APPENDIX Q

METALS IN DRINKING WATER

Metals in Drinking Water, Flin Flon

FINAL

Prepared for:
Hudson Bay Mining and Smelting Co., Ltd
Flin Flon, Manitoba

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Executive Summary

Background

Jacques Whitford AXYS Limited (JWA) was retained by Hudson Bay Mining and Smelting Co., Limited (HBM&S) in February, 2008, to conduct a drinking water sampling program for metals in the City of Flin Flon, Manitoba and surrounding communities, hereafter referred to as the Site.

This report summarizes the 2008 sampling activities.

Scope of Work

The scope of work included the collection of drinking water samples in the City of Flin Flon and the surrounding communities, their subsequent analytical analysis and the generation of the report presented herein.

Drinking Water Sampling

The number of samples collected in each portion of the City of Flin Flon and Town of Creighton was to provide a representative overview of water quality conditions at the Site. The samples were to be analyzed for total metals, and the CCME criteria were to be used to evaluate the results.

Conclusions

The drinking water data analysis is presented as additional information for the Community Based Risk Assessment and does not necessarily indicate a risk to human health or the environment without further assessment. CCME criteria were used as a screening to exclude various metals from discussion and are not a comment on the health effects of these metals. All analytical data is presented in the Appendices.

The drinking water sampling conducted by JWA on March 6 and 7, 2008 in and around Flin Flon, Manitoba has generated the following conclusions.

- All drinking water samples were below CCME criteria (16 metals assessed), with one exception.
  - One water sample collected in West Flin Flon exceeded the CCME Human Health criteria for lead and the CCME Aesthetic Objective criteria for copper. Between 1930 and 1986, most buildings in Canada used copper pipes with lead-solder joints. Based on the age of the location (constructed in the 1950s), the source of the exceedance may be related to the plumbing system.

The statements made in this Executive Summary text is subject to the same limitations described in the Closure Section 6.0 of this report, and should be read in conjunction with the remainder of this report.

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Abbreviations

JWA ..... Jacques Whitford AXYS Limited
HBM&S ..... Hudson Bay Mining and Smelting Co., Ltd.
CSRA ..... Contaminated Sites Remediation Act
CCME ..... Canadian Council of Ministers of the Environment
CCWQG ..... Canadian Community Water Quality Guidelines
MAC ..... Maximum Acceptable Concentrations
IMAC ..... Interim Maximum Acceptable Concentrations
CAEAL ..... Canadian Association of Environmental Analytical Laboratories

1 Introduction

Jacques Whitford AXYS Limited (JWA) was retained by Hudson Bay Mining and Smelting Co., Limited (HBM&S) in February 2008, to conduct a drinking water sampling program for metal analyses in the City of Flin Flon, Manitoba and surrounding communities, hereafter referred to as the Site.

This report summarizes the 2008 sampling activities.

1.1 Background

In the 1930's a smelter was built in the City of Flin Flon to process metal ore from the on-site mine. The smelter released all emissions via two smoke stacks at the Site. One stack was 46 metres (150 feet) in height (close to the current stack), and the other was 76 metres (250 feet) in height (located due west from the current stack and at a slightly lower elevation).

HBM&S has implemented numerous pollution control measures since operations commenced in the 1930's. Highlights of these measures include the following.

1950's

Reduction in particulate emissions with the commissioning of the Copper Smelter baghouse.

1973

The installation of a new smoke stack, 251 metres (825 feet) in height (located near the former 46 metre tall stack) to replace the two shorter stacks, resulting in a reduction of local deposition.

1974 and 1982

New electrostatic precipitators were commissioned, firstly on the copper roaster (1974) and later the zinc roaster (1982) which resulted in a reduction in particulate emissions.

1993

To address the wider issue of "Acid Rain", the Zinc Pressure Leach facility was commissioned in 1993. This resulted in a step reduction in particulate emissions as it led to the shutdown of the zinc roasters and zinc fuming plant.

2000

Fugitive emissions that may have impacted local ambient air quality were reduced by completion of the smelter gas handling project.

2007

The current expansion to the tailings facility will minimize airborne dusting potential for the community.

1.2 Physical Setting

The Site is located on the Precambrian shield in the Boreal forest portion of northwest Manitoba and northeast Saskatchewan.

2 Regulatory Guidelines

In Manitoba, the investigation of contaminated sites is authorized and guided under the *Contaminated Sites Remediation Act C.C.S.M. c. C205 (CSRA)*. The criteria used for reference is the Canadian Council of Ministers of the Environment, Canadian Community Water Quality Guidelines, 1999 (CCME, CCWQG).

2.1 Contaminated Sites Remediation Act

This Act establishes a process whereby the party responsible for a contaminated site can work with the regulatory authority to ensure the protection of human health, safety and the environment, in an economically feasible and sustainable manner. It provides a baseline for developing applicable risk-based remedial action and management plans for contaminated sites and its associated Guideline 98-01, Environmental Investigations in Manitoba (June 1998, revised May 2002) outlines a three tier assessment program for a contaminated site.

Tier I – is a criteria based approach using generic guidelines to determine impact at a Site and the final remediation requirements are based on these criteria.

Tier II – is based on a site-specific approach that determines site sensitivities and sets criteria based on site-determined parameters.

Tier III – is based on a risk management basis where methods employed at the site contain, control, monitor, and otherwise minimize the potential negative effects of contaminated media at the site.

For this Site, a Tier III approach will be conducted by Intrinsik Environmental using the data presented in this report. The CCME Human Health Criteria for Metals are referenced within this report as a screening preamble to the discussion of risk.

2.2 CCME Canadian Community Water Quality Guidelines

In 1999 (revised 2003), the Canadian Council of Ministers of the Environment (CCME) released the Canadian Community Water Quality Guidelines for the Protection of Environmental and Human Health. These guidelines provide information related to the quality of “treated” drinking water. The Guidelines for Canadian Drinking Water Quality (Health and Welfare Canada 1989) and the CCME criteria provide a baseline to support the assessment of risk.

Drinking water guidelines are developed by the Federal-Provincial Subcommittee on Drinking Water and are the basis for most guidelines developed by provincial and territorial agencies. The guidelines apply to all public and private drinking water supplies and treated water as it emerges from the tap. The primary goal of the guidelines is to protect human health and provide water of good aesthetic quality.

Although the drinking water guidelines do not apply directly to source waters, they do attribute the importance of continued efforts in ensuring the highest quality drinking water available, including the implementation of measures to protect raw water supplies from contamination where feasible.

The Canadian Community Water Quality Guidelines (CCWQG) are generic guidelines and are not intended to be applied to all contaminated sites in Canada without a proper site characterization.

The metal criteria referenced in this report include the Human Health Guideline ($CCWQG_{HH}$) and Aesthetic Objective Guideline ($CCWQG_{AO}$), where data is sufficient and adequate to calculate risk. The $CCWQG_{HH}$ assess water quality on three levels:

1. Microbiological parameters: drinking water must conform to strict standards to prevent the spread of waterborne disease.
2. Chemical and physical parameters: based on scientific information concerning the concentrations of certain substances in the drinking water. These parameters are reported in two forms:
    a) Maximum acceptable concentrations (MACs): established for substances that are known or suspected to cause adverse effects on human health.
    b) Interim maximum acceptable concentrations (IMACs): established for substances where insufficient toxicological data exists to derive a MAC with certainty. These employ a generous safety factor to compensate for the additional uncertainties.
3. Radiological parameters: to protect against chronic or cumulative exposure to radionuclides.

The $CCWQG_{AO}$ assess the aesthetic nature of water quality as it pertains to certain substances or characteristics of drinking water that can affect its acceptance by consumers or interfere with practices for providing good quality water. This includes items such as foul odour, off-taste, etc.

This report focuses on the concentrations of metals in drinking water, thus the data will be compared to the MACs and IMACs of the chemical and physical criteria in the Human Health CCME guidelines.

The Aesthetic guidelines will also be referenced where available. For aluminum, the $CCWQG_{AO}$ criteria is set at 0.1 mg/L or 0.2 mg/L. This is an operational guidance value, designed to apply only to drinking water treatment plants using aluminum-based coagulants. The operational guidance value of 0.1 mg/L applies to conventional treatment plants, and 0.2 mg/L applies to other types of treatment systems. Representatives at both the Flin Flon and Creighton Water Treatment Plants confirmed that aluminum-based coagulants are not used in the treatment of drinking water, chloride (Creighton and Flin Flon) and polymer coagulants (Creighton) are used. Thus, the $CCWQG_{AO}$ criteria of 0.2 mg/L is applicable.

Details of the metals in drinking water sampling program, as well as a discussion of Site-specific information, is detailed in the subsequent sections of this report.

3 Scope of Work

The scope of work included the collection of drinking water samples in the City of Flin Flon and the surrounding communities, their subsequent analytical analysis and the generation of the report presented herein.

The number of samples collected in each portion of the City of Flin Flon and Town of Creighton was to provide a representative overview of water quality conditions at the Site. Drinking water was to be sampled from the following establishments:

- 8 houses in the Town of Creighton;
- 17 houses, 2 daycares, 1 school and 1 apartment building in West Flin Flon;
- 19 houses, 1 school and 1 apartment building in East Flin Flon; and,
- 4 houses in the Town of Channing.

The samples were to be analyzed for total metals, and the CCME criteria were to be used to evaluate the results. Due to occupant availability, modifications to the sampling program were to be made as required. The final distribution of establishments included in the sampling program is discussed in Section 4.

4 Drinking Water Sampling

4.1 Intrusive Investigation

JWA conducted a drinking water sampling of select locations in the Creighton, Flin Flon and Channing areas on March 6 and 7, 2008.

4.1.1 Drinking Water Sample Collection

Drinking water samples were collected in order to assess the current metal status of tap drinking water at each location. For residential homes and daycares, water samples were collected from the most frequently used tap, typically the kitchen faucet. For schools, water samples were collected from a water fountain.

The Town of Creighton and City of Flin Flon have separate water treatment plants, and draw their water from different sources (Douglas Lake and Cliff Lake, respectively). Sampling locations are described in Table 4-1 and displayed in Figure A-1, Appendix A. Site Assessor qualifications are included in Appendix C.

Drinking water samples were collected in pre-cleaned plastic bottles. Sampling protocols and Quality Assurance/Quality Control measures are discussed in Section 4.1.2. The following series of drinking water samples were collected:

- 100 Series, Creighton, SK: The area sampled lies within the Town of Creighton, Saskatchewan and the extreme south end of the City of Flin Flon for homes that are across the Provincial border. In total, 11 samples were collected. Samples CS106, CS107, and CS108 were in Saskatchewan but sourced their water from the City of Flin Flon water supply.
- 200 Series, West Flin Flon: The area sampled lies within the City of Flin Flon, Manitoba, bordered by Highway 10 on the west, Ross Lake on the east, the northern edge of residential streets to the north, and the City of Flin Flon city limits on the south (locally referenced as “Uptown”). In total, 13 samples were collected.
- 300 Series, East Flin Flon: The area sampled lies within the City of Flin Flon, Manitoba, bordered by Highway 10 on the east and north, Ross Lake on the west, and the southern edge for residential streets to the south. One sample was from the Town of Channing, however it was reported that all of Channing uses trucked-in water from the City of Flin Flon Water Treatment Plant. In total, 23 samples were collected.
- Two field blanks were supplied by the laboratory. These blanks were opened and preserved in the field, and travelled with the Site samples to the laboratory.
- Two tap water samples were collected and preserved in an office building in the City of Winnipeg. These control samples were collected in the same manner as the Site samples.

Table 4-1 Drinking Water Sampling Locations

City / Town	Establishment Type	Number of Samples Collected
Creighton	Home / School / Daycare	9 / 1 / 1
West Flin Flon	Home / School / Daycare	10 / 1 / 2
East Flin Flon	Home / Daycare	20 / 2
Channing	Home	1
Winnipeg	Office Building	2

4.1.2 Quality Assurance/Quality Control (QA/QC)

All samples were submitted under a strict Chain-of-Custody protocol. Sampling protocols adhered to include the following:

- Tap water was run for three minutes, the volume slowed, and a pre-cleaned plastic bottle filled to shoulder height. Nitric acid, a preservative supplied by the laboratory (5 mL), was added to the bottle prior to the sample being capped and inverted once to mix the acid. The acid vial was then rinsed three times and removed from the premises.
- Two field blanks were collected. The laboratory supplied plastic sample bottles filled with de-ionized water. These blanks were opened in the field, nitric acid preservative was added (5 mL), and the bottle was capped and included with the Site samples.
- Two tap water samples were collected from an office building in the City of Winnipeg. The sampling protocol followed for these samples was identical to the Site samples.
- Disposable nitrile gloves were worn during the collection of samples, and discarded between sampling events.
- Samples collected for laboratory analysis were placed in coolers and transported to the laboratory via courier.
- Sample holding times were strictly adhered to, and samples were preserved for specific analyses.
- All drinking water samples were analyzed at Bodycote Testing Group in Winnipeg, Manitoba. Bodycote is a Canadian Association of Environmental Analytical Laboratories (CAEAL) accredited laboratory. All analytical reports include QA/QC reports.

4.1.3 Drinking Water Laboratory Analysis

All samples were submitted for the analysis of 34 metals. The discussion of analytical results in this report is limited to the 16 metals that have associated CCME criteria. Laboratory analyses included the following:

- Metals ICP-MS (Total) in water, US EPA and APHA, Determination of Trace Elements in Waters and Wastes by ICP-MS, 200.8.
- Mercury (Total) in Water, US EPA. Determination of Hg in Sediment by Cold Vapour Atomic Absorption Spectroscopy 245.5.

Drinking water analytical results are tabulated in Appendix B. The original laboratory analysis certificates are not appended due to confidentiality concerns.

4.2 Intrusive Investigation Results

The results of the drinking water sampling program are confidential to the property owners and are presented here with Site location but without property identification.

4.2.1 Metals Concentrations in Drinking Water

The CCME criteria are presented as a first step in the Community Based Risk Assessment and do not necessarily indicate a risk to human health or the environment without further assessment.

A comparison of the 47 drinking water sample analysis results to the CCME criteria revealed the following:

- Lead concentrations exceeded the CCME Human Health criteria (0.01 mg/L) in one sample collected in West Flin Flon (FF201), with a concentration of 0.0266 mg/L.
- Copper concentrations exceeded the CCME Aesthetic Objective criteria (≤1.0 mg/L) in one sample collected in West Flin Flon (FF201), with a concentration of 2.8 mg/L.
- All other metals for which the analysis was conducted were either detected in concentrations below the CCME Human Health or Aesthetic Objective criteria (available for 16 metals), or below the laboratory instrumentation detection limit.

5 Conclusions

The drinking water data analysis is presented as additional information for the Community Based Risk Assessment and does not necessarily indicate a risk to human health or the environment without further assessment. CCME criteria were used as a screening to exclude various metals from discussion and are not a comment on the health effects of these metals. All analytical data is presented in the Appendices.

The drinking water sampling conducted by JWA on March 6 and 7, 2008 in and around Flin Flon, Manitoba has generated the following conclusions.

- All drinking water samples were below CCME criteria (16 metals assessed), with one exception.
  - One water sample collected in West Flin Flon exceeded the CCME Human Health criteria for lead and the CCME Aesthetic Objective criteria for copper. Between 1930 and 1986, most buildings in Canada used copper pipes with lead-solder joints. Based on the age of the location (constructed in the 1950s), the source of the exceedance may be related to the plumbing system.

6 Closure

This report is prepared for the sole benefit of Hudson Bay Mining and Smelting Co., Limited. The report may not be relied upon by any other person or entity without the express written consent of Jacques Whitford AXYS Limited and Hudson Bay Mining and Smelting Co., Limited.

The information and conclusions contained in this report are based upon work undertaken by trained professional and technical staff in accordance with generally accepted engineering and scientific and agricultural practices current at the time the work was performed. The conclusions presented herein represent the best judgement of Jacques Whitford AXYS Limited based on the data obtained from the work and on the site conditions encountered at the time the work was performed at the specific testing and/or sampling locations, and can only be extrapolated to an undefined limited area around these locations.

In addition, analysis has been carried out for a limited number of chemical parameters, and it should not be inferred that other chemical species are not present. Due to the nature of the investigation and the limited data available, Jacques Whitford AXYS Limited cannot warrant against undiscovered environmental liabilities.

Should additional information become available which differs significantly from our understanding of conditions presented in this report, we request that this information be brought to our attention so that we may reassess the conclusions provided herein. The field work was conducted by Jim Hicks, B.Sc., P.Ag. This report was prepared by Daniel Saurette, M.Sc. and Kimberly Marko, B.Env.Sc. and senior reviewed by Jim Hicks, B.Sc., P.Ag. and Peter Reid, M.Eng.

Respectfully Submitted,

JACQUES WHITFORD AXYS LIMITED

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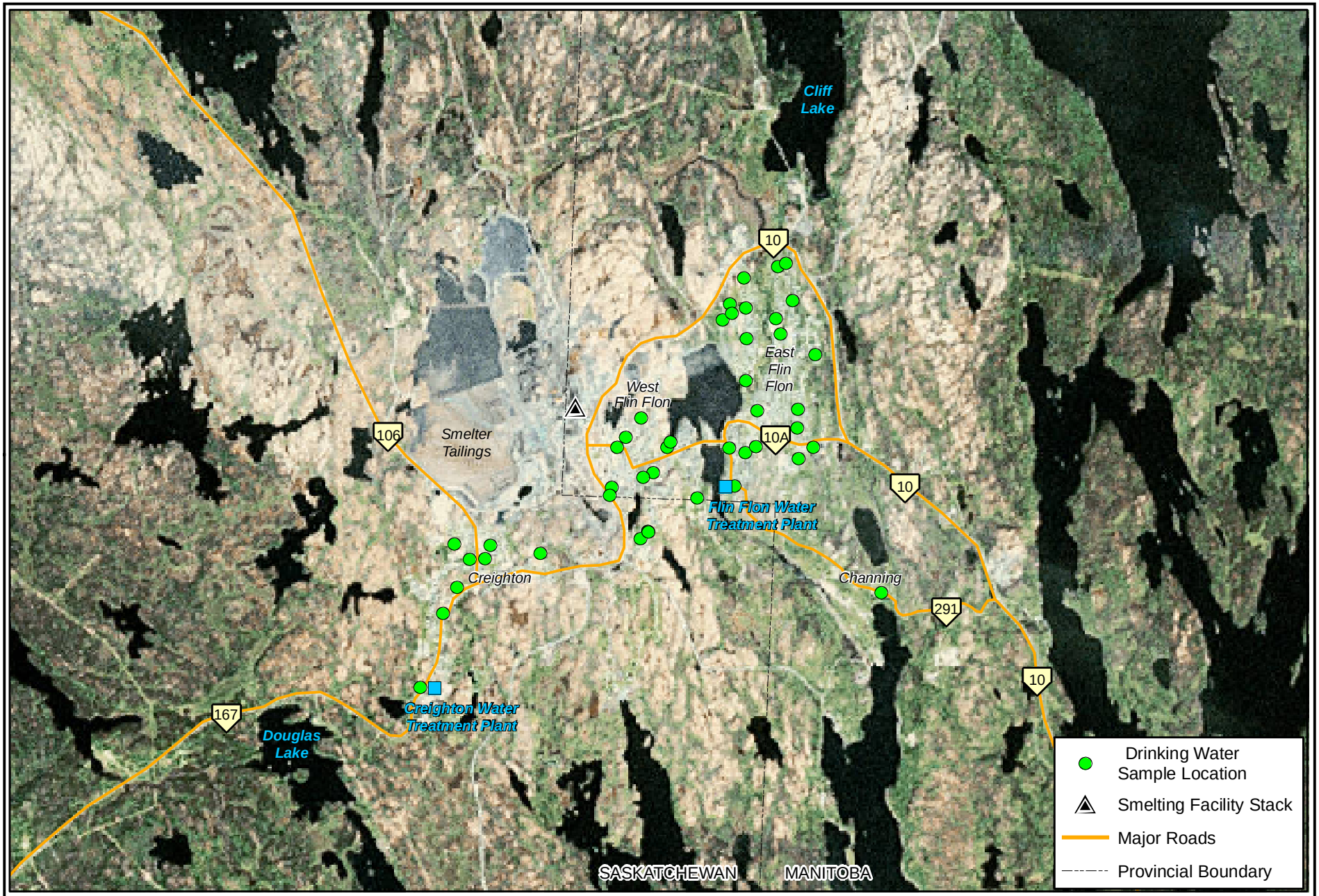
Appendix A Site Diagram



HUDSON BAY MINING AND SMELTING CO., LIMITED - FLIN FLON, MB & CREIGHTON, SK

Drinking Water Sampling Locations

NORTH

500 250 0 500 1,000 1,500

Metres

Acknowledgements:
Original Drawing by Jacques Whitford AXYS Ltd.

PREPARED BY Jacques Whitford AXYS

MAP SCALE	DATA SCALE
1:60,000	N/A

DRAFT DATE	PROJECT	FIGURE NO.
July 29, 2008	1032002.03	A-1

DRAWN	CHECKED	APPROVED
KM	KM	PR

Appendix B Tabulated Analytical Results

Table B-1. Metals in Flin Flon Area Drinking Water

			CCME Criterion (mg/L)														
			Mercury	Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Lead	Selenium	Uranium	Aluminum	Copper	Iron	Manganese	Sodium	Zinc
CCME CCWQG HH[1]			**0.001**	**0.006***	**0.025***	**1**	**5***	**0.005**	**0.05**	**0.01**	**0.01**	**0.02***	**-**	**-**	**-**	**-**	**-**	**-**
CCME CCWQG AO[2]			-	-	-	-	-	-	-	-	-	-	**0.2 [3]**	**≤1**	**≤0.3**	**≤0.05**	**≤200**	**≤5**
			Analytical Results (mg/L)															
Laboratory Lot Ref. #	Laboratory Sample #	Sample ID	Mercury	Antimony	Arsenic	Barium	Boron	Cadmium	Chromium	Lead	Selenium	Uranium	Aluminum	Copper	Iron	Manganese	Sodium	Zinc
1	2608477	CS101	<0.0001	0.0004	0.0018	0.039	0.009	0.00006	<0.0005	0.0005	0.0003	<0.0005	0.105	0.019	<0.1	0.007	8.6	0.06
2	2608478	CS102	<0.0001	0.0004	0.0017	0.038	0.009	0.00005	<0.0005	0.0025	0.0004	<0.0005	0.08	0.045	<0.1	<0.005	8.4	0.064
3	2608479	CS103	<0.0001	0.0004	0.0018	0.038	0.009	0.00005	<0.0005	0.0003	0.0002	<0.0005	0.105	0.01	<0.1	0.009	8.3	0.057
4	2608480	CS104	<0.0001	0.0004	0.0019	0.038	0.009	0.00005	<0.0005	0.0006	<0.0002	<0.0005	0.088	0.013	<0.1	0.006	8.3	0.062
5	2608481	CS105	<0.0001	0.0004	0.0015	0.039	0.009	0.00007	<0.0005	0.0003	0.0005	<0.0005	0.075	0.009	<0.1	<0.005	8.5	0.055
6	2608482	CS106	<0.0001	0.0002	0.0026	0.012	0.01	0.00101	<0.0005	0.0007	0.0005	<0.0005	0.014	0.14	<0.1	<0.005	2.6	0.128
7	2608483	CS107	<0.0001	0.0002	0.0027	0.013	0.009	0.00101	<0.0005	0.0012	0.0006	<0.0005	0.013	0.12	<0.1	<0.005	2.6	0.129
8	2608484	CS108	<0.0001	0.0002	0.0026	0.012	0.009	0.00098	<0.0005	0.0009	0.0004	<0.0005	0.012	0.146	<0.1	<0.005	2.6	0.129
9	2608485	CS109	<0.0001	0.0004	0.0015	0.038	0.009	0.00005	<0.0005	0.0002	0.0003	<0.0005	0.058	0.02	<0.1	<0.005	8.5	0.057
10	2608486	CS110	<0.0001	0.0004	0.0017	0.038	0.009	0.00005	<0.0005	0.0008	0.0004	<0.0005	0.083	0.01	<0.1	<0.005	8.6	0.059
11	2608487	CS111	<0.0001	0.0004	0.0017	0.039	0.009	0.00004	<0.0005	0.0006	0.0004	<0.0005	0.082	0.011	<0.1	<0.005	8.6	0.064
1	2608537	FF201	<0.0001	0.0003	0.0012	0.012	0.008	0.00098	<0.0005	0.0266	0.0002	<0.0005	0.008	2.8	<0.1	0.006	2.6	0.14
2	2608538	FF202	<0.0001	0.0002	0.0028	0.012	0.009	0.001	<0.0005	0.001	0.0003	<0.0005	0.011	0.205	<0.1	<0.005	2.5	0.128
3	2608539	FF203	<0.0001	0.0002	0.0025	0.012	0.009	0.001	<0.0005	0.0012	0.0004	<0.0005	0.01	0.141	<0.1	0.006	2.7	0.133
4	2608540	FF204	<0.0001	0.0002	0.0025	0.013	0.009	0.00101	0.0021	0.0005	0.0004	<0.0005	0.012	0.136	<0.1	<0.005	2.6	0.145
5	2608541	FF205	<0.0001	0.0002	0.0027	0.015	0.01	0.00098	0.0008	0.001	0.0006	<0.0005	0.023	0.136	<0.1	0.006	3	0.131
6	2608542	FF206	<0.0001	0.0002	0.0028	0.012	0.009	0.00103	<0.0005	0.0004	0.0004	<0.0005	0.018	0.101	<0.1	<0.005	2.4	0.13
7	2608543	FF207	<0.0001	0.0002	0.0028	0.012	0.009	0.00098	<0.0005	0.0008	0.0005	<0.0005	0.013	0.09	<0.1	<0.005	2.4	0.128
8	2608544	FF208	<0.0001	0.0002	0.0028	0.012	0.009	0.00101	<0.0005	0.0005	0.0006	<0.0005	0.016	0.169	<0.1	0.015	2.4	0.132
9	2608545	FF209	<0.0001	0.0002	0.0027	0.012	0.009	0.00099	<0.0005	0.0006	0.0004	<0.0005	0.01	0.13	<0.1	0.007	2.4	0.128
10	2608546	FF210	<0.0001	0.0002	0.0026	0.013	0.009	0.00101	<0.0005	0.001	0.0003	<0.0005	0.012	0.112	<0.1	<0.005	2.4	0.126
11	2608547	FF211	<0.0001	0.0003	0.0031	0.013	0.01	0.00108	<0.0005	0.0007	0.0006	<0.0005	0.014	0.114	<0.1	<0.005	2.4	0.138
12	2608548	FF212	<0.0001	0.0002	0.0031	0.013	0.01	0.00105	<0.0005	0.0007	0.0003	<0.0005	0.013	0.136	<0.1	<0.005	2.4	0.131
13	2608549	FF213	<0.0001	0.0002	0.0032	0.013	0.01	0.00111	<0.0005	0.001	0.0006	<0.0005	0.014	0.147	<0.1	<0.005	2.4	0.145
1	2608557	FF301	<0.0001	0.0003	0.0033	0.013	0.01	0.00108	<0.0005	0.0008	<0.0002	<0.0005	0.013	0.097	<0.1	<0.005	2.2	0.141
2	2608558	FF302	<0.0001	0.0002	0.0034	0.013	0.01	0.00112	<0.0005	0.0008	<0.0002	<0.0005	0.013	0.078	<0.1	<0.005	2.1	0.138
3	2608559	FF303	<0.0001	0.0002	0.0033	0.013	0.01	0.00112	<0.0005	0.0005	0.0003	<0.0005	0.011	0.078	<0.1	0.02	2.1	0.141
4	2608560	FF304	<0.0001	0.0002	0.0031	0.013	0.009	0.00108	<0.0005	0.002	0.0003	<0.0005	0.012	0.186	<0.1	<0.005	2.1	0.139
5	2608561	FF305	<0.0001	0.0002	0.0033	0.013	0.01	0.00107	<0.0005	0.0006	0.0005	<0.0005	0.013	0.151	<0.1	<0.005	2.1	0.139
6	2608562	FF306	<0.0001	0.0002	0.0033	0.013	0.011	0.00108	<0.0005	0.0007	0.0002	<0.0005	0.013	0.164	<0.1	<0.005	2.1	0.143
7	2608563	FF307	<0.0001	0.0002	0.0023	0.012	0.009	0.00092	<0.0005	0.0007	<0.0002	<0.0005	0.01	0.102	<0.1	0.008	2.3	0.116
8	2608564	FF308	<0.0001	0.0002	0.0025	0.014	0.009	0.00093	<0.0005	0.001	<0.0002	<0.0005	0.014	0.075	<0.1	<0.005	2.3	0.116
9	2608565	FF309	<0.0001	0.0002	0.0028	0.012	0.009	0.00098	<0.0005	0.0008	0.0003	<0.0005	0.009	0.12	<0.1	<0.005	2.3	0.12
10	2608566	FF310	<0.0001	0.0003	0.0027	0.013	0.008	0.00098	<0.0005	0.0012	0.0003	<0.0005	0.03	0.289	<0.1	0.01	2.2	0.127
11	2608567	FF311	<0.0001	0.0002	0.0027	0.012	0.008	0.00097	<0.0005	0.0014	<0.0002	<0.0005	0.012	0.096	<0.1	<0.005	2.2	0.119
12	2608568	FF312	<0.0001	0.0002	0.0026	0.012	0.009	0.00103	<0.0005	0.0006	0.0004	<0.0005	0.009	0.07	<0.1	<0.005	2.2	0.111
13	2608569	FF313	<0.0001	0.0002	0.0027	0.012	0.009	0.00098	<0.0005	0.0005	0.0004	<0.0005	0.01	0.092	<0.1	<0.005	2.3	0.114
14	2608570	FF314	<0.0001	0.0003	0.0026	0.013	0.009	0.00097	<0.0005	0.0006	0.0002	<0.0005	0.01	0.062	<0.1	<0.005	2.2	0.112
15	2608571	FF315	<0.0001	0.0003	0.0027	0.012	0.008	0.00098	<0.0005	0.0004	0.0002	<0.0005	0.011	0.099	<0.1	<0.005	2.3	0.116
16	2608572	FF316	<0.0001	0.0003	0.0028	0.012	0.009	0.00094	<0.0005	0.0007	0.0003	<0.0005	0.011	0.088	<0.1	<0.005	2.2	0.113
17	2608573	FF317	<0.0001	0.0003	0.0027	0.012	0.008	0.00096	<0.0005	0.0005	0.0003	<0.0005	0.009	0.099	<0.1	0.045	2.3	0.111
18	2608574	FF318	<0.0001	0.0002	0.0027	0.012	0.008	0.00093	<0.0005	0.0005	0.0003	<0.0005	0.011	0.086	<0.1	<0.005	2.3	0.114
19	2608575	FF319	<0.0001	0.0002	0.0026	0.012	0.008	0.00095	<0.0005	0.0008	<0.0002	<0.0005	0.009	0.092	<0.1	<0.005	2.3	0.114
20	2608576	FF320	<0.0001	0.0003	0.0025	0.012	0.009	0.00094	<0.0005	0.0017	0.0002	<0.0005	0.012	0.127	<0.1	<0.005	2.3	0.117
21	2608577	FF321	<0.0001	0.0003	0.0028	0.012	0.008	0.00098	<0.0005	0.0006	<0.0002	<0.0005	0.01	0.064	<0.1	<0.005	2.3	0.112
22	2608578	FF322	<0.0001	0.0002	0.0026	0.012	0.009	0.00096	<0.0005	0.0004	<0.0002	<0.0005	0.012	0.1	<0.1	<0.005	2.3	0.112
23	2608579	FF323	<0.0001	0.0003	0.0026	0.012	0.008	0.00095	<0.0005	0.0006	0.0003	<0.0005	0.012	0.099	<0.1	<0.005	2.3	0.115
1	2618971	WPG OFFICE 01	<0.0001	<0.0002	0.0008	0.02	0.015	<0.00001	<0.0005	0.0002	<0.0002	<0.0005	0.009	0.104	<0.1	0.02	2.4	0.005
2	2618972	WPG OFFICE 02	<0.0001	<0.0002	0.0009	0.019	0.017	<0.00001	<0.0005	0.0003	0.0002	<0.0005	0.005	0.098	<0.1	<0.005	2.4	0.003
3	2618973	TRAVEL BLANK 01	<0.0001	<0.0002	<0.0002	<0.001	0.009	<0.00001	<0.0005	0.0002	0.0002	<0.0005	<0.005	0.001	<0.1	<0.005	<0.4	0.003
4	2618974	TRAVEL BLANK 02	<0.0001	<0.0002	<0.0002	<0.001	0.01	<0.00001	<0.0005	0.0002	<0.0002	<0.0005	<0.005	<0.001	<0.1	<0.005	<0.4	0.002
		Laboratory Detection Limits	*0.0001*	*0.0002*	*0.0002*	*0.001*	*0.002*	*0.00001*	*0.0005*	*0.0001*	*0.0002*	*0.0005*	*0.005*	*0.001*	*0.1*	*0.005*	*0.4*	*0.001*

Notes

1. CCME CCWQG HH: Canadian Council of Ministers of the Environment, Canadian Community Water Quality Guidelines, Human Health Criteria, Maximum Acceptable Concentration (* denotes Interim Maximum Acceptable Concentration)
2. CCME CCWQG AO: Canadian Council of Ministers of the Environment, Canadian Community Water Quality Guidelines, Aesthetic Objectives
3. The Aluminum Aesthetic Objective criteria is designed for operational guidance, based on water treatment. The Flin Flon and Creighton Water Treatment Plants do not use Aluminum-based coagulants, thus the criteria of 0.2 mg/L applies.
4. Shaded Cells: Above the referenced CCME Criteria, as illustrated in bold along the top row
5. Results are confidential to the property owners and are presented here without property identification to allow for the completion of a Community Based Risk Assessment.

Appendix C Assessor Qualifications

Jacques Whitford

Engineering, Scientific, Planning and Management Consultants

www.jacqueswhitford.com

ASSESSOR QUALIFICATIONS

Jim Hicks, B.Sc., P.Ag.

Manager, Agronomics Division

Jim Hicks has a Bachelor's Degree in Chemistry from the University of Winnipeg. He also holds a Professional Agrologist (P.Ag.) designation from the Manitoba Institute of Agrologists. Mr. Hicks manages contaminated site work in Manitoba and Saskatchewan for Jacques Whitford AXYS Limited and has conducted dozens of Phase I, II, and III Environmental Site Assessments and remediation programs throughout Western Canada.

Daniel Saurette, M.Sc.

Soil Scientist

Daniel Saurette has a Bachelor of Environmental Studies in Forest Conservation from the Faculty of Forestry at Lakehead University and a Master's of Science in Soil Science from the Faculty of Renewable Resources at the University of Alberta. Daniel has 5 years of field experience with a wide variety of expertise in soil science. He currently focuses on irrigation suitability assessments, soil survey and mapping, pedology and climate services.

Kimberly Marko, B.Env.Sc.

Environmental Scientist

Kimberly Marko, B. Env.Sc., is an environmental scientist with Jacques Whitford AXYS Limited in Winnipeg, Manitoba. Kim is knowledgeable in the field of natural sciences, environmental legislation and natural resource management. She is fluent with geographic information systems and is the geomatics technician for JWA Winnipeg. Kim has extensive experience in conducting Phase I, II and III Environmental Site Assessments for residential, commercial and industrial properties throughout rural and urban Manitoba, Saskatchewan and Alberta.

Peter Reid, M.Eng., P.Eng.

Senior Service Director, Environmental Site Assessment & Remediation

Mr. Peter Reid M.Eng., P.Eng. (BC, ON) is the Senior Service Director for Environmental Site Assessment and Remediation for Jacques Whitford AXYS Limited. Mr Reid has completed over 600 environmental investigations and is currently appointed to the Roster of Professional Experts in British Columbia. Mr. Reid provided senior review prior to the release of this report.