
HILLIARD BAY PROV. PK	1991	PP	G	*	0	48	96	0	0%	7%
HILLIARD BAY PROV. PK	1992	PP	G	*	0	48	62	0	0%	0%
HILLIARD BAY PROV. PK	1993	PP	G	*	0	48	80	0	3%	3%
HILLIARD BAY PROV. PK	1994	PP	G	*	0	48	58	0	2%	2%
HILLTOP ESTATES	1989	SD	G	*	23	48	46	0	0%	3%
HILLTOP ESTATES	1990	SD	G	*	23	48	50	0	5%	5%
HILLTOP ESTATES	1991	SD	G	*	23	48	44	0	0%	2%
HILLTOP ESTATES	1992	SD	G	*	23	48	41	0	0%	5%
HILLTOP ESTATES	1993	SD	G	*	23	48	48	0	0%	0%
HILLTOP ESTATES	1994	SD	G	*	23	48	41	0	0%	0%
HINES CREEK	1988	V	S	*	513	48	52	0	2%	2%
HINES CREEK	1989	V	S	*	513	48	52	0	0%	0%
HINES CREEK	1990	V	S	*	513	48	46	0	2%	2%
HINES CREEK	1991	V	S	*	513	48	50	0	0%	2%
HINES CREEK	1992	V	S	*	513	48	50	0	2%	2%
HINES CREEK	1993	V	S	*	513	48	48	0	0%	0%
HINES CREEK	1994	V	S	*	513	48	43	0	2%	2%
HINTON	1988	T	S	*	8846	108	129	0	1%	1%
HINTON	1989	T	S	*	9893	120	129	0	1%	2%
HINTON	1990	T	S	*	9893	120	168	0	4%	5%
HINTON	1991	T	S	*	9893	120	178	0	1%	1%
HINTON	1992	T	S	*	9108	108	162	0	1%	1%
HINTON	1993	T	S	*	9108	120	152	0	0%	1%
HINTON	1994	T	S	*	9341	120	157	0	1%	1%
HOTCHKISS	1988	WP	S	*	10	24	26	0	0%	12%
HOTCHKISS	1989	WP	S	*	10	24	27	0	0%	12%
HOTCHKISS	1990	WP	S	*	10	24	29	0	7%	14%
HOTCHKISS	1991	WP	S	*	10	24	37	2	21%	41%
HOTCHKISS	1992	WP	S	*	10	24	39	3	37%	56%
HOTCHKISS	1993	WP	S	*	10	24	27	0	8%	19%
HOTCHKISS	1994	WP	S	*	10	24	41	5	32%	48%
HYTHE OFF/LIB	1989	V	G		0	24	51	0	0%	0%
HYTHE OFF/LIB	1990	V	G		0	24	54	0	0%	6%
HYTHE OFF/LIB	1991	V	G		0	24	53	0	0%	0%
HYTHE OFF/LIB	1992	V	G		0	24	55	0	0%	0%
HYTHE OFF/LIB	1993	V	G		0	24	54	0	0%	0%
HYTHE OFF/LIB	1994	V	G		0	24	45	0	0%	0%
JANVIER	1988	H	S	*	435	48	94	0	2%	4%
JANVIER	1989	H	S	*	435	48	84	0	3%	3%
JANVIER	1990	H	S	*	435	48	80	0	0%	0%
JANVIER	1991	H	S	*	435	48	87	0	3%	5%
JANVIER	1992	H	S	*	435	48	84	1	1%	1%
JANVIER	1993	H	S	*	435	48	41	0	0%	0%
JANVIER	1994	H	S	*	435	48	19	0	0%	0%
JARVIE	1988	H	G	*	102	48	53	0	2%	2%
JARVIE	1989	H	G	*	102	48	50	0	0%	0%
JARVIE	1990	H	G	*	102	48	48	0	0%	0%
JARVIE	1991	H	G	*	102	48	46	0	0%	0%
JARVIE	1992	H	G	*	102	48	48	0	0%	0%
JARVIE	1993	H	G	*	102	48	46	0	3%	3%
JARVIE	1994	H	G	*	102	48	40	0	0%	0%

Table 15: Listing of All NRBS Facilities With the Annual Microbial Sampling Summary

LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10.FC>0	% Coliform pos.	% POOR
JASPER NATIONAL PARK	1989	NP	S&G	*	4475	48	46	0	2%	5%
JASPER NATIONAL PARK	1990	NP	S&G	*	4475	48	22	0	0%	0%
JASPER NATIONAL PARK	1991	NP	S&G	*	4475	48	1	0	0%	0%
JASPER NATIONAL PARK	1992	NP	S&G	*	4475	48	0	0		
JASPER NATIONAL PARK	1993	NP	S&G	*	4475	48	0	0		
JASPER NATIONAL PARK	1994	NP	S&G	*	4475	48	5	0	0%	0%
JEAN COTE	1988	H	S	*	82	48	48	0	2%	2%
JEAN COTE	1989	H	S	*	82	48	48	0	0%	0%
JEAN COTE	1990	H	S	*	82	48	48	0	0%	0%
JEAN COTE	1991	H	S	*	82	48	48	0	0%	0%
JEAN COTE	1992	H	S	*	82	48	59	0	0%	2%
JEAN COTE	1993	H	S	*	82	48	84	1	2%	4%
JEAN COTE	1994	H	S	*	82	48	60	0	0%	0%
JOUSSARD	1988	H	S	*	330	48	54	0	0%	4%
JOUSSARD	1989	H	S	*	330	48	53	0	0%	6%
JOUSSARD	1990	H	S	*	330	48	70	0	0%	7%
JOUSSARD	1991	H	S	*	330	48	101	2	2%	2%
JOUSSARD	1992	H	S	*	330	48	62	0	0%	0%
JOUSSARD	1993	H	S	*	330	48	54	0	0%	0%
JOUSSARD	1994	H	S	*	330	48	51	0	0%	0%
KEG RIVER	1988	WP	S	*	18	24	26	1	5%	20%
KEG RIVER	1989	WP	S	*	18	24	28	0	12%	19%
KEG RIVER	1990	WP	S	*	18	24	24	2	13%	13%
KEG RIVER	1991	WP	S	*	18	24	23	0	5%	14%
KEG RIVER	1992	WP	S	*	18	24	29	3	13%	22%
KEG RIVER	1993	WP	S	*	18	48	69	0	1%	3%
KEG RIVER	1994	WP	S	*	18	48	89	0	0%	1%
KINUSO	1988	V	S	*	282	48	59	1	2%	7%
KINUSO	1989	V	S	*	282	48	66	0	0%	6%
KINUSO	1990	V	S	*	282	48	47	0	2%	2%
KINUSO	1991	V	S	*	282	48	50	1	2%	2%
KINUSO	1992	V	S	*	282	48	49	0	2%	2%
KINUSO	1993	V	S	*	282	48	49	0	0%	0%
KINUSO	1994	V	S	*	282	48	40	0	3%	3%
LA CRETE	1988	H	G	*	450	48	55	0	0%	0%
LA CRETE	1989	H	G	*	450	48	56	0	2%	2%
LA CRETE	1990	H	G	*	450	48	52	0	0%	0%
LA CRETE	1991	H	G	*	450	48	56	0	2%	2%
LA CRETE	1992	H	G	*	450	48	55	0	0%	0%
LA CRETE	1993	H	G	*	450	48	72	0	0%	3%
LA CRETE	1994	H	G	*	450	48	91	0	0%	2%
LA GLACE	1988	H	G		169	24	10	0	0%	0%
LA GLACE	1989	H	G		169	24	16	0	0%	0%
LA GLACE	1990	H	G		169	24	10	0	0%	0%
LA GLACE	1991	H	G		169	24	8	0	0%	0%
LA GLACE	1992	H	G		169	24	12	0	0%	8%
LA GLACE	1993	H	G		169	24	4	0	0%	0%
LA GLACE	1994	H	G		169	24	7	0	0%	29%
LAC LA BICHE	1988	T	S	*	2553	48	141	0	2%	5%
LAC LA BICHE	1989	T	S	*	2553	48	141	0	1%	2%
LAC LA BICHE	1990	T	S	*	2553	48	140	0	2%	6%
LAC LA BICHE	1991	T	S	*	2553	48	106	0	1%	1%
LAC LA BICHE	1992	T	S	*	2553	48	109	3	5%	5%
LAC LA BICHE	1993	T	S	*	2553	48	103	0	0%	0%
LAC LA BICHE	1994	T	S	*	2553	48	93	0	0%	1%
LITTLE BUFFALO	1988	H	S	*	253	48	46	0	2%	2%
LITTLE BUFFALO	1989	H	S	*	253	48	52	2	4%	8%
LITTLE BUFFALO	1990	H	S	*	253	48	38	0	0%	6%
LITTLE BUFFALO	1991	H	S	*	253	48	30	0	0%	0%
LITTLE BUFFALO	1992	H	S	*	253	48	49	0	0%	0%
LITTLE BUFFALO	1993	H	S	*	253	48	51	0	0%	0%
LITTLE BUFFALO	1994	H	S	*	253	48	84	0	0%	0%
LODGEPOLE	1988	H			161	24	39	0	9%	9%
LODGEPOLE	1989	H			161	24	49	0	4%	4%

Table 15: Listing of All NRBS Facilities With the Annual Microbial Sampling Summary

LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
LODGEPOLE	1990	H	G		161	24	58	1	3%	3%
LODGEPOLE	1991	H	G		161	24	52	0	2%	2%
LODGEPOLE	1992	H	G		161	24	14	0	0%	0%
LOON LAKE	1988	H	S	*	208	48	32	1	4%	28%
LOON LAKE	1989	H	S	*	208	48	48	0	0%	9%
LOON LAKE	1990	H	S	*	208	48	52	0	5%	15%
LOON LAKE	1991	H	S	*	208	48	49	0	2%	2%
LOON LAKE	1992	H	S	*	208	48	49	0	4%	6%
LOON LAKE	1993	H	S	*	208	48	53	0	2%	6%
MANNING	1988	T	S	*	1144	48	76	0	0%	0%
MANNING	1989	T	S	*	1144	48	76	0	0%	3%
MANNING	1990	T	S	*	1144	48	79	1	1%	1%
MANNING	1991	T	S	*	1144	48	62	0	0%	0%
MANNING	1992	T	S	*	1144	48	70	0	1%	1%
MANNING	1993	T	S	*	1144	48	71	1	1%	1%
MANNING	1994	T	S	*	1144	48	90	2	3%	3%
MANOLA	1988	H	G	*	71	48	50	0	0%	18%
MANOLA	1989	H	G	*	71	48	57	0	0%	13%
MANOLA	1990	H	G	*	71	48	58	0	7%	20%
MANOLA	1991	H	G	*	71	48	52	0	0%	0%
MANOLA	1992	H	G	*	71	48	53	0	0%	0%
MANOLA	1993	H	G	*	71	48	53	0	0%	0%
MANOLA	1994	H	G	*	71	48	45	1	5%	5%
MARIE REINE	1992	H	S	*	80	48	50	0	6%	8%
MARIE REINE	1993	H	S	*	80	48	50	1	14%	14%
MARIE REINE	1994	H	S	*	80	48	83	16	23%	27%
MARIE-REINE	1988	WP	S	*	80	24	26	0	0%	12%
MARIE-REINE	1989	WP	S	*	80	24	29	1	21%	34%
MARIE-REINE	1990	WP	S	*	80	24	30	0	10%	10%
MARIE-REINE	1991	WP	S	*	80	24	50	0	2%	6%
MAYERTHORPE	1988	T	G	*	1414	48	49	0	0%	0%
MAYERTHORPE	1989	T	G	*	1414	48	45	0	0%	0%
MAYERTHORPE	1990	T	G	*	1414	48	48	0	2%	2%
MAYERTHORPE	1991	T	G	*	1414	48	52	0	0%	0%
MAYERTHORPE	1992	T	G	*	1414	48	50	0	0%	0%
MAYERTHORPE	1993	T	G	*	1414	48	50	1	5%	11%
MAYERTHORPE	1994	T	G	*	1414	48	42	0	3%	5%
MCINNIS (WELL #1)	1988	WP	G		0	24	24	0	0%	0%
MCINNIS (WELL #1)	1989	WP	G		0	24	28	1	19%	21%
MCINNIS (WELL #1)	1990	WP	G		0	24	26	0	8%	12%
MCINNIS (WELL #1)	1991	WP	G		0	24	26	0	0%	4%
MCINNIS (WELL #1)	1992	WP	G		0	24	22	0	0%	0%
MCINNIS (WELL #1)	1993	WP	G		0	24	27	0	0%	12%
MCINNIS (WELL #1)	1994	WP	G		0	24	24	1	5%	17%
MCINNIS (WELL #2)	1988	WP	G		0	24	24	0	0%	0%
MCINNIS (WELL #2)	1989	WP	G		0	24	28	2	33%	36%
MCINNIS (WELL #2)	1990	WP	G		0	24	28	0	12%	19%
MCINNIS (WELL #2)	1991	WP	G		0	24	27	0	0%	4%
MCINNIS (WELL #2)	1992	WP	G		0	24	24	0	0%	4%
MCINNIS (WELL #2)	1993	WP	G		0	24	26	0	0%	12%
MCINNIS (WELL #2)	1994	WP	G		0	24	23	0	0%	13%
MCLENNAN	1988	T	S	*	1021	48	81	0	0%	0%
MCLENNAN	1989	T	S	*	1045	48	80	0	0%	0%
MCLENNAN	1990	T	S	*	1045	48	82	0	0%	0%
MCLENNAN	1991	T	S	*	1045	48	69	0	0%	0%
MCLENNAN	1992	T	S	*	1045	48	76	0	0%	0%
MCLENNAN	1993	T	S	*	1045	48	84	0	2%	2%
MCLENNAN	1994	T	S	*	1045	48	87	0	0%	1%
MILDRED LAKE/LOWER CAM	1991	I	S	*	0	48	61	0	0%	0%
MILDRED LAKE/LOWER CAM	1992	I	S	*	0	48	72	0	0%	0%
MILDRED LAKE/SYNCRUDE	1993	I	S	*	0	48	48	0	0%	0%
MILDRED LAKE/SYNCRUDE	1994	I	S	*	0	48	44	1	2%	2%
MILDRED LAKE/UPPER CAM	1991	I	S	*	0	48	57	0	0%	4%
MILDRED LAKE/UPPER CAM	1992	I	S	*	0	48	63	0	0%	2%

Table 15: Listing of All NRBS Facilities With the Annual Microbial Sampling Summary

LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
MITSUE IND. PARK	1989	O	S	*	0	48	43	0	0%	0%
MITSUE IND. PARK	1990	O	S	*	0	48	42	1	3%	3%
MITSUE IND. PARK	1991	O	S	*	0	48	44	0	5%	5%
MITSUE IND. PARK	1992	O	S	*	0	48	46	1	2%	2%
MITSUE IND. PARK	1993	O	S	*	0	48	42	0	0%	2%
MITSUE IND. PARK	1994	O	S	*	0	48	48	1	5%	9%
MOONSHINE LAKE PROV.PK.	1989	PP	S	*	0	48	111	0	2%	8%
MOONSHINE LAKE PROV.PK.	1990	PP	S	*	0	48	176	4	18%	23%
MOONSHINE LAKE PROV.PK.	1991	PP	S	*	0	48	253	2	10%	12%
MOONSHINE LAKE PROV.PK.	1992	PP	S	*	0	48	230	4	5%	13%
MOONSHINE LAKE PROV.PK.	1993	PP	S	*	0	48	55	0	4%	10%
MOONSHINE LAKE PROV.PK.	1994	PP	S	*	0	48	173	1	3%	23%
NAMPA	1993	V	S	*	464	48	54	0	0%	0%
NAMPA	1994	V	S	*	464	48	81	0	1%	4%
NEERLANDIA	1989	H	S	*	71	24	47	0	0%	0%
NEERLANDIA	1990	H	S	*	71	48	71	0	3%	3%
NEERLANDIA	1991	H	S	*	71	48	53	0	0%	0%
NEERLANDIA	1992	H	S	*	71	48	53	0	0%	0%
NEERLANDIA	1993	H	S	*	71	48	52	0	0%	0%
NEERLANDIA	1994	H	S	*	71	48	49	0	0%	0%
NEW FISH CREEK	1988	WP	G	*	0	24	52	0	4%	4%
NEW FISH CREEK	1989	WP	G	*	0	24	51	0	0%	2%
NEW FISH CREEK	1990	WP	G	*	0	24	51	0	4%	6%
NEW FISH CREEK	1991	WP	G	*	0	24	52	0	4%	6%
NEW FISH CREEK	1992	WP	G	*	0	48	53	0	0%	0%
NEW FISH CREEK	1993	WP	G	*	0	48	53	0	2%	4%
NEW FISH CREEK	1994	WP	G	*	0	48	53	0	4%	8%
NORTH STAR	1988	WP	S	*	86	24	27	0	4%	19%
NORTH STAR	1989	WP	S	*	86	24	27	0	0%	16%
NORTH STAR	1990	WP	S	*	86	24	31	0	0%	13%
NORTH STAR	1991	WP	S	*	86	24	36	1	13%	22%
NORTH STAR	1992	WP	S	*	86	24	28	1	16%	25%
NORTH STAR	1993	WP	S	*	86	24	26	3	21%	27%
NORTH STAR	1994	WP	S	*	86	24	26	6	53%	65%
PADDLE PRAIRIE	1988	H	S	*	400	48	36	0	3%	11%
PADDLE PRAIRIE	1989	H	S	*	400	48	52	0	4%	6%
PADDLE PRAIRIE	1990	H	S	*	400	48	52	0	0%	0%
PADDLE PRAIRIE	1991	H	S	*	400	48	53	0	0%	4%
PADDLE PRAIRIE	1992	H	S	*	400	48	53	0	2%	2%
PADDLE PRAIRIE	1993	H	S	*	400	48	76	3	5%	5%
PADDLE PRAIRIE	1994	H	S	*	400	48	77	1	1%	1%
PEACE RIVER	1991	T	S	*	6644	84	104	0	0%	0%
PEACE RIVER	1992	T	S	*	6696	72	108	0	0%	0%
PEACE RIVER	1993	T	S	*	6696	84	100	0	0%	0%
PEACE RIVER	1994	T	S	*	6696	84	87	0	0%	0%
PEACE RIVER AIRPORT	1988	AP	S	*	0	48	31	0	0%	0%
PEACE RIVER AIRPORT	1989	AP	S	*	0	48	37	0	0%	0%
PEACE RIVER AIRPORT	1990	AP	S	*	0	48	47	0	0%	0%
PEACE RIVER AIRPORT	1991	AP	G	*	0	48	74	0	0%	0%
PEACE RIVER AIRPORT	1992	AP	G	*	0	48	52	0	0%	0%
PEACE RIVER AIRPORT	1993	AP	G	*	0	48	50	0	0%	0%
PEACE RIVER AIRPORT	1994	AP	G	*	0	48	82	0	0%	0%
PEACE RIVER C.C.	1989	O	S	*	0	48	90	0	0%	0%
PEACE RIVER C.C.	1990	O	S	*	0	48	109	0	1%	1%
PEACE RIVER C.C.	1991	O	S	*	0	48	104	0	0%	0%
PEACE RIVER C.C.	1992	O	S	*	0	48	105	0	0%	0%
PEACE RIVER C.C.	1993	O	S	*	0	48	92	0	0%	0%
PEACE RIVER C.C.	1994	O	S	*	0	48	82	0	0%	0%
PEAVINE	1990	MS	S	*	0	48	51	0	0%	0%
PEAVINE	1991	MS	S	*	0	48	52	0	0%	0%
PEAVINE	1992	MS	S	*	0	48	49	0	0%	0%
PEAVINE	1993	MS	S	*	0	48	45	0	0%	0%
PEAVINE	1994	MS	S	*	0	48	41	0	0%	0%
PEERLESS LAKE	1988	H	S	*	202	24	8	0	0%	0%

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LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
PEERLESS LAKE	1989	H	S	*	202	24	44	0	8%	23%
PEERLESS LAKE	1990	H	S	*	202	24	49	0	5%	12%
PEERLESS LAKE	1991	H	S	*	202	24	53	0	0%	2%
PEERLESS LAKE	1992	H	S	*	202	24	53	0	0%	0%
PEERLESS LAKE	1993	H	S	*	202	24	49	0	0%	4%
PEERLESS LAKE	1994	H	S	*	202	24	50	1	8%	10%
PEERS	1988	H	G		162	24	27	0	12%	12%
PEERS	1989	H	G		162	24	16	0	20%	20%
PEERS	1990	H	G		162	24	10	0	44%	44%
PEERS	1991	H	G		162	24	7	0	0%	0%
PEERS	1992	H	G		162	24	8	0	0%	0%
PEORIA	1988	H	S	*	65	48	98	0	2%	15%
PEORIA	1989	H	S	*	65	48	95	0	2%	4%
PEORIA	1990	H	S	*	65	48	79	1	1%	4%
PEORIA	1991	H	S	*	65	48	55	0	0%	5%
PEORIA	1992	H	S	*	65	48	63	0	0%	16%
PEORIA	1993	H	S	*	65	48	86	0	0%	1%
PEORIA	1994	H	S	*	65	48	53	0	0%	4%
PIBROCH	1988	H	G	*	100	48	51	0	11%	11%
PIBROCH	1989	H	G	*	100	48	53	0	0%	2%
PIBROCH	1990	H	G	*	100	48	48	0	0%	0%
PIBROCH	1991	H	G	*	100	48	51	0	7%	7%
PIBROCH	1992	H	G	*	100	48	48	0	0%	2%
PIBROCH	1993	H	G	*	100	48	48	0	0%	0%
PIBROCH	1994	H	G	*	100	48	40	0	0%	5%
PICKARDVILLE	1988	H	S	*	190	48	53	0	0%	0%
PICKARDVILLE	1989	H	S	*	190	48	49	0	0%	0%
PICKARDVILLE	1990	H	S	*	190	48	49	0	0%	0%
PICKARDVILLE	1991	H	S	*	190	48	48	0	0%	0%
PICKARDVILLE	1992	H	S	*	190	48	48	0	0%	2%
PICKARDVILLE	1993	H	S	*	190	48	48	0	0%	0%
PICKARDVILLE	1994	H	S	*	190	48	37	0	0%	0%
PINE SHADOW ESTATES	1989	MHP	G		200	24	19	0	0%	6%
PINE SHADOW ESTATES	1990	MHP	G		200	24	24	0	9%	17%
PINE SHADOW ESTATES	1991	MHP	G		200	24	28	0	12%	19%
PINE SHADOW ESTATES	1992	MHP	G		200	24	32	0	0%	3%
PLAMONDON	1988	V	S	*	236	48	72	1	7%	7%
PLAMONDON	1989	V	S	*	236	48	72	0	0%	0%
PLAMONDON	1990	V	S	*	236	48	72	0	0%	0%
PLAMONDON	1991	V	S	*	236	48	73	0	1%	1%
PLAMONDON	1992	V	S	*	236	48	72	0	0%	0%
PLAMONDON	1993	V	S	*	236	48	72	0	0%	0%
PLAMONDON	1994	V	S	*	236	48	60	0	0%	0%
POPLAR PLACE (EDSON)	1989	MHP	G		250	24	18	0	6%	12%
POPLAR PLACE (EDSON)	1990	MHP	G		250	24	25	0	8%	8%
POPLAR PLACE (EDSON)	1991	MHP	G		250	24	20	0	5%	5%
POPLAR PLACE (EDSON)	1992	MHP	G		250	24	16	0	0%	0%
PUSKWASKAU	1988	WP	G	*	0	48	47	0	2%	6%
PUSKWASKAU	1989	WP	G	*	0	24	51	0	0%	0%
PUSKWASKAU	1990	WP	G	*	0	24	51	0	2%	4%
PUSKWASKAU	1991	WP	G	*	0	24	40	0	0%	3%
PUSKWASKAU	1992	WP	G	*	0	48	34	0	0%	0%
PUSKWASKAU	1993	WP	G	*	0	48	42	0	0%	5%
PUSKWASKAU	1994	WP	G	*	0	48	0	0		
QUEEN ELIZ.(LAC CARDINAL	1990	PP	G	*	0	48	71	0	0%	2%
QUEEN ELIZ.(LAC CARDINAL	1991	PP	G	*	0	48	104	0	1%	6%
QUEEN ELIZ.(LAC CARDINAL	1992	PP	G	*	0	48	109	3	4%	6%
QUEEN ELIZ.(LAC CARDINAL	1993	PP	G	*	0	48	95	1	1%	1%
QUEEN ELIZ.(LAC CARDINAL	1994	PP	G	*	0	48	90	0	0%	0%
RAINBOW LAKE	1988	T	S	*	1146	48	57	0	2%	2%
RAINBOW LAKE	1989	T	S	*	1146	48	66	0	0%	0%
RAINBOW LAKE	1990	T	S	*	1146	48	67	0	2%	2%
RAINBOW LAKE	1991	T	S	*	1146	48	140	1	2%	2%
RAINBOW LAKE	1992	T	S	*	1146	48	151	2	3%	3%

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RAINBOW LAKE	1993	T	S	*	1146	48	179	1	1%	1%
RAINBOW LAKE	1994	T	S	*	1146	48	88	0	0%	0%
RED EARTH	1988	WP	S	*	0	24	21	0	17%	29%
RED EARTH	1989	WP	S	*	0	24	47	0	0%	4%
RED EARTH	1990	WP	S	*	0	24	54	4	20%	23%
RED EARTH	1991	WP	S	*	0	24	44	0	8%	8%
RED EARTH	1992	WP	S	*	0	24	53	0	2%	4%
RED EARTH	1993	WP	S	*	0	48	71	3	5%	5%
RED EARTH	1994	WP	S	*	0	48	50	0	0%	0%
REINWOOD	1988	WP	S	*	0	24	25	0	4%	4%
REINWOOD	1989	WP	S	*	0	24	24	0	0%	4%
REINWOOD	1990	WP	S	*	0	24	27	0	4%	4%
REINWOOD	1991	WP	S	*	0	24	27	0	0%	7%
REINWOOD	1992	WP	S	*	0	24	23	1	13%	13%
REINWOOD	1993	WP	S	*	0	24	25	0	12%	12%
REINWOOD	1994	WP	S	*	0	24	15	0	8%	14%
RENO	1988	WP	S	*	20	24	26	0	5%	31%
RENO	1989	WP	S	*	20	24	30	0	4%	20%
RENO	1990	WP	S	*	20	24	25	0	0%	0%
RENO	1991	WP	S	*	20	24	24	0	0%	0%
RENO	1992	WP	S	*	20	24	25	0	0%	0%
RENO	1993	WP	S	*	20	24	23	0	0%	0%
RENO	1994	WP	S	*	20	24	19	0	0%	0%
RIDGE VALLEY	1988	H	G	*	52	48	51	0	0%	0%
RIDGE VALLEY	1989	H	G	*	52	48	52	0	0%	0%
RIDGE VALLEY	1990	H	G	*	52	48	52	0	0%	2%
RIDGE VALLEY	1991	H	G	*	52	48	52	0	0%	0%
RIDGE VALLEY	1992	H	G	*	52	48	52	0	0%	2%
RIDGE VALLEY	1993	H	G	*	52	48	59	0	0%	2%
RIDGE VALLEY	1994	H	G	*	52	48	58	0	0%	7%
ROBB	1988	WP	G		230	24	38	0	5%	5%
ROBB	1989	WP	G		230	24	36	0	0%	0%
ROBB	1990	WP	G		230	24	52	0	2%	2%
ROBB	1991	WP	G		230	24	59	0	5%	5%
ROBB	1992	WP	G		230	24	55	0	2%	6%
ROCHESTER	1989	S	G		0	24	3	0	100%	100%
ROCHESTER	1990	S	G		0	24	1	0	0%	0%
ROCHESTER	1991	S	G		0	24	2	0	0%	0%
ROCHESTER	1992	S	G		0	24	1	0	0%	0%
ROCKY LANE	1989	WP	S	*	200	24	48	0	0%	2%
ROCKY LANE	1990	WP	S	*	200	24	48	0	0%	9%
ROCKY LANE	1991	WP	S	*	200	24	54	0	0%	6%
ROCKY LANE	1992	WP	S	*	200	24	49	0	0%	2%
ROCKY LANE	1993	WP	S	*	200	24	47	0	0%	0%
ROCKY LANE	1994	WP	S	*	200	24	39	0	0%	5%
ROCKY LANE SCHOOL	1989	S	S		0	24	46	0	0%	0%
ROCKY LANE SCHOOL	1990	S	S		0	24	42	0	0%	0%
ROCKY LANE SCHOOL	1991	S	S		0	24	44	0	0%	0%
ROCKY LANE SCHOOL	1992	S	S		0	24	25	0	0%	0%
ROCKY LANE SCHOOL	1993	S	S		0	24	12	0	0%	0%
ROCKY LANE SCHOOL	1994	S	S		0	24	19	0	0%	0%
ROYCE	1988	WP	S	*	0	24	49	0	10%	15%
ROYCE	1989	WP	S	*	0	48	46	0	0%	2%
ROYCE	1990	WP	S	*	0	48	48	0	2%	2%
ROYCE	1991	WP	S	*	0	48	46	1	13%	13%
ROYCE	1992	WP	S	*	0	48	49	2	12%	12%
ROYCE	1993	WP	S	*	0	48	48	0	0%	2%
ROYCE	1994	WP	S	*	0	48	46	2	9%	13%
RYCROFT	1988	V	S&G	*	672	48	57	0	5%	5%
RYCROFT	1989	V	S&G	*	672	48	49	0	0%	0%
RYCROFT	1990	V	S&G	*	672	48	48	0	2%	2%
RYCROFT	1991	V	S&G	*	672	48	48	0	0%	0%
RYCROFT	1992	V	S&G	*	672	48	46	0	0%	0%
RYCROFT	1993	V	S&G	*	672	48	47	0	0%	0%

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RYCROFT	1994	V	S&G	*	672	48	41	0	5%	12%
SANDY LAKE	1988	H	S	*	0	48	55	0	8%	9%
SANDY LAKE	1989	H	S	*	0	48	55	1	4%	6%
SANDY LAKE	1990	H	S	*	0	48	74	0	4%	9%
SANDY LAKE	1991	H	S	*	0	48	50	0	0%	0%
SANDY LAKE	1992	H	S	*	0	48	49	0	0%	0%
SANDY LAKE	1993	H	S	*	0	48	66	0	0%	0%
SANDY LAKE	1994	H	S	*	0	48	64	0	0%	3%
SANGUDO	1988	V	G	*	368	24	48	0	0%	0%
SANGUDO	1989	V	G	*	368	48	57	0	0%	5%
SANGUDO	1990	V	G	*	368	48	98	0	0%	1%
SANGUDO	1991	V	G	*	368	48	97	0	0%	3%
SANGUDO	1992	V	G	*	368	48	52	0	0%	0%
SANGUDO	1993	V	G	*	368	48	52	0	0%	0%
SANGUDO	1994	V	G	*	368	48	73	0	0%	0%
SANGUDO SCHOOL	1989	S	G		0	24	5	0	0%	60%
SANGUDO SCHOOL	1990	S	G		0	24	0	0		
SANGUDO SCHOOL	1991	S	G		0	24	0	0		
SANGUDO SCHOOL	1992	S	G		0	24	0	0		
SASKATOON ISLAND PROV.	1989	PP	G	*	0	48	127	1	8%	10%
SASKATOON ISLAND PROV.	1990	PP	G	*	0	48	107	0	0%	0%
SASKATOON ISLAND PROV.	1991	PP	G	*	0	48	112	0	0%	1%
SASKATOON ISLAND PROV.	1992	PP	G	*	0	28	59	0	0%	5%
SASKATOON ISLAND PROV.	1993	PP	G	*	0	20	69	0	0%	0%
SASKATOON ISLAND PROV.	1994	PP	G	*	0	20	37	0	0%	0%
SEXSMITH	1988	T	G		1256	48	77	0	16%	16%
SEXSMITH	1989	T	G		1256	48	73	0	3%	3%
SEXSMITH	1990	T	G		1256	48	117	0	13%	15%
SEXSMITH	1991	T	G		1256	48	102	0	1%	1%
SEXSMITH	1992	T	G		1256	48	99	0	2%	2%
SEXSMITH	1993	T	G		1256	48	109	2	3%	3%
SEXSMITH	1994	T	G		1256	48	83	2	6%	7%
SHELL-PEACE R. INSITU	1991	I	S	*	0	48	52	0	2%	2%
SHELL-PEACE R. INSITU	1992	I	S	*	0	48	52	0	0%	0%
SHELL-PEACE R. INSITU	1993	I	S	*	0	48	37	0	0%	0%
SHELL-PEACE R. INSITU	1994	I	S	*	0	48	40	0	0%	0%
SIR WINSTON CHURCHILL P	1989	PP	S	*	0	48	53	0	0%	0%
SIR WINSTON CHURCHILL P	1990	PP	S	*	0	48	87	0	11%	17%
SIR WINSTON CHURCHILL P	1991	PP	S	*	0	48	44	0	0%	5%
SIR WINSTON CHURCHILL P	1992	PP	S	*	0	48	51	0	2%	10%
SIR WINSTON CHURCHILL P	1993	PP	S	*	0	48	39	0	0%	0%
SIR WINSTON CHURCHILL P	1994	PP	S	*	0	48	45	1	13%	24%
SLAVE LAKE	1988	T	S	*	5611	72	159	0	3%	6%
SLAVE LAKE	1989	T	S	*	5611	72	76	0	0%	0%
SLAVE LAKE	1990	T	S	*	5611	72	80	0	1%	1%
SLAVE LAKE	1991	T	S	*	5611	72	82	0	0%	0%
SLAVE LAKE	1992	T	S	*	5607	60	227	0	0%	0%
SLAVE LAKE	1993	T	S	*	5607	72	140	0	0%	0%
SLAVE LAKE	1994	T	S	*	5607	72	94	1	1%	1%
SLAVE LAKE PULP	1991	I	S	*	0	48	20	2	16%	16%
SLAVE LAKE PULP CORP.	1992	I	S	*	0	48	47	0	0%	2%
SLAVE LAKE PULP CORP.	1993	I	S	*	0	48	18	0	0%	0%
SLAVE LAKE PULP CORP.	1994	I	S	*	0	48	21	0	0%	0%
SMITH	1988	H	S	*	323	24	57	0	4%	4%
SMITH	1989	H	S	*	323	24	52	0	0%	0%
SMITH	1990	H	S	*	323	24	52	0	2%	10%
SMITH	1991	H	S	*	323	24	54	1	6%	6%
SMITH	1992	H	S	*	323	48	54	0	0%	0%
SMITH	1993	H	S	*	323	48	64	0	0%	2%
SMITH	1994	H	S	*	323	48	56	0	0%	2%
SPIRIT RIVER	1988	T	S	*	1086	48	104	0	1%	1%
SPIRIT RIVER	1989	T	S	*	1086	48	106	0	0%	1%
SPIRIT RIVER	1990	T	S	*	1086	48	101	0	3%	3%
SPIRIT RIVER	1991	T	S	*	1086	48	102	0	0%	0%

Table 15: Listing of All NRBS Facilities With the Annual Microbial Sampling Summary

LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
SPIRIT RIVER	1992	T	S	*	1086	48	104	0	0%	0%
SPIRIT RIVER	1993	T	S	*	1086	48	99	0	0%	0%
SPIRIT RIVER	1994	T	S	*	1086	48	86	0	1%	1%
ST. ISIDORE	1988	H	S	*	55	48	49	0	0%	0%
ST. ISIDORE	1989	H	S	*	55	48	54	0	0%	0%
ST. ISIDORE	1990	H	S	*	55	48	53	0	0%	2%
ST. ISIDORE	1991	H	S	*	55	48	50	0	2%	2%
ST. ISIDORE	1992	H	S	*	55	48	50	0	0%	0%
ST. ISIDORE	1993	H	S	*	55	48	50	0	0%	0%
ST. ISIDORE	1994	H	S	*	55	48	84	0	0%	0%
STRONG CREEK	1988	WP	G		0	24	24	0	13%	13%
STRONG CREEK	1989	WP	G		0	24	23	0	10%	18%
STRONG CREEK	1990	WP	G		0	24	28	0	21%	21%
STRONG CREEK	1991	WP	G		0	24	24	0	5%	9%
STRONG CREEK	1992	WP	G		0	24	24	0	18%	22%
STRONG CREEK	1993	WP	G		0	24	25	0	11%	19%
STRONG CREEK	1994	WP	G		0	24	21	0	0%	10%
SUNCOR,TAR ISLAND,FT.MC	1991	I	S	*	2500	48	243	0	1%	4%
SUNCOR,TAR ISLAND,FT.MC	1992	I	S	*	2500	48	484	1	0%	1%
SUNCOR,TAR ISLAND,FT.MC	1993	I	S	*	2500	48	157	1	1%	1%
SUNCOR,TAR ISLAND,FT.MC	1994	I	S	*	2500	48	195	2	1%	3%
SUNSET HOUSE	1988	WP	G		0	24	51	0	2%	8%
SUNSET HOUSE	1989	WP	G	*	0	24	50	0	0%	2%
SUNSET HOUSE	1990	WP	G	*	0	24	52	0	0%	0%
SUNSET HOUSE	1991	WP	G	*	0	24	51	0	0%	0%
SUNSET HOUSE	1992	WP	G	*	0	24	53	0	0%	0%
SUNSET HOUSE	1993	WP	G	*	0	24	53	0	0%	2%
SUNSET HOUSE	1994	WP	G	*	0	24	58	0	0%	3%
SWAN HILLS	1988	T	S&G	*	2407	48	54	0	15%	15%
SWAN HILLS	1989	T	S&G	*	2407	48	59	1	5%	5%
SWAN HILLS	1990	T	S&G	*	2407	48	48	0	0%	0%
SWAN HILLS	1991	T	S&G	*	2407	48	54	1	2%	4%
SWAN HILLS	1992	T	S	*	2407	48	50	1	2%	2%
SWAN HILLS	1993	T	S	*	2407	48	47	0	0%	0%
SWAN HILLS	1994	T	S	*	2407	48	41	0	2%	2%
SWEATHOUSE	1988	WP	G		0	24	51	0	0%	2%
SWEATHOUSE	1989	WP	G		0	24	51	0	0%	0%
SWEATHOUSE	1990	WP	G		0	24	51	0	8%	8%
SWEATHOUSE	1991	WP	G		0	24	52	1	2%	2%
SWEATHOUSE	1992	WP	G		0	24	53	0	0%	0%
SWEATHOUSE	1993	WP	G		0	24	52	0	0%	0%
SWEATHOUSE	1994	WP	G		0	24	52	0	0%	0%
SYNCRUDE (FT.MCM)	1991	I	S	*	0	48	0	0		
SYNCRUDE (FT.MCM)	1992	I	S	*	0	48	0	0		
SYNCRUDE (FT.MCM)	1993	I	S	*	0	48	0	0		
SYNCRUDE (FT.MCM)	1994	I	S	*	0	48	0	0		
T&E TRAILER PARK	1989	MHP	G	*	150	48	59	0	4%	16%
T&E TRAILER PARK	1990	MHP	G	*	150	48	54	0	0%	4%
T&E TRAILER PARK	1991	MHP	G	*	150	48	50	0	0%	11%
T&E TRAILER PARK	1992	MHP	G	*	150	48	66	0	0%	23%
T&E TRAILER PARK	1993	MHP	G	*	150	48	22	0	0%	0%
T&E TRAILER PARK	1994	MHP	G	*	150	48	2	0	0%	0%
TANGENT	1988	H	S	*	60	48	97	0	0%	6%
TANGENT	1989	H	S	*	60	48	94	0	2%	10%
TANGENT	1990	H	S	*	60	48	79	0	0%	3%
TANGENT	1991	H	S	*	60	48	55	0	2%	7%
TANGENT	1992	H	S	*	60	48	55	0	0%	8%
TANGENT	1993	H	S	*	60	48	89	1	1%	9%
TANGENT	1994	H	S	*	60	48	55	0	2%	9%
TEEPEE CREEK	1989	S	G		18	24	16	0	0%	0%
TEEPEE CREEK	1990	S	G		18	24	11	0	0%	0%
TEEPEE CREEK	1991	S	G		18	24	10	0	0%	10%
TEEPEE CREEK	1992	S	G		18	24	11	0	0%	0%
TEEPEE CREEK	1993	S	G		18	24	4	0	0%	0%

Table 15: Listing of All NRBS Facilities With the Annual Microbial Sampling Summary

LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
TEEPEE CREEK	1994	S	G		18	24	5	0	0%	0%
THREE CREEKS	1988	WP	S	*	0	24	26	0	4%	4%
THREE CREEKS	1989	WP	S	*	0	24	30	0	14%	20%
THREE CREEKS	1990	WP	S	*	0	24	26	0	4%	12%
THREE CREEKS	1991	WP	S	*	0	24	24	0	8%	8%
THREE CREEKS	1992	WP	S	*	0	24	25	0	4%	8%
THREE CREEKS	1993	WP	S	*	0	24	29	0	4%	17%
THREE CREEKS	1994	WP	S	*	0	24	21	1	11%	19%
THUNDER LAKE PROV.PK.	1990	PP	G	*	0	48	0	0		
THUNDER LAKE PROV.PK.	1991	PP	G	*	0	48	45	0	9%	29%
THUNDER LAKE PROV.PK.	1992	PP	G	*	0	48	52	0	0%	2%
THUNDER LAKE PROV.PK.	1993	PP	G	*	0	48	65	1	3%	3%
THUNDER LAKE PROV.PK.	1994	PP	G	*	0	48	52	2	4%	6%
TOMPKINS LANDING SCHOO	1991	S	S	*	0	24	44	0	0%	0%
TOMPKINS LANDING SCHOO	1992	S	S	*	0	24	35	0	0%	0%
TOMPKINS LANDING SCHOO	1993	S	S	*	0	24	36	0	0%	0%
TOMPKINS LANDING SCHOO	1994	S	S	*	0	24	34	0	0%	0%
TRIPLE L T.P.	1989	MHP	G	*	300	48	56	0	2%	7%
TRIPLE L T.P.	1990	MHP	G	*	300	48	53	0	0%	2%
TRIPLE L T.P.	1991	MHP	G	*	300	48	53	0	0%	0%
TRIPLE L T.P.	1992	MHP	G	*	300	48	53	1	2%	4%
TRIPLE L T.P.	1993	MHP	G	*	300	48	44	0	5%	5%
TRIPLE L T.P.	1994	MHP	G	*	300	48	46	3	17%	17%
TROUT LAKE	1988	WP	G	*	202	24	13	0	36%	46%
TROUT LAKE	1989	WP	G	*	202	24	11	0	0%	0%
TROUT LAKE	1990	WP	G	*	202	24	48	0	10%	16%
TROUT LAKE	1991	WP	G	*	202	24	54	0	9%	18%
TROUT LAKE	1992	WP	G	*	202	48	50	0	0%	0%
TROUT LAKE	1993	WP	G	*	202	48	44	0	2%	2%
TROUT LAKE	1994	WP	G	*	202	48	52	0	0%	2%
TROUT LAKE (KATERI)	1989	S	S	*	100	24	3	0	33%	33%
TROUT LAKE (KATERI)	1990	S	S	*	100	24	0	0		
TROUT LAKE (KATERI)	1991	S	S	*	100	24	4	0	0%	0%
TROUT LAKE (KATERI)	1992	S	S	*	100	24	41	3	14%	22%
TROUT LAKE (KATERI)	1993	S	S	*	100	24	8	0	25%	25%
TROUT LAKE (KATERI)	1994	S	S	*	100	24	0	0		
VALHALLA	1989	S	G		0	24	16	0	0%	0%
VALHALLA	1990	S	G		0	24	10	0	0%	0%
VALHALLA	1991	S	G		0	24	9	0	0%	56%
VALHALLA	1992	S	G		0	24	36	0	8%	67%
VALHALLA	1993	S	G		0	24	4	0	0%	0%
VALHALLA	1994	S	G		0	24	6	0	0%	17%
WABASCA	1988	H	S	*	620	48	51	0	0%	4%
WABASCA	1989	H	S	*	620	48	38	1	5%	5%
WABASCA	1990	H	S	*	620	48	52	0	0%	0%
WABASCA	1991	H	S	*	620	48	53	1	2%	6%
WABASCA	1992	H	S	*	620	48	21	0	0%	7%
WABASCA	1993	H	S	*	620	48	57	0	0%	0%
WABASCA	1994	H	S	*	620	48	75	1	6%	7%
WANDERING RIVER	1988	H	S	*	43	48	97	1	3%	6%
WANDERING RIVER	1989	H	S	*	43	48	88	3	14%	18%
WANDERING RIVER	1990	H	S	*	43	48	97	0	1%	1%
WANDERING RIVER	1991	H	S	*	43	48	95	0	1%	2%
WANDERING RIVER	1992	H	S	*	43	48	112	0	0%	0%
WANDERING RIVER	1993	H	S	*	43	48	98	0	0%	0%
WANDERING RIVER	1994	H	S	*	43	48	78	1	3%	3%
WANHAM	1988	V	S	*	238	48	99	0	0%	0%
WANHAM	1989	V	S	*	238	48	79	0	0%	0%
WANHAM	1990	V	S	*	238	48	78	1	3%	3%
WANHAM	1991	V	S	*	238	48	91	0	0%	0%
WANHAM	1992	V	S	*	238	48	86	0	0%	0%
WANHAM	1993	V	S	*	238	48	83	0	1%	1%
WANHAM	1994	V	S	*	238	48	79	0	0%	0%
WARRENSVILLE	1988	WP	G		0	24	25	0	28%	28%

Table 15: Listing of All NRBS Facilities With the Annual Microbial Sampling Summary

LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
WARRENSVILLE	1989	WP	G		0	24	32	0	21%	23%
WARRENSVILLE	1990	WP	G		0	24	32	1	28%	28%
WARRENSVILLE	1991	WP	G		0	24	28	0	11%	11%
WARRENSVILLE	1992	WP	G		0	24	27	0	7%	7%
WARRENSVILLE	1993	WP	G		0	24	19	0	0%	0%
WARRENSVILLE	1994	WP	G		0	24	14	0	14%	14%
WATINO	1988	WP	G		66	24	52	1	7%	22%
WATINO	1989	WP	G		66	24	54	0	15%	25%
WATINO	1990	WP	G		66	24	50	0	2%	6%
WATINO	1991	WP	G		66	24	56	8	31%	38%
WATINO	1992	WP	G		66	24	32	1	12%	26%
WATINO	1993	WP	G		66	24	23	3	23%	57%
WATINO	1994	WP	G		66	24	9	1	13%	22%
WEBERVILLE (#1)	1988	WP	G		0	24	27	0	33%	33%
WEBERVILLE (#1)	1989	WP	G		0	24	26	1	12%	15%
WEBERVILLE (#1)	1990	WP	G		0	24	29	0	21%	24%
WEBERVILLE (#1)	1991	WP	G		0	24	29	0	4%	17%
WEBERVILLE (#1)	1992	WP	G		0	24	24	0	4%	4%
WEBERVILLE (#1)	1993	WP	G		0	24	27	0	4%	4%
WEBERVILLE (#1)	1994	WP	G		0	24	19	2	33%	33%
WEBERVILLE (#2)	1988	WP	G		100	24	26	0	4%	4%
WEBERVILLE (#2)	1989	WP	G		100	24	26	0	4%	8%
WEBERVILLE (#2)	1990	WP	G		100	24	30	0	13%	13%
WEBERVILLE (#2)	1991	WP	G		100	24	26	0	0%	0%
WEBERVILLE (#2)	1992	WP	G		100	24	24	0	4%	4%
WEBERVILLE (#2)	1993	WP	G		100	24	17	0	6%	6%
WEBERVILLE (#2)	1994	WP	G		100	24	11	0	30%	30%
WELDWOOD OF CAN.(HINT	1991	I	S	*	0	52	53	0	0%	0%
WELDWOOD OF CAN.(HINT	1992	I	S	*	0	52	53	0	0%	0%
WELDWOOD OF CAN.(HINT	1993	I	S	*	0	52	50	0	4%	4%
WELDWOOD OF CAN.(HINT	1994	I	S	*	0	52	43	0	0%	0%
WEMBLEY	1988	T	G		1227	24	52	0	2%	8%
WEMBLEY	1989	T	G		1264	48	51	0	0%	0%
WEMBLEY	1990	T	G		1264	48	52	0	0%	4%
WEMBLEY	1991	T	G		1264	48	56	1	2%	2%
WEMBLEY	1992	T	G		1264	48	52	0	0%	0%
WEMBLEY	1993	T	G		1264	48	55	0	4%	4%
WEMBLEY	1994	T	G		1264	48	44	0	2%	7%
WESTLOCK	1988	T	S	*	4463	48	52	0	0%	0%
WESTLOCK	1989	T	S	*	4463	48	51	0	0%	0%
WESTLOCK	1990	T	S	*	4463	48	52	0	0%	0%
WESTLOCK	1991	T	S	*	4463	48	53	0	0%	0%
WESTLOCK	1992	T	S	*	4463	48	52	0	0%	2%
WESTLOCK	1993	T	S	*	4463	48	54	1	2%	2%
WESTLOCK	1994	T	S	*	4719	48	42	0	0%	0%
WESTWIND	1989	MHP	S	*	130	24	50	1	11%	18%
WESTWIND	1990	MHP	S	*	130	24	49	0	2%	8%
WESTWIND	1991	MHP	S	*	130	24	54	0	0%	0%
WESTWIND	1992	MHP	S	*	130	24	50	0	2%	2%
WEYERHAEUSER (GR.PR.)	1992	I	S	*	0	48	58	2	5%	7%
WEYERHAEUSER (GR.PR.)	1993	I	S	*	0	48	19	0	0%	0%
WEYERHAEUSER (GR.PR.)	1994	I	S	*	0	48	65	6	11%	23%
WHITE GULL	1990	SV	G		0	12	4	0	0%	0%
WHITE GULL	1991	SV	G		0	12	6	0	0%	17%
WHITE GULL	1992	SV	G		0	12	7	0	0%	0%
WHITE GULL	1993	SV	G		0	12	5	0	0%	0%
WHITE GULL	1994	SV	G		0	12	6	0	20%	20%
WHITECOURT	1988	T	S	*	6126	72	68	0	0%	0%
WHITECOURT	1989	T	S	*	6560	84	87	0	0%	0%
WHITECOURT	1990	T	S	*	6692	84	80	0	0%	0%
WHITECOURT	1991	T	S	*	6692	84	99	0	2%	2%
WHITECOURT	1992	T	S	*	6922	72	94	0	0%	0%
WHITECOURT	1993	T	S	*	7056	96	92	0	1%	1%
WHITECOURT	1994	T	S	*	7056	96	84	0	0%	0%

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LOCATION	YEAR	STATUS	TYPE	CL2	POPULATION	NO REQD	TOTSAM	TC>10,FC>0	% Coliform pos.	% POOR
WHITELAW SPRING	1988	WP	G		0	24	27	0	11%	11%
WHITELAW SPRING	1989	WP	G		0	24	27	0	4%	4%
WHITELAW SPRING	1990	WP	G		0	24	25	0	4%	4%
WHITELAW SPRING	1991	WP	G		0	24	31	0	0%	0%
WHITELAW SPRING	1992	WP	G		0	24	9	0	0%	0%
WHITELAW SPRING	1993	WP	G		0	24	4	0	0%	0%
WHITELAW SPRING	1994	WP	G		0	24	2	0	50%	50%
WILDWOOD	1988	V	G	*	361	48	45	0	0%	5%
WILDWOOD	1989	V	G	*	353	48	29	0	0%	0%
WILDWOOD	1990	V	G	*	353	48	41	0	5%	5%
WILDWOOD	1991	V	G	*	353	48	42	0	3%	3%
WILDWOOD	1992	V	G	*	353	48	46	0	0%	0%
WILDWOOD	1993	V	G	*	353	48	43	0	0%	0%
WILDWOOD	1994	V	G	*	353	48	43	0	0%	0%
WILLIAMSON PROV.PK.	1992	PP	G	*	0	20	19	0	0%	0%
WILLIAMSON PROV.PK.	1993	PP	G	*	0	20	16	0	0%	0%
WILLIAMSON PROV.PK.	1994	PP	G	*	0	20	11	0	0%	0%
WILLOW GROVE T.P.(HYTHE	1992	SD	G	*	0	48	54	0	0%	0%
WILLOW GROVE T.P.(HYTHE	1993	SD	G	*	0	48	52	0	0%	0%
WILLOW GROVE T.P.(HYTHE	1994	SD	G	*	0	48	42	0	0%	0%
WINAGAMI LAKE P.P.	1989	PP	S	*	0	48	32	0	8%	25%
WINAGAMI LAKE P.P.	1990	PP	S	*	0	48	30	0	0%	19%
WINAGAMI LAKE P.P.	1991	PP	S	*	0	16	75	0	7%	16%
WINAGAMI LAKE P.P.	1992	PP	S	*	0	16	144	3	4%	4%
WINAGAMI LAKE P.P.	1993	PP	S	*	0	16	142	4	4%	4%
WINAGAMI LAKE P.P.	1994	PP	S	*	0	16	128	3	5%	8%
WOKING	1989	H	S	*	106	48	100	0	1%	3%
WOKING	1990	H	S	*	106	48	96	0	0%	3%
WOKING	1991	H	S	*	106	48	98	0	1%	8%
WOKING	1992	H	S	*	106	48	96	0	0%	0%
WOKING	1993	H	S	*	106	48	98	0	0%	3%
WOKING	1994	H	S	*	106	48	82	2	4%	4%
WORSLEY	1989	H	S	*	89	48	48	0	0%	0%
WORSLEY	1990	H	S	*	89	48	51	0	0%	0%
WORSLEY	1991	H	S	*	89	48	49	0	0%	0%
WORSLEY	1992	H	S	*	89	48	49	0	0%	0%
WORSLEY	1993	H	S	*	89	48	54	0	0%	2%
WORSLEY	1994	H	S	*	89	48	43	1	2%	2%
ZAMA	1989	H	G	*	300	48	55	0	0%	10%
ZAMA	1990	H	G	*	300	48	85	0	0%	0%
ZAMA	1991	H	G	*	300	48	105	1	1%	2%
ZAMA	1992	H	G	*	300	48	94	0	1%	1%
ZAMA	1993	H	G	*	300	48	76	1	1%	1%
ZAMA	1994	H	G	*	300	48	73	0	0%	0%

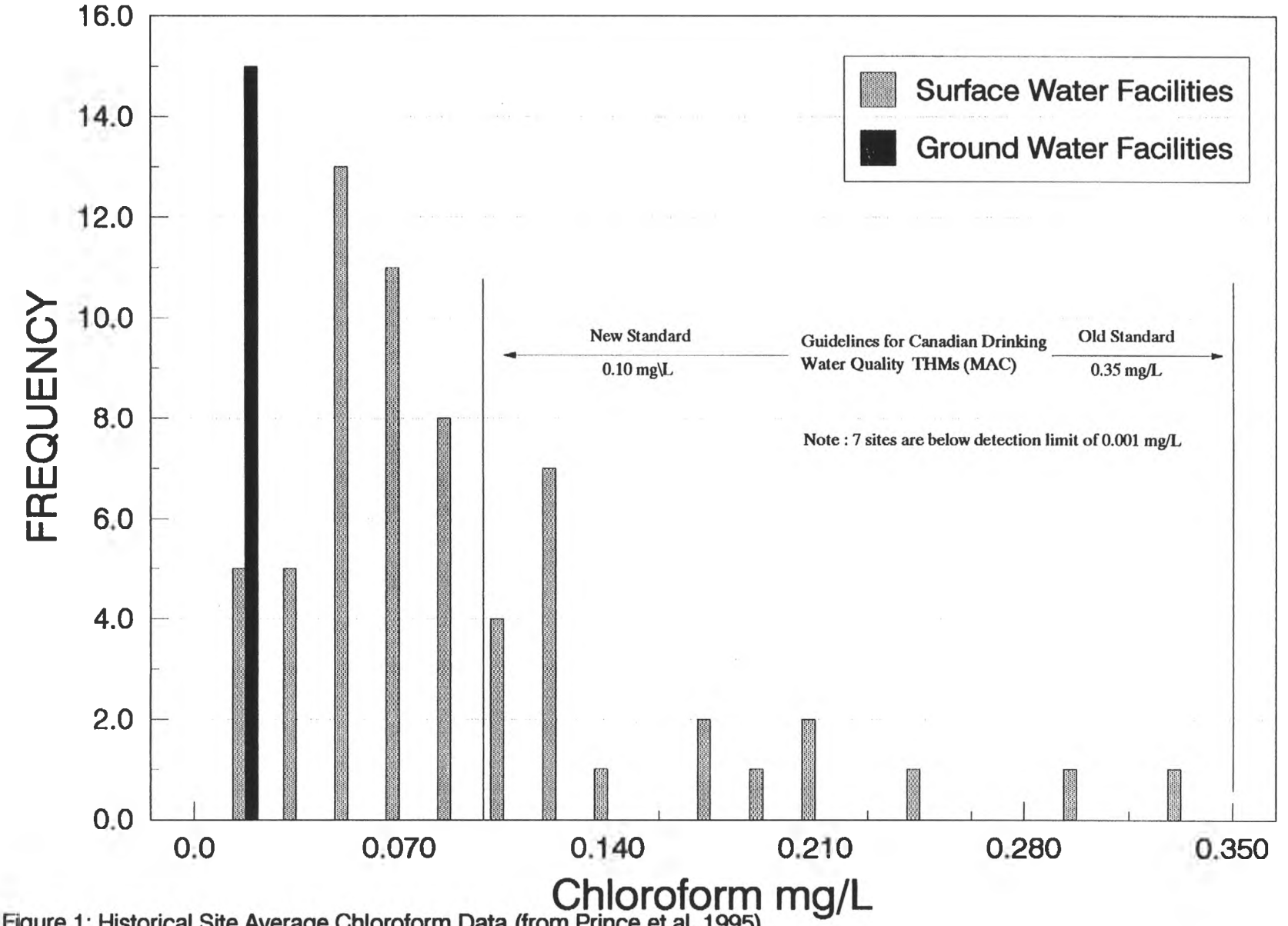

Figure 1: Historical Site Average Chloroform Data (from Prince et al. 1995)

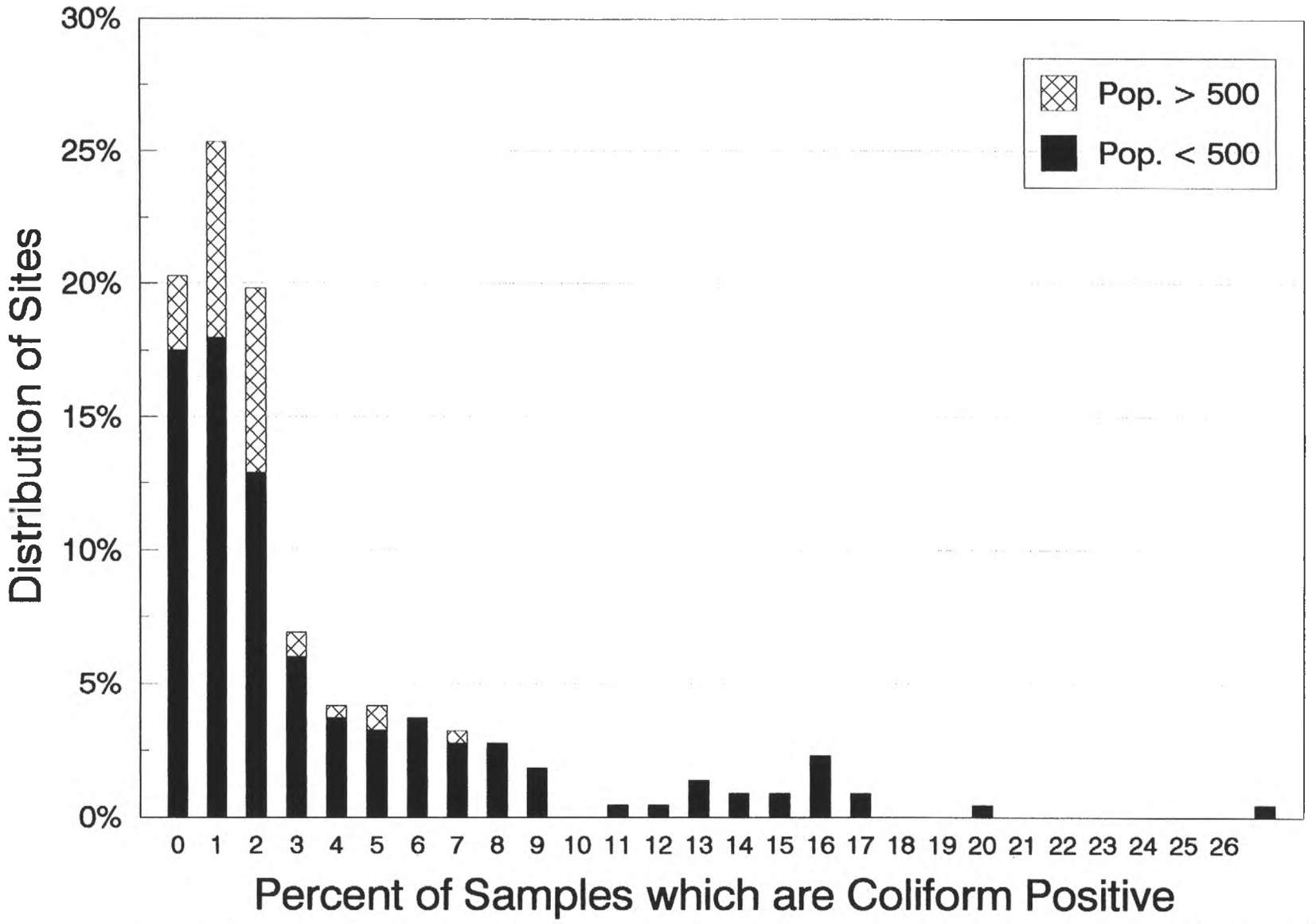

Figure 2: Frequency of coliform positive water samples, all NRBS sites (1988-1994)

Total Sites 217

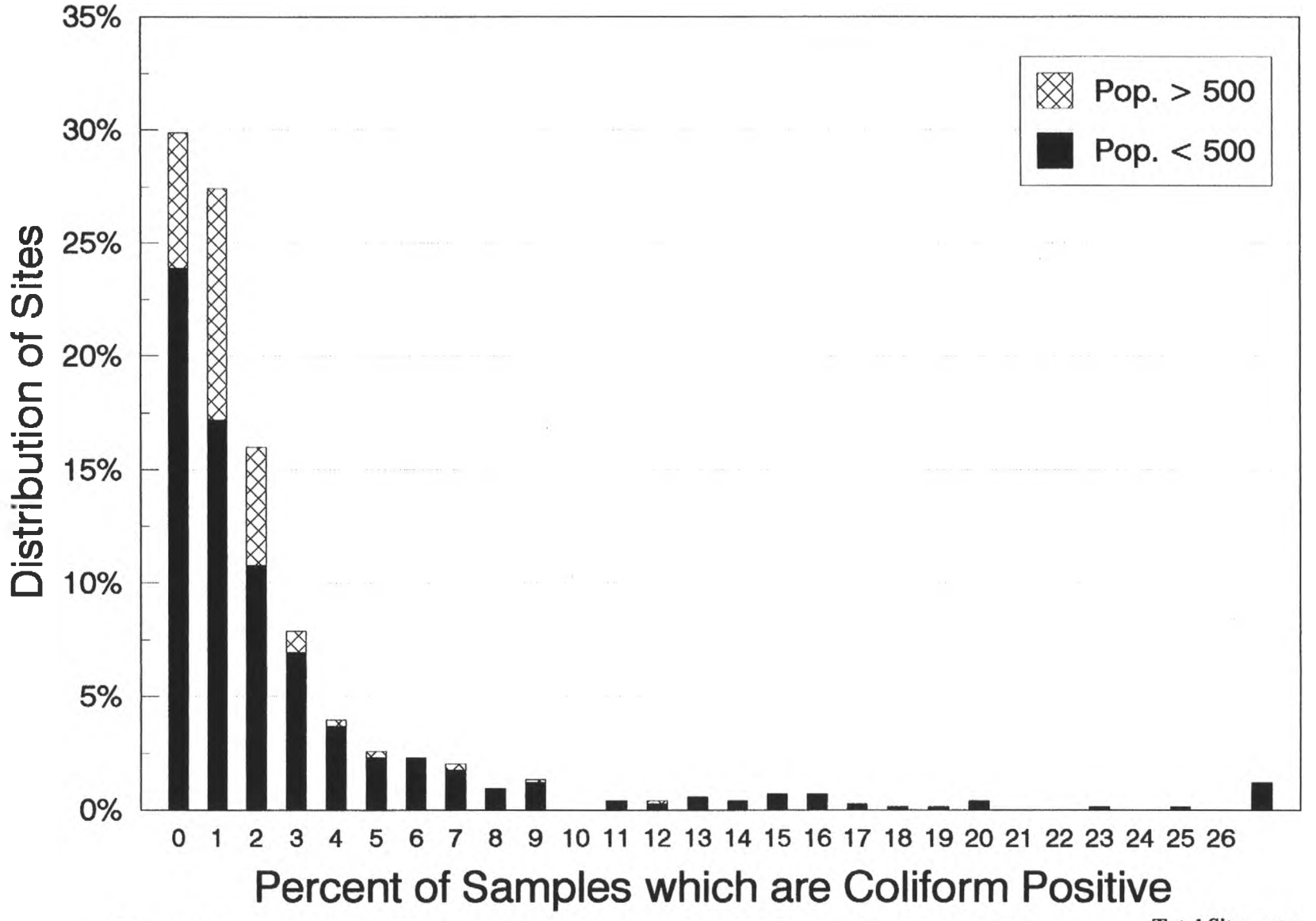

Figure 3: Frequency of coliform positive water samples, all Alberta sites (1988-1994)

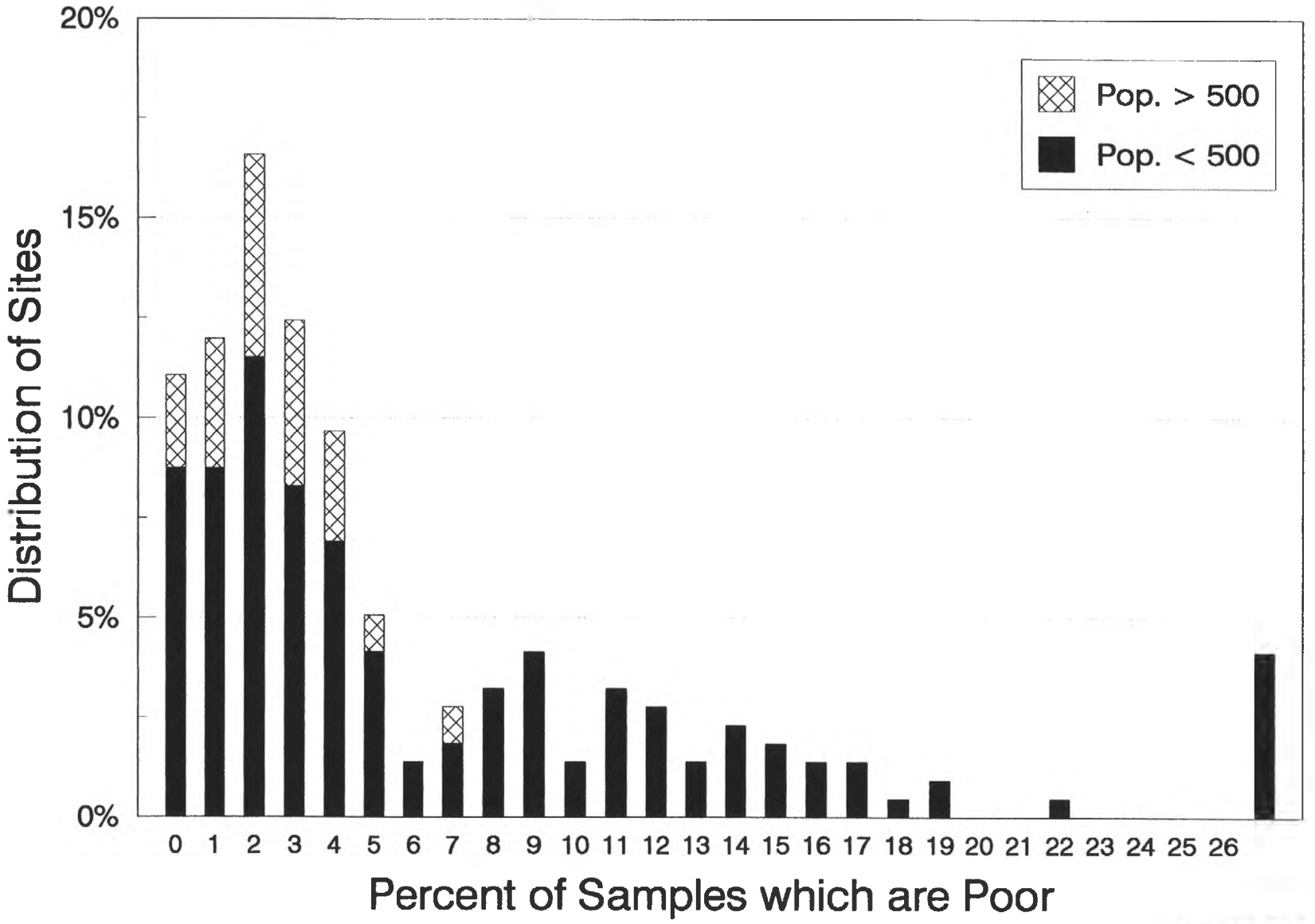

Figure 4: Frequency of poor water samples, all NRBS area sites (1988-1994)

Total Sites 217

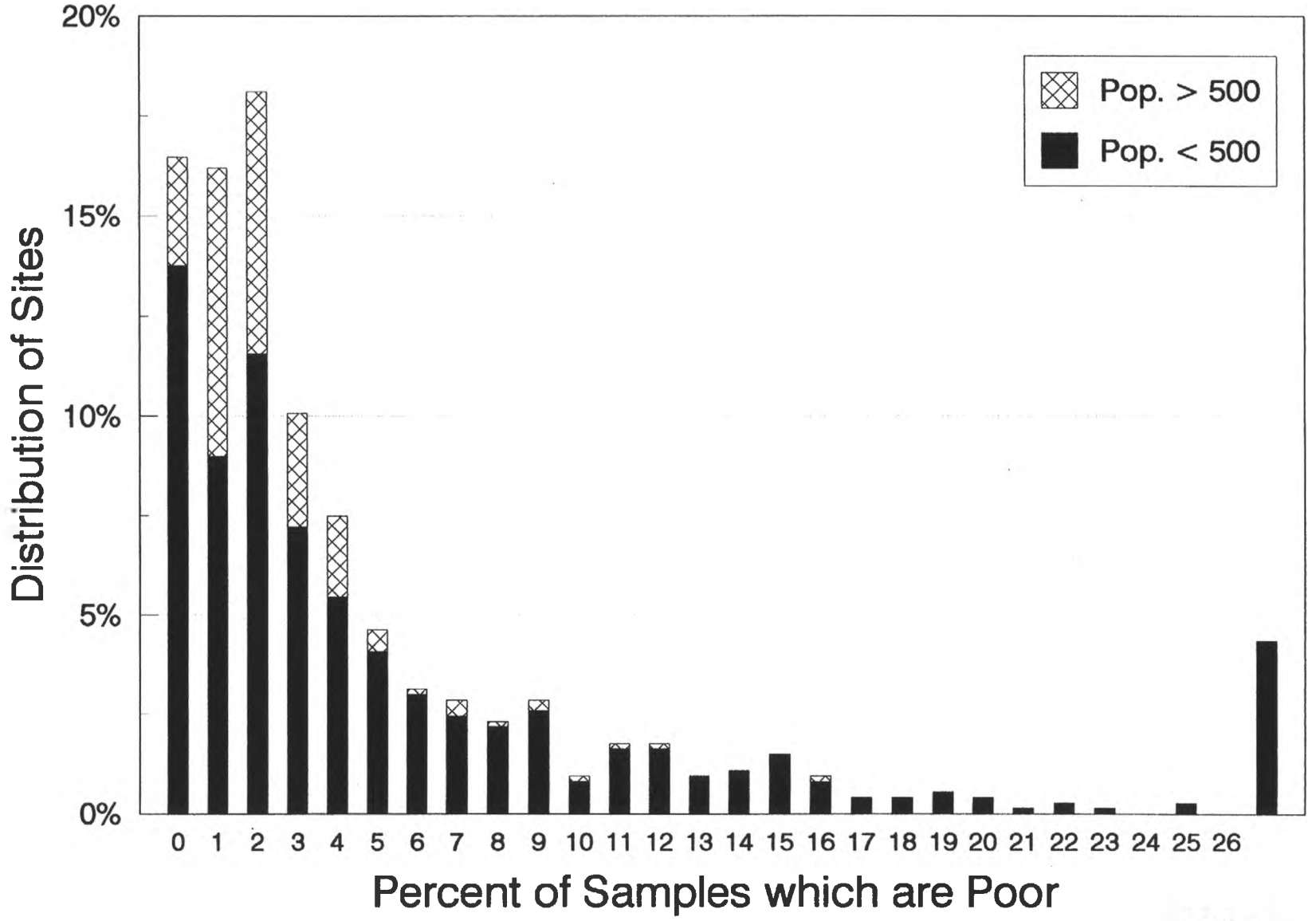

Figure 5: Frequency of poor water samples, all Alberta sites (1988-1994)

Total Sites 735

Appendix A: Terms Of Reference

NORTHERN RIVER BASINS STUDY

SCHEDULE A - TERMS OF REFERENCE

Project 4422-D1 **An Assessment of Drinking Water Quality for Alberta Communities in the Peace, Athabasca and Slave River Basins**

I. BACKGROUND & OBJECTIVES

The quality of drinking water is primarily dependent on raw water quality, the treatment processes used, and the distribution system. This study proposes a detailed evaluation of these components and the factors that affect them for a selection of communities in the Northern River Basins study area.

The quality of the raw water is an important factor to the overall quality of drinking water. While very advanced treatment processes that can treat even extremely polluted waters to acceptable standards exist, raw water of higher quality requires less effort and sophistication in treatment to reach acceptable standards. The sampling and analyzing of the untreated river water will indicate the raw water quality and the level of pollution from point and non-point sources.

An important factor to the drinking water quality is the operation and maintenance of the treatment facilities. Most of the treatment systems used in the Northern River Basins consist of combinations of conventional water treatment processes. These processes may include coagulation, flocculation, sedimentation, filtration, and disinfection. The conventional water treatment processes have proven capable of meeting drinking water guidelines given a reasonable quality of raw water and proper operation and maintenance. The water treatment practices of the selected communities will be assessed by conducting site visits and inspections of water treatment facilities.

The maintenance and design of the distribution system are important in delivering high quality water to the public. The effort spent on providing the highest raw water quality and providing the highest level of treatment is futile if water quality deteriorates in poorly maintained distribution systems. Sampling of drinking water delivered through the distribution systems of the selected communities will show any deterioration occurring in the systems. The drinking water quality delivered to the public will be compared to drinking water standards and guidelines.

Objectives

Based on the results from project 4421-C1 and any new information available:

1. Evaluate and assess the quality of raw water to be used for drinking water.

2. Evaluate the effectiveness of treatment systems used to remove contaminants identified in A.1.

3. Evaluate the effect of distribution systems on the quality of drinking water.

II. REQUIREMENTS

A. Assessment of the Quality of Raw Water Used for Drinking Water

1. Finalize of list of representative sites from the Northern River Basins study area (from 4422-C1) for in-depth investigation (roughly 40 sites).

2. Development of a site study protocol for sampling of raw river water

3. Execution of summer and winter sampling programs.

4. Analysis of collected samples for substances listed in Appendix I.

5. Prepare an interpretation which discusses the quality of raw water in relation to the drinking water quality guidelines and the factors affecting raw water quality.

B. Assessment of the Effectiveness of Treatment Systems Used to Remove Contaminants

1. Develop a site study protocol for sampling of treated drinking water and facility inspections.

2. Execution of summer and winter sampling programs.

3. Analysis of collected samples for substances listed in Appendix I.

4. Assess and evaluate the practices of selected communities by conducting site visits and inspections of water treatment facilities using the protocols developed in B.1.

5. Prepare an interpretation which discusses the quality of treated water in relation to drinking water quality guidelines and the factors affecting drinking water quality.

C. Effect of distribution Systems on Drinking Water Quality

1. Establish sampling locations on water distribution systems to determine how drinking water quality is affected by these systems.

2. Describe the distribution system eg. age, material, type, soil problems etc.

3. Sample and analyze water samples from the locations selected in C.1.

4. Prepare an interpretation which discusses the effect of the distribution system on the quality of drinking water in relative to the drinking water quality guidelines.

III. DELIVERABLES

1. Draft Interpretive report - 10 copies due March 31, 1995

2. Prepare 35 mm slides for use in presentations. These would include photographs of relevant items such as water treatment plants, examples of deteriorating pipe etc. and a summary of the main findings of your investigation.

IV. REPORTING REQUIREMENTS

1) The Contractor is to provide draft and final reports in the style and format outlined in the NRBS Style Manual. A copy of the Style Manual entitled "A Guide for the Preparation of Reports" will be supplied to the contractor by the NRBS.

2) Ten copies of the Draft Report along with an electronic disk copy are to be submitted to the Project Liaison Officer by March 31, 1995.

Three weeks after the receipt of review comments on the draft report, the Contractor is to provide the Project Liaison Officer with two unbound, camera ready copies and ten cerlox bound copies of the final report along with an electronic version.

3) The final report is to include the following: An acknowledgement section that indicates any local involvement in the project, Project Summary, Table of Contents, List of Tables, List of Figures and an Appendix with the Terms of Reference for this project.

Text for the report should be set up in the following format:

a) Times Roman 12 point (Pro) or Times New Roman (WPWIN60) font.
b) Margins; are 1" at top and bottom, 7/8" on left and right.
c) Headings; in the report body are labelled with hierarchical decimal Arabic numbers.
d) Text; is presented with full justification; that is, the text aligns on both left and right margins.
e) Page numbers; are Arabic numerals for the body of the report, centred at the bottom of each page and bold.

- If photographs are to be included in the report text they should be high contrast black and white.
- All tables and figures in the report should be clearly reproducible by a black and white photocopier.

- Along with copies of the final report, the Contractor is to supply an electronic version of the report in Word Perfect 5.1 or Word Perfect for Windows Version 6.0 format.
- Electronic copies of tables, figures and data appendices in the report are also to be submitted to the Project Liaison Officer along with the final report. These should be submitted in a spreadsheet (Quattro Pro preferred, but also Excel or Lotus) or database (dBase IV) format. Where appropriate, data in tables, figures and appendices should be geo-referenced.

4. All figures and maps are to be delivered in both hard copy (paper) and digital formats. Acceptable formats include: DXF, uncompressed E00, VEC/VEH, Atlas and ISIF. All digital maps must be properly geo-referenced.

5. All sampling locations presented in report and electronic format should be geo-referenced. This is to include decimal latitudes and longitudes (to six decimal places) and UTM coordinates. The first field for decimal latitudes / longitudes should be latitudes (10 spaces wide). The second field should be longitude (11 spaces wide).

V. CONTRACT ADMINISTRATION

The Project Liaison Officer for this project is:

James Choles
Office of the Science Director
Northern River Basins Study
690 Standard Life Centre
10405 Jasper Avenue
Edmonton, Alberta
T5J 3N4

Home Phone: (403) 455-4812
Bus. Phone: (403) 427-1742
Fax: (403) 422-3055

APPENDIX 1

The following is a summary of the analyses to be performed on the samples taken for the evaluation of drinking water quality.

Field Analyses

pH
Turbidity
Total Chlorine
Free Chlorine
Ammonia
Conductivity
Colour

Zeta potential
Odour
Flavour

Non-field Analyses

Total Heterotropic Bacteria
Total Coliforms
Fecal Coliforms
Fecal *Streptococcus* species
Yeasts and Molds
Klebsiella species
Corrosion microorganisms (iron-reducers, iron oxidizers, sulphate reducers, sulphite reducers, thiosulphate reducers)

Appendix B: Site Selection Information

Table A-1

Treated Water
Survey

LOCATION	TYPE	Total Dissolved Solids (mg/L) MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	Percentile WITHIN GROUP	pH (pH units) MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	Percentile WITHIN GROUP
Total Ground Water		606	1204	305	40	40		8.1	9.0	7.3	40	40	
BERWYN	G	390	433	352	2	2	10%	8.3			2	2	66%
BLUE RIDGE	G	670			1	1	61%	8.7			1	1	92%
CLAIRMONT	G	917	959	876	2	2	88%	8.7	9.0	8.4	2	2	90%
COLINTON	G	920	937	903	2	2	88%	7.9	7.9	7.9	2	2	31%
CYNTHIA	G	682			1	1	63%	8.7			1	1	92%
DEBOLT	G	662	673	651	2	2	60%	8.7	8.7	8.6	2	2	89%
EDSON	G	520	608	445	6	6	33%	8.2	8.6	7.8	6	6	57%
ENTWISTLE	G	475	481	470	2	2	24%	7.8	8.0	7.7	2	2	25%
EVANSBURG	G	514	515	512	2	2	32%	7.9	8.0	7.8	2	2	33%
FAWCETT	G	644			1	1	57%	8.2			1	1	58%
FORT ASSINIBOINE	G	372	374	371	2	2	8%	7.6	7.7	7.5	2	2	11%
FOX CREEK	G	440	562	344	3	3	18%	7.9	8.0	7.7	3	3	30%
GRIMSHAW	G	404	408	399	2	2	12%	7.2	8.3	6.3	2	2	2%
JARVIE	G	651			1	1	58%	8.1			1	1	50%
LA CRETE	G	398	437	363	2	2	11%	7.6	7.8	7.4	2	2	12%
MAYERTHORPE	G	843	852	833	2	2	83%	8.0	8.0	8.0	2	2	43%
PIBROCH	G	922			1	1	88%	8.6			1	1	86%
SANGUDO	G	904	928	881	2	2	87%	8.3	8.4	8.1	2	2	64%
TROUT LAKE	G	365			1	1	7%	8.4			1	1	74%
WILDWOOD	G	699			1	1	66%	8.2			1	1	57%
ZAMA	G	1099	1269	952	2	2	96%	7.5	7.5	7.5	2	2	6%
Total Surface Water		232	570	94	377	377		7.7	8.4	7.0	377	377	
ANZAC	S	140	248	79	2	2	14%	8.1	8.3	7.9	2	2	86%
ATHABASCA	S	234	370	148	30	30	51%	7.6	8.3	7.0	30	30	46%
BARRHEAD	S	410	569	295	9	9	89%	8.2	8.5	7.9	9	9	90%
BEAVERLODGE	S	300	371	242	3	3	71%	7.6	7.9	7.4	3	3	45%
BLUESKY	S	182	308	107	3	3	30%	7.9	9.2	6.9	3	3	76%
BOYLE	S	227	524	99	2	2	48%	8.5	10.0	7.2	2	2	98%
BRULE	S	200			1	1	37%	8.2			1	1	91%
CALLING LAKE	S	105	126	87	2	2	4%	8.0	8.4	7.7	2	2	82%
CANYON CREEK	S	97			1	1	3%	7.7			1	1	49%
CLEARDALE	S	269	357	203	2	2	63%	6.7	7.5	6.0	2	2	0%
DESMARAIS	S	325	337	314	3	3	77%	7.6	8.0	7.3	3	3	47%
DONNELLY	S	412	426	398	2	2	89%	8.0	8.2	7.8	2	2	79%
EAGLESHAM	S	296	428	204	3	3	70%	7.2	7.5	7.0	3	3	11%
FAIRVIEW	S	178	282	113	4	4	28%	7.3	7.5	7.2	4	4	18%
FALHER	S	430	591	312	7	7	91%	7.4	8.1	6.7	7	7	20%
FAUST	S	123	152	99	5	5	8%	7.9	8.2	7.7	5	5	75%
FORT CHIPEWYAN	S	78	122	50	2	2	1%	7.3	7.9	6.8	2	2	15%
FORT MACKAY	S	143			1	1	15%	7.7			1	1	57%
FORT MCMURRAY	S	222	330	149	56	56	46%	7.9	8.6	7.2	56	56	68%
FORT VERMILION	S	135	142	128	3	3	12%	7.8	8.0	7.6	3	3	66%
GIFT LAKE	S	249	340	183	5	5	56%	7.5	8.1	6.9	5	5	33%
GROUXVILLE	S	378	390	366	3	3	86%	7.5	8.0	7.1	3	3	32%
GRANDE CACHE	S	192	234	158	9	9	34%	8.2	8.6	7.7	9	9	90%
GRANDE PRAIRIE	S	182	262	127	25	25	30%	7.8	8.5	7.3	25	25	66%
GROUARD	S	311	525	184	5	5	74%	7.3	8.1	6.6	5	5	14%
GUY	S	247	309	198	2	2	56%	7.5	8.0	7.1	2	2	32%
HIGH LEVEL	S	539	822	353	4	4	97%	7.8	8.6	7.1	4	4	65%
HIGH PRAIRIE	S	271	382	193	10	10	63%	7.2	8.4	6.2	10	10	11%
HINES CREEK	S	266	330	214	6	6	62%	7.2	7.9	6.6	6	6	10%
HINTON	S	158	222	113	17	17	20%	7.9	8.7	7.1	17	17	70%
JANVIER	S	133	344	51	2	2	11%	7.0	8.7	5.6	2	2	3%
JEAN COTE	S	318	437	231	3	3	75%	7.6	7.9	7.3	3	3	42%
JOUSSARD	S	141	160	125	3	3	14%	7.9	8.0	7.9	3	3	76%
LAC LA BICHE	S	168	211	134	7	7	24%	8.4	8.8	7.9	7	7	96%
LOON LAKE	S	350	443	276	2	2	81%	7.7	8.4	7.0	2	2	53%
MANNING	S	337	483	235	7	7	79%	7.5	7.8	7.2	7	7	31%
MARIE REINE	S	430			1	1	91%	8.2			1	1	92%
MCLENNAN	S	353			6	6	82%	7.4			6	6	24%
NAMPA	S	317	444	226	3	3	75%	7.7	7.9	7.5	3	3	55%
NEERLANDIA	S	398	406	390	2	2	88%	7.7	9.1	6.5	2	2	54%
PADDLE PRAIRIE	S	322	425	243	3	3	76%	7.6	7.7	7.5	3	3	40%
PEACE RIVER	S	121	193	77	22	22	8%	7.4	8.3	6.6	22	22	22%
PEERLESS LAKE	S	115	136	98	3	3	6%	8.1	8.1	8.0	3	3	85%
PEORIA	S	575			1	1	98%	8.2			1	1	91%
PLAMONDON	S	270	560	130	2	2	63%	7.9	8.8	7.1	2	2	73%
RAINBOW LAKE	S	227	263	196	4	4	48%	7.5	8.1	7.0	4	4	34%
RYCROFT	S	310	613	157	6	6	74%	7.6	7.8	7.3	6	6	39%
SANDY LAKE	S	184	189	180	2	2	31%	7.9	8.7	7.3	2	2	76%
SLAVE LAKE	S	122	177	84	11	11	8%	7.6	8.2	7.0	11	11	41%
SMITH	S	235	360	153	3	3	51%	7.9	8.5	7.4	3	3	76%
SPIRIT RIVER	S	431	498	373	5	5	91%	7.7	7.9	7.5	5	5	55%
ST. ISIDORE	S	467			1	1	94%	7.3			1	1	17%
SWAN HILLS	S	130	171	98	5	5	10%	8.3	8.5	8.1	5	5	95%
TANGENT	S	212			1	1	42%	8.3			1	1	94%
VALLEYVIEW	S	232	491	110	10	10	50%	7.1	8.2	6.3	10	10	7%
WABASCA	S	131	293	59	2	2	11%	7.4	7.4	7.3	2	2	19%
WANDERING RIVER	S	157	301	82	3	3	20%	7.4	8.8	6.2	3	3	23%
WANHAM	S	369	559	244	4	4	84%	7.0	7.2	6.7	4	4	2%
WESTLOCK	S	222	409	120	6	6	46%	7.8	8.8	6.9	6	6	62%
WHITECOURT	S	218	304	157	11	11	45%	7.8	8.6	7.1	11	11	64%
WOKING	S	282	413	193	2	2	67%	7.5	7.9	7.0	2	2	28%
WORSLEY	S	236	401	138	4	4	51%	7.3	7.5	7.1	4	4	15%
GRASSLAND	S&G	321	703	146	3	3	76%	7.6	8.3	7.0	3	3	44%

LOCATION	TYPE	Turbidity (NTU)						Total Hardness (mg/L)					
		MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	Percentile WITHIN GROUP	MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	Percentile WITHIN GROUP
Total Ground Water		0.35	3.21	0.04	20	24		96	1593	6	39	40	
BERWYN	G	0.10			1	1	13%	303	335	274	2	2	79%
BLUE RIDGE	G	0.20			1	1	31%	11			1	1	7%
CLAIRMONT	G	0.46	1 48	0.14	2	2	59%	7			1	2	3%
COLINTON	G	0.22			1	1	34%	171	197	149	2	2	66%
CYNTHIA	G				0	0		8			1	1	4%
DEBOLT	G	0.40			2	2	55%	17	22	14	2	2	12%
EDSON	G	0.39	0.79	0.19	2	3	54%	78	241	25	6	6	44%
ENTWISTLE	G				0	0		442	451	432	2	2	86%
EVANSBURG	G				0	0		203	250	166	2	2	70%
FAWCETT	G	0.17			1	1	26%	119			1	1	56%
FORT ASSINIBOINE	G	0.04			1	2	3%	346	353	340	2	2	81%
FOX CREEK	G	0.70			1	1	73%	152	163	143	3	3	63%
GRIMSHAW	G				0	1		331	344	319	2	2	81%
JARVIE	G	0.40			1	1	53%	210			1	1	71%
LA CRETE	G	0.22	0.52	0.09	2	2	34%	166	214	129	2	2	65%
MAYERTHORPE	G				0	1		119	133	107	2	2	56%
PIBROCH	G	0.63			1	1	70%	13			1	1	8%
SANGUDO	G	0.20			1	1	31%	24	34	16	2	2	17%
TROUT LAKE	G	2.50			1	1	96%	269			1	1	76%
WILDWOOD	G				0	0		207			1	1	70%
ZAMA	G	3.48	4.78	2.53	2	2	98%	689	1153	412	2	2	92%
Total Surface Water		0.69	4.14	0.12	333	359		154	372	64	377	377	
ANZAC	S	0.21			1	2	10%	89	315	25	2	2	11%
ATHABASCA	S	0.27	1.01	0.07	27	30	15%	140	364	54	30	30	41%
BARRHEAD	S	0.35	0.93	0.13	7	7	22%	176	268	116	9	9	62%
BEAVERLODGE	S	0.16	0.79	0.03	3	3	5%	183	202	166	3	3	65%
BLUESKY	S	3.37	12.47	0.91	2	3	96%	121	257	57	3	3	29%
BOYLE	S	0.90	5.21	0.16	2	2	61%	156	218	111	2	2	51%
BRULE	S	0.30			1	1	18%	190			1	1	68%
CALLING LAKE	S	0.39	0.79	0.19	2	2	26%	89	110	72	2	2	11%
CANYON CREEK	S	0.20			1	1	9%	73			1	1	5%
CLEARDALE	S	0.23			1	2	11%	177	238	132	2	2	62%
DESMARAIS	S	0.38	1.57	0.09	3	3	25%	146	199	107	3	3	45%
DONNELLY	S	0.39	0.42	0.36	2	2	26%	291	303	279	2	2	92%
EAGLESHAM	S	0.62	0.99	0.39	3	3	45%	215	308	150	3	3	77%
FAIRVIEW	S	0.29	0.49	0.18	4	4	17%	137	207	91	4	4	40%
FALHER	S	0.54	3.58	0.08	7	7	39%	301	451	200	7	7	93%
FAUST	S	1.65	2.81	0.97	5	5	83%	92	117	73	5	5	13%
FORT CHIPEWYAN	S	0.21	0.26	0.18	2	2	10%	34	37	32	2	2	0%
FORT MACKAY	S	0.39			1	1	26%	91			1	1	12%
FORT MCMURRAY	S	0.41	3.05	0.06	46	47	29%	150	242	92	56	56	47%
FORT VERMILION	S	1.62	104.42	0.03	3	3	82%	119	133	107	3	3	28%
GIFT LAKE	S	0.28	1.43	0.05	5	5	16%	152	175	132	5	5	48%
GIROUXVILLE	S	0.84	3.62	0.19	3	3	58%	278	319	241	3	3	90%
GRANDE CACHE	S	0.49	1.70	0.14	9	9	35%	181	235	140	9	9	64%
GRANDE PRAIRIE	S	0.30	1.35	0.07	19	24	18%	161	235	110	25	25	54%
GROUARD	S	1.16	11.98	0.11	5	5	71%	208	342	126	5	5	75%
GUY	S	3.57	6.37	2.00	2	2	96%	183	220	153	2	2	65%
HIGH LEVEL	S	0.75	1.78	0.32	3	3	53%	213	259	175	4	4	76%
HIGH PRAIRIE	S	0.58	1.84	0.18	10	10	43%	155	207	116	10	10	50%
HINES CREEK	S	1.15	3.90	0.34	6	6	71%	170	235	122	6	6	58%
HINTON	S	0.52	3.98	0.07	13	16	38%	135	190	96	17	17	38%
JANVIER	S	0.20			1	2	9%	95	244	37	2	2	14%
JEAN COTE	S	3.72	7.81	1.78	3	3	97%	231	302	176	3	3	81%
JOUSSARD	S	0.54	1.33	0.22	3	3	40%	97	114	82	3	3	15%
LAC LA BICHE	S	0.65	4.15	0.10	6	6	47%	141	184	108	7	7	42%
LOON LAKE	S	3.17	6.90	1.46	2	2	95%	244	341	174	2	2	85%
MANNING	S	0.75	3.31	0.17	5	6	54%	242	348	168	7	7	84%
MARIE REINE	S	3.00			1	1	95%	308			1	1	94%
MCLENNAN	S	2.07			6	6	89%	269			6	6	89%
NAMPA	S	0.60	2.92	0.12	3	3	44%	270	374	195	3	3	89%
NEERLANDIA	S	1.00	1.31	0.75	2	2	65%	173	215	139	2	2	60%
PADDLE PRAIRIE	S	1.12	18.79	0.07	3	3	70%	215	320	145	3	3	77%
PEACE RIVER	S	0.22	1.09	0.04	18	22	10%	101	140	73	22	22	17%
PEERLESS LAKE	S	1.90	7.48	0.48	3	3	87%	93	98	88	3	3	13%
PEORIA	S	0.80			1	1	56%	437			1	1	99%
PLAMONDON	S	0.36	1.46	0.09	2	2	24%	181	213	154	2	2	64%
RAINBOW LAKE	S	0.94	3.03	0.29	4	4	63%	99	119	83	4	4	16%
RYCROFT	S	1.60	4.58	0.56	6	6	82%	213	387	117	6	6	76%
SANDY LAKE	S	5.25	5.68	4.85	2	2	99%	112	140	89	2	2	23%
SLAVE LAKE	S	0.74	6.25	0.09	11	11	53%	85	100	72	11	11	9%
SMITH	S	2.30	223.90	0.02	3	3	91%	165	170	160	3	3	56%
SPIRIT RIVER	S	0.28	1.32	0.06	5	5	16%	172	238	124	5	5	59%
ST. ISIDORE	S	5.60			1	1	99%	315			1	1	94%
SWAN HILLS	S	0.18	0.27	0.12	4	5	7%	67	82	54	5	5	3%
TANGENT	S	1.40			1	1	78%	164			1	1	55%
VALLEYVIEW	S	0.57	10.91	0.03	10	10	42%	107	153	75	10	10	21%
WABASCA	S	0.73	3.91	0.14	2	2	52%	109	258	46	2	2	22%
WANDERING RIVER	S	0.41	0.94	0.18	2	3	28%	89	116	68	3	3	11%
WANHAM	S	0.89	3.68	0.14	4	4	61%	226	330	155	4	4	80%
WESTLOCK	S	0.27	1.25	0.06	5	5	13%	152	219	106	6	6	49%
WHITECOURT	S	0.37	2.43	0.06	9	10	25%	179	254	126	11	11	63%
WOKING	S	1.51	2.86	0.80	2	2	80%	154	264	90	2	2	50%
WORSLEY	S	0.56	1.89	0.16	3	4	41%	168	279	101	4	4	58%
GRASSLAND	S&G	1.67	18.74	0.15	2	3	83%	200	414	97	3	3	72%

LOCATION	TYPE	Langelier Saturation Index						Chloroform (ug/L)					
		MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	Percentile WITHIN GROUP	MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	Percentile WITHIN GROUP
Total Ground Water		0.14	0.76	-0.47	39	39		3.5	12.6	1.0	26	41	
BERWYN	G	0.40	0.66	0.13	2	2	79%				0	2	
BLUE RIDGE	G	0.04			1	1	37%	6.0			1	1	80%
CLAIRMONT	G	-0.33			1	1	6%	5.7	14.8	2.2	2	2	77%
COLINTON	G	0.10	0.27	-0.06	2	2	45%	7.7	48.4	1.2	2	2	89%
CYNTHIA	G	-0.29			1	1	8%				0	1	
DEBOLT	G	-0.06	0.25	-0.37	2	2	26%	9.0			2	2	93%
EDSON	G	0.18	0.77	-0.41	6	6	55%	1.6	3.5	0.7	3	6	12%
ENTWISTLE	G	0.47	0.76	0.18	2	2	85%	7.7	15.7	3.8	2	2	89%
EVANSBURG	G	0.17	0.32	0.02	2	2	54%	2.4	4.3	1.4	2	3	30%
FAWCETT	G	0.49			1	1	86%				0	1	
FORT ASSINIBOINE	G	0.27	0.78	-0.25	2	2	65%	2.0			1	2	20%
FOX CREEK	G	0.07	0.30	-0.17	3	3	40%	3.0			1	3	41%
GRIMSHAW	G	-0.47	0.17	-1.10	2	2	3%	2.0			2	2	20%
JARVIE	G	0.66			1	1	95%				0	1	
LA CRETE	G	-0.25	-0.08	-0.42	2	2	10%	2.4	4.3	1.4	2	2	30%
MAYERTHORPE	G	0.34	0.69	-0.01	2	2	73%	2.8	7.4	1.1	2	2	38%
PIBROCH	G	0.16			1	1	51%	4.0			1	1	58%
SANGUDO	G	0.06	0.35	-0.24	2	2	39%				0	2	
TROUT LAKE	G	0.54			1	1	90%				0	1	
WILDWOOD	G	0.53			1	1	89%				1	1	
ZAMA	G	-0.01	0.09	-0.11	2	2	30%	5.5	29.1	1.0	2	2	76%
Total Surface Water		12344.99	34670.32	4395.66	377	377		61.9	296.4	12.9	383	415	
ANZAC	S	-0.42	0.41	-1.24	2	2	62%	24.0			1	2	12%
ATHABASCA	S	-0.56	0.14	-1.27	30	30	51%	20.7	65.1	6.6	29	30	8%
BARRHEAD	S	0.28	0.63	-0.07	9	9	95%	71.6	369.5	13.9	9	9	57%
BEAVERLODGE	S	-0.42	0.04	-0.89	3	3	62%	36.0	318.3	4.1	3	3	25%
BLUESKY	S	-0.44	0.57	-1.46	3	3	60%	181.5	1301.4	25.3	3	3	91%
BOYLE	S	0.21	1.70	-1.29	2	2	93%	69.0			1	2	55%
BRULE	S	0.43			1	1	97%	9.0			1	1	1%
CALLING LAKE	S	-0.60	-0.38	-0.82	2	2	48%	37.4	212.4	6.6	2	2	26%
CANYON CREEK	S	-1.02			1	1	20%	88.0			1	1	67%
CLEARDALE	S	-1.99	-0.52	-3.47	2	2	0%	43.8	95.6	20.0	2	2	33%
DESMARAIS	S	-0.53	-0.17	-0.89	3	3	54%	111.6	159.8	77.9	2	3	77%
DONNELLY	S	-0.05	0.54	-0.65	2	2	84%	162.3	327.2	80.5	2	2	89%
EAGLESHAM	S	-1.05	-0.81	-1.29	3	3	19%	59.0	114.5	30.5	10	10	48%
FAIRVIEW	S	-1.01	-0.78	-1.25	4	4	20%	39.2	119.0	12.9	3	4	28%
FALHER	S	-0.60	0.36	-1.55	7	7	49%	99.3	404.9	24.4	6	8	72%
FAUST	S	-0.60	-0.44	-0.76	5	5	48%	106.0	156.3	71.8	4	5	75%
FORT CHIPEWYAN	S	-1.93	-1.14	-2.71	2	2	1%	17.0			1	2	5%
FORT MACKAY	S	-0.70			1	1	41%				0	1	
FORT MCMURRAY	S	-0.32	0.48	-1.12	56	56	69%	11.0	98.4	1.2	53	58	2%
FORT VERMILION	S	-0.58	-0.44	-0.72	3	3	50%	48.9	67.7	35.3	3	3	38%
GIFT LAKE	S	-0.72	0.12	-1.57	5	5	39%	83.3	191.4	36.3	5	5	64%
GROUXVILLE	S	-0.47	-0.10	-0.84	3	3	58%	108.9	293.2	40.4	10	10	76%
GRANDE CACHE	S	0.01	0.39	-0.38	9	9	87%	59.8	176.6	20.2	10	10	48%
GRANDE PRAIRIE	S	-0.32	0.38	-1.02	25	25	69%	23.2	67.7	8.0	23	25	11%
GROUARD	S	-0.83	-0.04	-1.61	5	5	32%	160.2	266.2	96.4	5	5	88%
GUY	S	-0.93	-0.46	-1.40	2	2	25%	76.8	92.0	64.2	2	2	61%
HIGH LEVEL	S	-0.20	0.65	-1.05	4	4	77%	52.4	552.5	5.0	3	4	42%
HIGH PRAIRIE	S	-1.06	0.30	-2.42	10	10	18%	34.8	213.5	5.7	9	10	24%
HINES CREEK	S	-1.15	-0.27	-2.04	6	6	14%	76.7	192.5	30.6	4	5	61%
HINTON	S	-0.67	0.22	-1.56	17	17	43%	5.5	27.3	1.1	17	17	0%
JANVIER	S	-1.64	1.07	-4.35	2	2	2%	58.0			1	2	47%
JEAN COTE	S	-0.57	0.04	-1.19	3	3	50%	46.9	148.0	14.9	2	2	36%
JOUSSARD	S	-0.61	-0.55	-0.66	3	3	48%	108.5	277.3	42.5	3	3	76%
LAC LA BICHE	S	0.17	0.57	-0.23	7	7	92%	46.4	132.5	16.2	6	7	36%
LOON LAKE	S	-0.31	0.48	-1.10	2	2	70%	209.2	354.3	123.5	2	2	94%
MANNING	S	-0.54	0.00	-1.08	7	7	53%	60.2	213.7	16.9	6	7	49%
MARIE REINE	S	0.46			1	1	98%	92.0			1	1	69%
MCLENNAN	S	-0.62			6	6	47%	58.2	1199.6	2.8	4	4	47%
NAMPA	S	-0.08	0.10	-0.25	3	3	83%	237.7	359.0	157.4	3	3	95%
NEERLANDIA	S	-0.25	1.14	-1.64	2	2	73%	27.8	559.4	1.4	6	6	16%
PADDLE PRAIRIE	S	-0.59	-0.29	-0.90	3	3	49%	109.3	213.2	56.0	3	3	76%
PEACE RIVER	S	-1.15	-0.22	-2.08	22	22	14%	14.8	33.7	6.5	21	23	4%
PEERLESS LAKE	S	-0.37	-0.05	-0.70	3	3	65%	54.4	109.6	27.0	3	3	44%
PEORIA	S	0.29			1	1	95%	119.0			1	1	79%
PLAMONDON	S	-0.11	0.31	-0.53	2	2	81%	38.0			1	2	27%
RAINBOW LAKE	S	-1.07	-0.36	-1.77	4	4	18%	71.6	108.9	47.0	3	4	57%
RYCROFT	S	-0.49	-0.05	-0.93	6	6	57%	84.9	128.5	56.1	6	6	65%
SANDY LAKE	S	-0.33	0.61	-1.28	2	2	68%	329.7	733.9	148.1	2	2	98%
SLAVE LAKE	S	-0.97	-0.35	-1.59	11	11	23%	45.9	145.2	14.5	11	11	35%
SMITH	S	-0.18	0.43	-0.78	3	3	78%	69.0	97.0	49.1	2	2	55%
SPIRIT RIVER	S	-0.44	-0.21	-0.66	5	5	60%	50.6	143.7	17.8	11	11	40%
ST. ISIDORE	S	-0.85			1	1	30%	109.0			1	1	76%
SWAN HILLS	S	-0.30	0.09	-0.68	5	5	70%	69.5	116.0	41.6	5	5	56%
TANGENT	S	0.23			1	1	94%	69.0			1	1	55%
VALLEYVIEW	S	-1.42	-0.22	-2.63	10	10	5%	37.8	164.5	8.7	10	10	27%
WABASCA	S	-1.19	-0.57	-1.81	2	2	12%	198.0			1	2	93%
WANDERING RIVER	S	-1.19	0.56	-2.95	3	3	12%	90.3	106.9	76.3	2	3	68%
WANHAM	S	-1.34	-1.08	-1.60	4	4	7%	75.4	246.3	23.1	10	10	60%
WESTLOCK	S	-0.20	0.89	-1.28	6	6	77%	63.6	146.4	27.6	5	6	51%
WHITECOURT	S	-0.19	0.65	-1.03	11	11	77%	40.5	76.7	21.4	11	11	30%
WOKING	S	-0.96	0.12	-2.03	2	2	24%	125.6	278.0	56.7	10	10	81%
WORSLEY	S	-0.97	-0.47	-1.47	4	4	23%	64.7	91.3	45.8	3	4	52%
GRASSLAND	S&G	-0.47	0.27	-1.21	3	3	58%	286.5	595.5	137.8	2	3	97%

Table A-2

NAQUADAT DATA

STATION	TYPE	Total Dissolved Solids (mg/L)						pH (pH units)					
		MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP	MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
AL-PAC CONSTRUCTION CA	Raw Surface Water	198			1	1	41%	8.3			1	1	88%
AL-PAC CONSTRUCTION CA	Treated Surface Water	212			1	1	29%	8.2			1	1	85%
ALBERTA NEWSPRINT MILL	Raw Well Water	333	474	234	2	2	18%	7.3	7.6	7.0	2	2	4%
AMISK LAKE TRAILER PA	Treated Surface Water	540			1	1	84%	8.1			1	1	79%
ANZAC WATER RAW SURFAC	Raw Surface Water	86	174	43	2	2	5%	7.4	8.4	6.4	2	2	2%
ANZAC WATER RAW WELL	Raw Well Water	663	1102	399	31	31	58%	8.0	9.1	6.9	31	31	41%
ANZAC WATER TREATED	Treated Well Water	518	1780	151	23	23	48%	7.9	9.0	6.9	23	23	37%
ATHABASCA H.U.WATER RA	H.U. Raw Surface Water	178	321	99	28	28	32%	8.1	8.6	7.7	28	28	72%
ATHABASCA WATER RAW S	Raw Surface Water	164	288	93	60	60	29%	8.1	8.6	7.6	60	60	70%
ATHABASCA WATER TREAT	Treated Surface Water	232	350	154	92	92	35%	7.7	8.6	7.0	92	92	38%
ATHABASCA H.U.WATER TR	H. U. Treated Surface Water	242	386	152	28	28	38%	7.8	8.4	7.2	28	28	36%
ATIKAMEG WATER RAW SU	Raw Surface Water	527	2034	136	4	4	93%	7.8	8.5	7.2	4	4	54%
ATIKAMEG WATER RAW WE	Raw Well Water	801	1084	592	5	5	68%	8.1	8.8	7.4	5	5	51%
ATIKAMEG WATER TREATE	Treated Well Water	632	2119	188	9	9	60%	7.9	9.1	6.9	9	9	38%
ATIKAMEG WATER TREATE	Treated Surface Water	331	1441	85	10	10	61%	8.1	8.5	7.7	10	10	79%
BARRHEAD H.U.WATER RAW	H.U. Raw Surface Water	251	320	197	5	5	54%	8.4	8.5	8.2	5	5	94%
BARRHEAD WATER RAW SU	Raw Surface Water	236	340	163	23	23	53%	8.3	8.8	7.9	23	23	91%
BARRHEAD WATER TREATE	Treated Surface Water	387	497	301	35	35	67%	8.2	8.7	7.8	35	35	87%
BARRHEAD H.U.WATER TRE	H. U. Treated Surface Water	376	472	298	4	4	73%	8.1	8.3	8.0	4	4	86%
BEAR CANYON WATER RAW	Raw Surface Water	331	647	169	9	9	74%	8.0	8.6	7.5	9	9	63%
BEAR CANYON WATER TRE	Treated Surface Water	335	739	152	24	24	58%	7.7	8.3	7.1	24	24	41%
BEAR CANYON H.U.WATER	H. U. Treated Surface Water	191	344	106	2	2	21%	8.4	9.9	7.1	2	2	95%
BEAVERLODGE WATER RAW	Raw Surface Water	206	467	91	35	35	44%	8.1	8.8	7.4	35	35	69%
BEAVERLODGE WATER RAW	Raw Well Water	1903	2190	1654	2	2	97%	8.1	8.6	8.0	2	2	69%
BEAVERLODGE WATER TRE	Treated Well Water	339	433	265	18	18	24%	7.7	8.3	7.2	18	18	25%
BEAVERLODGE WATER TRE	Treated Surface Water	845	2903	246	4	4	96%	8.2	8.6	7.9	4	4	87%
BERWYN WATER RAW WELL	Raw Well Water	395	428	366	8	8	26%	7.6	8.1	7.1	8	8	14%
BERWYN H.U.WATER RAW W	H. U. Raw Well Water	401			1	1	16%	7.5			1	1	16%
BERWYN WATER TREATED	Treated Well Water	377	443	321	20	20	30%	7.7	8.5	6.9	21	21	21%
BEZANSON WATER RAW SU	Raw Surface Water	267	283	253	2	2	61%	7.7	8.0	7.4	2	2	21%
BEZANSON WATER RAW WE	Raw Well Water	939	965	913	4	4	76%	8.3	8.6	8.4	4	4	81%
BEZANSON WATER TREATE	Treated Well Water	733	1798	299	7	7	69%	8.4	9.0	7.9	7	7	81%
BEZANSON WATER TREATE	Treated Surface Water	911	971	854	6	6	97%	8.6	8.8	8.4	6	6	99%
BIG PRAIRIE (PEAVINE)H	H.U. Raw Surface Water	245			1	1	53%	8.2			1	1	82%
BIG PRAIRIE (PEAVINE)	Raw Surface Water	311	516	188	10	10	71%	8.0	8.6	7.5	10	10	66%
BIG PRAIRIE (PEAVINE)	Treated Surface Water	399	567	280	15	15	69%	7.9	8.4	7.5	15	15	64%
BIG PRAIRIE (PEAVINE)H	H. U. Treated Surface Water	316			1	1	60%	6.9			1	1	2%
BLUE RIDGE WATER RAW	Raw Well Water	521	1087	250	10	10	41%	8.7	9.2	8.3	10	10	92%
BLUE HERON ESTATES WA	Raw Well Water	518			1	1	41%	7.6			1	1	15%
BLUE RIDGE H.U.WATER R	H. U. Raw Well Water	654	676	634	2	2	50%	8.8	9.0	8.6	2	2	94%
BLUE RIDGE WATER TREA	Treated Well Water	661	704	620	31	31	63%	8.7	9.0	8.5	32	32	93%
BLUE RIDGE H.U.WATER T	H. U. Treated Well Water	680	725	638	3	3	65%	8.7	8.7	8.6	3	3	89%
BLUEBERRY MOUNTAIN WA	Raw Well Water	203			1	1	4%	7.3			1	1	10%
BLUESKY WATER RAW SUR	Raw Surface Water	189	465	77	14	14	38%	7.6	8.6	6.7	14	14	13%
BLUESKY WATER TREATED	Treated Surface Water	168	473	60	35	35	18%	7.7	8.6	6.9	36	36	35%
BLUESKY H.U.WATER TREA	H. U. Treated Surface Water	117			1	1	3%	7.8			1	1	59%
BONANZA WATER RAW SUR	Raw Surface Water	179	204	157	2	2	35%	7.3	7.6	7.0	2	2	1%
BOYLE WATER RAW SURFAC	Raw Surface Water	191	239	153	4	4	39%	8.5	9.2	7.9	4	4	98%
BOYLE WATER TREATED	Treated Surface Water	199	284	140	13	13	26%	8.3	9.0	7.7	13	13	93%
BROWNVALE WATER RAW W	Raw Well Water	779	888	683	8	8	66%	8.0	8.3	7.6	8	8	47%
BROWNVALE H.U.WATER RA	H. U. Raw Well Water	763			1	1	62%	7.9			1	1	44%
BROWNVALE WATER TREAT	Treated Well Water	809	1073	618	19	19	74%	8.0	8.5	7.5	19	19	46%
BRULE H.U.WATER RAW SU	H.U. Raw Surface Water	234			1	1	50%	8.1			1	1	75%
BRULE WATER RAW WELL	Raw Well Water	160			1	1	2%	8.4			1	1	76%
BRULE WATER TREATED	Treated Well Water	209	269	162	12	12	7%	8.3	9.0	7.6	12	12	70%
BRULE WATER TREATED	Treated Surface Water	236	258	216	2	2	36%	8.0			2	2	69%
BUFFALO HEAD PRAIRIE W	Raw Surface Water	254	320	201	3	3	58%	7.3	7.8	6.8	3	3	1%
BUFFALO HEAD PRAIRIE	Treated Surface Water	319	536	183	12	12	55%	7.5	8.5	6.6	12	12	16%
BUFFALO HEAD PRAIRIE W	H. U. Treated Surface Water	370	390	351	2	2	72%	7.3	8.0	6.6	2	2	13%
CADOMIN WATER RAW WEL	Raw Well Water	276	351	217	7	7	11%	7.9	8.3	7.6	7	7	40%
CADOTTE LAKE WATER RAW	Raw Surface Water	244	400	149	3	3	55%	8.0	8.6	7.4	3	3	57%
CADOTTE LAKE WATER RA	Raw Well Water	565	1272	251	17	17	46%	8.2	8.6	7.7	17	17	60%
CADOTTE LAKE WATER TR	Treated Well Water	467	1021	214	13	13	42%	7.9	8.4	7.5	13	13	42%
CADOTTE LAKE WATER TR	Treated Surface Water	760	794	727	2	2	94%	8.2	8.4	8.1	2	2	89%
CALLING LAKE WATER RAW	Raw Surface Water	107	121	95	3	3	10%	8.0	8.3	7.7	3	3	60%
CALLING LAKE WATER RA	Raw Well Water	665			1	1	57%	7.8			1	1	28%
CALLING LAKE WATER TR	Treated Well Water	105	120	92	10	10	1%	7.9	8.3	7.5	10	10	40%
CALLING LAKE WATER TR	Treated Surface Water	116	137	98	5	5	6%	8.1	8.9	7.4	5	5	78%
CANYON CREEK WATER RA	Raw Surface Water	127	201	80	9	9	16%	8.2	9.5	7.2	9	9	86%
CANYON CREEK WATER TR	Treated Surface Water	152	280	82	19	19	14%	7.9	8.4	7.4	19	19	59%
CARSON-PEGASUS PROV.PK	Raw Surface Water	163			1	1	29%	8.2			1	1	79%
CARSON-PEGASUS PROV.PK	Treated Surface Water	187	195	179	2	2	23%	8.4	8.4	8.3	2	2	94%
CLAIRMONT WATER RAW W	Raw Well Water	893	1775	449	28	28	74%	8.8	9.1	8.4	28	28	93%
CLAIRMONT H.U.WATER RA	H. U. Raw Well Water	1009	2153	473	6	6	81%	8.7	9.1	8.3	6	6	90%
CLAIRMONT WATER TREAT	Treated Well Water	923	1112	766	10	10	80%	8.7	9.0	8.4	10	10	92%
CLEARDALE WATER RAW S	Raw Surface Water	285	475	172	5	5	66%	8.1	8.9	7.4	5	5	74%
CLEARDALE WATER TREAT	Treated Surface Water	305	414	225	6	6	52%	7.4	8.6	6.3	6	6	8%
CLEARDALE H.U.WATER TR	H. U. Treated Surface Water	412	873	194	2	2	79%	7.4	8.3	6.6	2	2	19%
COLINTON WATER RAW WE	Raw Well Water	879	1831	422	16	16	73%	7.9	9.1	6.9	16	16	37%
COLINTON H.U.WATER RAW	H. U. Raw Well Water	897	932	863	4	4	74%	7.9	8.0	7.8	4	4	43%
COLINTON WATER TREATE	Treated Well Water	885	1137	689	37	37	78%	8.2	8.9	7.5	37	37	60%
COLINTON H.U.WATER TRE	H. U. Treated Well Water	914	962	868	4	4	80%	8.0	8.5	7.5	4	4	41%
CONKLIN WATER RAW WEL	Raw Well Water	349	447	273	8	8	20%	7.8	8.2	7.4	8	8	27%
CONKLIN WATER TREATED	Treated Well Water	268	772	93	5	5	14%	7.8	8.4	7.3	5	5	31%
CROOKED CREEK WATER R	Raw Well Water	863	900	827	4	4	72%	8.1	8.4	7.8	4	4	52%
CROOKED CREEK H.U.WATE	H. U. Raw Well Water	887	937	840	3	3	73%	8.1	8.5	7.8	3	3	62%
CROOKED CREEK WATER T	Treated Well Water	856	912	803	15	15	77%	8.2	8.6	7.9	15	15	65%
CROSS LAKE PROVINCIAL	Raw Well Water	629	1219	324	7	7	53%	8.5	9.2	7.8	7	7	80%
CROSS LAKE PROV PK H.U	H. U. Raw Well Water	1006			1	1	81%	8.6			1	1	89%
CYNTHIA WATER RAW WELL	Raw Well Water	678			1	1	58%	8.7			1	1	91%
CYNTHIA WATER TREATED	Treated Well Water	671	689	654	8	8	64%	8.7	8.9	8.6	8	8	93%
DAISHOWA CAMP WATER RA	Raw Surface Water	123			1	1	15%	7.5			1	1	7%
DAISHOWA CAMP WATER TR	Treated Surface Water	136	281	66	2	2	10%	7.2	9.0	5.7	2	2	2%
DEADWOOD WATER RAW SU	Raw Surface Water	838			1	1	99%	8.9			1	1	100%
DEADWOOD WATER RAW WEL	Raw Well Water	652			1	1	55%	8.2			1	1	62%

STATION	TYPE	Total Dissolved Solids (mg/L)						pH (pH units)					
		MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP	MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
DEADWOOD WATER TREATED	Treated Well Water	778	994	609	6	6	72%	8.0	8.4	7.5	6	6	43%
DEADWOOD WATER TREATE	Treated Surface Water	809	1010	649	10	10	95%	8.2	8.6	7.8	10	10	83%
DEBOLT WATER RAW WELL	Raw Well Water	629	718	550	8	8	53%	8.7	9.2	8.2	8	8	90%
DEBOLT H.U.WATER RAW W	H. U. Raw Well Water	635	696	579	4	4	48%	8.6	9.1	8.2	4	4	88%
DEBOLT WATER TREATED	Treated Well Water	639	1111	368	28	28	61%	8.5	9.0	8.1	28	28	86%
DEBOLT H.U.WATER TREAT	H. U. Treated Well Water	663	668	659	2	2	64%	8.5	8.9	8.2	2	2	82%
DEER HILL WATER RAW W	Raw Well Water	688	781	605	14	14	59%	7.6	8.1	7.2	14	14	16%
DEER HILL H.U.WATER RA	H. U. Raw Well Water	672			1	1	52%	7.5			1	1	16%
DEER HILL WATER TREAT	Treated Well Water	686	756	623	3	3	65%	7.6	7.8	7.4	4	4	14%
DEMMITT WATER RAW WELL	Raw Well Water	716			1	1	61%	7.5			1	1	10%
DESMARAIS WATER RAW S	Raw Surface Water	128	243	68	20	20	17%	7.9	9.5	6.6	20	20	43%
DESMARAIS WATER TREAT	Treated Surface Water	225	502	101	25	25	33%	7.5	8.6	6.5	25	25	15%
DIXONVILLE WATER RAW	Raw Well Water	391	468	327	16	16	25%	7.8	8.2	7.4	16	16	26%
DIXONVILLE WATER TREA	Treated Well Water	351	438	282	25	25	26%	7.9	8.4	7.4	25	25	37%
DONNELLY WATER RAW SU	Raw Surface Water	469	703	313	13	13	89%	8.3	8.6	8.1	14	14	91%
DONNELLY WATER TREATE	Treated Surface Water	539	816	356	25	25	84%	8.1	9.1	7.3	26	26	79%
DR.MARY JACKSON SCHOOL	Raw Well Water	1432	1477	1388	2	2	92%	8.0	8.1	7.9	2	2	47%
DR.MARY JACKSON SCHOOL	Treated Well Water	1426	1482	1372	2	2	94%	8.0	8.4	7.6	2	2	45%
EAGLESHAM WATER RAW S	Raw Surface Water	309	665	144	28	28	70%	8.0	8.9	7.2	29	29	64%
EAGLESHAM WATER TREAT	Treated Surface Water	348	619	195	35	35	61%	7.2	7.9	6.5	36	36	2%
EAST PRAIRIE WATER RAW	Raw Surface Water	811			1	1	99%	7.4			1	1	3%
EAST PRAIRIE WATER RAW	Raw Well Water	839	1015	694	18	18	70%	7.7	8.6	7.0	18	18	22%
EAST PRAIRIE WATER TRE	Treated Well Water	758	1842	312	9	9	71%	7.9	8.8	7.0	9	9	37%
EDSON H.U.WATER RAW SU	H.U. Raw Surface Water	512			1	1	90%	7.9			1	1	42%
EDSON WATER RAW SURFAC	Raw Surface Water	234			1	1	53%	7.9			1	1	49%
EDSON WATER RAW WELL	Raw Well Water	495	657	372	112	113	38%	8.2	9.0	7.5	114	114	64%
EDSON H.U.WATER RAW WE	H. U. Raw Well Water	494	785	311	14	14	29%	8.2	8.8	7.6	14	14	66%
EDSON WATER TREATED	Treated Well Water	490	719	334	29	29	45%	8.3	9.0	7.7	29	29	72%
EDSON WATER TREATED	Treated Surface Water	528	635	439	18	18	83%	8.4	9.0	7.9	18	18	95%
EDSON H.U.WATER TREATE	H. U. Treated Well Water	379	994	144	5	5	31%	8.2	9.5	7.1	5	5	64%
ELDOE'S MOBILE HOME P	Raw Well Water	780	795	765	2	2	66%	8.7			2	2	91%
ELDOE'S MOBILE HOME P	Treated Well Water	779	819	742	9	9	72%	8.7	9.0	8.5	9	9	93%
ELDOE'S MOBILE HOME PK	H. U. Treated Well Water	778			1	1	73%	8.7			1	1	90%
ENTRANCE WATER RAW SU	Raw Surface Water	349	357	341	2	2	77%	8.0	8.1	7.8	2	2	34%
ENTRANCE H.U.WATER RAW	H. U. Raw Well Water	356	370	342	2	2	11%	7.9	8.0	7.8	2	2	43%
ENTWISTLE WATER RAW W	Raw Well Water	444	526	375	4	4	32%	7.7	8.1	7.4	4	4	24%
ENTWISTLE WATER TREAT	Treated Well Water	409	606	276	19	19	34%	7.9	8.4	7.5	19	19	39%
ENTWISTLE H.U.WATER TR	H. U. Treated Well Water	462	471	452	2	2	42%	7.9	7.9	7.8	2	2	30%
EUREKA RIVER WATER RA	Raw Well Water	1010	2932	348	15	15	80%	7.6	8.2	7.1	15	15	15%
EUREKA RIVER WATER H.U	H. U. Raw Well Water	952	1065	851	2	2	77%	7.5	7.9	7.1	2	2	13%
EUREKA RIVER WATER TR	Treated Well Water	1048	1171	939	5	5	85%	7.4	7.7	7.2	7	7	8%
EVANSBURG WATER RAW W	Raw Well Water	497	530	467	4	4	38%	7.9	8.5	7.3	4	4	33%
EVANSBURG WATER TREAT	Treated Well Water	520	673	403	13	13	48%	7.8	8.3	7.3	13	13	29%
EVERGREEN MOBILE HOME	Raw Well Water	552			1	1	45%	9.0			1	1	97%
FAIRVIEW H.U.WATER RAW	H.U. Raw Surface Water	137	185	101	8	8	19%	8.0	8.7	7.4	8	8	57%
FAIRVIEW WATER RAW SU	Raw Surface Water	236	466	119	48	48	53%	7.8	8.6	7.1	48	48	33%
FAIRVIEW WATER RAW WE	Raw Well Water	383	1479	99	7	7	24%	7.9	8.8	7.0	7	7	34%
FAIRVIEW WATER TREATE	Treated Well Water	306	532	176	49	49	20%	7.3	7.8	6.7	49	49	4%
FAIRVIEW WATER TREATE	Treated Surface Water	306	434	216	10	10	52%	7.4	8.4	6.5	10	10	9%
FAIRVIEW H.U.WATER TRE	H. U. Treated Well Water	160	215	120	8	8	3%	7.5	7.7	7.2	8	8	8%
FALHER H.U.WATER RAW S	H.U. Raw Surface Water	328	467	231	7	7	71%	8.1	8.5	7.6	7	7	63%
FALHER WATER RAW SURF	Raw Surface Water	322	541	192	34	34	73%	8.0	8.8	7.3	35	35	62%
FALHER WATER RAW WELL	Raw Well Water	230			1	1	7%	7.6			1	1	15%
FALHER WATER TREATED	Treated Well Water	368	600	226	30	30	28%	7.4	8.0	6.8	31	31	6%
FALHER WATER TREATED	Treated Surface Water	414	606	283	16	16	71%	7.6	8.2	7.0	17	17	24%
FALHER H.U.WATER TREAT	H. U. Treated Well Water	398	465	341	7	7	33%	7.2	7.6	6.8	7	7	2%
FAUST WATER RAW SURFA	Raw Surface Water	110	131	93	14	14	11%	7.8	8.6	7.2	14	14	39%
FAUST WATER TREATED	Treated Surface Water	122	155	96	17	17	7%	7.8	8.6	7.0	17	17	42%
FAWCETT WATER RAW WEL	Raw Well Water	590	657	529	9	9	49%	8.3	8.7	7.9	9	9	68%
FAWCETT H.U.WATER RAW	H. U. Raw Well Water	619	627	610	5	5	46%	8.3	8.5	8.2	5	5	73%
FAWCETT WATER TREATED	Treated Well Water	586	649	529	16	16	56%	8.3	8.7	7.9	16	16	70%
FAWCETT H.U.WATER TREA	H. U. Treated Well Water	627	636	618	5	5	61%	8.4	8.7	8.1	5	5	73%
FLATBUSH WATER RAW WE	Raw Well Water	662	953	460	4	4	56%	8.3	9.4	7.4	4	4	72%
FLATBUSH WATER TREATED	Treated Well Water	757	777	738	2	2	71%	8.7	9.1	8.3	2	2	92%
FLATBUSH H.U.WATER TRE	H. U. Treated Well Water	753			1	1	71%	8.6			1	1	88%
FOOTNER LAKE WATER RA	Raw Surface Water	402	669	241	12	12	84%	7.9	8.7	7.1	12	12	42%
FOOTNER LAKE WATER TR	Treated Surface Water	534	798	358	20	20	83%	7.8	8.5	7.1	20	20	43%
FORT ASSINIBOINE WATE	Raw Well Water	336	471	240	4	4	18%	8.0	8.9	7.2	4	4	43%
FORT ASSINIBOINE H.U.W	H. U. Raw Well Water	503	576	439	2	2	30%	7.9	8.6	7.2	2	2	42%
FORT ASSINIBOINE WATE	Treated Well Water	352	475	261	13	13	26%	7.8	8.5	7.3	13	13	33%
FORT CHIPEWYAN WATER	Raw Surface Water	64	133	31	8	8	2%	7.4	8.5	6.4	8	8	3%
FORT CHIPEWYAN WATER	Treated Surface Water	80	279	23	28	28	2%	7.3	8.3	6.5	28	28	6%
FORT MACKAY WATER RAW	Raw Surface Water	135	173	105	5	5	19%	7.8	8.9	6.8	5	5	28%
FORT MACKAY WATER TRE	Treated Surface Water	203	337	122	18	18	27%	7.7	9.0	6.6	18	18	37%
FORT MCMURRAY RAW SUR	Raw Surface Water	171	334	87	62	62	32%	8.1	8.6	7.7	62	62	77%
FORT MCMURRAY AIRPORT	Raw Well Water	281			1	1	12%	8.2			1	1	62%
FORT MCMURRAY TREATED	Treated Well Water	223	317	157	174	174	9%	8.0	8.7	7.3	174	174	46%
FORT MCMURRAY TREATED	Treated Surface Water	213	282	161	5	5	30%	7.9	8.5	7.3	5	5	53%
FORT VERMILION WATER	Raw Surface Water	126	159	99	27	27	16%	7.8	9.8	6.2	27	27	32%
FORT VERMILION WATER	Treated Surface Water	136	181	102	36	36	10%	7.5	9.3	6.0	36	36	14%
FORT VERMILION H.U.WAT	H. U. Treated Surface Water	124	150	102	4	4	4%	7.8	8.2	7.5	4	4	64%
FOX CREEK WATER RAW W	Raw Well Water	315	1250	79	14	14	15%	8.0	8.5	7.4	14	14	40%
FOX LAKE WATER RAW WE	Raw Well Water	391	587	260	4	4	25%	8.1	8.3	7.9	4	4	53%
FOX CREEK WATER TREAT	Treated Well Water	599	1135	316	25	25	57%	8.2	8.8	7.6	25	25	61%
FOX LAKE WATER TREATE	Treated Well Water	346	558	214	2	2	25%	8.1	8.7	7.4	2	2	52%
FOX CREEK H.U.WATER TR	H. U. Treated Well Water	466			1	1	43%	7.7			1	1	17%
GARDEN RIVER COMMUNIT	Raw Well Water	382			1	1	24%	8.3			1	1	69%
GIFT LAKE H.U.WATER RA	H.U. Raw Surface Water	162	179	146	2	2	27%	8.0	8.3	7.7	2	2	57%
GIFT LAKE WATER RAW S	Raw Surface Water	156	180	135	13	13	27%	7.9	8.6	7.3	13	13	47%
GIFT LAKE WATER TREAT	Treated Surface Water	184	274	124	29	29	22%	7.9	8.5	7.3	29	29	54%
GIFT LAKE H.U.WATER TR	H. U. Treated Surface Water	245			1	1	39%	7.1			1	1	6%
GIROUXVILLE WATER RAW	Raw Surface Water	390	536	283	23	23	83%	8.2	8.8	7.6	24	24	82%
GIROUXVILLE WATER TRE	Treated Surface Water	428	609	300	38	38	73%	7.7	8.5	6.9	39	39	32%
GRANDE CACHE WATER RA	Raw Surface Water	185	225	153	15	15	37%	8.2	8.8	7.7	15	15	84%
GRANDE PRAIRIE WATER	Raw Surface Water	173	269	111	40	40	32%	8.1	8.7	7.6	40	40	77%

NAQUADAT DATA

STATION	TYPE	Total Dissolved Solids (mg/L)						pH (pH units)					
		MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP	MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
GRANDE CACHE WATER TR	Treated Surface Water	183	221	152	25	25	22%	8.2	8.8	7.6	25	25	84%
GRANDE PRAIRIE WATER	Treated Surface Water	184	300	112	134	134	22%	7.9	8.7	7.2	136	136	58%
GRANDE PRAIRIE H.U.WAT	H. U. Treated Surface Water	233	922	59	6	6	34%	7.9	8.9	7.0	6	6	66%
GRASSLAND WATER H.U.RA	H.U. Raw Surface Water	933	3828	227	9	9	99%	8.0	8.5	7.5	9	9	49%
GRASSLAND WATER RAW S	Raw Surface Water	341	1724	67	17	17	76%	7.6	8.6	6.7	17	17	14%
GRASSLAND WATER RAW W	Raw Well Water	1507	2175	1044	7	7	93%	8.0	8.9	7.2	7	7	46%
GRASSLAND H.U.WATER RA	H. U. Raw Well Water	1696	1832	1570	3	3	97%	7.8	8.0	7.6	3	3	34%
GRASSLAND WATER TREAT	Treated Well Water	561	2500	126	29	29	53%	7.8	8.5	7.2	29	29	33%
GRASSLAND WATER TREAT	Treated Surface Water	193	311	120	10	10	24%	6.9	9.4	5.0	10	10	0%
GRASSLAND WATER H.U. T	H. U. Treated Well Water	1118	5349	234	8	8	88%	7.9	8.7	7.2	8	8	37%
GREGOIRE LAKE PROVINC	Raw Surface Water	68	81	56	6	6	2%	7.6	8.0	7.2	6	6	11%
GREGOIRE LAKE PROVINC	Treated Surface Water	120	794	18	11	11	7%	7.6	8.4	7.0	11	11	28%
GRIFFIN CREEK WATER R	Raw Well Water	394	499	311	11	11	25%	7.8	8.3	7.4	11	11	29%
GRIFFIN CREEK H.U.WATE	H. U. Raw Well Water	408			1	1	17%	7.8			1	1	38%
GRIFFIN CREEK WATER T	Treated Well Water	406	416	397	4	4	34%	7.8	8.5	7.2	5	5	30%
GRIMSHAW WATER	Raw Surface Water	238	300	189	2	2	54%	8.1	8.4	7.8	2	2	73%
GRIMSHAW WATER RAW WE	Raw Well Water	398	481	330	9	9	26%	7.5	8.0	7.0	9	9	11%
GRIMSHAW WATER TREATE	Treated Well Water	419	483	364	19	19	35%	7.3	7.9	6.8	20	20	4%
GRIMSHAW WATER TREATE	Treated Surface Water	347	354	341	2	2	61%	7.5	8.0	7.1	2	2	20%
GROUARD WATER RAW SUR	Raw Surface Water	268	454	159	15	15	62%	8.0	8.7	7.3	15	15	56%
GROUARD WATER TREATED	Treated Surface Water	285	530	153	34	34	48%	7.8	8.7	7.0	34	34	47%
GROVEDALE H.U.WATER RA	H. U. Raw Well Water	1207			1	1	89%	8.5			1	1	83%
GROVEDALE WATER TREAT	Treated Well Water	1200			1	1	89%	7.6			1	1	16%
GUY WATER RAW SURFACE	Raw Surface Water	224	582	86	14	14	50%	7.7	8.7	6.8	14	14	22%
GUY WATER TREATED	Treated Surface Water	258	765	87	36	36	41%	7.5	8.0	7.0	36	36	15%
GUY H.U.WATER TREATEDH	H. U. Treated Surface Water	336			1	1	63%	7.4			1	1	24%
HAWK HILLS WATER RAW	Raw Surface Water	386	1127	133	3	3	82%	8.1	8.5	7.6	3	3	68%
HAWK HILLS WATER TREA	Treated Surface Water	637	1734	234	22	22	98%	7.9	8.5	7.3	22	22	56%
HAWK HILLS H.U.WATER T	H. U. Treated Surface Water	386	399	374	2	2	73%	8.0	8.4	7.5	2	2	73%
HIGH PRAIRIE WATER RA	Raw Surface Water	213	320	142	13	13	46%	8.1	8.5	7.6	13	13	67%
HIGH PRAIRIE AIRPORT	Raw Surface Water	168			1	1	31%	7.6			1	1	13%
HIGH LEVEL WATER RAW	Raw Surface Water	365	490	271	25	25	78%	8.0	8.7	7.4	25	25	61%
HIGH PRAIRIE WATER RA	Raw Well Water	395			1	1	50%	8.7			1	1	91%
HIGH PRAIRIE WATER TR	Treated Well Water	283	316	155	30	30	16%	7.3	8.4	6.3	30	30	4%
HIGH PRAIRIE AIRPORT	Treated Well Water	237	312	109	5	5	10%	7.5	8.3	6.8	5	5	10%
HIGH PRAIRIE WATER TR	Treated Surface Water	668	695	643	2	2	91%	7.9	8.7	7.3	2	2	64%
HIGH LEVEL WATER TREA	Treated Surface Water	485	864	273	41	41	79%	7.6	8.5	6.8	41	41	26%
HIGH LEVEL H.U.WATER T	H. U. Treated Surface Water	555	654	471	4	4	93%	7.6	7.7	7.4	4	4	36%
HILLIARDS BAY PROVINC	Raw Well Water	856	1074	682	7	7	71%	7.2	7.6	6.8	7	7	2%
HILLIARDS BAY PROV.PK	H. U. Raw Well Water	962			1	1	78%	6.8			1	1	1%
HILLIARDS BAY PROVINC	Treated Well Water	831	2518	274	17	17	75%	7.5	8.5	6.6	17	17	12%
HILLIARDS BAY PROV.PK	H. U. Treated Well Water	996			1	1	84%	7.2			1	1	2%
HILLPARK MOBILE HOME	Raw Well Water	527			1	1	42%	8.8			1	1	94%
HILLTOP ESTATES WATER	Raw Well Water	962	987	938	2	2	77%	7.8			2	2	28%
HILLTOP ESTATES TREAT	Treated Well Water	989	1037	942	5	5	83%	8.1	9.1	7.2	5	5	56%
HINES CREEK WATER RAW	Raw Surface Water	245	365	165	16	16	50%	7.9	8.4	7.4	16	16	42%
HINES CREEK WATER TRE	Treated Surface Water	313	418	234	34	34	54%	7.2	8.9	5.8	35	35	3%
HINES CREEK WATER H.U.	H. U. Treated Surface Water	281	350	225	3	3	50%	7.3	8.2	6.5	3	3	16%
HINTON WATER RAW SURF	Raw Surface Water	191	459	80	6	6	39%	8.2	8.4	7.9	6	6	81%
HINTON WATER TREATED	Treated Surface Water	153	233	100	58	58	14%	8.0	8.6	7.4	58	58	67%
HINTON H.U.WATER TREAT	H. U. Treated Surface Water	167			1	1	14%	7.3			1	1	30%
HOTCHKISS WATER RAW S	Raw Surface Water	327	351	305	3	3	74%	8.0	8.4	7.6	3	3	59%
HOTCHKISS WATER TREAT	Treated Surface Water	340	791	146	20	20	35%	7.8	8.8	7.0	20	20	52%
HYTHE WATER RAW WELL	Raw Well Water	768	1134	520	17	17	65%	8.8	9.2	8.3	17	17	93%
HYTHE H.U.WATER RAW WE	H. U. Raw Well Water	928			1	1	76%	8.7			1	1	92%
HYTHE WATER TREATED	Treated Well Water	741	1080	508	3	3	69%	9.0	9.3	8.6	3	3	97%
JANVIER WATER RAW SUR	Raw Surface Water	195	259	147	12	12	40%	7.9	9.1	6.9	12	12	49%
JANVIER WATER TREATED	Treated Surface Water	194	286	133	21	21	25%	7.7	8.6	7.0	21	21	38%
JARVIE WATER RAW WELL	Raw Well Water	663	749	587	7	7	56%	7.9	8.4	7.5	7	7	39%
JARVIE H.U.WATER RAW W	H. U. Raw Well Water	646	661	631	4	4	49%	7.9	8.2	7.7	4	4	46%
JARVIE WATER TREATED	Treated Well Water	656	797	540	13	13	63%	8.2	8.5	7.9	13	13	65%
JARVIE H.U.WATER TREAT	H. U. Treated Well Water	654	664	644	5	5	63%	8.1	8.2	8.0	5	5	50%
JASPER WATER RAW WELL	Raw Well Water	128	133	124	2	2	1%	7.8	8.9	6.9	2	2	31%
JASPER WATER TREATED	Treated Well Water	117	177	77	15	15	1%	8.0	8.5	7.5	15	15	45%
JASPER H.U.WATER TREAT	H. U. Treated Well Water	130	133	127	2	2	2%	8.0	8.4	7.6	2	2	40%
JEAN COTE WATER RAW S	Raw Surface Water	238	503	112	15	15	54%	7.6	8.3	7.0	15	15	14%
JEAN COTE WATER TREAT	Treated Surface Water	180	507	64	35	35	21%	7.4	8.2	6.7	35	35	10%
JEAN COTE H.U.WATER TR	H. U. Treated Surface Water	295			1	1	54%	7.4			1	1	21%
JOUSSARD WATER RAW SU	Raw Surface Water	114	144	90	10	10	12%	8.0	8.5	7.5	10	10	59%
JOUSSARD WATER TREATE	Treated Surface Water	120	156	93	22	22	7%	7.8	8.5	7.1	22	22	46%
KEG RIVER WATER RAW SU	Raw Surface Water	583	772	440	5	5	95%	7.8	9.0	6.9	5	5	40%
KEG RIVER WATER RAW W	Raw Well Water	1077	1838	631	4	4	82%	7.9	8.8	7.2	4	4	39%
KEG RIVER WATER TREAT	Treated Well Water	828	1343	510	24	24	73%	7.9	8.6	7.3	24	24	39%
KEG RIVER WATER TREAT	Treated Surface Water	268	667	108	3	3	44%	8.2	9.0	7.5	3	3	88%
KEG RIVER H.U.WATER TR	H. U. Treated Well Water	738			1	1	70%	7.8			1	1	25%
KINUSO WATER RAW SURF	Raw Surface Water	100	187	53	29	29	8%	7.5	8.4	6.7	29	29	6%
KINUSO WATER TREATED	Treated Surface Water	177	342	92	39	39	20%	7.5	8.8	6.3	39	39	16%
KINUSO H.U.WATER TREAT	H. U. Treated Surface Water	148	247	89	4	4	9%	8.0	8.4	7.6	4	4	77%
LA CRETE H.U.WATER TRE	H. U. Treated Well Water	383			1	1	31%	7.7			1	1	22%
LA CRETE WATER H.U.RAW	H. U. Raw Well Water	421			1	1	19%	7.8			1	1	33%
LA CRETE WATER RAW SU	Raw Surface Water	369	392	347	3	3	80%	7.6	8.0	7.3	3	3	14%
LA CRETE WATER RAW WE	Raw Well Water	361	511	255	17	17	21%	7.8	8.4	7.2	17	17	25%
LA CRETE WATER TREATE	Treated Well Water	414	472	362	30	30	39%	7.9	8.3	7.3	30	30	39%
LA CRETE WATER TREATE	Treated Surface Water	796			1	1	93%	8.9			1	1	100%
LA GLACE WATER RAW WE	Raw Well Water	568	1136	284	3	3	47%	8.5	9.5	7.7	3	3	84%
LA GLACE WATER TREATE	Treated Well Water	667	1070	416	5	5	64%	8.6	9.2	8.0	5	5	88%
LAC LA BICHE H.U.WATER	H.U. Raw Surface Water	214			1	1	44%	8.1			1	1	70%
LAC LA BICHE H.U.WATER	H. U. Treated Well Water	186	188	185	2	2	5%	8.1	8.2	7.9	2	2	47%
LAC LA BICHE WATER RA	Raw Surface Water	155	202	119	5	5	26%	8.3	9.1	7.7	5	5	92%
LAC LA BICHE WATER RA	Raw Well Water	976			1	1	78%	7.7			1	1	21%
LAC LA BICHE WATER TR	Treated Well Water	156	284	86	13	13	3%	8.3	8.9	7.7	13	13	71%
LAC LA BICHE WATER TR	Treated Surface Water	147	184	118	5	5	13%	8.0	8.4	7.6	5	5	69%
LAKEVIEW ESTATES WATE	Raw Well Water	896			1	1	74%	7.7			1	1	21%
LESSER SLAVE LAKE PROV	Raw Well Water	480	816	283	7	7	36%	7.7	8.6	6.8	7	7	18%
LESSER SLAVE LAKE PROV	Treated Well Water	633	909	441	9	9	60%	7.5	7.9	7.2	9	9	12%

STATION	TYPE	Total Dissolved Solids (mg/L)						pH (pH units)					
		MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP	MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
LINARIA WATER RAW WEL	Raw Well Water				0	0					0	0	
LITTLE BUFFALO WATER	Raw Surface Water	542	1196	246	15	15	93%	8.0	8.7	7.4	15	15	61%
LITTLE BUFFALO WATER	Treated Surface Water	739	2534	216	24	24	93%	8.1	8.6	7.6	24	24	77%
LODGEPOLE H.U.WATER RA	H. U. Raw Well Water	453			1	1	23%	7.6			1	1	22%
LODGEPOLE WATER TREAT	Treated Well Water	396			1	1	32%	8.4			1	1	79%
LOON LAKE WATER RAW S	Raw Surface Water	401	632	254	19	19	84%	8.0	8.7	7.3	20	20	57%
LOON LAKE WATER TREAT	Treated Surface Water	440	669	289	32	32	74%	8.0	8.7	7.3	33	33	66%
MANNING WATER RAW SUR	Raw Surface Water	244	465	128	17	17	55%	8.1	8.6	7.6	17	17	69%
MANNING WATER TREATED	Treated Surface Water	332	742	149	29	29	58%	7.6	8.4	6.9	29	29	24%
MANNING EAST WATER TR	Treated Surface Water	492	777	312	12	12	80%	8.0	8.6	7.5	12	12	72%
MANOLA WATER RAW WELL	Raw Well Water	1272	1306	1239	6	6	88%	8.4	8.9	8.0	6	6	77%
MANOLA WATER TREATED	Treated Well Water	1183	1894	738	8	8	89%	8.3	8.9	7.8	8	8	75%
MANOLA H.U.WATER TREAT	H. U. Treated Well Water	427	507	359	2	2	37%	8.1	8.3	7.9	2	2	52%
MARIE-REINE WATER RAW	Raw Surface Water	414			1	1	83%	8.1			1	1	67%
MARIE-REINE WATER TRE	Treated Surface Water	341	594	195	15	15	59%	8.1	8.6	7.6	15	15	79%
MARLBORO WATER RAW WEL	Raw Well Water	311			1	1	15%	7.8			1	1	29%
MARLBORO H.U.WATER RAW	H. U. Raw Well Water	310			1	1	7%	8.0			1	1	50%
MARLBORO WATER TREATED	Treated Well Water	327	340	315	2	2	23%	8.1	8.3	7.8	2	2	53%
MAYERTHORPE WATER RAW	Raw Well Water	783	876	700	8	8	66%	8.2	8.8	7.7	8	8	64%
MAYERTHORPE WATER TRE	Treated Well Water	818	952	704	29	29	79%	8.1	8.6	7.7	31	31	59%
MAYERTHORPE H.U.WATER	H. U. Treated Well Water	843			1	1	77%	8.1			1	1	51%
MCINNIS WATER RAW WELL	Raw Well Water	488			1	1	37%	7.5			1	1	9%
MCINNIS H.U.WATER RAW	H. U. Raw Well Water	477			1	1	26%	7.4			1	1	10%
MCLENNAN WATER RAW SU	Raw Surface Water	378	620	231	17	17	81%	8.1	9.0	7.4	17	17	76%
MCLENNAN WATER TREATE	Treated Surface Water	428	910	202	31	31	73%	7.5	8.1	7.0	31	31	19%
MEANDER RIVER WATER R	Raw Surface Water	266			1	1	61%	8.0			1	1	60%
MEANDER RIVER WATER R	Raw Well Water	330	353	308	2	2	17%	8.1	8.2	7.9	2	2	49%
MEANDER RIVER WATER T	Treated Well Water	354			1	1	26%	7.7			1	1	22%
MITSUE WATER RAW SURF	Raw Surface Water	112	141	90	3	3	12%	8.1	9.1	7.2	3	3	76%
MITSUE WATER TREATED	Treated Surface Water	114	130	100	8	8	6%	7.7	8.4	7.1	8	8	37%
MOONSHINE LAKE PROV PK	H.U. Raw Surface Water	469	605	364	2	2	87%	7.6	8.0	7.3	2	2	10%
MOONSHINE LAKE PROV.PK	Raw Surface Water	291	843	100	3	3	67%	8.1	8.7	7.5	3	3	68%
MOONSHINE LAKE PROVINC	Treated Surface Water	348	723	167	3	3	61%	7.8	8.7	7.0	3	3	48%
MOONSHINE LAKE PROV PK	H. U. Treated Surface Water	401	478	336	2	2	77%	8.4	10.3	6.9	2	2	96%
NAMPA WATER RAW SURFA	Raw Surface Water	306	481	195	17	17	70%	8.3	8.7	7.9	17	17	88%
NAMPA WATER TREATED	Treated Surface Water	319	508	201	37	37	55%	7.9	8.5	7.4	37	37	63%
NEERLANDIA WATER RAW S	Raw Surface Water	251	443	143	4	4	57%	8.0	9.4	6.8	4	4	59%
NEERLANDIA WATER RAW	Raw Well Water	435	1853	102	2	2	31%	7.8	8.7	7.0	2	2	28%
NEERLANDIA WATER TREAT	Treated Well Water	415	512	336	13	13	35%	7.8	8.5	7.2	13	13	31%
NEERLANDIA WATER TREA	Treated Surface Water	838	1250	562	11	11	96%	8.4	8.9	8.0	11	11	96%
NEERLANDIA H.U.WATER T	H. U. Treated Well Water	371	446	308	4	4	29%	8.2	8.7	7.7	4	4	60%
NEW FISH CREEK WATER	Raw Well Water	655	702	611	3	3	56%	8.7	8.8	8.6	3	3	90%
NEW FISH CREEK WATER	Treated Well Water	666	705	628	12	12	63%	8.7	9.2	8.3	12	12	93%
NEW FISH CREEK H.U.WAT	H. U. Treated Well Water	681	719	645	3	3	66%	8.5	8.8	8.1	3	3	79%
NOTIKEWIN PROVINCIAL	Raw Surface Water	74			1	1	3%	7.5			1	1	7%
NOTIKEWIN PROVINCIAL	Raw Well Water	1345			1	1	90%	7.8			1	1	28%
NOTIKEWIN PROVINCIAL P	Treated Well Water	958			1	1	82%	7.9			1	1	38%
PADDLE PRAIRIE H.U.WAT	H.U. Raw Surface Water	341	415	281	2	2	73%	7.8	8.3	7.4	2	2	29%
PADDLE PRAIRIE WATER	Raw Surface Water	278	539	143	24	24	64%	7.9	8.6	7.3	24	24	52%
PADDLE PRAIRIE WATER	Raw Well Water	225			1	1	6%	7.9			1	1	36%
PADDLE PRAIRIE WATER	Treated Well Water	287	433	190	19	19	17%	7.6	8.4	7.0	19	19	18%
PADDLE PRAIRIE WATER	Treated Surface Water	390	798	191	11	11	68%	8.0	8.6	7.4	12	12	64%
PEACE RIVER H.U.WATER	H.U. Raw Surface Water	118	149	93	3	3	13%	8.2	8.6	7.8	3	3	80%
PEACE RIVER CORRECTIO	Raw Surface Water	112	131	97	10	10	12%	8.0	8.5	7.5	11	11	59%
PEACE RIVER WATER RAW	Raw Surface Water	131	299	57	112	112	18%	8.0	8.6	7.4	111	111	57%
PEACE RIVER A.P.WATER	Raw Well Water	466	476	457	2	2	33%	7.5	7.6	7.4	2	2	10%
PEACE POINT WATER TRE	Treated Well Water	156			1	1	3%	7.3			1	1	4%
PEACE RIVER A.P.TRUCKE	Treated Well Water	140	190	103	2	2	2%	7.4	7.9	6.9	2	2	6%
PEACE RIVER AIRPORT TR	Treated Well Water	493	509	477	3	3	43%	7.6	8.0	7.2	3	3	14%
PEACE RIVER CORRECTIO	Treated Surface Water	156	268	91	13	13	13%	7.6	9.0	6.4	14	14	25%
PEACE RIVER WATER TRE	Treated Surface Water	133	235	76	155	155	10%	7.3	8.1	6.5	155	155	4%
PEACE RIVER H.U.WATER	H. U. Treated Surface Water	166	532	52	5	5	13%	7.2	7.9	6.5	5	5	8%
PEERLESS LAKE WATER R	Raw Surface Water	107	126	91	11	11	10%	7.7	8.3	7.1	11	11	21%
PEERLESS LAKE WATER R	Raw Well Water	237	1495	38	2	2	7%	7.8	9.5	6.4	2	2	30%
PEERLESS LAKE WATER T	Treated Well Water	131	270	64	17	17	2%	8.1	8.8	7.4	17	17	53%
PEORIA WATER RAW SURF	Raw Surface Water	359	887	145	13	13	79%	7.9	8.7	7.2	13	13	48%
PEORIA WATER TREATED	Treated Surface Water	411	892	189	19	19	71%	7.8	9.0	6.8	19	19	47%
PEORIA H.U.WATER TREAT	H. U. Treated Surface Water	712			1	1	98%	8.2			1	1	88%
PIBROCH WATER RAW WEL	Raw Well Water	873	933	816	6	6	72%	8.6	8.8	8.4	6	6	88%
PIBROCH H.U.WATER RAW	H. U. Raw Well Water	918	929	907	3	3	75%	8.5	8.7	8.4	3	3	85%
PIBROCH WATER TREATED	Treated Well Water	918	1092	771	10	10	80%	8.6	8.9	8.2	10	10	87%
PIBROCH H.U.WATER TREA	H. U. Treated Well Water	921	924	918	3	3	81%	8.6	8.7	8.4	3	3	86%
PICKARDVILLE H.U.WATER	H.U. Raw Surface Water	269	702	103	2	2	59%	7.8	8.3	7.3	2	2	28%
PICKARDVILLE WATER RAW	Raw Surface Water	165			1	1	30%	7.5			1	1	8%
PICKARDVILLE WATER RA	Raw Well Water	1636	1730	1585	4	4	99%	8.0	8.5	7.5	4	4	46%
PICKARDVILLE WATER TR	Treated Well Water	467	4524	48	3	3	42%	7.9	8.7	7.2	3	3	38%
PICKARDVILLE WATER TR	Treated Surface Water	1645	1877	1441	5	5	100%	8.2	8.9	7.6	5	5	86%
PICKARDVILLE H.U.WATER	H. U. Treated Well Water	224	594	85	3	3	9%	7.8	8.4	7.2	3	3	24%
PINE SHADOWS TRAILER	Raw Well Water	563	1046	304	23	23	46%	8.5	9.1	7.9	23	23	83%
PINE LANE TRAILER PAR	Raw Well Water	1492			1	1	92%	8.0			1	1	64%
PINE SHADOWS TRAILER P	H. U. Raw Well Water	551	582	521	2	2	37%	8.9	9.3	8.4	2	2	95%
PINE SHADOWS ESTATES	Treated Well Water	491			1	1	45%	8.5			1	1	84%
PINE LANE TRAILER PAR	Treated Well Water	1501	1640	1374	4	4	94%	7.9	8.2	7.6	4	4	37%
PLAMONDON WATER RAW S	Raw Surface Water	282	594	134	6	6	63%	8.0	9.0	7.2	6	6	63%
PLAMONDON WATER TREAT	Treated Surface Water	295	620	141	6	6	50%	7.7	8.8	6.7	6	6	37%
POPLAR PLACE MOBILE H	Raw Well Water	479	551	416	12	12	36%	8.1	8.9	7.4	12	12	53%
POPLAR PLACE MHP H.U.W	H. U. Raw Well Water	440			1	1	21%	7.9			1	1	41%
POPLAR PLACE MOBILE HO	Treated Well Water	467	586	372	2	2	42%	8.1	9.0	7.3	2	2	55%
QUEEN ELIZABETH PROVI	Raw Well Water	1055	1170	951	2	2	81%	7.5	7.7	7.4	2	2	12%
QUEEN ELIZABETH PROVIN	Treated Well Water	1024	1241	845	3	3	84%	7.7	7.9	7.6	3	3	24%
RAINBOW LAKE WATER RA	Raw Surface Water	127	179	90	24	24	16%	7.4	8.1	6.8	25	25	4%
RAINBOW LAKE WATER TR	Treated Surface Water	223	350	141	28	28	32%	7.4	10.0	5.5	29	29	9%
RAINBOW LAKE H.U.WATER	H. U. Treated Surface Water	235			3	3	35%	7.4	7.6	7.3	3	3	24%
REDEARTH WATER RAW SUR	Raw Surface Water	361	620	210	3	3	79%	8.1	8.5	7.8	3	3	76%
REDEARTH CREEK AFS WAT	Raw Surface Water	213	354	129	3	3	46%	8.2	8.6	7.8	3	3	80%

STATION	TYPE	Total Dissolved Solids (mg/L)						pH (pH units)					
		MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP	MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
REDEARTH CREEK DISTRIB	Treated Surface Water	362			1	1	63%	8.0			1	1	66%
REDEARTH WATER TREATED	Treated Surface Water	403	666	243	5	5	69%	7.8	8.2	7.3	5	5	41%
REDEARTH CREEK AFS WAT	Treated Surface Water	271	629	117	6	6	45%	7.8	8.3	7.2	6	6	43%
REINWOOD WATER RAW SU	Raw Surface Water	430			1	1	87%	8.2			1	1	83%
REINWOOD WATER TREATE	Treated Surface Water	314	529	186	13	13	54%	8.0	8.7	7.3	13	13	67%
RIDGE VALLEY WATER RA	Raw Well Water	841	915	773	4	4	70%	8.8	8.9	8.7	4	4	93%
RIDGE VALLEY WATER TR	Treated Well Water	848	879	819	17	17	76%	8.8	8.9	8.7	17	17	94%
RIDGE VALLEY H.U.WATER	H. U. Treated Well Water	851	882	822	3	3	77%	8.7	8.8	8.7	3	3	92%
ROBB WATER RAW WELL	Raw Well Water	467	486	450	2	2	35%	9.1			2	2	98%
ROBB WATER TREATED	Treated Well Water	452	461	444	3	3	40%	9.1	9.3	8.8	3	3	99%
ROCHESTER WATER RAW W	Raw Well Water	438			1	1	31%	7.4			1	1	6%
ROCKY LANE WATER RAW S	Raw Surface Water	625	890	439	2	2	96%	8.2	8.4	8.0	2	2	83%
ROCKY LANE WATER TREAT	Treated Surface Water	710	956	527	5	5	92%	8.1	8.4	7.7	5	5	77%
ROCKY LANE H.U.WATER T	H. U. Treated Surface Water	824			1	1	99%	8.2			1	1	88%
ROYCE WATER RAW SURFA	Raw Surface Water	890	4194	189	6	6	99%	7.7	8.6	7.0	6	6	25%
ROYCE WATER RAW WELL	Raw Well Water	824			1	1	69%	7.5			1	1	10%
ROYCE WATER TREATED	Treated Well Water	488	1238	193	25	25	45%	7.7	8.4	7.1	25	25	24%
ROYCE WATER TREATED	Treated Surface Water	160			1	1	16%	7.4			1	1	10%
ROYCE H.U.WATER TREATE	H. U. Treated Well Water	352	452	273	2	2	27%	8.0	8.1	7.9	2	2	41%
RYCROFT WATER RAW SUR	Raw Surface Water	359	921	140	19	19	79%	8.1	8.7	7.6	19	19	74%
RYCROFT WATER RAW WEL	Raw Well Water	3041	5403	1712	2	2	99%	7.8	8.1	7.5	2	2	28%
RYCROFT WATER TREATED	Treated Well Water	391	1240	123	12	12	32%	7.7	8.3	7.1	12	12	19%
RYCROFT WATER TREATED	Treated Surface Water	779	2667	228	10	10	94%	7.8	8.7	7.0	11	11	50%
SANDY LAKE WATER RAW S	Raw Surface Water	115	139	96	6	6	13%	7.8	9.3	6.5	6	6	29%
SANDY LAKE WATER TREAT	Treated Surface Water	187	220	158	10	10	23%	8.0	8.8	7.3	10	10	67%
SANGUDO WATER RAW WEL	Raw Well Water	902	1185	686	12	12	74%	8.5	8.7	8.2	12	12	80%
SANGUDO WATER TREATED	Treated Well Water	895	1103	727	27	27	79%	8.4	8.9	8.0	28	28	80%
SASKATOON ISLAND PROV	Raw Well Water	1703	2710	1071	5	5	95%	8.4	8.8	8.1	6	6	79%
SASKATOON ISLAND PROVI	Treated Well Water	1986	2028	1945	4	4	98%	8.4	8.7	8.1	4	4	79%
SEXSMITH WATER RAW WE	Raw Well Water	971	1027	917	9	9	78%	8.3	8.6	7.9	9	9	68%
SEXSMITH WATER TREATE	Treated Well Water	966	1004	929	19	19	82%	8.4	8.8	8.0	19	19	77%
SHELL PEACE RIVER INSI	Raw Surface Water	133	136	130	2	2	18%	7.9	7.9	7.8	2	2	44%
SHELL PEACE RIVER INS	Treated Surface Water	189	226	158	5	5	23%	7.7	8.3	7.2	5	5	37%
SIR WINSTON CHURCHILL	Raw Surface Water	144			1	1	22%	9.0			1	1	100%
SIR WINSTON CHURCHILL	Treated Surface Water	163	183	146	5	5	17%	8.6	9.1	8.1	5	5	98%
SLAVE LAKE WATER RAW	Raw Surface Water	105	154	71	20	20	9%	7.8	8.9	6.8	21	21	30%
SLAVE LAKE WATER TREA	Treated Surface Water	111	180	69	30	30	6%	7.6	8.5	6.8	31	31	21%
SMITH WATER RAW SURFAC	Raw Surface Water	213	394	115	6	6	46%	7.7	10.1	5.9	6	6	26%
SMITH WATER TREATED	Treated Surface Water	196	296	130	14	14	25%	8.0	8.7	7.4	14	14	71%
SMITH H.U.WATER TREATE	H. U. Treated Surface Water	263.0			2	2	44%	7.8	7.8	7.8	2	2	60%
SPIRIT RIVER WATER RA	Raw Surface Water	225	329	154	30	30	50%	7.8	8.6	7.1	31	31	38%
SPIRIT RIVER WATER TR	Treated Surface Water	337	549	207	48	48	59%	7.6	8.4	6.9	49	49	26%
ST. ISIDORE WATER RAW	Raw Surface Water	434	694	271	10	10	87%	7.9	8.8	7.0	10	10	46%
ST. ISIDORE WATER TRE	Treated Surface Water	399	705	225	21	21	69%	7.7	8.3	7.2	21	21	38%
STRONG CREEK WATER RA	Raw Surface Water	1010			1	1	99%	7.7			1	1	22%
STRONG CREEK WATER RA	Raw Well Water	992	1208	815	7	7	79%	8.0	8.4	7.6	7	7	46%
STRONG CREEK WATER TRE	Treated Well Water	1025			1	1	84%	7.5			1	1	10%
STRONG CREEK WATER TR	Treated Surface Water	1033	1175	908	2	2	98%	7.8	7.9	7.6	2	2	41%
SUNSET HOUSE WATER RAW	Raw Well Water	824			1	1	69%	8.8			1	1	93%
SUNSET HOUSE WATER TRE	Treated Well Water	893	1301	612	5	5	79%	8.6	9.0	8.2	5	5	89%
SUNSET HOUSE H.U.WATER	H. U. Treated Well Water	825	840	811	3	3	76%	8.6	8.8	8.5	3	3	87%
SWAN HILLS H.U.WATER R	H.U. Raw Surface Water	75.27	100	57	5	5	3%	7.4	7.8	7.0	5	5	1%
SWAN HILLS WATER RAW	Raw Surface Water	65	86	49	42	42	2%	7.6	8.6	6.8	42	42	16%
SWAN HILLS WATER RAW	Raw Well Water	64			1	1	0%	7.9			1	1	36%
SWAN CITY MOBILE HOME	Raw Well Water	739	760	719	3	3	63%	9.0	9.6	8.4	3	3	97%
SWAN HILLS WATER TREA	Treated Well Water	132	198	88	54	54	2%	8.0	8.9	7.2	54	54	46%
SWAN CITY MOBILE HOME	Treated Well Water	751	797	707	8	8	70%	8.8	9.0	8.6	8	8	94%
SWAN HILLS WATER TREA	Treated Surface Water	168	310	91	15	15	18%	8.3	9.1	7.6	15	15	92%
SWAN HILLS H.U.WATER T	H. U. Treated Well Water	128	188	87	5	5	1%	8.0	9.0	7.1	5	5	41%
SWEATHOUSE CWP WATER	Raw Well Water	1255	1316	1196	6	6	88%	8.4	8.8	8.0	6	6	79%
SWEATHOUSE CWP H.U.WAT	H. U. Raw Well Water	1279	1338	1222	2	2	91%	8.2	8.3	8.1	2	2	66%
SWEATHOUSE WATER TREA	Treated Well Water	1152	1662	798	11	11	88%	8.3	8.6	8.1	11	11	75%
T & E MOBILE HOME PAR	Raw Well Water	732	759	705	4	4	62%	8.9	9.4	8.4	4	4	95%
T & E MOBILE HOME PAR	Treated Well Water	737	786	692	7	7	69%	8.9	9.1	8.7	7	7	96%
T & E MOBILE HOME PARK	H. U. Treated Well Water	735			1	1	70%	8.9			1	1	96%
TANGENT WATER RAW SUR	Raw Surface Water	294	517	167	14	14	67%	8.2	8.6	7.8	14	14	84%
TANGENT WATER TREATED	Treated Surface Water	310	501	192	18	18	53%	8.2	8.9	7.6	18	18	88%
TANGENT H.U.WATER TREA	H. U. Treated Surface Water	212			1	1	28%	8.2			1	1	88%
TEEPEE CREEK WATER TR	Treated Surface Water	1250	1270	1229	2	2	99%	7.9	8.4	7.5	2	2	64%
TOMPKINS WATER RAW SUR	Raw Surface Water	621	688	560	2	2	96%	8.1	8.3	8.0	2	2	77%
TOMPKINS WATER RAW WEL	Raw Well Water	675			1	1	57%	8.3			1	1	67%
TOMPKINS WATER TREATED	Treated Well Water	556	771	401	3	3	52%	8.3	8.5	8.2	3	3	73%
TOMPKINS WATER TREATED	Treated Surface Water	582	711	476	5	5	87%	8.1	8.5	7.7	5	5	74%
TOMPKINS H.U.WATER TRE	H. U. Treated Well Water	734	814	662	2	2	70%	8.0	8.2	7.8	2	2	42%
TRIPLE L MOBILE HOME	Raw Well Water	768	885	667	40	40	65%	8.6	9.0	8.3	40	40	88%
TRIPLE L MOBILE HOME	Treated Well Water	768	864	682	27	27	71%	8.7	9.0	8.3	27	27	91%
TROUT LAKE WATER RAW S	Raw Surface Water	103			1	1	9%	7.9			1	1	47%
TROUT LAKE WATER RAW	Raw Well Water	568	722	448	12	12	47%	7.7	8.3	7.1	12	12	18%
TROUT LAKE WATER TREA	Treated Well Water	351	1315	94	16	16	26%	8.1	8.8	7.4	16	16	54%
VALLEYVIEW H.U.WATER R	H.U. Raw Surface Water	129	225	74	10	10	16%	7.6	8.1	7.1	10	10	6%
VALLEYVIEW WATER RAW	Raw Surface Water	133	223	79	31	31	18%	7.6	8.3	7.1	31	31	16%
VALLEYVIEW WATER TREA	Treated Surface Water	316	743	134	46	46	54%	7.6	9.3	6.2	46	46	21%
VALLEYVIEW H.U.WATER T	H. U. Treated Surface Water	243	497	119	9	9	38%	7.5	9.1	6.1	9	9	27%
WABASCA WATER RAW SUR	Raw Surface Water	116	183	73	21	21	13%	7.6	8.3	7.0	21	21	14%
WABASCA WATER TREATED	Treated Surface Water	149	245	91	28	28	13%	7.5	8.3	6.7	28	28	13%
WANDERING RIVER WATER	Raw Surface Water	94	132	67	14	14	7%	7.6	8.2	7.0	14	14	12%
WANDERING RIVER WATER	Treated Surface Water	110	173	70	21	21	5%	7.8	8.7	6.9	21	21	44%
WANHAM WATER RAW SURF	Raw Surface Water	303	622	147	33	33	69%	8.0	8.6	7.4	33	33	55%
WANHAM WATER TREATED	Treated Surface Water	299	574	155	65	65	51%	7.7	8.9	6.7	66	66	39%
WANHAM H.U.WATER TREAT	H. U. Treated Surface Water	374	615	227	6	6	73%	7.6	8.4	6.9	6	6	42%
WARRENSVILLE WATER RA	Raw Well Water	148	204	107	12	12	1%	7.1	8.0	6.2	12	12	1%
WARRENSVILLE H.U.WATER	H. U. Raw Well Water	206			1	1	1%	8.2			1	1	63%
WARRENSVILLE WATER TR	Treated Well Water	146	176	121	11	11	2%	7.1	8.1	6.2	11	11	1%
WATINO WATER RAW WELL	Raw Well Water	2678	5356	1339	13	13	99%	8.2	8.8	7.7	13	13	65%
WATINO WATER TREATED	Treated Well Water	2195	7335	657	6	6	99%	8.2	8.9	7.6	6	6	64%

STATION	TYPE	Total Dissolved Solids (mg/L)						pH (pH units)					
		MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP	MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
WEBERVILLE WATER RAW	Raw Well Water	343	547	215	22	22	19%	7.5	8.1	6.9	22	22	8%
WEBERVILLE WATER TREA	Treated Well Water	379	584	246	12	12	30%	7.7	8.7	6.8	12	12	21%
WEMBLEY WATER RAW WEL	Raw Well Water	1519	1827	1264	24	24	93%	8.5	8.7	8.2	25	25	80%
WEMBLEY H.U.WATER RAW	H. U. Raw Well Water	1671	1776	1571	5	5	97%	8.5	8.8	8.2	5	5	83%
WEMBLEY WATER TREATED	Treated Well Water	1406	1606	1230	36	36	93%	8.6	8.8	8.3	36	36	88%
WEMBLEY H.U.WATER TREA	H. U. Treated Well Water	1673			1	1	96%	8.6			1	1	87%
WEST VALE WATER RAW W	Raw Well Water	1740	1898	1596	13	13	95%	8.3	9.1	7.5	13	13	66%
WEST VALE WATER TREAT	Treated Well Water	1778	1859	1700	7	7	97%	8.1	8.4	7.9	8	8	59%
WESTLOCK H.U.WATER RAW	H.U. Raw Surface Water	221	391	125	10	10	46%	8.2	8.5	7.8	10	10	78%
WESTLOCK WATER RAW SU	Raw Surface Water	209	323	135	32	32	45%	8.1	8.7	7.5	32	32	71%
WESTLOCK WATER TREATE	Treated Surface Water	229	409	128	45	45	34%	7.9	8.6	7.2	45	45	56%
WESTLOCK H.U.WATER TRE	H. U. Treated Surface Water	222	390	126	10	10	31%	7.9	8.1	7.7	10	10	68%
WESTVIEW MOBILE VILLA	Raw Well Water	424	626	287	2	2	29%	7.7	8.8	6.8	2	2	24%
WHITECOURT WATER RAW	Raw Surface Water	206	385	110	13	13	44%	8.2	8.7	7.7	13	13	79%
WHITECOURT WATER TREA	Treated Surface Water	237	354	159	41	41	36%	7.9	8.6	7.3	41	41	57%
WHITECOURT H.U.WATER T	H. U. Treated Surface Water	218			1	1	30%	8.1			1	1	85%
WHITELAW WATER RAW SU	Raw Surface Water	278	283	272	3	3	64%	7.6	8.3	7.0	3	3	15%
WHITELAW WATER RAW WE	Raw Well Water	274	296	253	10	10	11%	7.5	8.0	7.1	10	10	11%
WHITELAW SPRING WATER	Raw Well Water	277			1	1	11%	7.4			1	1	6%
WHITELAW SPRING WATER	H. U. Raw Well Water	289			1	1	9%	7.3			1	1	6%
WHITELAW WATER TREATE	Treated Well Water	258	321	207	29	29	13%	7.6	8.2	7.0	30	30	15%
WHITELAW SPRING WATER	Treated Well Water	285			1	1	17%	7.3			1	1	4%
WHITELAW WATER TREATE	Treated Surface Water	286	439	187	6	6	48%	8.0	8.8	7.3	6	6	72%
WHITELAW H.U.WATER TRE	H. U. Treated Well Water	268			1	1	15%	7.5			1	1	9%
WHITEMUD CREEK WATER R	Raw Surface Water	230	364	146	4	4	51%	8.0	8.7	7.4	5	5	62%
WHITEMUD CREEK WATER	Treated Surface Water	278	530	146	29	29	46%	7.8	8.3	7.4	30	30	51%
WILDWOOD WATER RAW WE	Raw Well Water	663	718	612	2	2	56%	8.0	8.2	7.9	2	2	48%
WILDWOOD H.U.WATER RAW	H. U. Raw Well Water	696			1	1	55%	7.7			1	1	25%
WILDWOOD WATER TREATE	Treated Well Water	683	710	656	6	6	65%	8.1	8.5	7.8	6	6	59%
WILLIAM A SWITZER PROV	Raw Well Water	225	229	220	2	2	6%	9.2	13.0	6.5	2	2	99%
WILLIAMSON PROVINCIAL	Raw Well Water	719	1079	480	7	7	61%	8.7	9.4	8.2	7	7	92%
WILLIAMSON PROVINCIAL	Treated Well Water	689	818	580	4	4	65%	8.8	8.9	8.6	4	4	94%
WINAGAMI LAKE PROV PK	Raw Surface Water	345			1	1	77%	7.8			1	1	33%
WINAGAMI LAKE PROVINC	Raw Well Water	862	4851	153	4	4	72%	7.7	8.4	7.1	4	4	24%
WINAGAMI LAKE PROVINCI	Treated Well Water	249			1	1	12%	7.9			1	1	38%
WOKING WATER RAW SURF	Raw Surface Water	253	441	145	25	25	58%	7.9	8.5	7.4	25	25	49%
WOKING WATER TREATED	Treated Surface Water	308	448	212	30	30	53%	7.6	8.4	6.9	30	30	23%
WORSLEY WATER RAW SUR	Raw Surface Water	222	475	104	18	18	49%	8.0	8.7	7.3	18	18	60%
WORSLEY WATER TREATED	Treated Surface Water	270	562	129	36	36	44%	7.6	8.6	6.7	37	37	24%
WORSLEY H.U.WATER TREA	H. U. Treated Surface Water	442			1	1	83%	7.6			1	1	40%
YOUNG'S POINT PROVINC	Raw Well Water	750	1035	543	10	10	64%	8.6	8.9	8.3	10	10	86%
YOUNG'S POINT PROVINCI	Treated Well Water	860	1592	464	5	5	77%	8.5	8.7	8.3	5	5	84%
ZAMA CITY WATER RAW W	Raw Well Water	739	1091	500	45	45	63%	7.7	8.2	7.2	45	45	20%
ZAMA CITY H.U.WATER RA	H. U. Raw Well Water	870	1609	471	2	2	72%	7.4	7.6	7.1	2	2	10%
ZAMA CITY WATER TREAT	Treated Well Water	971	1424	662	17	17	82%	7.6	8.3	7.1	17	17	18%
ZAMA CITY H.U.WATER TR	H. U. Treated Well Water	1120	1401	895	2	2	88%	7.6	7.7	7.5	2	2	13%

NAQUADAT DATA

STATION	TYPE	Turbidity (JTU)						Turbidity (NTU)					
		MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP	MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
AL-PAC CONSTRUCTION CA	Raw Surface Water	8.80			1	1	72%				0	0	
AL-PAC CONSTRUCTION CA	Treated Surface Water				0	1					0	0	
ALBERTA NEWSPRINT MILL	Raw Well Water				0	0					0	0	
AMISK LAKE TRAILER PA	Treated Surface Water				0	0					0	0	
ANZAC WATER RAW SURFAC	Raw Surface Water	2.60			1	1	28%				0	0	
ANZAC WATER RAW WELL	Raw Well Water				0	0		5			1	1	51%
ANZAC WATER TREATED	Treated Well Water	0.50	5.39	0.05	3	3	38%				0	0	
ATHABASCA H.U.WATER RA	H.U. Raw Surface Water				0	0					0	0	
ATHABASCA WATER RAW S	Raw Surface Water	7.56	286.78	0.20	10	10	67%				0	0	
ATHABASCA WATER TREAT	Treated Surface Water	0.25	1.01	0.06	34	36	4%				0	0	
ATHABASCA H.U.WATER TR	H. U. Treated Surface Water				0	0					0	0	
ATIKAMEG WATER RAW SU	Raw Surface Water	3.00			1	1	33%				0	0	
ATIKAMEG WATER RAW WE	Raw Well Water	9.50			1	1	64%	8			1	1	62%
ATIKAMEG WATER TREATE	Treated Well Water	0.58	7.12	0.05	3	3	42%				1	2	
ATIKAMEG WATER TREATE	Treated Surface Water	31.00			1	2	100%				0	0	
BARRHEAD H.U.WATER RAW	H.U. Raw Surface Water				0	0					0	0	
BARRHEAD WATER RAW SU	Raw Surface Water	5.50			1	1	55%				0	0	
BARRHEAD WATER TREATE	Treated Surface Water	0.34	0.91	0.13	7	7	7%				0	0	
BARRHEAD H.U.WATER TRE	H. U. Treated Surface Water				0	0					0	0	
BEAR CANYON WATER RAW	Raw Surface Water	2.75	5.35	1.42	4	4	30%	4	10	1	4	4	38%
BEAR CANYON WATER TRE	Treated Surface Water	1.61	10.57	0.25	5	5	53%	3	6	1	4	5	46%
BEAR CANYON H.U.WATER	H. U. Treated Surface Water				0	0					0	0	
BEAVERLODGE WATER RAW	Raw Surface Water	11.17	82.32	1.52	6	6	79%	11	118	1	4	4	84%
BEAVERLODGE WATER RAW	Raw Well Water				0	0					0	0	
BEAVERLODGE WATER TRE	Treated Well Water	0.59	15.67	0.02	9	9	42%	0			1	4	12%
BEAVERLODGE WATER TRE	Treated Surface Water				0	0					0	0	
BERWYN WATER RAW WELL	Raw Well Water				0	0					0	0	
BERWYN H.U.WATER RAW W	H. U. Raw Well Water				0	0					0	0	
BERWYN WATER TREATED	Treated Well Water	0.99	140.69	0.01	7	7	58%	1	5	0	3	5	19%
BEZANSON WATER RAW SU	Raw Surface Water	9.00			1	1	73%				0	0	
BEZANSON WATER RAW WE	Raw Well Water				0	0		2	2	1	2	2	27%
BEZANSON WATER TREATE	Treated Well Water	0.91	1.27	0.65	2	2	55%	2	6	1	2	2	60%
BEZANSON WATER TREATE	Treated Surface Water				0	0					0	0	
BIG PRAIRIE (PEAVINE)H	H.U. Raw Surface Water				0	0					0	0	
BIG PRAIRIE (PEAVINE)	Raw Surface Water	6.51	10.37	4.08	2	2	62%	1	7	0	3	3	5%
BIG PRAIRIE (PEAVINE)	Treated Surface Water	0.57	7.03	0.05	2	2	17%	2	9	0	3	3	30%
BIG PRAIRIE (PEAVINE)H	H. U. Treated Surface Water				0	0					0	0	
BLUE RIDGE WATER RAW	Raw Well Water				0	0					0	0	
BLUE HERON ESTATES WA	Raw Well Water				0	0					0	0	
BLUE RIDGE H.U.WATER R	H. U. Raw Well Water				0	0					0	0	
BLUE RIDGE WATER TREA	Treated Well Water	0.20			1	1	16%	0	3	0	2	2	15%
BLUE RIDGE H.U.WATER T	H. U. Treated Well Water				0	0					0	0	
BLUEBERRY MOUNTAIN WA	Raw Well Water	6.00			1	1	55%				0	0	
BLUESKY WATER RAW SUR	Raw Surface Water	6.16	10.65	3.57	6	6	60%	7	100	1	4	4	71%
BLUESKY WATER TREATED	Treated Surface Water	3.30	10.45	1.04	7	7	78%	5	21	1	5	5	66%
BLUESKY H.U.WATER TREA	H. U. Treated Surface Water				0	0					0	0	
BONANZA WATER RAW SUR	Raw Surface Water	8.50			1	1	71%				0	0	
BOYLE WATER RAW SURFAC	Raw Surface Water	8.40			1	1	70%				0	0	
BOYLE WATER TREATED	Treated Surface Water	0.89	3.72	0.21	4	4	30%				0	1	
BROWNVALE WATER RAW W	Raw Well Water				0	0		2			1	1	27%
BROWNVALE H.U.WATER RA	H. U. Raw Well Water				0	0					0	0	
BROWNVALE WATER TREAT	Treated Well Water	1.99	86.91	0.05	4	4	76%	2	7	0	6	6	50%
BRULE H.U.WATER RAW SU	H.U. Raw Surface Water				0	0					0	0	
BRULE WATER RAW WELL	Raw Well Water				0	0					0	0	
BRULE WATER TREATED	Treated Well Water	0.36	1.01	0.13	5	5	29%				0	0	
BRULE WATER TREATED	Treated Surface Water				0	0					0	0	
BUFFALO HEAD PRAIRIE W	Raw Surface Water	4.24	8.84	2.03	3	3	46%				0	0	
BUFFALO HEAD PRAIRIE	Treated Surface Water	3.61	20.87	0.62	6	7	80%	1	2	1	2	2	23%
BUFFALO HEAD PRAIRIE W	H. U. Treated Surface Water				0	0					0	0	
CADOMIN WATER RAW WEL	Raw Well Water				0	0					0	0	
CADOTTE LAKE WATER RAW	Raw Surface Water	0.95	1.56	0.58	2	2	6%				0	0	
CADOTTE LAKE WATER RA	Raw Well Water	77.00			1	1	91%	12	984	0	3	3	71%
CADOTTE LAKE WATER TR	Treated Well Water	0.89	1.17	0.67	2	2	54%	8	90	1	6	6	91%
CADOTTE LAKE WATER TR	Treated Surface Water				0	0					0	0	
CALLING LAKE WATER RAW	Raw Surface Water	0.57	1.48	0.22	2	2	2%				0	0	
CALLING LAKE WATER RA	Raw Well Water				0	0					0	0	
CALLING LAKE WATER TR	Treated Well Water	0.34	0.70	0.16	5	5	27%	1			1	1	21%
CALLING LAKE WATER TR	Treated Surface Water	0.74	1.13	0.48	4	4	24%				0	0	
CANYON CREEK WATER RA	Raw Surface Water	0.95	9.92	0.09	4	4	6%	5	83	0	3	3	57%
CANYON CREEK WATER TR	Treated Surface Water	0.47	1.96	0.11	6	6	13%	1	1	0	3	4	7%
CARSON-PEGASUS PROV.PK	Raw Surface Water	23.00			1	1	93%				0	0	
CARSON-PEGASUS PROV.PK	Treated Surface Water	0.59	1.08	0.32	2	2	18%				0	0	
CLAIRMONT WATER RAW W	Raw Well Water	0.16	0.59	0.04	7	8	6%				0	2	
CLAIRMONT H.U.WATER RA	H. U. Raw Well Water				0	0					0	0	
CLAIRMONT WATER TREAT	Treated Well Water	0.65	2.65	0.16	3	3	45%	1	2	0	3	3	19%
CLEARDALE WATER RAW S	Raw Surface Water	0.47	1.62	0.14	3	3	1%	4			1	1	44%
CLEARDALE WATER TREAT	Treated Surface Water	0.53	2.97	0.10	3	3	16%	2			1	1	24%
CLEARDALE H.U.WATER TR	H. U. Treated Surface Water				0	0					0	0	
COLINTON WATER RAW WE	Raw Well Water				0	0					0	0	
COLINTON H.U.WATER RAW	H. U. Raw Well Water				0	0					0	0	
COLINTON WATER TREATE	Treated Well Water	1.03	73.66	0.01	2	2	59%	4			1	1	76%
COLINTON H.U.WATER TRE	H. U. Treated Well Water				0	0					0	0	
CONKLIN WATER RAW WEL	Raw Well Water				0	0					0	0	
CONKLIN WATER TREATED	Treated Well Water				0	0					0	0	
CROOKED CREEK WATER R	Raw Well Water				0	0					0	0	
CROOKED CREEK H.U.WATE	H. U. Raw Well Water				0	0					0	0	
CROOKED CREEK WATER T	Treated Well Water	0.54			1	1	40%	1	4	1	5	5	47%
CROSS LAKE PROVINCIAL	Raw Well Water				0	0					0	0	
CROSS LAKE PROV PK H.U	H. U. Raw Well Water				0	0					0	0	
CYNTHIA WATER RAW WELL	Raw Well Water				0	0					0	0	
CYNTHIA WATER TREATED	Treated Well Water	0.21			1	1	17%				0	0	
DAISHOWA CAMP WATER RA	Raw Surface Water	2.20			1	1	23%				0	0	
DAISHOWA CAMP WATER TR	Treated Surface Water	1.10			1	1	38%				0	0	
DEADWOOD WATER RAW SU	Raw Surface Water				0	0					0	0	
DEADWOOD WATER RAW WEL	Raw Well Water				0	0					0	0	

NAQUADAT DATA

STATION	TYPE	Turbidity (JTU)						Turbidity (NTU)					
		MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP	MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
DEADWOOD WATER TREATED	Treated Well Water	0.32	1.21	0.09	2	2	26%				0	0	
DEADWOOD WATER TREATE	Treated Surface Water				0	0		1	4	0	4	4	5%
DEBOLT WATER RAW WELL	Raw Well Water				0	0					0	0	
DEBOLT H.U.WATER RAW W	H. U. Raw Well Water				0	0					0	0	
DEBOLT WATER TREATED	Treated Well Water	0.38	0.83	0.17	3	3	30%	1	2	0	7	8	23%
DEBOLT H.U.WATER TREAT	H. U. Treated Well Water				0	0					0	0	
DEER HILL WATER RAW W	Raw Well Water	85.63	116.57	62.90	3	3	92%	38	348	4	3	3	88%
DEER HILL H.U.WATER RA	H. U. Raw Well Water				0	0					0	0	
DEER HILL WATER TREAT	Treated Well Water	44.00			1	1	100%				0	0	
DEMMITT WATER RAW WELL	Raw Well Water	41.00			1	1	83%				0	0	
DESMARAIS WATER RAW S	Raw Surface Water	3.81	10.57	1.37	5	5	42%	5	56	0	8	8	50%
DESMARAIS WATER TREAT	Treated Surface Water	1.22	17.29	0.09	12	12	42%	5	58	0	9	9	70%
DIXONVILLE WATER RAW	Raw Well Water	0.79	2.23	0.28	4	4	20%	1			1	2	19%
DIXONVILLE WATER TREA	Treated Well Water	1.54	7.68	0.31	8	8	70%	3	25	0	3	3	66%
DONNELLY WATER RAW SU	Raw Surface Water	3.68	10.04	1.35	6	6	40%	5	46	1	4	4	54%
DONNELLY WATER TREATE	Treated Surface Water	0.85	18.76	0.04	6	6	29%	2	3	1	5	5	33%
DR.MARY JACKSON SCHOOL	Raw Well Water	20.55	24.82	17.02	2	2	76%				0	0	
DR.MARY JACKSON SCHOOL	Treated Well Water	0.36	0.64	0.20	2	2	28%				0	0	
EAGLESHAM WATER RAW S	Raw Surface Water	8.66	28.97	2.59	15	15	71%	14	103	2	5	5	90%
EAGLESHAM WATER TREAT	Treated Surface Water	1.01	2.85	0.36	21	21	35%	4	16	1	8	8	61%
EAST PRAIRIE WATER RAW	Raw Surface Water				0	0					0	0	
EAST PRAIRIE WATER RAW	Raw Well Water	3.83	497.39	0.03	3	3	47%	2			1	1	32%
EAST PRAIRIE WATER TRE	Treated Well Water	0.41	3.37	0.05	3	3	32%	1			1	1	39%
EDSON H.U.WATER RAW SU	H.U. Raw Surface Water				0	0					0	0	
EDSON WATER RAW SURFAC	Raw Surface Water	1.50			1	1	14%				0	0	
EDSON WATER RAW WELL	Raw Well Water				0	0					0	0	
EDSON H.U.WATER RAW WE	H. U. Raw Well Water				0	0					0	0	
EDSON WATER TREATED	Treated Well Water	0.58	2.49	0.13	3	4	42%				0	0	
EDSON WATER TREATED	Treated Surface Water				0	0					0	0	
EDSON H.U.WATER TREATE	H. U. Treated Well Water				0	0					0	0	
ELDOE'S MOBILE HOME P	Raw Well Water				0	0					0	0	
ELDOE'S MOBILE HOME P	Treated Well Water	0.79			1	1	51%	1	3	0	3	4	21%
ELDOE'S MOBILE HOME PK	H. U. Treated Well Water				0	0					0	0	
ENTRANCE WATER RAW SU	Raw Surface Water				0	0					0	0	
ENTRANCE H.U.WATER RAW	H. U. Raw Well Water				0	0					0	0	
ENTWISTLE WATER RAW W	Raw Well Water	2.30			1	1	37%				0	0	
ENTWISTLE WATER TREAT	Treated Well Water				0	1					0	0	
ENTWISTLE H.U.WATER TR	H. U. Treated Well Water				0	0					0	0	
EUREKA RIVER WATER RA	Raw Well Water	72.11	369.31	14.08	2	2	91%	161	829	31	4	4	98%
EUREKA RIVER WATER H.U	H. U. Raw Well Water				0	0					0	0	
EUREKA RIVER WATER TR	Treated Well Water	300.01			1	1	100%	40			1	1	100%
EVANSBURG WATER RAW W	Raw Well Water				0	0					0	0	
EVANSBURG WATER TREAT	Treated Well Water				0	0					0	0	
EVERGREEN MOBILE HOME	Raw Well Water				0	0					0	0	
FAIRVIEW H.U.WATER RAW	H.U. Raw Surface Water				0	0					0	0	
FAIRVIEW WATER RAW SU	Raw Surface Water	1.63	8.06	0.33	5	5	15%	4	14	1	3	3	40%
FAIRVIEW WATER RAW WE	Raw Well Water				0	0					0	0	
FAIRVIEW WATER TREATE	Treated Well Water	0.26	0.51	0.14	5	6	21%	1	5	0	4	4	38%
FAIRVIEW WATER TREATE	Treated Surface Water				0	0					0	0	
FAIRVIEW H.U.WATER TRE	H. U. Treated Well Water				0	0					0	0	
FALHER H.U.WATER RAW S	H.U. Raw Surface Water				0	0					0	0	
FALHER WATER RAW SURF	Raw Surface Water	3.84	20.54	0.72	6	6	42%	5	20	1	4	4	53%
FALHER WATER RAW WELL	Raw Well Water				0	0					0	0	
FALHER WATER TREATED	Treated Well Water	0.56	4.11	0.08	9	9	41%	3	9	1	3	3	69%
FALHER WATER TREATED	Treated Surface Water	3.50			1	1	79%	3			1	1	54%
FALHER H.U.WATER TREAT	H. U. Treated Well Water				0	0					0	0	
FAUST WATER RAW SURFA	Raw Surface Water	2.10	4.61	0.96	9	9	22%	1	4	0	2	2	8%
FAUST WATER TREATED	Treated Surface Water	1.39	8.17	0.24	11	11	47%	3	16	1	5	5	49%
FAWCETT WATER RAW WEL	Raw Well Water				0	0		3			1	1	38%
FAWCETT H.U.WATER RAW	H. U. Raw Well Water				0	0					0	0	
FAWCETT WATER TREATED	Treated Well Water	0.92	99.98	0.01	2	2	56%	10	33	3	2	2	93%
FAWCETT H.U.WATER TREA	H. U. Treated Well Water				0	0					0	0	
FLATBUSH WATER RAW WE	Raw Well Water				0	0					0	0	
FLATBUSH WATER TREATED	Treated Well Water	0.32			1	1	26%				0	0	
FLATBUSH H.U.WATER TRE	H. U. Treated Well Water				0	0					0	0	
FOOTNER LAKE WATER RA	Raw Surface Water	8.65	21.53	3.47	3	3	71%	6	19	2	6	6	58%
FOOTNER LAKE WATER TR	Treated Surface Water	1.70	4.48	0.64	8	8	59%	2	13	0	7	7	24%
FORT ASSINIBOINE WATE	Raw Well Water				0	0					0	0	
FORT ASSINIBOINE H.U.W	H. U. Raw Well Water				0	0					0	0	
FORT ASSINIBOINE WATE	Treated Well Water	0.04			1	2	1%				0	0	
FORT CHIPEWYAN WATER	Raw Surface Water	32.52	357.71	2.96	5	5	97%				0	0	
FORT CHIPEWYAN WATER	Treated Surface Water	2.45	107.97	0.06	10	10	68%	18	37	8	7	7	96%
FORT MACKAY WATER RAW	Raw Surface Water	5.07	50.84	0.51	4	4	52%				0	0	
FORT MACKAY WATER TRE	Treated Surface Water	1.12	6.87	0.18	8	8	39%				0	0	
FORT MCMURRAY RAW SUR	Raw Surface Water	4.24	72.91	0.25	23	24	46%				0	0	
FORT MCMURRAY AIRPORT	Raw Well Water				0	0					0	0	
FORT MCMURRAY TREATED	Treated Well Water	0.55	5.35	0.06	61	62	40%	1	8	0	24	26	41%
FORT MCMURRAY TREATED	Treated Surface Water	3.02	16.46	0.55	5	5	75%				0	0	
FORT VERMILION WATER	Raw Surface Water	7.05	160.48	0.31	12	12	64%	29	1500	1	6	6	98%
FORT VERMILION WATER	Treated Surface Water	2.04	32.77	0.13	13	13	62%	13	237	1	8	8	93%
FORT VERMILION H.U.WAT	H. U. Treated Surface Water				0	0					0	0	
FOX CREEK WATER RAW W	Raw Well Water				0	0					0	0	
FOX LAKE WATER RAW WE	Raw Well Water				0	0					0	0	
FOX CREEK WATER TREAT	Treated Well Water				0	0					0	0	
FOX LAKE WATER TREATE	Treated Well Water	0.70			1	1	47%				0	0	
FOX CREEK H.U.WATER TR	H. U. Treated Well Water				0	0					0	0	
GARDEN RIVER COMMUNIT	Raw Well Water				0	0					0	0	
GIFT LAKE H.U.WATER RA	H.U. Raw Surface Water				0	0					0	0	
GIFT LAKE WATER RAW S	Raw Surface Water	1.77	16.56	0.19	8	8	17%	1			1	1	1%
GIFT LAKE WATER TREAT	Treated Surface Water	0.56	6.34	0.05	10	10	17%	2	8	1	3	3	33%
GIFT LAKE H.U.WATER TR	H. U. Treated Surface Water				0	0					0	0	
GIROUXVILLE WATER RAW	Raw Surface Water	2.73	9.54	0.78	15	15	30%	8	67	1	3	3	74%
GIROUXVILLE WATER TRE	Treated Surface Water	1.43	4.46	0.46	18	18	48%	4	9	2	3	3	66%
GRANDE CACHE WATER RA	Raw Surface Water	0.64	1.37	0.30	6	6	3%	1	3	0	4	5	5%
GRANDE PRAIRIE WATER	Raw Surface Water	7.80	74.91	0.81	5	5	68%				0	0	

STATION	TYPE	Turbidity (JTU)						Turbidity (NTU)					
		MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP	MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
GRANDE CACHE WATER TR	Treated Surface Water	0.45	1.75	0.12	11	11	12%	1	3	0	5	6	11%
GRANDE PRAIRIE WATER	Treated Surface Water	0.26	1.04	0.06	17	23	4%	1	3	0	23	26	8%
GRANDE PRAIRIE H.U.WAT	H. U. Treated Surface Water				0	0					0	0	
GRASSLAND WATER H.U.RA	H.U. Raw Surface Water				0	0					0	0	
GRASSLAND WATER RAW S	Raw Surface Water	4.62	16.31	1.31	7	7	49%				0	0	
GRASSLAND WATER RAW W	Raw Well Water				0	0					0	0	
GRASSLAND H.U.WATER RA	H. U. Raw Well Water				0	0					0	0	
GRASSLAND WATER TREAT	Treated Well Water	2.36	7.74	0.72	10	10	80%	9	12	7	3	3	92%
GRASSLAND WATER TREAT	Treated Surface Water	17.10	43.62	6.70	3	3	99%				0	0	
GRASSLAND WATER H.U. T	H. U. Treated Well Water				0	0					0	0	
GREGOIRE LAKE PROVINC	Raw Surface Water				0	0					0	0	
GREGOIRE LAKE PROVINC	Treated Surface Water	0.52			1	1	15%	5			1	1	66%
GRIFFIN CREEK WATER R	Raw Well Water				0	0		2	208	0	3	4	32%
GRIFFIN CREEK H.U.WATE	H. U. Raw Well Water				0	0					0	0	
GRIFFIN CREEK WATER T	Treated Well Water	0.30			1	1	24%				0	0	
GRIMSHAW WATER	Raw Surface Water				0	0					0	0	
GRIMSHAW WATER RAW WE	Raw Well Water	0.25	0.60	0.10	2	2	8%	0			1	1	7%
GRIMSHAW WATER TREATE	Treated Well Water	0.21	1.65	0.03	3	4	17%	1			1	5	19%
GRIMSHAW WATER TREATE	Treated Surface Water				0	0					0	0	
GROUARD WATER RAW SUR	Raw Surface Water	4.86	58.99	0.40	8	8	31%	3			1	1	36%
GROUARD WATER TREATED	Treated Surface Water	2.22	31.54	0.16	13	13	65%	11	49	3	4	4	91%
GROVEDALE H.U.WATER RA	H. U. Raw Well Water				0	0					0	0	
GROVEDALE WATER TREAT	Treated Well Water				0	0					0	0	
GUY WATER RAW SURFACE	Raw Surface Water	10.51	123.53	0.89	7	7	77%				0	0	
GUY WATER TREATED	Treated Surface Water	7.22	82.02	0.63	10	10	94%	5	12	2	6	6	70%
GUY H.U.WATER TREATEDH	H. U. Treated Surface Water				0	0					0	0	
HAWK HILLS WATER RAW	Raw Surface Water	11.62	161.08	0.84	2	2	80%				0	0	
HAWK HILLS WATER TREA	Treated Surface Water	5.15	48.04	0.55	6	6	88%	4	32	1	6	6	62%
HAWK HILLS H.U.WATER T	H. U. Treated Surface Water				0	0					0	0	
HIGH PRAIRIE WATER RA	Raw Surface Water	3.67	12.20	1.10	5	5	40%	3	24	0	3	3	33%
HIGH PRAIRIE AIRPORT	Raw Surface Water				0	0					0	0	
HIGH LEVEL WATER RAW	Raw Surface Water	3.55	19.00	0.66	9	9	39%	4	22	1	7	7	42%
HIGH PRAIRIE WATER RA	Raw Well Water				0	0					0	0	
HIGH PRAIRIE WATER TR	Treated Well Water	0.47	2.13	0.10	12	13	36%	2	11	0	3	3	53%
HIGH PRAIRIE AIRPORT	Treated Well Water	4.10			1	1	90%	9	21	4	2	2	92%
HIGH PRAIRIE WATER TR	Treated Surface Water				0	0					0	0	
HIGH LEVEL WATER TREA	Treated Surface Water	0.71	4.97	0.10	12	12	23%	1	12	0	6	6	24%
HIGH LEVEL H.U.WATER T	H. U. Treated Surface Water				0	0					0	0	
HILLIARDS BAY PROVINC	Raw Well Water	154.01			1	1	95%				0	0	
HILLIARDS BAY PROV.PK.	H. U. Raw Well Water				0	0					0	0	
HILLIARDS BAY PROVINC	Treated Well Water	0.26	0.34	0.20	2	2	21%				0	0	
HILLIARDS BAY PROV.PK.	H. U. Treated Well Water				0	0					0	0	
HILLPARK MOBILE HOME	Raw Well Water				0	0					0	0	
HILLTOP ESTATES WATER	Raw Well Water				0	0					0	0	
HILLTOP ESTATES TREAT	Treated Well Water	1.64			1	1	72%	1	5	0	3	3	36%
HINES CREEK WATER RAW	Raw Surface Water	3.87	16.67	0.90	8	8	42%	3	8	1	3	3	26%
HINES CREEK WATER TRE	Treated Surface Water	1.34	4.97	0.36	10	10	45%	2	4	1	4	4	34%
HINES CREEK WATER H.U.	H. U. Treated Surface Water				0	0					0	0	
HINTON WATER RAW SURF	Raw Surface Water	29.20	900.42	0.95	3	3	96%				0	0	
HINTON WATER TREATED	Treated Surface Water	0.74	7.62	0.07	11	14	24%	0	3	0	21	27	3%
HINTON H.U.WATER TREAT	H. U. Treated Surface Water				0	0					0	0	
HOTCHKISS WATER RAW S	Raw Surface Water	2.75	3.19	2.36	2	2	30%				0	0	
HOTCHKISS WATER TREAT	Treated Surface Water	4.07	12.24	1.35	5	5	83%	8	205	0	4	4	84%
HYTHE WATER RAW WELL	Raw Well Water	2.72	552.44	0.01	2	2	40%				0	0	
HYTHE H.U.WATER RAW WE	H. U. Raw Well Water				0	0					0	0	
HYTHE WATER TREATED	Treated Well Water				0	0					0	0	
JANVIER WATER RAW SUR	Raw Surface Water	2.20	6.45	0.75	5	5	23%	1	4	0	2	2	3%
JANVIER WATER TREATED	Treated Surface Water	0.86	8.43	0.09	6	6	29%	3	29	0	5	5	54%
JARVIE WATER RAW WELL	Raw Well Water				0	0					0	0	
JARVIE H.U.WATER RAW W	H. U. Raw Well Water				0	0					0	0	
JARVIE WATER TREATED	Treated Well Water	0.40			1	1	31%				0	0	
JARVIE H.U.WATER TREAT	H. U. Treated Well Water				0	0					0	0	
JASPER WATER RAW WELL	Raw Well Water				0	0					0	0	
JASPER WATER TREATED	Treated Well Water	0.09	0.12	0.07	3	7	6%				1	1	
JASPER H.U.WATER TREAT	H. U. Treated Well Water				0	0					0	0	
JEAN COTE WATER RAW S	Raw Surface Water	5.61	15.21	2.07	7	7	56%				0	0	
JEAN COTE WATER TREAT	Treated Surface Water	5.26	14.95	1.85	8	8	89%	14	310	1	5	5	94%
JEAN COTE H.U.WATER TR	H. U. Treated Surface Water				0	0					0	0	
JOUSSARD WATER RAW SU	Raw Surface Water	4.58	145.42	0.14	7	7	48%	3			1	1	31%
JOUSSARD WATER TREATE	Treated Surface Water	2.43	56.99	0.10	10	10	68%	3	18	1	6	6	52%
KEG RIVER WATER RAW SU	Raw Surface Water	4.40	108.34	0.18	5	5	47%				0	0	
KEG RIVER WATER RAW W	Raw Well Water				0	0					0	0	
KEG RIVER WATER TREAT	Treated Well Water	1.47	22.68	0.09	8	8	69%	3	15	1	7	7	71%
KEG RIVER WATER TREAT	Treated Surface Water				0	0					0	0	
KEG RIVER H.U.WATER TR	H. U. Treated Well Water				0	0					0	0	
KINUSO WATER RAW SURF	Raw Surface Water	12.32	94.55	1.61	4	4	82%	19	48	7	7	7	95%
KINUSO WATER TREATED	Treated Surface Water	1.76	31.56	0.10	8	8	56%	3	36	0	5	6	54%
KINUSO H.U.WATER TREAT	H. U. Treated Surface Water				0	0					0	0	
LA CRETE H.U.WATER TRE	H. U. Treated Well Water				0	0					0	0	
LA CRETE WATER H.U.RAW	H. U. Raw Well Water				0	0					0	0	
LA CRETE WATER RAW SU	Raw Surface Water	0.15			1	1	0%	2			1	1	10%
LA CRETE WATER RAW WE	Raw Well Water	0.21	1.26	0.04	6	7	7%	0	1	0	2	2	5%
LA CRETE WATER TREATE	Treated Well Water	0.14	0.37	0.05	6	9	10%	1	3	0	4	6	20%
LA CRETE WATER TREATE	Treated Surface Water				0	0					0	0	
LA GLACE WATER RAW WE	Raw Well Water				0	0					0	1	
LA GLACE WATER TREATE	Treated Well Water				0	0		0	0	0	3	3	5%
LAC LA BICHE H.U.WATER	H.U. Raw Surface Water				0	0					0	0	
LAC LA BICHE H.U.WATER	H. U. Treated Well Water				0	0					0	0	
LAC LA BICHE WATER RA	Raw Surface Water	0.80			1	2	4%				0	0	
LAC LA BICHE WATER RA	Raw Well Water				0	0					0	0	
LAC LA BICHE WATER TR	Treated Well Water	0.48	2.67	0.09	9	9	36%				0	0	
LAC LA BICHE WATER TR	Treated Surface Water				0	1					0	0	
LAKEVIEW ESTATES WATE	Raw Well Water				0	0					0	0	
LESSER SLAVE LAKE PROV	Raw Well Water	20.62	844.68	0.50	7	7	76%				0	0	
LESSER SLAVE LAKE PROV	Treated Well Water	0.78	16.62	0.04	5	5	51%				0	0	

STATION	TYPE	Turbidity (JTU) MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP	Turbidity (NTU) MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
LINARIA WATER RAW WEL	Raw Well Water				0	0					0	0	
LITTLE BUFFALO WATER	Raw Surface Water	3.02	26.01	0.35	5	6	33%	2	8	0	4	4	11%
LITTLE BUFFALO WATER	Treated Surface Water	2.75	12.44	0.61	11	12	72%	3	7	1	6	6	52%
LODGEPOLE H.U.WATER RA	H. U. Raw Well Water				0	0					0	0	
LODGEPOLE WATER TREAT	Treated Well Water				0	0					0	0	
LOON LAKE WATER RAW S	Raw Surface Water	7.28	79.26	0.67	10	10	66%	10	47	2	8	8	81%
LOON LAKE WATER TREAT	Treated Surface Water	3.88	27.50	0.55	14	14	82%	4	18	1	9	9	60%
MANNING WATER RAW SUR	Raw Surface Water	3.65	33.73	0.39	6	6	40%	4	15	1	6	6	42%
MANNING WATER TREATED	Treated Surface Water	0.42	2.50	0.07	8	10	11%	1	7	0	6	6	19%
MANNING EAST WATER TR	Treated Surface Water	2.61	45.20	0.15	3	3	70%	3	20	0	4	4	51%
MANOLA WATER RAW WELL	Raw Well Water				0	0					0	0	
MANOLA WATER TREATED	Treated Well Water	0.30			1	1	24%				0	0	
MANOLA H.U.WATER TREAT	H. U. Treated Well Water				0	0					0	0	
MARIE-REINE WATER RAW	Raw Surface Water	9.20			1	1	73%				0	0	
MARIE-REINE WATER TRE	Treated Surface Water	11.36	454.83	0.28	2	2	98%	3	26	0	5	5	55%
MARLBORO WATER RAW WEL	Raw Well Water				0	0					0	0	
MARLBORO H.U.WATER RAW	H. U. Raw Well Water				0	0					0	0	
MARLBORO WATER TREATED	Treated Well Water				0	0					0	0	
MAYERTHORPE WATER RAW	Raw Well Water				0	0					0	0	
MAYERTHORPE WATER TRE	Treated Well Water	2.67	152.86	0.05	2	3	83%				0	0	
MAYERTHORPE H.U.WATER	H. U. Treated Well Water				0	0					0	0	
MCINNIS WATER RAW WELL	Raw Well Water	0.63			1	1	17%				0	0	
MCINNIS H.U.WATER RAW	H. U. Raw Well Water				0	0					0	0	
MCLENNAN WATER RAW SU	Raw Surface Water	17.03	88.60	3.27	7	7	89%	7	47	1	7	7	69%
MCLENNAN WATER TREATE	Treated Surface Water	1.60	6.21	0.41	10	10	52%	4	12	1	7	7	57%
MEANDER RIVER WATER R	Raw Surface Water				0	0					0	0	
MEANDER RIVER WATER R	Raw Well Water				0	0					0	0	
MEANDER RIVER WATER T	Treated Well Water				0	0		1			1	1	45%
MITSUE WATER RAW SURF	Raw Surface Water	6.10			1	1	59%	2			1	1	10%
MITSUE WATER TREATED	Treated Surface Water	3.99	10.70	1.49	2	2	83%	3	7	2	3	3	56%
MOONSHINE LAKE PROV PK	H.U. Raw Surface Water				0	0					0	0	
MOONSHINE LAKE PROV.PK	Raw Surface Water	3.48	31.02	0.39	3	3	38%				0	0	
MOONSHINE LAKE PROVINC	Treated Surface Water	1.03	2.02	0.52	3	3	36%				0	0	
MOONSHINE LAKE PROV PK	H. U. Treated Surface Water				0	0					0	0	
NAMPA WATER RAW SURFA	Raw Surface Water	7.43	53.68	1.03	8	8	66%	6	65	0	4	4	60%
NAMPA WATER TREATED	Treated Surface Water	2.14	15.85	0.29	12	12	63%	5	23	1	9	9	71%
NEERLANDIA WATER RAW S	Raw Surface Water	4.56	83.18	0.25	2	2	48%				0	0	
NEERLANDIA WATER RAW	Raw Well Water				0	0					0	0	
NEERLANDIA WATER TREAT	Treated Well Water	1.24	3.70	0.42	8	8	64%				0	0	
NEERLANDIA WATER TREA	Treated Surface Water				0	0					0	0	
NEERLANDIA H.U.WATER T	H. U. Treated Well Water				0	0					0	0	
NEW FISH CREEK WATER	Raw Well Water				0	0					0	0	
NEW FISH CREEK WATER	Treated Well Water	0.18			1	1	14%	2	3	1	5	5	54%
NEW FISH CREEK H.U.WAT	H. U. Treated Well Water				0	0					0	0	
NOTIKEWIN PROVINCIAL	Raw Surface Water				0	0					0	0	
NOTIKEWIN PROVINCIAL	Raw Well Water				0	0					0	0	
NOTIKEWIN PROVINCIAL P	Treated Well Water	1.20			1	1	63%				0	0	
PADDLE PRAIRIE H.U.WAT	H.U. Raw Surface Water				0	0					0	0	
PADDLE PRAIRIE WATER	Raw Surface Water	5.28	22.67	1.23	11	12	54%	4	8	2	6	6	48%
PADDLE PRAIRIE WATER	Raw Well Water				0	0					0	0	
PADDLE PRAIRIE WATER	Treated Well Water	1.12	21.18	0.06	10	10	61%	3	8	1	2	2	72%
PADDLE PRAIRIE WATER	Treated Surface Water	1.68	5.81	0.49	5	6	54%	4	8	2	4	4	60%
PEACE RIVER H.U.WATER	H.U. Raw Surface Water				0	0					0	0	
PEACE RIVER CORRECTIO	Raw Surface Water	34.29	381.49	3.08	4	4	97%	7	129	0	5	5	71%
PEACE RIVER WATER RAW	Raw Surface Water	9.19	201.63	0.42	9	9	73%	3	5	2	2	2	30%
PEACE RIVER A.P.WATER	Raw Well Water	1.23	1286.46	0.00	2	2	26%				0	0	
PEACE POINT WATER TRE	Treated Well Water				0	0		11			1	1	94%
PEACE RIVER A.P.TRUCKE	Treated Well Water	0.81	3.03	0.21	2	2	52%				0	0	
PEACE RIVER AIRPORT TR	Treated Well Water	0.46	1.90	0.11	3	3	35%				0	0	
PEACE RIVER CORRECTIO	Treated Surface Water	0.93	11.18	0.08	5	5	32%	2	14	0	5	5	28%
PEACE RIVER WATER TRE	Treated Surface Water	0.21	1.16	0.04	18	22	3%	0	2	0	19	28	3%
PEACE RIVER H.U.WATER	H. U. Treated Surface Water				0	0					0	0	
PEERLESS LAKE WATER R	Raw Surface Water	3.96	12.19	1.29	7	7	43%	5	5	4	2	2	51%
PEERLESS LAKE WATER R	Raw Well Water				0	0		2			1	1	33%
PEERLESS LAKE WATER T	Treated Well Water	1.96	6.65	0.58	8	8	76%	2	4	1	3	3	63%
PEORIA WATER RAW SURF	Raw Surface Water	6.31	34.84	1.14	5	5	60%	10	300	0	3	3	82%
PEORIA WATER TREATED	Treated Surface Water	2.92	21.51	0.40	5	5	74%	2	9	0	5	5	36%
PEORIA H.U.WATER TREAT	H. U. Treated Surface Water				0	0					0	0	
PIBROCH WATER RAW WEL	Raw Well Water				0	0					0	0	
PIBROCH H.U.WATER RAW	H. U. Raw Well Water				0	0					0	0	
PIBROCH WATER TREATED	Treated Well Water	0.35	1.74	0.07	2	2	28%				0	0	
PIBROCH H.U.WATER TREA	H. U. Treated Well Water				0	0					0	0	
PICKARDVILLE H.U.WATER	H.U. Raw Surface Water				0	0					0	0	
PICKARDVILLE WATER RAW	Raw Surface Water				0	0					0	0	
PICKARDVILLE WATER RA	Raw Well Water				0	0					0	0	
PICKARDVILLE WATER TR	Treated Well Water	0.39			1	1	31%				0	0	
PICKARDVILLE WATER TR	Treated Surface Water				0	0					0	0	
PICKARDVILLE H.U.WATER	H. U. Treated Well Water				0	0					0	0	
PINE SHADOWS TRAILER	Raw Well Water				0	0					0	0	
PINE LANE TRAILER PAR	Raw Well Water				0	0					0	0	
PINE SHADOWS TRAILER P	H. U. Raw Well Water				0	0					0	0	
PINE SHADOWS ESTATES	Treated Well Water				0	0					0	0	
PINE LANE TRAILER PAR	Treated Well Water				0	1					0	0	
PLAMONDON WATER RAW S	Raw Surface Water	2.40	5.33	1.08	2	2	26%	7			1	1	68%
PLAMONDON WATER TREAT	Treated Surface Water	0.48	1.68	0.14	4	4	13%	5	23	1	2	2	68%
POPLAR PLACE MOBILE H	Raw Well Water				0	0					0	0	
POPLAR PLACE MHP H.U.W	H. U. Raw Well Water				0	0					0	0	
POPLAR PLACE MOBILE HO	Treated Well Water				0	0					0	0	
QUEEN ELIZABETH PROVI	Raw Well Water				0	0					0	0	
QUEEN ELIZABETH PROVIN	Treated Well Water	0.14			1	1	10%				0	0	
RAINBOW LAKE WATER RA	Raw Surface Water	3.94	14.73	1.05	12	12	43%	3	8	1	8	8	31%
RAINBOW LAKE WATER TR	Treated Surface Water	0.90	5.77	0.14	13	13	31%	1	11	0	7	8	5%
RAINBOW LAKE H.U.WATER	H. U. Treated Surface Water				0	0					0	0	
REDEARTH WATER RAW SUR	Raw Surface Water	4.74	18.51	1.21	3	3	50%				0	0	
REDEARTH CREEK AFS WAT	Raw Surface Water	0.59	0.62	0.56	2	2	2%				0	0	

STATION	TYPE	Turbidity (JTU)						Turbidity (NTU)					
		MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP	MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
REDEARTH CREEK DISTRIB	Treated Surface Water	1.76			1	1	56%				0	0	
REDEARTH WATER TREATED	Treated Surface Water	1.61	4.66	0.56	5	5	53%				0	0	
REDEARTH CREEK AFS WAT	Treated Surface Water	0.63	2.10	0.19	3	3	20%				0	0	
REINWOOD WATER RAW SU	Raw Surface Water				0	0					0	0	
REINWOOD WATER TREATE	Treated Surface Water	14.31	112.40	1.82	3	3	99%	13	42	4	3	3	93%
RIDGE VALLEY WATER RA	Raw Well Water				0	0					0	0	
RIDGE VALLEY WATER TR	Treated Well Water	0.15	0.26	0.08	2	2	11%	0	1	0	3	5	8%
RIDGE VALLEY H.U.WATER	H. U. Treated Well Water				0	0					0	0	
ROBB WATER RAW WELL	Raw Well Water				0	0					0	0	
ROBB WATER TREATED	Treated Well Water				0	0					0	0	
ROCHESTER WATER RAW W	Raw Well Water				0	0					0	0	
ROCKY LANE WATER RAW S	Raw Surface Water	5.41	45.92	0.64	2	2	55%				0	0	
ROCKY LANE WATER TREAT	Treated Surface Water	4.92	19.10	1.27	4	4	88%				0	0	
ROCKY LANE H.U.WATER T	H. U. Treated Surface Water				0	0					0	0	
ROYCE WATER RAW SURFA	Raw Surface Water	5.40	5.68	5.13	2	2	53%	13			1	1	92%
ROYCE WATER RAW WELL	Raw Well Water				0	0					0	0	
ROYCE WATER TREATED	Treated Well Water	4.15	32.67	0.53	6	6	90%	6	39	1	4	4	85%
ROYCE WATER TREATED	Treated Surface Water				0	0					0	0	
ROYCE H.U.WATER TREATE	H. U. Treated Well Water				0	0					0	0	
RYCROFT WATER RAW SUR	Raw Surface Water	17.29	94.84	3.15	7	7	89%	12	43	3	6	6	87%
RYCROFT WATER RAW WEL	Raw Well Water				0	0		42			1	1	89%
RYCROFT WATER TREATED	Treated Well Water	1.69	6.55	0.44	9	9	72%	4	14	1	3	3	76%
RYCROFT WATER TREATED	Treated Surface Water				0	0		2	4	1	2	2	33%
SANDY LAKE WATER RAW S	Raw Surface Water	11.22	13.51	9.33	2	2	79%	5			1	1	54%
SANDY LAKE WATER TREAT	Treated Surface Water	7.04	13.10	3.79	5	5	93%	3			1	1	51%
SANGUDO WATER RAW WEL	Raw Well Water				0	0					0	0	
SANGUDO WATER TREATED	Treated Well Water	0.20			1	1	16%				0	0	
SASKATOON ISLAND PROV	Raw Well Water	1.06			1	1	24%				0	0	
SASKATOON ISLAND PROVI	Treated Well Water	0.74	5.38	0.10	2	2	49%				0	0	
SEXSMITH WATER RAW WE	Raw Well Water				0	0					0	0	
SEXSMITH WATER TREATE	Treated Well Water	1.09	1.83	0.65	2	2	60%				0	0	
SHELL PEACE RIVER INSI	Raw Surface Water	336.00			1	1	100%				0	0	
SHELL PEACE RIVER INS	Treated Surface Water	4.23	62.80	0.29	2	2	84%	4	5	3	2	2	60%
SIR WINSTON CHURCHILL	Raw Surface Water	10.20			1	1	76%				0	0	
SIR WINSTON CHURCHILL	Treated Surface Water	1.61	5.36	0.49	3	3	53%				0	0	
SLAVE LAKE WATER RAW	Raw Surface Water	2.31	99.10	0.05	11	11	25%	2	31	0	4	4	17%
SLAVE LAKE WATER TREA	Treated Surface Water	1.42	58.09	0.03	20	20	48%	1	4	0	4	4	9%
SMITH WATER RAW SURFAC	Raw Surface Water	3.95	66.91	0.23	5	5	43%				0	0	
SMITH WATER TREATED	Treated Surface Water	1.07	8.02	0.14	9	9	37%	2			1	1	31%
SMITH H.U.WATER TREATE	H. U. Treated Surface Water	0.39	0.79	0.19	2	2					0	0	
SPIRIT RIVER WATER RA	Raw Surface Water	7.66	39.36	1.49	16	16	67%	11	114	1	4	4	85%
SPIRIT RIVER WATER TR	Treated Surface Water	0.31	1.27	0.08	20	21	6%	5	25	1	5	5	71%
ST. ISIDORE WATER RAW	Raw Surface Water	4.15	33.88	0.51	5	5	45%	6			1	2	64%
ST. ISIDORE WATER TRE	Treated Surface Water	1.09	12.77	0.09	6	6	38%	8	39	2	4	5	84%
STRONG CREEK WATER RA	Raw Surface Water				0	0					0	0	
STRONG CREEK WATER RA	Raw Well Water				0	0		3	661	0	3	4	42%
STRONG CREEK WATER TRE	Treated Well Water				0	0					0	0	
STRONG CREEK WATER TR	Treated Surface Water				0	0		3	5	2	2	2	56%
SUNSET HOUSE WATER RAW	Raw Well Water				0	0					0	0	
SUNSET HOUSE WATER TRE	Treated Well Water	0.75			1	1	49%	1			1	1	29%
SUNSET HOUSE H.U.WATER	H. U. Treated Well Water				0	0					0	0	
SWAN HILLS H.U.WATER R	H.U. Raw Surface Water	0.90			1	1					0	0	
SWAN HILLS WATER RAW	Raw Surface Water	1.74	8.16	0.37	10	10	17%	2	5	1	2	2	13%
SWAN HILLS WATER RAW	Raw Well Water				0	0					0	0	
SWAN CITY MOBILE HOME	Raw Well Water				0	0					0	0	
SWAN HILLS WATER TREA	Treated Well Water	0.35	1.96	0.06	19	20	28%	1			1	1	23%
SWAN CITY MOBILE HOME	Treated Well Water	3.00			1	1	85%	1	5	0	3	4	32%
SWAN HILLS WATER TREA	Treated Surface Water				0	0					0	0	
SWAN HILLS H.U.WATER T	H. U. Treated Well Water				0	0					0	0	
SWEATHOUSE CWP WATER	Raw Well Water				0	0		3	8	1	2	2	37%
SWEATHOUSE CWP H.U.WAT	H. U. Raw Well Water				0	0					0	0	
SWEATHOUSE WATER TREA	Treated Well Water	0.66			1	1	46%	2	5	1	3	3	35%
T & E MOBILE HOME PAR	Raw Well Water				0	0					0	0	
T & E MOBILE HOME PAR	Treated Well Water	0.25			1	1	20%	1	2	0	2	3	20%
T & E MOBILE HOME PARK	H. U. Treated Well Water				0	0					0	0	
TANGENT WATER RAW SUR	Raw Surface Water	2.59	13.30	0.50	4	4	28%	8	97	1	4	4	74%
TANGENT WATER TREATED	Treated Surface Water	2.59	11.12	0.60	5	5	70%	7	62	1	5	5	80%
TANGENT H.U.WATER TREA	H. U. Treated Surface Water				0	0					0	0	
TEEPEE CREEK WATER TR	Treated Surface Water				0	0		9	55	1	2	2	86%
TOMPKINS WATER RAW SUR	Raw Surface Water	8.46	17.53	4.08	2	2	71%				0	0	
TOMPKINS WATER RAW WEL	Raw Well Water				1	1					0	0	
TOMPKINS WATER TREATED	Treated Well Water	2.49	25.70	0.24	3	3	81%				0	0	
TOMPKINS WATER TREATED	Treated Surface Water	2.25	13.20	0.39	4	4	65%				0	0	
TOMPKINS H.U.WATER TRE	H. U. Treated Well Water				0	0					0	0	
TRIPLE L MOBILE HOME	Raw Well Water				0	0					0	0	
TRIPLE L MOBILE HOME	Treated Well Water	0.16			1	2	12%	0			1	2	13%
TROUT LAKE WATER RAW S	Raw Surface Water				0	0					0	0	
TROUT LAKE WATER RAW	Raw Well Water	91.30	223.85	37.23	4	4	92%	96	163	56	4	4	96%
TROUT LAKE WATER TREA	Treated Well Water	6.72	39.02	1.16	4	4	95%	0	0	0	2	2	6%
VALLEYVIEW H.U.WATER R	H.U. Raw Surface Water				0	0					0	0	
VALLEYVIEW WATER RAW	Raw Surface Water	10.01	29.00	3.46	7	7	76%	15	98	2	6	6	92%
VALLEYVIEW WATER TREA	Treated Surface Water	0.48	7.95	0.03	15	16	13%	1	7	0	4	7	16%
VALLEYVIEW H.U.WATER T	H. U. Treated Surface Water				0	0					0	0	
WABASCA WATER RAW SUR	Raw Surface Water	3.43	30.35	0.39	9	9	38%	5	36	1	8	8	52%
WABASCA WATER TREATED	Treated Surface Water	2.39	9.55	0.60	12	12	67%	4	40	0	8	8	62%
WANDERING RIVER WATER	Raw Surface Water	12.86	40.19	4.11	3	3	83%	20			1	1	96%
WANDERING RIVER WATER	Treated Surface Water	1.77	17.49	0.18	8	8	56%	161	11048916	0	3	3	100%
WANHAM WATER RAW SURF	Raw Surface Water	6.27	22.47	1.75	17	17	60%	6	29	1	4	4	62%
WANHAM WATER TREATED	Treated Surface Water	1.28	4.01	0.41	19	19	44%	4	22	1	4	4	58%
WANHAM H.U.WATER TREAT	H. U. Treated Surface Water				0	0					0	0	
WARRENSVILLE WATER RA	Raw Well Water	21.00			1	1	77%	2			1	2	31%
WARRENSVILLE H.U.WATER	H. U. Raw Well Water				0	0					0	0	
WARRENSVILLE WATER TR	Treated Well Water				0	0		9	153	1	3	3	92%
WATINO WATER RAW WELL	Raw Well Water	4.70			1	1	50%	12	109	1	3	3	70%
WATINO WATER TREATED	Treated Well Water	8.80			1	1	97%	5	8	3	2	2	84%

STATION	TYPE	Turbidity (JTU)						Turbidity (NTU)					
		MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP	MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
WEBERVILLE WATER RAW	Raw Well Water	1.27	48.61	0.03	5	5	27%	5	245	0	5	7	52%
WEBERVILLE WATER TREA	Treated Well Water	4.60			1	1	91%	7	392	0	4	4	89%
WEMBLEY WATER RAW WEL	Raw Well Water				0	0					0	0	
WEMBLEY H.U.WATER RAW	H. U. Raw Well Water				0	0					0	0	
WEMBLEY WATER TREATED	Treated Well Water	0.80	5.53	0.12	2	3	51%	0	1	0	2	2	7%
WEMBLEY H.U.WATER TREA	H. U. Treated Well Water				0	0					0	0	
WEST VALE WATER RAW W	Raw Well Water				0	0		39	193	8	3	3	89%
WEST VALE WATER TREAT	Treated Well Water	9.60			1	1	97%	22	52	9	2	2	98%
WESTLOCK H.U.WATER RAW	H.U. Raw Surface Water				0	0					0	0	
WESTLOCK WATER RAW SU	Raw Surface Water				0	0		1			1	1	6%
WESTLOCK WATER TREATE	Treated Surface Water	0.23	0.93	0.06	8	8	3%	1	16	0	2	2	10%
WESTLOCK H.U.WATER TRE	H. U. Treated Surface Water				0	0					0	0	
WESTVIEW MOBILE VILLA	Raw Well Water				0	0					0	0	
WHITECOURT WATER RAW	Raw Surface Water	3.35	38.99	0.29	5	5	37%				0	0	
WHITECOURT WATER TREA	Treated Surface Water	0.45	2.92	0.07	12	13	12%				1	1	
WHITECOURT H.U.WATER T	H. U. Treated Surface Water				0	0					0	0	
WHITELAW WATER RAW SU	Raw Surface Water				0	0					0	0	
WHITELAW WATER RAW WE	Raw Well Water	0.46	2.09	0.10	2	2	14%	0	0	0	2	2	4%
WHITELAW SPRING WATER	Raw Well Water				0	0					0	0	
WHITELAW SPRING WATER	H. U. Raw Well Water				0	0					0	0	
WHITELAW WATER TREATE	Treated Well Water	0.29	0.67	0.12	4	4	23%	1	257	0	3	7	31%
WHITELAW SPRING WATER	Treated Well Water				0	0					0	0	
WHITELAW WATER TREATE	Treated Surface Water				0	0					0	0	
WHITELAW H.U.WATER TRE	H. U. Treated Well Water				0	0					0	0	
WHITEMUD CREEK WATER R	Raw Surface Water	33.05	64.23	17.00	2	2	97%				0	0	
WHITEMUD CREEK WATER	Treated Surface Water	5.65	168.09	0.19	5	5	90%	10	48	2	5	5	88%
WILDWOOD WATER RAW WE	Raw Well Water				0	0					0	0	
WILDWOOD H.U.WATER RAW	H. U. Raw Well Water				0	0					0	0	
WILDWOOD WATER TREATE	Treated Well Water	2.70			1	1	83%				0	0	
WILLIAM A SWITZER PROV	Raw Well Water				0	0					0	0	
WILLIAMSON PROVINCIAL	Raw Well Water	0.63	2.18	0.18	3	3	17%				0	0	
WILLIAMSON PROVINCIAL	Treated Well Water	1.10	22.93	0.05	2	3	61%				0	0	
WINAGAMI LAKE PROV PK	Raw Surface Water				0	0					0	0	
WINAGAMI LAKE PROVINC	Raw Well Water				0	0					0	0	
WINAGAMI LAKE PROVINCI	Treated Well Water	0.37			1	1	29%				0	0	
WOKING WATER RAW SURF	Raw Surface Water	5.13	39.37	0.67	18	18	53%	7	45	1	5	5	71%
WOKING WATER TREATED	Treated Surface Water	2.12	7.65	0.59	19	19	63%	3	21	0	6	6	48%
WORSLEY WATER RAW SUR	Raw Surface Water	3.03	9.00	1.02	7	7	33%	8	72	1	6	6	74%
WORSLEY WATER TREATED	Treated Surface Water	0.95	4.79	0.19	9	9	32%	3	7	1	6	6	50%
WORSLEY H.U.WATER TREA	H. U. Treated Surface Water				0	0					0	0	
YOUNG'S POINT PROVINC	Raw Well Water				0	0					0	0	
YOUNG'S POINT PROVINCI	Treated Well Water	0.81	2.72	0.24	2	2	52%				0	0	
ZAMA CITY WATER RAW W	Raw Well Water	23.79	109.63	5.16	8	8	78%	19	134	3	13	15	78%
ZAMA CITY H.U.WATER RA	H. U. Raw Well Water				0	0					0	0	
ZAMA CITY WATER TREAT	Treated Well Water	2.07	8.81	0.48	6	6	77%	1	4	0	3	3	33%
ZAMA CITY H.U.WATER TR	H. U. Treated Well Water				0	0					0	0	

STATION	TYPE	Hardness (mg/L) MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
AL-PAC CONSTRUCTION CA	Raw Surface Water				0	0	
AL-PAC CONSTRUCTION CA	Treated Surface Water				0	0	
ALBERTA NEWSPRINT MILL	Raw Well Water				0	0	
AMISK LAKE TRAILER PA	Treated Surface Water	500			1	1	95%
ANZAC WATER RAW SURFAC	Raw Surface Water	101			1	1	14%
ANZAC WATER RAW WELL	Raw Well Water				0	5	
ANZAC WATER TREATED	Treated Well Water	77	187	32	2	2	43%
ATHABASCA H.U.WATER RA	H.U. Raw Surface Water	165	306	89	8	8	42%
ATHABASCA WATER RAW S	Raw Surface Water	170	353	82	5	5	52%
ATHABASCA WATER TREAT	Treated Surface Water	157	278	89	12	12	47%
ATHABASCA H.U.WATER TR	H. U. Treated Surface Water	162	303	87	8	8	38%
ATIKAMEG WATER RAW SU	Raw Surface Water				0	0	
ATIKAMEG WATER RAW WE	Raw Well Water				0	0	
ATIKAMEG WATER TREATE	Treated Well Water				0	0	
ATIKAMEG WATER TREATE	Treated Surface Water	148	1026	21	10	10	44%
BARRHEAD H.U.WATER RAW	H.U. Raw Surface Water	150			1	1	35%
BARRHEAD WATER RAW SU	Raw Surface Water	204	249	167	3	3	67%
BARRHEAD WATER TREATE	Treated Surface Water	208	255	170	4	4	64%
BARRHEAD H.U.WATER TRE	H. U. Treated Surface Water				0	0	
BEAR CANYON WATER RAW	Raw Surface Water				0	0	
BEAR CANYON WATER TRE	Treated Surface Water	348			1	1	87%
BEAR CANYON H.U.WATER	H. U. Treated Surface Water				0	0	
BEAVERLODGE WATER RAW	Raw Surface Water	119	281	50	22	22	23%
BEAVERLODGE WATER RAW	Raw Well Water				0	0	
BEAVERLODGE WATER TRE	Treated Well Water				0	0	
BEAVERLODGE WATER TRE	Treated Surface Water	86	671	11	3	3	16%
BERWYN WATER RAW WELL	Raw Well Water				0	0	
BERWYN H.U.WATER RAW W	H. U. Raw Well Water				0	0	
BERWYN WATER TREATED	Treated Well Water	315	376	263	5	5	82%
BEZANSON WATER RAW SU	Raw Surface Water				0	0	
BEZANSON WATER RAW WE	Raw Well Water				0	0	
BEZANSON WATER TREATE	Treated Well Water				0	0	
BEZANSON WATER TREATE	Treated Surface Water	11	19	7	6	6	0%
BIG PRAIRIE (PEAVINE)H	H.U. Raw Surface Water				0	0	
BIG PRAIRIE (PEAVINE)	Raw Surface Water				0	0	
BIG PRAIRIE (PEAVINE)	Treated Surface Water				0	0	
BIG PRAIRIE (PEAVINE)H	H. U. Treated Surface Water				0	0	
BLUE RIDGE WATER RAW	Raw Well Water	105	525	21	2	3	39%
BLUE HERON ESTATES WA	Raw Well Water				0	0	
BLUE RIDGE H.U.WATER R	H. U. Raw Well Water				0	0	
BLUE RIDGE WATER TREA	Treated Well Water	18	185	2	5	6	10%
BLUE RIDGE H.U.WATER T	H. U. Treated Well Water	8	12	5	3	3	12%
BLUEBERRY MOUNTAIN WA	Raw Well Water				0	0	
BLUESKY WATER RAW SUR	Raw Surface Water	148	256	85	2	2	40%
BLUESKY WATER TREATED	Treated Surface Water	91	609	14	7	7	19%
BLUESKY H.U.WATER TREA	H. U. Treated Surface Water				0	0	
BONANZA WATER RAW SUR	Raw Surface Water				0	0	
BOYLE WATER RAW SURFAC	Raw Surface Water	176			1	1	55%
BOYLE WATER TREATED	Treated Surface Water	168	189	149	3	3	51%
BROWNVALE WATER RAW W	Raw Well Water	165			1	1	52%
BROWNVALE H.U.WATER RA	H. U. Raw Well Water				0	0	
BROWNVALE WATER TREAT	Treated Well Water	284	1047	77	3	4	80%
BRULE H.U.WATER RAW SU	H.U. Raw Surface Water				0	0	
BRULE WATER RAW WELL	Raw Well Water				0	0	
BRULE WATER TREATED	Treated Well Water	163			1	1	65%
BRULE WATER TREATED	Treated Surface Water	214	247	185	2	2	65%
BUFFALO HEAD PRAIRIE W	Raw Surface Water				0	0	
BUFFALO HEAD PRAIRIE	Treated Surface Water	144			1	1	42%
BUFFALO HEAD PRAIRIE W	H. U. Treated Surface Water				0	0	
CADOMIN WATER RAW WEL	Raw Well Water				0	0	
CADOTTE LAKE WATER RAW	Raw Surface Water	164			1	1	49%
CADOTTE LAKE WATER RA	Raw Well Water				0	0	
CADOTTE LAKE WATER TR	Treated Well Water	164			1	1	66%
CADOTTE LAKE WATER TR	Treated Surface Water	152	163	141	2	2	45%
CALLING LAKE WATER RAW	Raw Surface Water	100			1	1	14%
CALLING LAKE WATER RA	Raw Well Water				0	0	
CALLING LAKE WATER TR	Treated Well Water	94	122	72	2	2	49%
CALLING LAKE WATER TR	Treated Surface Water	71	105	49	3	3	10%
CANYON CREEK WATER RA	Raw Surface Water				0	0	
CANYON CREEK WATER TR	Treated Surface Water	155	277	87	3	3	46%
CARSON-PEGASUS PROV.PK	Raw Surface Water				0	0	
CARSON-PEGASUS PROV.PK	Treated Surface Water				0	0	
CLAIRMONT WATER RAW W	Raw Well Water	9			1	2	2%
CLAIRMONT H.U.WATER RA	H. U. Raw Well Water				0	0	
CLAIRMONT WATER TREAT	Treated Well Water	8			1	2	3%
CLEARDALE WATER RAW S	Raw Surface Water	196	225	170	2	2	64%
CLEARDALE WATER TREAT	Treated Surface Water	211	257	174	2	2	65%
CLEARDALE H.U.WATER TR	H. U. Treated Surface Water				0	0	
COLINTON WATER RAW WE	Raw Well Water				0	0	
COLINTON H.U.WATER RAW	H. U. Raw Well Water	186	188	185	2	2	76%
COLINTON WATER TREATE	Treated Well Water	148	211	104	14	14	63%
COLINTON H.U.WATER TRE	H. U. Treated Well Water	178			1	1	79%
CONKLIN WATER RAW WEL	Raw Well Water				0	0	
CONKLIN WATER TREATED	Treated Well Water	81			1	1	44%
CROOKED CREEK WATER R	Raw Well Water				0	0	
CROOKED CREEK H.U.WATE	H. U. Raw Well Water	107			1	1	65%
CROOKED CREEK WATER T	Treated Well Water	91	108	77	2	2	48%
CROSS LAKE PROVINCIAL	Raw Well Water				0	0	
CROSS LAKE PROV PK H.U	H. U. Raw Well Water				0	0	
CYNTHIA WATER RAW WELL	Raw Well Water				0	0	
CYNTHIA WATER TREATED	Treated Well Water				0	0	
DAISHOWA CAMP WATER RA	Raw Surface Water				0	0	
DAISHOWA CAMP WATER TR	Treated Surface Water				0	0	
DEADWOOD WATER RAW SU	Raw Surface Water				0	0	
DEADWOOD WATER RAW WEL	Raw Well Water				0	0	

STATION	TYPE	Hardness (mg/L) MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
DEADWOOD WATER TREATED	Treated Well Water				0	0	
DEADWOOD WATER TREATE	Treated Surface Water	424			1	1	92%
DEBOLT WATER RAW WELL	Raw Well Water				0	1	
DEBOLT H.U.WATER RAW W	H. U. Raw Well Water	5			1	1	8%
DEBOLT WATER TREATED	Treated Well Water	39	144	11	6	7	24%
DEBOLT H.U.WATER TREAT	H. U. Treated Well Water	31			1	1	38%
DEER HILL WATER RAW W	Raw Well Water	585			1	1	83%
DEER HILL H.U.WATER RA	H. U. Raw Well Water				0	0	
DEER HILL WATER TREAT	Treated Well Water				0	0	
DEMMITT WATER RAW WELL	Raw Well Water				0	0	
DESMARAIS WATER RAW S	Raw Surface Water	113			1	1	20%
DESMARAIS WATER TREAT	Treated Surface Water	105	179	62	4	4	25%
DIXONVILLE WATER RAW	Raw Well Water	334			1	1	71%
DIXONVILLE WATER TREA	Treated Well Water	309			1	1	81%
DONNELLY WATER RAW SU	Raw Surface Water				0	0	
DONNELLY WATER TREATE	Treated Surface Water	443	591	333	5	5	93%
DR.MARY JACKSON SCHOOL	Raw Well Water	274			1	1	66%
DR.MARY JACKSON SCHOOL	Treated Well Water	274			1	1	79%
EAGLESHAM WATER RAW S	Raw Surface Water	205	313	134	2	2	68%
EAGLESHAM WATER TREAT	Treated Surface Water	231	359	148	4	4	69%
EAST PRAIRIE WATER RAW	Raw Surface Water				0	0	
EAST PRAIRIE WATER RAW	Raw Well Water				0	0	
EAST PRAIRIE WATER TRE	Treated Well Water				0	0	
EDSON H.U.WATER RAW SU	H.U. Raw Surface Water				0	0	
EDSON WATER RAW SURFAC	Raw Surface Water				0	0	
EDSON WATER RAW WELL	Raw Well Water	75	589	10	9	9	30%
EDSON H.U.WATER RAW WE	H. U. Raw Well Water				0	0	
EDSON WATER TREATED	Treated Well Water	41			1	1	25%
EDSON WATER TREATED	Treated Surface Water	78	282	22	18	18	13%
EDSON H.U.WATER TREATE	H. U. Treated Well Water				0	0	
ELDOE'S MOBILE HOME P	Raw Well Water				0	0	
ELDOE'S MOBILE HOME P	Treated Well Water	11			1	1	5%
ELDOE'S MOBILE HOME PK	H. U. Treated Well Water				0	0	
ENTRANCE WATER RAW SU	Raw Surface Water				0	0	
ENTRANCE H.U.WATER RAW	H. U. Raw Well Water				0	0	
ENTWISTLE WATER RAW W	Raw Well Water	335			1	1	71%
ENTWISTLE WATER TREAT	Treated Well Water	304	606	153	6	6	81%
ENTWISTLE H.U.WATER TR	H. U. Treated Well Water				0	0	
EUREKA RIVER WATER RA	Raw Well Water	933			1	1	90%
EUREKA RIVER WATER H.U	H. U. Raw Well Water				0	0	
EUREKA RIVER WATER TR	Treated Well Water				0	0	
EVANSBURG WATER RAW W	Raw Well Water				0	0	
EVANSBURG WATER TREAT	Treated Well Water	189			1	1	70%
EVERGREEN MOBILE HOME	Raw Well Water				0	0	
FAIRVIEW H.U.WATER RAW	H.U. Raw Surface Water	110	124	99	2	2	17%
FAIRVIEW WATER RAW SU	Raw Surface Water	199	326	122	14	14	66%
FAIRVIEW WATER RAW WE	Raw Well Water	212	373	121	2	2	59%
FAIRVIEW WATER TREATE	Treated Well Water	209	389	112	8	8	72%
FAIRVIEW WATER TREATE	Treated Surface Water	230	341	156	10	10	69%
FAIRVIEW H.U.WATER TRE	H. U. Treated Well Water	148	299	73	2	2	73%
FALHER H.U.WATER RAW S	H.U. Raw Surface Water	233	277	196	2	2	68%
FALHER WATER RAW SURF	Raw Surface Water	316	371	269	4	4	92%
FALHER WATER RAW WELL	Raw Well Water				0	0	
FALHER WATER TREATED	Treated Well Water				0	0	
FALHER WATER TREATED	Treated Surface Water	312	505	193	5	5	83%
FALHER H.U.WATER TREAT	H. U. Treated Well Water	234	340	162	2	2	84%
FAUST WATER RAW SURFA	Raw Surface Water	87			1	1	8%
FAUST WATER TREATED	Treated Surface Water	96	111	83	3	3	21%
FAWCETT WATER RAW WEL	Raw Well Water	257			1	1	64%
FAWCETT H.U.WATER RAW	H. U. Raw Well Water	114	129	101	2	2	66%
FAWCETT WATER TREATED	Treated Well Water	154	215	111	3	3	64%
FAWCETT H.U.WATER TREA	H. U. Treated Well Water	121	136	108	2	2	71%
FLATBUSH WATER RAW WE	Raw Well Water				0	0	
FLATBUSH WATER TREATED	Treated Well Water	7			1	1	2%
FLATBUSH H.U.WATER TRE	H. U. Treated Well Water	7			1	1	10%
FOOTNER LAKE WATER RA	Raw Surface Water	314			1	1	92%
FOOTNER LAKE WATER TR	Treated Surface Water	265	273	257	2	2	76%
FORT ASSINIBOINE WATE	Raw Well Water				0	0	
FORT ASSINIBOINE H.U.W	H. U. Raw Well Water	437	491	389	2	2	88%
FORT ASSINIBOINE WATE	Treated Well Water	303	516	178	4	4	81%
FORT CHIPEWYAN WATER	Raw Surface Water	56	178	18	2	2	1%
FORT CHIPEWYAN WATER	Treated Surface Water	60	127	28	6	6	6%
FORT MACKAY WATER RAW	Raw Surface Water				0	0	
FORT MACKAY WATER TRE	Treated Surface Water	122	207	72	4	5	33%
FORT MCMURRAY RAW SUR	Raw Surface Water	139	233	83	21	21	35%
FORT MCMURRAY AIRPORT	Raw Well Water	263			1	1	65%
FORT MCMURRAY TREATED	Treated Well Water	122	323	46	28	28	57%
FORT MCMURRAY TREATED	Treated Surface Water	133	220	81	5	5	37%
FORT VERMILION WATER	Raw Surface Water	113	126	101	4	4	20%
FORT VERMILION WATER	Treated Surface Water	119	159	89	7	7	31%
FORT VERMILION H.U.WAT	H. U. Treated Surface Water				0	0	
FOX CREEK WATER RAW W	Raw Well Water				0	0	
FOX LAKE WATER RAW WE	Raw Well Water				0	0	
FOX CREEK WATER TREAT	Treated Well Water	94	1275	7	6	7	49%
FOX LAKE WATER TREATE	Treated Well Water	250			1	1	77%
FOX CREEK H.U.WATER TR	H. U. Treated Well Water				0	0	
GARDEN RIVER COMMUNIT	Raw Well Water				0	0	
GIFT LAKE H.U.WATER RA	H.U. Raw Surface Water	149			1	1	35%
GIFT LAKE WATER RAW S	Raw Surface Water	141	190	104	3	3	36%
GIFT LAKE WATER TREAT	Treated Surface Water	131	166	103	8	8	36%
GIFT LAKE H.U.WATER TR	H. U. Treated Surface Water	183			1	1	51%
GIROUXVILLE WATER RAW	Raw Surface Water	324	452	232	3	3	93%
GIROUXVILLE WATER TRE	Treated Surface Water	346	473	253	9	9	87%
GRANDE CACHE WATER RA	Raw Surface Water	176	213	145	5	5	55%
GRANDE PRAIRIE WATER	Raw Surface Water	148	260	85	8	8	41%

STATION	TYPE	Hardness (mg/L) MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
GRANDE CACHE WATER TR	Treated Surface Water	172	185	159	3	3	53%
GRANDE PRAIRIE WATER	Treated Surface Water	159	237	107	23	23	48%
GRANDE PRAIRIE H.U.WAT	H. U. Treated Surface Water				0	0	
GRASSLAND WATER H.U.RA	H.U. Raw Surface Water	438	879	218	4	4	95%
GRASSLAND WATER RAW S	Raw Surface Water	275	485	156	5	5	87%
GRASSLAND WATER RAW W	Raw Well Water				0	0	
GRASSLAND H.U.WATER RA	H. U. Raw Well Water				0	0	
GRASSLAND WATER TREAT	Treated Well Water	303	326	282	2	2	81%
GRASSLAND WATER TREAT	Treated Surface Water	138	212	90	4	4	40%
GRASSLAND WATER H.U. T	H. U. Treated Well Water	432	754	247	4	4	91%
GREGOIRE LAKE PROVINC	Raw Surface Water				0	0	
GREGOIRE LAKE PROVINC	Treated Surface Water	59			1	1	6%
GRIFFIN CREEK WATER R	Raw Well Water	352	354	351	2	2	72%
GRIFFIN CREEK H.U.WATE	H. U. Raw Well Water				0	0	
GRIFFIN CREEK WATER T	Treated Well Water	328	444	242	2	2	83%
GRIMSHAW WATER	Raw Surface Water	204	261	160	2	2	68%
GRIMSHAW WATER RAW WE	Raw Well Water	320			1	1	70%
GRIMSHAW WATER TREATE	Treated Well Water	325	339	311	2	2	82%
GRIMSHAW WATER TREATE	Treated Surface Water	264	272	258	2	2	76%
GROUARD WATER RAW SUR	Raw Surface Water	189	464	77	3	3	61%
GROUARD WATER TREATED	Treated Surface Water	192	392	94	9	9	59%
GROVEDALE H.U.WATER RA	H. U. Raw Well Water				0	0	
GROVEDALE WATER TREAT	Treated Well Water				0	0	
GUY WATER RAW SURFACE	Raw Surface Water				0	0	
GUY WATER TREATED	Treated Surface Water	286	1104	74	5	5	80%
GUY H.U.WATER TREATEDH	H. U. Treated Surface Water				0	0	
HAWK HILLS WATER RAW	Raw Surface Water				0	0	
HAWK HILLS WATER TREA	Treated Surface Water	447	3453	58	2	2	93%
HAWK HILLS H.U.WATER T	H. U. Treated Surface Water				0	0	
HIGH PRAIRIE WATER RA	Raw Surface Water	199	341	117	3	3	66%
HIGH PRAIRIE AIRPORT	Raw Surface Water				0	0	
HIGH LEVEL WATER RAW	Raw Surface Water	240	298	194	4	4	79%
HIGH PRAIRIE WATER RA	Raw Well Water	156			1	1	50%
HIGH PRAIRIE WATER TR	Treated Well Water	159	189	133	7	7	63%
HIGH PRAIRIE AIRPORT	Treated Well Water				0	0	
HIGH PRAIRIE WATER TR	Treated Surface Water	163	190	140	2	2	49%
HIGH LEVEL WATER TREA	Treated Surface Water	160	2435	11	7	7	48%
HIGH LEVEL H.U.WATER T	H. U. Treated Surface Water	268			1	1	86%
HILLIARDS BAY PROVINC	Raw Well Water	712			1	1	86%
HILLIARDS BAY PROV.PK.	H. U. Raw Well Water				0	0	
HILLIARDS BAY PROVINC	Treated Well Water	678			1	1	93%
HILLIARDS BAY PROV.PK.	H. U. Treated Well Water				0	0	
HILLPARK MOBILE HOME	Raw Well Water				0	0	
HILLTOP ESTATES WATER	Raw Well Water				0	0	
HILLTOP ESTATES TREAT	Treated Well Water	216			1	1	73%
HINES CREEK WATER RAW	Raw Surface Water	213	414	110	4	4	71%
HINES CREEK WATER TRE	Treated Surface Water	211	342	130	7	7	64%
HINES CREEK WATER H.U.	H. U. Treated Surface Water				0	0	
HINTON WATER RAW SURF	Raw Surface Water	114			1	1	21%
HINTON WATER TREATED	Treated Surface Water	139	167	116	4	4	40%
HINTON H.U.WATER TREAT	H. U. Treated Surface Water				0	0	
HOTCHKISS WATER RAW S	Raw Surface Water				0	0	
HOTCHKISS WATER TREAT	Treated Surface Water	661			1	1	98%
HYTHE WATER RAW WELL	Raw Well Water	7			1	3	1%
HYTHE H.U.WATER RAW WE	H. U. Raw Well Water				0	0	
HYTHE WATER TREATED	Treated Well Water	10			1	2	4%
JANVIER WATER RAW SUR	Raw Surface Water	201			1	1	66%
JANVIER WATER TREATED	Treated Surface Water	164	288	94	2	2	50%
JARVIE WATER RAW WELL	Raw Well Water	215			1	1	59%
JARVIE H.U.WATER RAW W	H. U. Raw Well Water	209			1	1	78%
JARVIE WATER TREATED	Treated Well Water	134	461	39	4	4	60%
JARVIE H.U.WATER TREAT	H. U. Treated Well Water	201			1	1	81%
JASPER WATER RAW WELL	Raw Well Water				0	0	
JASPER WATER TREATED	Treated Well Water	124			1	1	57%
JASPER H.U.WATER TREAT	H. U. Treated Well Water				0	0	
JEAN COTE WATER RAW S	Raw Surface Water				0	0	
JEAN COTE WATER TREAT	Treated Surface Water	127	316	51	7	7	35%
JEAN COTE H.U.WATER TR	H. U. Treated Surface Water				0	0	
JOUSSARD WATER RAW SU	Raw Surface Water	106			1	1	17%
JOUSSARD WATER TREATE	Treated Surface Water	88	132	58	4	4	17%
KEG RIVER WATER RAW SU	Raw Surface Water	361			1	1	96%
KEG RIVER WATER RAW W	Raw Well Water				0	0	
KEG RIVER WATER TREAT	Treated Well Water	475	1060	213	2	2	89%
KEG RIVER WATER TREAT	Treated Surface Water	170	654	44	3	3	52%
KEG RIVER H.U.WATER TR	H. U. Treated Well Water				0	0	
KINUSO WATER RAW SURF	Raw Surface Water	105	124	88	3	3	16%
KINUSO WATER TREATED	Treated Surface Water	94	255	35	5	5	20%
KINUSO H.U.WATER TREAT	H. U. Treated Surface Water	113			1	1	10%
LA CRETE H.U.WATER TRE	H. U. Treated Well Water				0	0	
LA CRETE WATER H.U.RAW	H. U. Raw Well Water				0	0	
LA CRETE WATER RAW SU	Raw Surface Water	339			1	1	94%
LA CRETE WATER RAW WE	Raw Well Water	262	694	99	3	3	65%
LA CRETE WATER TREATE	Treated Well Water	145	202	104	5	5	62%
LA CRETE WATER TREATE	Treated Surface Water	239			1	1	71%
LA GLACE WATER RAW WE	Raw Well Water				0	0	
LA GLACE WATER TREATE	Treated Well Water				0	0	
LAC LA BICHE H.U.WATER	H.U. Raw Surface Water	164			1	1	42%
LAC LA BICHE H.U.WATER	H. U. Treated Well Water	155	156	153	2	2	76%
LAC LA BICHE WATER RA	Raw Surface Water	121	161	91	2	2	25%
LAC LA BICHE WATER RA	Raw Well Water				0	0	
LAC LA BICHE WATER TR	Treated Well Water	162			1	1	65%
LAC LA BICHE WATER TR	Treated Surface Water	123	170	88	2	2	33%
LAKEVIEW ESTATES WATE	Raw Well Water				0	0	
LESSER SLAVE LAKE PROV	Raw Well Water	194	4876	8	6	6	56%
LESSER SLAVE LAKE PROV	Treated Well Water	116	10804	1	3	3	35%

STATION	TYPE	Hardness (mg/L) MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
LINARIA WATER RAW WEL	Raw Well Water				0	0	
LITTLE BUFFALO WATER	Raw Surface Water	279	433	179	5	5	87%
LITTLE BUFFALO WATER	Treated Surface Water	275	509	149	8	8	78%
LODGEPOLE H.U.WATER RA	H. U. Raw Well Water				0	0	
LODGEPOLE WATER TREAT	Treated Well Water				0	0	
LOON LAKE WATER RAW S	Raw Surface Water	316	496	202	2	2	92%
LOON LAKE WATER TREAT	Treated Surface Water	282	423	188	9	9	79%
MANNING WATER RAW SUR	Raw Surface Water	175	318	96	3	3	55%
MANNING WATER TREATED	Treated Surface Water	239	878	65	11	11	71%
MANNING EAST WATER TR	Treated Surface Water				0	0	
MANOLA WATER RAW WELL	Raw Well Water				0	0	
MANOLA WATER TREATED	Treated Well Water	16	55	5	5	5	8%
MANOLA H.U.WATER TREAT	H. U. Treated Well Water				0	0	
MARIE-REINE WATER RAW	Raw Surface Water				0	0	
MARIE-REINE WATER TRE	Treated Surface Water	193	643	58	2	2	59%
MARLBORO WATER RAW WEL	Raw Well Water				0	0	
MARLBORO H.U.WATER RAW	H. U. Raw Well Water				0	0	
MARLBORO WATER TREATED	Treated Well Water	259			1	1	77%
MAYERTHORPE WATER RAW	Raw Well Water	64	75	55	2	2	26%
MAYERTHORPE WATER TRE	Treated Well Water	102	190	55	4	4	51%
MAYERTHORPE H.U.WATER	H. U. Treated Well Water				0	0	
MCINNIS WATER RAW WELL	Raw Well Water	381			1	1	74%
MCINNIS H.U.WATER RAW	H. U. Raw Well Water				0	0	
MCLENNAN WATER RAW SU	Raw Surface Water	230	941	56	2	2	76%
MCLENNAN WATER TREATE	Treated Surface Water	246	696	87	7	7	73%
MEANDER RIVER WATER R	Raw Surface Water				0	0	
MEANDER RIVER WATER R	Raw Well Water				0	0	
MEANDER RIVER WATER T	Treated Well Water	308			1	1	81%
MITSUE WATER RAW SURF	Raw Surface Water				0	0	
MITSUE WATER TREATED	Treated Surface Water	81			1	1	14%
MOONSHINE LAKE PROV PK	H.U. Raw Surface Water	313			1	1	85%
MOONSHINE LAKE PROV.PK	Raw Surface Water				0	0	
MOONSHINE LAKE PROVINC	Treated Surface Water				0	0	
MOONSHINE LAKE PROV PK	H. U. Treated Surface Water	228			1	1	74%
NAMPA WATER RAW SURFA	Raw Surface Water	263	538	129	3	3	84%
NAMPA WATER TREATED	Treated Surface Water	249	651	95	7	7	73%
NEERLANDIA WATER RAW S	Raw Surface Water				0	0	
NEERLANDIA WATER RAW	Raw Well Water				0	0	
NEERLANDIA WATER TREAT	Treated Well Water	196			1	1	70%
NEERLANDIA WATER TREA	Treated Surface Water	12	55	3	10	11	0%
NEERLANDIA H.U.WATER T	H. U. Treated Well Water	184			1	1	79%
NEW FISH CREEK WATER	Raw Well Water				0	0	
NEW FISH CREEK WATER	Treated Well Water	8			1	3	3%
NEW FISH CREEK H.U.WAT	H. U. Treated Well Water	7			1	1	10%
NOTIKEWIN PROVINCIAL	Raw Surface Water				0	0	
NOTIKEWIN PROVINCIAL	Raw Well Water				0	0	
NOTIKEWIN PROVINCIAL P	Treated Well Water				0	0	
PADDLE PRAIRIE H.U.WAT	H.U. Raw Surface Water	293			1	1	82%
PADDLE PRAIRIE WATER	Raw Surface Water	167	197	141	2	2	51%
PADDLE PRAIRIE WATER	Raw Well Water				0	0	
PADDLE PRAIRIE WATER	Treated Well Water	217	457	103	2	2	73%
PADDLE PRAIRIE WATER	Treated Surface Water	264	450	155	3	3	76%
PEACE RIVER H.U.WATER	H.U. Raw Surface Water				0	0	
PEACE RIVER CORRECTIO	Raw Surface Water				0	0	
PEACE RIVER WATER RAW	Raw Surface Water	133	262	67	16	16	32%
PEACE RIVER A.P.WATER	Raw Well Water				0	0	
PEACE POINT WATER TRE	Treated Well Water				0	0	
PEACE RIVER A.P.TRUCKE	Treated Well Water				0	0	
PEACE RIVER AIRPORT TR	Treated Well Water	396			1	1	86%
PEACE RIVER CORRECTIO	Treated Surface Water	102			1	1	24%
PEACE RIVER WATER TRE	Treated Surface Water	122	213	70	18	19	33%
PEACE RIVER H.U.WATER	H. U. Treated Surface Water				0	0	
PEERLESS LAKE WATER R	Raw Surface Water	96			2	2	12%
PEERLESS LAKE WATER R	Raw Well Water	323			1	1	70%
PEERLESS LAKE WATER T	Treated Well Water	106	114	100	2	2	53%
PEORIA WATER RAW SURF	Raw Surface Water	365			1	1	96%
PEORIA WATER TREATED	Treated Surface Water	370			1	1	89%
PEORIA H.U.WATER TREAT	H. U. Treated Surface Water				0	0	
PIBROCH WATER RAW WEL	Raw Well Water	113			1	1	41%
PIBROCH H.U.WATER RAW	H. U. Raw Well Water	5			1	1	8%
PIBROCH WATER TREATED	Treated Well Water				0	1	
PIBROCH H.U.WATER TREA	H. U. Treated Well Water	5			1	1	7%
PICKARDVILLE H.U.WATER	H.U. Raw Surface Water	282			1	1	80%
PICKARDVILLE WATER RAW	Raw Surface Water				0	0	
PICKARDVILLE WATER RA	Raw Well Water	179	184	175	2	2	54%
PICKARDVILLE WATER TR	Treated Well Water	214			1	1	73%
PICKARDVILLE WATER TR	Treated Surface Water	177	273	114	5	5	54%
PICKARDVILLE H.U.WATER	H. U. Treated Well Water	287			1	1	87%
PINE SHADOWS TRAILER	Raw Well Water	46			2	2	19%
PINE LANE TRAILER PAR	Raw Well Water				0	0	
PINE SHADOWS TRAILER P	H. U. Raw Well Water				0	0	
PINE SHADOWS ESTATES	Treated Well Water	42			1	1	26%
PINE LANE TRAILER PAR	Treated Well Water	347	467	257	3	3	84%
PLAMONDON WATER RAW S	Raw Surface Water	214			1	1	71%
PLAMONDON WATER TREAT	Treated Surface Water	171			1	1	52%
POPLAR PLACE MOBILE H	Raw Well Water				0	0	
POPLAR PLACE MHP H.U.W	H. U. Raw Well Water				0	0	
POPLAR PLACE MOBILE HO	Treated Well Water				0	0	
QUEEN ELIZABETH PROVI	Raw Well Water				0	0	
QUEEN ELIZABETH PROVIN	Treated Well Water				0	0	
RAINBOW LAKE WATER RA	Raw Surface Water	110	161	74	3	3	18%
RAINBOW LAKE WATER TR	Treated Surface Water	113	160	79	5	5	28%
RAINBOW LAKE H.U.WATER	H. U. Treated Surface Water	100			1	1	5%
REDEARTH WATER RAW SUR	Raw Surface Water	275	498	152	3	3	87%
REDEARTH CREEK AFS WAT	Raw Surface Water	176			1	1	55%

STATION	TYPE	Hardness (mg/L) MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
REDEARTH CREEK DISTRIB	Treated Surface Water	246			1	1	73%
REDEARTH WATER TREATED	Treated Surface Water	274	498	151	3	3	78%
REDEARTH CREEK AFB WAT	Treated Surface Water	193			1	1	59%
REINWOOD WATER RAW SU	Raw Surface Water				0	0	
REINWOOD WATER TREATE	Treated Surface Water	172			1	1	53%
RIDGE VALLEY WATER RA	Raw Well Water				0	0	
RIDGE VALLEY WATER TR	Treated Well Water	9			1	2	3%
RIDGE VALLEY H.U.WATER	H. U. Treated Well Water	7			1	1	10%
ROBB WATER RAW WELL	Raw Well Water				0	0	
ROBB WATER TREATED	Treated Well Water	6			1	2	2%
ROCHESTER WATER RAW W	Raw Well Water	391			1	1	75%
ROCKY LANE WATER RAW S	Raw Surface Water	222			1	1	74%
ROCKY LANE WATER TREAT	Treated Surface Water	310	508	189	2	2	83%
ROCKY LANE H.U.WATER T	H. U. Treated Surface Water				0	0	
ROYCE WATER RAW SURFA	Raw Surface Water				0	0	
ROYCE WATER RAW WELL	Raw Well Water				0	0	
ROYCE WATER TREATED	Treated Well Water	355			1	1	84%
ROYCE WATER TREATED	Treated Surface Water	103			1	1	24%
ROYCE H.U.WATER TREATE	H. U. Treated Well Water				0	0	
RYCROFT WATER RAW SUR	Raw Surface Water	309	618	155	3	3	91%
RYCROFT WATER RAW WEL	Raw Well Water	1171			1	1	93%
RYCROFT WATER TREATED	Treated Well Water				0	0	
RYCROFT WATER TREATED	Treated Surface Water	396	935	168	6	6	91%
SANDY LAKE WATER RAW S	Raw Surface Water				0	0	
SANDY LAKE WATER TREAT	Treated Surface Water				0	0	
SANGUDO WATER RAW WEL	Raw Well Water				0	0	
SANGUDO WATER TREATED	Treated Well Water	27	54	13	7	8	16%
SASKATOON ISLAND PROV	Raw Well Water				0	0	
SASKATOON ISLAND PROVI	Treated Well Water				0	0	
SEXSMITH WATER RAW WE	Raw Well Water				0	0	
SEXSMITH WATER TREATE	Treated Well Water	34	82	14	4	4	21%
SHELL PEACE RIVER INSI	Raw Surface Water				0	0	
SHELL PEACE RIVER INS	Treated Surface Water				0	0	
SIR WINSTON CHURCHILL	Raw Surface Water				0	0	
SIR WINSTON CHURCHILL	Treated Surface Water	124			1	2	33%
SLAVE LAKE WATER RAW	Raw Surface Water	87	109	69	5	5	8%
SLAVE LAKE WATER TREA	Treated Surface Water	85	100	73	7	7	16%
SMITH WATER RAW SURFAC	Raw Surface Water	191	297	123	2	2	62%
SMITH WATER TREATED	Treated Surface Water	189	282	126	2	2	58%
SMITH H.U.WATER TREATE	H. U. Treated Surface Water	224.0			1	1	72%
SPIRIT RIVER WATER RA	Raw Surface Water	159	182	138	4	4	46%
SPIRIT RIVER WATER TR	Treated Surface Water	161	192	135	8	8	45%
ST. ISIDORE WATER RAW	Raw Surface Water				0	0	
ST. ISIDORE WATER TRE	Treated Surface Water	354	493	254	3	3	87%
STRONG CREEK WATER RA	Raw Surface Water				0	0	
STRONG CREEK WATER RA	Raw Well Water				0	0	
STRONG CREEK WATER TRE	Treated Well Water				0	0	
STRONG CREEK WATER TR	Treated Surface Water	652	763	557	2	2	98%
SUNSET HOUSE WATER RAW	Raw Well Water				0	0	
SUNSET HOUSE WATER TRE	Treated Well Water				0	0	
SUNSET HOUSE H.U.WATER	H. U. Treated Well Water	12			1	1	18%
SWAN HILLS H.U.WATER R	H.U. Raw Surface Water	76.46	84	70	2	2	5%
SWAN HILLS WATER RAW	Raw Surface Water	48	56	42	2	2	0%
SWAN HILLS WATER RAW	Raw Well Water				0	0	
SWAN CITY MOBILE HOME	Raw Well Water				0	0	
SWAN HILLS WATER TREA	Treated Well Water	54	79	37	3	3	32%
SWAN CITY MOBILE HOME	Treated Well Water	11			1	1	5%
SWAN HILLS WATER TREA	Treated Surface Water	58	526	6	10	14	6%
SWAN HILLS H.U.WATER T	H. U. Treated Well Water	77	88	68	2	2	61%
SWEATHOUSE CWP WATER	Raw Well Water				0	0	
SWEATHOUSE CWP H.U.WAT	H. U. Raw Well Water				0	0	
SWEATHOUSE WATER TREA	Treated Well Water	37	43	32	2	2	23%
T & E MOBILE HOME PAR	Raw Well Water				0	1	
T & E MOBILE HOME PAR	Treated Well Water				0	0	
T & E MOBILE HOME PARK	H. U. Treated Well Water				0	0	
TANGENT WATER RAW SUR	Raw Surface Water	189			1	1	61%
TANGENT WATER TREATED	Treated Surface Water	186			1	1	57%
TANGENT H.U.WATER TREA	H. U. Treated Surface Water				0	0	
TEEPEE CREEK WATER TR	Treated Surface Water	94			1	1	20%
TOMPKINS WATER RAW SUR	Raw Surface Water				0	0	
TOMPKINS WATER RAW WEL	Raw Well Water				0	0	
TOMPKINS WATER TREATED	Treated Well Water				0	0	
TOMPKINS WATER TREATED	Treated Surface Water				0	0	
TOMPKINS H.U.WATER TRE	H. U. Treated Well Water				0	0	
TRIPLE L MOBILE HOME	Raw Well Water	7			1	2	1%
TRIPLE L MOBILE HOME	Treated Well Water	10	23	4	7	9	4%
TROUT LAKE WATER RAW S	Raw Surface Water				0	0	
TROUT LAKE WATER RAW	Raw Well Water				0	0	
TROUT LAKE WATER TREA	Treated Well Water	503			1	1	90%
VALLEYVIEW H.U.WATER R	H.U. Raw Surface Water	85	148	49	6	6	7%
VALLEYVIEW WATER RAW	Raw Surface Water	109	112	106	2	2	18%
VALLEYVIEW WATER TREA	Treated Surface Water	128	230	71	4	4	35%
VALLEYVIEW H.U.WATER T	H. U. Treated Surface Water	132	137	128	2	2	19%
WABASCA WATER RAW SUR	Raw Surface Water	100	246	41	4	4	14%
WABASCA WATER TREATED	Treated Surface Water	103	195	55	6	6	24%
WANDERING RIVER WATER	Raw Surface Water	61	122	30	3	3	1%
WANDERING RIVER WATER	Treated Surface Water	72	111	47	5	5	11%
WANHAM WATER RAW SURF	Raw Surface Water	258	407	163	6	6	83%
WANHAM WATER TREATED	Treated Surface Water	242	480	122	8	8	72%
WANHAM H.U.WATER TREAT	H. U. Treated Surface Water	289	306	273	2	2	90%
WARRENSVILLE WATER RA	Raw Well Water				0	0	
WARRENSVILLE H.U.WATER	H. U. Raw Well Water				0	0	
WARRENSVILLE WATER TR	Treated Well Water				0	0	
WATINO WATER RAW WELL	Raw Well Water				0	0	
WATINO WATER TREATED	Treated Well Water				0	0	

STATION	TYPE	Hardness (mg/L) MEAN	UPPER 95% LIMIT	LOWER 95% LIMIT	SAMPLES >MLD	# SAMPLES TAKEN	PERCENTILE WITHIN GROUP
WEBERVILLE WATER RAW	Raw Well Water	291	439	193	3	3	67%
WEBERVILLE WATER TREA	Treated Well Water	306			1	1	81%
WEMBLEY WATER RAW WEL	Raw Well Water	13			1	1	4%
WEMBLEY H.U.WATER RAW	H. U. Raw Well Water	18			1	1	26%
WEMBLEY WATER TREATED	Treated Well Water	12	20	7	18	18	5%
WEMBLEY H.U.WATER TREA	H. U. Treated Well Water	22			1	1	30%
WEST VALE WATER RAW W	Raw Well Water				0	0	
WEST VALE WATER TREAT	Treated Well Water				0	0	
WESTLOCK H.U.WATER RAW	H.U. Raw Surface Water	214	376	121	3	3	62%
WESTLOCK WATER RAW SU	Raw Surface Water	156	218	112	5	5	45%
WESTLOCK WATER TREATE	Treated Surface Water	104	717	15	5	5	25%
WESTLOCK H.U.WATER TRE	H. U. Treated Surface Water	216	379	124	3	3	69%
WESTVIEW MOBILE VILLA	Raw Well Water				0	0	
WHITECOURT WATER RAW	Raw Surface Water	143	289	71	3	3	37%
WHITECOURT WATER TREA	Treated Surface Water	191	284	128	6	6	59%
WHITECOURT H.U.WATER T	H. U. Treated Surface Water				0	0	
WHITELAW WATER RAW SU	Raw Surface Water				0	0	
WHITELAW WATER RAW WE	Raw Well Water	242			1	1	62%
WHITELAW SPRING WATER	Raw Well Water				0	0	
WHITELAW SPRING WATER	H. U. Raw Well Water				0	0	
WHITELAW WATER TREATE	Treated Well Water	230	254	208	4	4	75%
WHITELAW SPRING WATER	Treated Well Water				0	0	
WHITELAW WATER TREATE	Treated Surface Water	242	375	157	6	6	72%
WHITELAW H.U.WATER TRE	H. U. Treated Well Water				0	0	
WHITEMUD CREEK WATER R	Raw Surface Water				0	0	
WHITEMUD CREEK WATER	Treated Surface Water	298	440	201	5	5	81%
WILDWOOD WATER RAW WE	Raw Well Water				0	0	
WILDWOOD H.U.WATER RAW	H. U. Raw Well Water				0	0	
WILDWOOD WATER TREATE	Treated Well Water				0	0	
WILLIAM A SWITZER PROV	Raw Well Water				0	0	
WILLIAMSON PROVINCIAL	Raw Well Water	10	12	9	2	2	3%
WILLIAMSON PROVINCIAL	Treated Well Water	66			1	1	38%
WINAGAMI LAKE PROV PK	Raw Surface Water				0	0	
WINAGAMI LAKE PROVINC	Raw Well Water				0	0	
WINAGAMI LAKE PROVINCI	Treated Well Water				0	0	
WOKING WATER RAW SURF	Raw Surface Water	179	280	114	4	4	57%
WOKING WATER TREATED	Treated Surface Water	206	396	107	5	5	63%
WORSLEY WATER RAW SUR	Raw Surface Water	117	1030	13	3	3	23%
WORSLEY WATER TREATED	Treated Surface Water	143	4057	5	5	6	41%
WORSLEY H.U.WATER TREA	H. U. Treated Surface Water				0	0	
YOUNG'S POINT PROVINC	Raw Well Water				0	0	
YOUNG'S POINT PROVINCI	Treated Well Water				0	0	
ZAMA CITY WATER RAW W	Raw Well Water	559	890	351	5	5	82%
ZAMA CITY H.U.WATER RA	H. U. Raw Well Water				0	0	
ZAMA CITY WATER TREAT	Treated Well Water	378	3347	43	2	2	85%
ZAMA CITY H.U.WATER TR	H. U. Treated Well Water				0	0	

Table A-3: Listing of Facility Information from Prince *et al.* 1995

FACILITY	STATUS	POPULATION	% Pop. change	TYPE	SOURCE	RAW_STORA m^3	TREATED_ST m^3	TREATMENT	LAT	LONG	SURVEY SAMPLES	RAW SAMPLES	VISIT PLANNED
ANZAC	H	165		S				Cg/CgA/Flc/Sd/RSflt/NaOCl/TWR	56.450000	111.033333	X		
ATHABASCA	T	1975	-0.3%	S	Athabasca River		7092	Cg/CgA/pH/Sd/RSflt/AC/Flu/CL2/TWR	54.733333	113.250000	X	X	X
ATIKAMEG SCHOOL	S	0		S	Whitefish Band WTP			Prov for chlor/TWR	55.933333	115.650000			
BARRHEAD	T	4014	4.2%	S	Paddle River	363636	45454	RWR/Aer/Cg/Clr/Rflt/Flu/PPCl2/TWR	54.133333	114.400000	X		X
BEAR CANYON	WP	NA		S	Surface runoff	2700		Iron Removal,P. Filt.	56.183333	119.816667			
BEAR CANYON SCHO	S	0		S	Bear Canyon WP			RWR/Gsflt/PPNaOCl					
BEAVERLODGE	T	1808	-1.6%	S	Beaverlodge River	690909	3405	RWR/TWR/Aer/Cg/pH/Clr/Rflt/Cl2	55.216667	119.433333	X		
BERWYN	V	606	-12.1%	G			1091	Stor	56.150000	117.733333	X		X
BEZANSON	H	62		G			41	NT	55.233333	118.366667			
BEZANSON	O			G				Nil	55.233333	118.366667			
BEZANSON SCHOOL	S	0		G				Nil	55.233333	118.366667			
BISHOP ROUTHIER(PE	S	0		S	Hauled From Peavine WTP								
BLUE RIDGE	H	260		G			295	Nil	54.133333	115.366667	X		
BLUESKY	H	165		S	Surface runoff	65000	332	RWR/Aer/Rflt/NaOCl/TWR	56.066667	118.233333	X		
BONANZA	S	0		S	Dugout			Culligan Filters					
BORGEL WHITELAW	WP	NA		G				Nil					
BOYLE	V	704	-1.9%	S	Skeleton Lake(new pt.1992)		1899	T&O/Cg/CgA/Flc/Sed/pH/RSflt/PPCl2,CaOCl,NaOCl/TW	54.583333	112.816667	X		
BROWNVALE	H	134		G			45	Nil	56.133333	117.883333			
BRULE	H	82		S	Supply Creek(GW 1992)		227	Pflt/NaOCl/TWR	53.283333	117.883333	X		
BUFFALO HEAD PRAI	WP	NA		S	surface runoff			P. Filt.	58.050000	116.316667			
BUFFALO HEAD PRAI	S	0		G	Hauled From Lacrete WTP			Nil	58.050000	116.316667			
CADOMIN	WP	114		G				Nil	53.033333	117.333333			
CADOTTE LAKE	WP	241		G			450	Aer/PAC/Cg/CgA/pH/Clr/RSflt/PPNaOCl/TWR	56.466667	116.366667			X
CALLING LAKE	H	330		S	Calling Lake(upgraded 1992)		64	Flc/Sd/Flt/NaOCl	55.250000	113.200000	X		
CALLING LAKE P.P.	PP			S	Calling Lake			I.Gal.	55.216667	112.200000			
CANYON CREEK	H	367		S	Lesser Slave Lake	40000	818	RWR/Cg/CgA/Rflt/TO/pH/Cl2/TWR	54.366667	115.083333	X		
CARCAJOU	WP	NA		G									
CHERHILL	H	79			Private				53.816667	114.683333			
CHIP LAKE	S	0		S									
CHIPEWYAN LAKE	H	157		S	Chipewyan Lake		45	Filt. W.P.					
CHISHOLM	H	100		G				Nil,W.P.	54.916667	114.166667			
CLAIRMONT	H	443		G			909	Nil	55.266667	118.783333	X		
CLEARDALE	WP	25		S	Surface Runoff	35900	160	Comp.	56.333333	119.583333	X	X	
COLINTON	H	126		G			115	Fe re/GSflt/NaOCl/TWR	54.616667	113.250000	X		X
CONKLIN	H				Private				55.633333	111.083333			
CONKLIN	S	133		G			45	P.Filt, KMnO4, W.P.	55.633333	111.083333			
CROOKED CREEK	WP	NA		G				Nil	55.166667	117.866667			
CYNTHIA	H	56		G			227	Nil	53.283333	115.416667	X		X
DAPP	S	0		G									
DEADWOOD SCHOOL	S	0		S	H from Manning or Loc. WT				56.733333	117.450000			
DEADWOOD WP	WP	NA		S	Spring			I.Gal.	56.733333	117.450000			
DEBOLT	H	106		G			45	NaOCl	55.216667	118.016667	X		
DEER HILL	WP	NA		G				Nil	56.283333	118.333333			
DESMARAIS	H	350		S	South Wabasca Lake	227000	1137	RWR/Cg/CgA/Clr/RSflt/TO/pH/PPCl2	55.933333	113.816667	X		X
DIXONVILLE 1	H	90		G			45	Nil	56.533333	117.666667			
DIXONVILLE 2	WP	NA		G				Nil					
DONNELLY	V	421	4.0%	S	Winagami Lake via canal	82500	530	RWR/Cg/Flc/RSflt/pH/NaOCl	55.733333	117.100000	X		
DR. MARY JACKSON	S	0		G				Fe re/Gsflt/CaOCl/TWR					
DUNVEGAN PROV.RE	O	0		G				Nil					
EAGLESHAM	V	184	-6.6%	S	Surface runoff	86000	340	RWR/Cg/CgA/Clr/DMflt/Cl2	55.783333	117.883333	X		
EAST GRIMSHAW WA	O			G				Nil					
EAST MANNING	WP	NA		S	Surface runoff			I.Gal.					
EAST PRAIRIE SETTLE	MS	260		G				Gsflt/NaOCl					
EDSON	T	7323	0.0%	G			7115	NaOCL2/TWR	53.583333	116.433333	X		X
ELMWORTH	S	0		G				Nil					

Table A-3: Continued

FACILITY	STATUS	POPULATION	% Pop. change	TYPE	SOURCE	RAW_STORA m^3	TREATED_ST m^3	TREATMENT	LAT	LONG	SURVEY SAMPLES	RAW SAMPLES	VISIT PLANNED
ENILDA	H	128		S	High Prairie WTP		91		55.416667	116.300000			
ENTWISTLE	V	478	-3.8%	G			680	GSflt/Fe re/Sc cnt/PPNaOCl2/TWR	53.600000	115.000000	X		
EUREKA RIVER	WP	4		G			5	Nil	56.450000	118.733333			
EVANSBURG	V	750	-3.6%	G			2272	Corr Cnt/NaOCl/TWR	53.600000	115.016667	X		
EVERGREEN PARK,A	O	0		G				Nil	55.166667	118.800000			
FAIRVIEW	T	3281	0.8%	S	Peace River	636400	682	RWR/Ar/Cg&A/pH/Sflt/TO/Flu/PPCl2/TWR	56.066667	118.383333	X	X	X
FAIRVIEW REGIONAL	O			S	Fairview WTP			Nil	56.066667	118.383333			
FALHER	T	1183	0.4%	S	Winagami Lake via canal	86360	322	Aer/Cg/CgA/Sd/Sfl/pH/T&O/Clr/RSflt/Flu/CL2/TWR	55.733333	117.366667	X		X
FAUST	H	344		S	Slave Lake	88200	1023	RWR/TO/Cg/CgA/pH/Flc/Sd/RSflt/PPCl2/TWR	55.316667	115.633333	X		
FAWCETT	H	144		G			100	Fe re/GSflt/NaOCl/TWR	54.533333	114.083333	X		
FOOTNER LAKE	H	60		S	High Level WTP				58.616667	117.183333			
FORT ASSINIBOINE	V	214	-16.4%	G			21	Mn re/GSflt/NaOCl/TWR	54.333333	114.766667	X		
FORT CHIPEWYAN	H	1200		S	Lake Athabasca	84000	865	RWR/Cg/CgA/pH//RSflt/Cl2/TWR	58.700000	111.133333	X	X	X
FORT MACKAY	H	267		S	Ells River		18	RWR/Fere/Aer/Cg/CgA/pH/Flt/PPNaOCl	57.183333	111.616667	X		X
FORT MCMURRAY	C	33698	-0.7%	S	Athabasca River	45500	60000	Cg/CgA/TO/pH/Clr/DMflt/Flu/NH4/PPCl2/9TWR	56.733333	111.383333	X	X	X
FORT VERMILION	H	823		S	Peace River	100000	990	RWR/Cg/CgA/Clr/pH/Rflt/PPCL2/TWR	58.400000	116.000000	X		X
FOX CREEK	T	2068	9.3%	G			4818	GW/(1:GSflt/NaOCl/TWR)(1:NT)(3:FeRe/Seq/Cl2/TWR)	54.400000	116.800000	X		X
GIFT LAKE	MS	424		S	Gift Lake		850	Cg/CgA/Flc/Clr/pH/RSflt/NaOCl/TWR	55.883333	115.816667	X		X
GIROUXVILLE	V	367	-4.9%	S	Winagami Lake via canal	45455	818	RWR/Cg/Sd/Rflt/Sft/Cl2/TWR	55.750000	117.333333	X		
GOODWIN	WP	NA		G			10		55.216667	118.183333			
GRANDE CACHE	T	3842	5.4%	S	Victor Lake		4545	Fe re/Pflt/CL2/TWR	53.883333	119.133333	X		X
GRANDE PRAIRIE	C	28350	6.8%	S	Wapiti River	200000	26509	RWR/Cg/CgA/Flc/Sd/Rflt/Flu/PPCl2	55.166667	118.800000	X		X
GRANDE PRAIRIE	AP			G				Nil	55.166667	118.800000			
GRASSLAND	H	66		S&G	Surface runoff	22727	82	RWS/Aer/KMnO4/Cg/CgA/pH/Clar/RSflt/AC/NaOCl/TW	54.816667	112.683333	X		
GREEN COURT	H	70			Private								
GRIFFIN CREEK	WP	NA		G				NT	56.016667	117.850000			
GRIMSHAW	T	2812	9.0%	G			5773	Flu/Cl2/TWR	56.183333	117.600000	X		X
GROUARD	H	352		S	Buffalo Bay/Lesser Slave	48500	705	Fe re-Aer,KMnO4/Cg/CgA/pH/Flc/Clr/Rflt/Cl2/TWR	55.516667	116.150000	X		
GUY	H	54		S	Surface runoff	40900	22	RWR/Pflt/PPCL2/TWR	55.550000	117.116667	X		
HARMON VALLEY	WP	NA		S	Surface runoff		14	I.Gal.	56.116667	116.833333			
HAWK HILLS	WP	10		S	Surface runoff		5	I.Gal.	57.233333	117.466667			
HIGH LEVEL	T	2921	-5.2%	S	Footner Lake	500060	2845	Cg/CgA/Clr/pH/Rflt/T&O/Flu/Cl2/R&TWR	58.516667	117.133333	X		X
HIGH PRAIRIE	T	2932	4.1%	S	West Prairie River	536428	4955	RWR/Aer/Cg/CgA/Clr/pH/Rflt/Flu/Cl2	55.433333	116.483333	X	X	X
HIGH PRAIRIE AIRPO	AP	0			Bottled water			Nil	55.433333	116.483333			
HIGH PRAIRIE NW CO	O	0		S	High Prairie WTP			Nil	55.433333	116.483333			
HILLIARD BAY PROV.	PP	0		G				GSflt/Fe re/NaOCL2	55.516667	116.150000			
HILLTOP ESTATES	SD	23		G				Fe seq/NaOCl/TWR	55.166667	118.800000			
HINES CREEK	V	513	-17.9%	S	Jack Creek	136000	727	RWS/Aer/Cg/CgA/pH/Sd/Sflt/PPNaOCl	56.250000	118.600000	X	X	
HINTON	T	9893	4.8%	S	Athabasca River		5228	Comp. (Weldwood)	53.416667	117.566667	X	X	X
HOTCHKISS	WP	NA		S	Surface runoff		5	1 Gal	57.066667	117.550000			
HYTHE OFF/LIB	V	NA		G	Private				55.333333	119.550000			
JANVIER	H	435		S	Christina River	50000	31	RWR/Cg/Flc/RSflt/pH/NaOCl/TWR	55.933333	110.716667	X		X
JARVIE	H	102		G			68	Aer/Fe re/NaOCl	54.450000	113.983333	X		
JASPER NATIONAL PA	NP	4475		S&G	Cabin Lake		1509	Nil	52.883333	118.083333			X
JEAN COTE	H	75		S	Surface runoff	45430	22	RWR/Pflt/PPCL2/TWR	55.900000	117.316667	X		
JOUSSARD	H	269		S	Lesser Slave Lake	9090	454	Cg/RSflt/NaOCl/TWR	55.366667	115.933333	X		
KEG RIVER	WP	NA		S	Surface Runoff		22	RWR/Cg/CgA/Flc/Clr/pH/MMFlt/NaOCl/TWR	57.800000	117.866667			
KINUSO	V	154	-18.4%	S	Faust WTP		455	NA	55.333333	115.416667			
LA CRETE	H	689		G			1136	Fe re/Pfl/Sfl/NaOCl	58.183333	116.400000	X		
LA GLACE	H	169		G	Private				55.400000	119.150000			
LAC LA BICHE	T	2553	0.2%	S	Lac La Biche		1134	RWR/Cg/Microflt/Pflt/TO/Flu/CL2/TWR	54.766667	111.966667	X		X
LITTLE BUFFALO	H	253		S	Hauled from Cadotte Lake		9	NA	56.433333	116.100000			
LITTLE SMOKY	H	39			Private								
LODGEPOLE	H	161		G	Private				53.100000	115.316667			
LOON LAKE	H	218		S	Red Earth Creek WTP		23	Prov for Dis/TWR	56.550000	115.400000	X		

Table A-3: Continued

FACILITY	STATUS	POPULATION	% Pop. change	TYPE	SOURCE	RAW_STORA m³	TREATED_ST m³	TREATMENT	LAT	LONG	SURVEY SAMPLES	RAW SAMPLES	VISIT PLANNED
MANNING	T	1144	-0.4%	S	Notikiwin River	163640	1830	RWR/Aer/Cg/Sd/pH/Rflt/Flu/Cl2/TWR	56.916667	117.616667	X		X
MANOLA	H	71		S	From Barrhead		91	Nil	54.100000	114.233333			
MARIE-REINE	WP	93		S	Surface runoff		14	RWR/Aer/Cg/Pflt/NaOCl/TWR	56.066667	117.283333	X		
MAYERTHORPE	T	1692	19.7%	G			3410	FeRe & Mnre/GSflt/Cl2	53.950000	115.133333	X		
MCINNIS (WELL #1)	WP	NA		G				Nil					
MCINNIS (WELL #2)	WP	NA		G				Nil					
MCLENNAN	T	1026	2.7%	S	Winagami Lake via canal	207500	1300	RWR/Cg/CgA/pH/Clr/RSflt/Flu/PPCl2/TWR	55.700000	116.900000	X		
MILDRED LAKE/LOW	I			S	Athabasca River	5910	36	Stdby Cl2	57.050000	111.583333			
MILDRED LAKE/UPPE	I			S	Athabasca River	17728	932	P.Filt., Polymer	57.050000	111.583333			
MITSUE IND. PARK	O	0		S	Lesser Slave River			P.Filt/Non-Potable	55.266667	114.616667			
MOONSHINE LAKE P	PP	0		S	Moonshine Lake			P.Filt	55.883333	119.216667			
NAMPA	WP	NA		S	Surface Runoff			I. Gal.	56.033333	117.133333	X		
NAMPA	V	496	6.9%	S	North Heart River	113650	1137	RWR/Aer/Cg/CgA/pH/Sd/Clr/Rflt/PPCL2/TWR	56.033333	117.133333			
NEERLANDIA	H	71		S	Baird Lake	22500	1360	RWR/Cg/CgA/Flc/Clr/pH/KMnO4/Flt/Cloram/TWR	54.333333	114.366667	X		
NEW FISH CREEK	WP	NA		G			18	Nil	55.300000	117.250000			
NITON JUNCTION	H	72			Private								
NORTH STAR	WP	NA		S	Surface runoff		11	I.Gal.	56.850000	117.633333			
PADDLE PRAIRIE	MS	470		S	Boyer River	68000	255	RWR/Aer/Cg/CgA/Flc/Sd/Flt/NaOCl	57.950000	117.483333	X		
PEACE RIVER	T	6696	6.8%	S	Peace River		14189	AC/Cg/CgA/Clr/Rflt/Flu/Cl2/TWR	56.233333	117.283333	X		X
PEACE RIVER AIRPOR	AP	0		G	East Grimshaw Co-op			Res/NaOCl	56.233333	117.283333			
PEACE RIVER C.C.	O	0		S	Peace River	4546	1795	RWR/Cg/CgA/pH/Clr/Flr	56.166667	117.416667			
PEACE RIVER PULP M	O								56.166667	117.416667			
PEAVINE	MS	363		S	South Heart River			RWS/Cg/CgA/MMflt/NaOCl					
PEERLESS LAKE	WP	253		S	Peerless Lake		100	Comp.	56.666667	114.583333	X		X
PEERLESS LAKE	S	0		S&G				Soft.	56.666667	114.583333			
PEERS	H	162		G	Private								
PEORIA	H	25		S	Surface runoff	16365	5	RWR/Pflt/NaOCL2/TWR	55.616667	118.283333	X		
PIBROCH	H	100		G			100	Gsflt/Fe re/NaOCl/TWR	54.266667	113.866667	X		
PICKARDVILLE	H	190		S	Pembina River (Westlock)		68	NaOCl/TWR	54.050000	113.883333			
PINE SHADOW ESTAT	MHP	200		G				Nil	53.583333	116.433333			
PLAMONDON	V	236	7.2%	S	Lac La Biche		714	Cg/RSflt/TO/pH/Cl2/TWR	54.850000	112.316667	X		
PUSKWASKAU	WP	NA		G				Nil	55.250000	117.650000			
QUEEN ELIZ.(LAC CA	PP	0		G					54.050000	111.333333			
RAINBOW LAKE	T	817	21.0%	S	Surface runoff	318000	1576	RWR/Oxi/Aer/Cg/CgA/pH/RSflt/PPCl2/TWR	58.500000	119.383333	X		
RED EARTH	WP	NA		S	Red Earth Creek WTP				56.616667	115.300000			
REINWOOD	WP	NA		S	Surface runoff			Nil	56.733333	117.450000			
RENO	WP	20		S	Surface runoff	3182	14	I.Gal.	56.000000	117.000000			
RIDGE VALLEY	H	52		G			46	Nil	55.166667	117.866667			
RIDGE VALLEY	HC								55.166667	117.866667			
ROBB	WP	230		G	Private			Nil	53.216667	116.966667			
ROCHESTER	H	87			Private								
ROCHFORT BRIDGE	H				Private								
ROCKY LANE	WP	NA		S	Surface Runoff			P. Filt.	53.516667	116.366667			
ROCKY LANE SCHOO	S	0		S	Hauled From Local WTP			Nil	53.516667	116.366667			
ROYCE	WP	NA		S	Surface Runoff	6820	1	RWR/MMflt/NaOCl	56.216667	114.966667			
RYCROFT	V	634	-3.7%	S	Spirit River	312000	1045	RWS/Aer/Cg/CgA/Clar/Sflt/PPCl2	55.750000	118.716667	X		
SANDY LAKE	H	NA		S	Sandy Lake	3300	773	RWR/MMFlt/ACFlt/NaOCl	56.000000	113.883333	X		
SANGUDO	V	368	3.6%	G			3	Fe seq/NaOCl/TWR	53.883333	114.900000	X		
SASKATOON ISLAND	PP	0		G				Gsflt/Fe re/NaOCl	55.200000	119.083333			
SEXSMITH	T	1236	0.3%	G			2728	TWR	55.350000	118.783333			X
SHELL-PEACE R. INSI	I	0		S	Peace River			Flt/Sfl/AC/Chlor	56.233333	117.283333			
SIR WINSTON CHURC	PP	0		S	Lac La Biche		45	Pflt/NaOCl/TWR	54.833333	111.983333			
SLAVE LAKE	T	5607	3.3%	S	Lesser Slave Lake		4786	Cg/CgA/Flc/Sd/pH/T&O/Rflt/Flu/Cl2/TWR	55.283333	114.766667	X	X	X
SMITH	H	323		S	Athabasca River	32731	454	RWR/Cg/Pflt/CL2/TWR	55.166667	114.033333	X	X	X
SPIRIT RIVER	T	1044	-6.4%	S	Surface runoff	510556	1586	RWR/Cg/CgA/Flc/Sd/Clr/TO/pH/2RSflr/Flu/PPCl2	55.783333	118.833333	X		

Table A-3: Continued

FACILITY	STATUS	POPULATION	% Pop. change	TYPE	SOURCE	RAW_STORA m^3	TREATED_ST m^3	TREATMENT	LAT	LONG	SURVEY SAMPLES	RAW SAMPLES	VISIT PLANNED
ST. ISIDORE	H	90		S	Surface runoff	38600	185	2RWR/Aer/Cg/CgA/Flc/Clr/pH/RSflt/AC/NaOCl/TWR	56.200000	117.100000	X		
STRONG CREEK	WP	NA		G			11	Nil	56.166667	117.416667			
STURGEON HEIGHT C	H				Private								
SUNSET HOUSE	WP	NA		G				Nil	55.116667	116.866667			
SUNSET HOUSE	S			G				Nil	55.116667	116.866667			
SWAN HILLS	T	2407	-2.3%	S	Freeman Lake		4546	Cg/Sed/Sft/pH/AC/Rflt/Flu/PPCl2/NaOCl/TWR	54.716667	115.400000	X		X
SWEATHOUSE	WP	NA		G			18	Nil	55.016667	116.883333			
T&E TRAILER PARK	MHP	150		G				Nil	55.166667	118.766667			
TANGENT	H	60		S	Surface runoff	25000	13	RWR/Pflt/NaOCl/TWR	55.800000	117.666667	X		X
TEEPEE CREEK	S	18		G				Iron Removal	55.366667	118.400000			X
THREE CREEKS	WP	NA		S	Surface Runoff		14	I.Gal.	56.350000	117.083333			
THUNDER LAKE PRO	PP	0		G				NaOCl (Apr 1 to Oct 31 each year)	54.116667	114.700000			
TOMKINS LANDING	WP	NA		S	Surface Runoff			P. Filt.	58.183333	116.400000			
TOMPKINS LANDING	S	0		S	Hauled From Local WP				58.183333	116.400000			
TRIPLE L T.P.	MHP	300		G			55	Nil	55.166667	118.683333			
TROUT LAKE	WP	290		G			33	Cg/CgA/Sd/Sft/Clr/Rflt/Fe re/NaOCl/TWR	56.500000	114.533333	X		
TROUT LAKE (KATERI	S	100		S	Trout Lake			P.Filt.	56.500000	114.533333			
VALHALLA	S	0		G				Nil					
VALLEYVIEW	T	2039	-0.4%	S	Sturgeon Creek	194000	3000	RWR/Cg/CgA/pH/Fe re/Sd/AC/RSflt/Flu/PPCl2/TWR	55.066667	117.283333	X		
VALLEYVIEW	HC			G					55.066667	117.283333			
WABASCA	H	501		S	North Wabasca Lake	15000	1050	RWR/Cg/CgA/Sd/pH/Pflt/ACflt/CL2/TWR	56.000000	113.883333	X		
WAGNER	WP	76		S	Canyon Creek WTP			NA					
WANDERING RIVER	H	43		S	Wandering River	27000	573	RWR/Cg/CgA/RSflt/pH/TO/NaOCl/TWR	55.200000	112.466667	X		X
WANHAM	V	216	-7.3%	S	Surface Runoff	50000	68	RWR/Cg/Sd/Rflt/CL2	55.733333	118.400000	X		
WARRENSVILLE	WP	NA		G				Nil	56.300000	117.666667			
WATINO	WP	66		G				Nil	55.716667	117.616667			
WEBERVILLE (#1)	WP	NA		G				Nil	56.283333	117.316667			
WEBERVILLE (#2)	WP	NA		G				Nil					
WEMBLEY	T	1382	11.5%	G			682	TWR	55.150000	119.133333			
WESTLOCK	T	4463	4.1%	S	Pembina River	256849	4546	RWR/Cg/CgA/AC/Sd/Rflt/Flu/PPCl2/TWR	54.150000	113.866667	X		X
WEYERHAEUSER GRA	I												
WEYERHAEUSER GRA	I			S	Wapiti River			Complete					
WHITE GULL	SV	0		G				NT (operated Apr 1 - Nov 1)					
WHITECOURT	T	6692	20.9%	S	Macleod River		10433	TO/Cg/CgA/Rflt/pH/Clr/Flu/Cl2/TWR	54.150000	115.683333	X	X	X
WHITELAW	H	139		S	Spring		114	NaOCl/TWR	56.116667	118.066667			
WHITELAW SPRING	WP	NA		S	Spring			NaOCL2/CLOSED Dec 5, 1991	56.116667	118.066667			
WIDEWATER	H	130		S	Canyon Creek WTP								
WILDWOOD	V	353		G			1318	Fe Seq/Cl2	53.616667	115.233333	X		
WILLIAMSON PROV.P	PP	0		G				GSflt/NaOCl	55.083333	117.550000			
WILLOW GROVE T.P.(	SD	0		G				Iron Removal	55.333333	119.550000			
WINAGAMI LAKE P.P.	PP	0		S	Hauled From High Prairie				55.616667	116.650000			
WOKING	H	77		S	Surface Runoff	34060	78	RWR/Aer/Cg/CgA/Sd/Flt/NaOCl/TWR	55.583333	118.766667	X		X
WORSLEY	H	51		S	Eureka River	73640	418	RWR/Cg/CgA/Flc/flt/NaOCl	56.516667	119.133333	X	X	X
YOUNG'S POINT PRO	PP	0		G					55.066667	117.533333			
ZAMA	WP	NA		G				Nil	58.750000	119.083333	X		
ZAMA	H	178		G			472	Sft/Fe re/PPNaOCl	58.750000	119.083333			

STATUS CODES

C	City
T	Town
V	Village
H	Hamlet
SV	Summer Village
SD	Subdivision
PP	Provincial Park

TREATMENT CODES

NT/	No Treatment
RWR/	Raw water reservoir
Cst/	Cistern
Alg/	Algae control
Oxi/	Oxidation
Aer/	Aeration
TO/	Taste and Odour control

TREATMENT CODES

DMflt/	Dual-media filtration
CSep/	Cyclonic separation
Sft/	Softening
pH/	pH control
Fe re/	Iron removal
Fe seq/	Iron sequestering
Fe seq A/	Iron sequestering agent

Table A-3: Continued

FACILITY	STATUS	POPULATION	% Pop. change	TYPE	SOURCE	RAW m^3	STORA m^3	TREATED m^3	ST	TREATMENT	LAT	LONG	SURVEY SAMPLES	RAW SAMPLES	VISIT PLANNED
	MHP	Mobile Home Park						Cg/		Coagulation	Sc cntr/	Scale Control			
	REG	Regional System						Cg/A/		Coagulant aid	Flu/	Fluoridation			
	WCO	Water Cooperative						Flc/		Flocculation	NaOCl/	Disinfection with NaOCl			
	WP	Watering Point						Clr/		Clarification	PPNaOCl/	Pre & post disinfection with NaOCl			
	IR	Indian Reserve						Sd/		Sedimentation	Cl2/	Disinfection by chlorine gas			
	MS	Metis Settlement						Cflt/		Carbon adsorption filtration	PPCl2/	Pre & post disinfection with chlorine gas			
	S	School						Msflt/		Micro strainer filtration	CaOCl/	Disinfection with CaOCl			
	O	Other						Pflt/		Pressure filtration	PPCaOCl/	Pre & post disinfection with CaOCl			
								Sflt/		Slow sand filtration	UV/	Disinfection by ultra-violet			
								Rflt/		Rapid sand filtration	SupCl/	Supplemental chlorination			
								Gsflt/		Manganese greensand filtration	NH3/	Disinfection by combined chlorination			
								MMflt/		Multi-media filtration					