

MV2019L2-0006
Canadian Zinc Corporation – Mineral Exploration
DRAFT Water Licence

Table of Contents

Part A: [Scope](#) and [Definitions](#)

[Part B](#): General Conditions

[Part C](#): Security

[Part D](#): Water Use

[Part E](#): Waste and Water Management

[Part F](#): Spill Contingency Planning

[Part G](#): Closure and Reclamation

Schedules

[Schedule B](#): Annual Water Licence Report (Part B)

Schedule C: Security (Part C)

Schedule E: Waste and Water Management (Part E)

[Schedule G](#): Closure and Reclamation (Part G)

Annex A: Surveillance Network Program - Not included at this time

Part A: Reporting Requirements

Part B: Site Descriptions

Annex B: Concordance Table of Items Requiring Submission

Annex C: Table of Revision History

Part A: Scope and Definitions

Definitions¹:

Acid Rock Drainage – acidic Water, often with elevated sulphate concentrations, that occurs as a result of oxidation of sulphide minerals contained in rock or other materials that are exposed as a result of natural weathering processes, Construction, or Project activities.
Action Level – a predetermined qualitative or quantitative trigger which, if exceeded, requires the Licensee to take appropriate actions.
Analyst – an Analyst designated by the Minister under subsection 65(1) of the <i>Waters Act</i> .
Average Concentration – the arithmetic mean/discrete average of four consecutive analytical results, or if less than four analytical results, the arithmetic mean/discrete average of the analytical results collected during a batch decant, as submitted to the Board in accordance with the sampling and analysis requirements specified in the Surveillance Network Program.
Board – the Mackenzie Valley Land and Water Board established under subsection 99(1) of the <i>Mackenzie Valley Resource Management Act</i> .
Catchment Pond - the engineered structure designed to contain runoff and associated liquid waste from the Prairie Creek minesite, labelled “Run Off Settling Pond” as shown on Drawing Number 301, dated August 2000 and titled “Site Plan”
Closure Cost Estimate – has the same meaning as that in the MVLWB/GNWT/AANDC <i>Guidelines for Closure and Reclamation Cost Estimates for Mines</i> .
Closure Criteria – has the same meaning as that in the MVLWB/AANDC <i>Guidelines for the Closure and Reclamation of Advance Mineral Exploration and Mine Sites in the Northwest Territories</i> .
Closure Objectives – has the same meaning as that in the MVLWB/AANDC <i>Guidelines for the Closure and Reclamation of Advance Mineral Exploration and Mine Sites in the Northwest Territories</i> .
Closure and Reclamation – the process and activities that facilitate the return of areas affected by the Project to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment and human activities.
Closure and Reclamation Plan (CRP) – a document, developed in accordance with this Licence and the MVLWB/AANDC <i>Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories</i> , that clearly describes the Closure and Reclamation for the Project.
Dewatering – the complete removal of Water from an existing Watercourse, or portion thereof, by pumping or draining.
Discharge – a direct or indirect release of any Waters or Waste to the Receiving Environment.
Effluent – a Wastewater Discharge.

¹ Defined terms are capitalized throughout the License, including when used in other definitions.

Effluent Quality Criteria (EQC) – numerical or narrative limits on the quality or quantity of the Waste deposited to the Receiving Environment.
Engagement Plan – a document, developed in accordance with the MVLWB <i>Engagement and Consultation Policy</i> and the <i>Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits</i> , that clearly describes how, when and which engagement activities will occur with an affected party during the life of the Project.
Engineered Structure – any structure or facility related to Water Use or the deposit of Waste that is designed by a Professional Engineer associated with the Project.
Environmental Assessment (EA) – the totality of the Mackenzie Valley Environmental Impact Review Board’s Public Registry for Environmental Assessment EA01-003.
Freeboard – the vertical distance between the Water line and the lowest elevation of the effective Water containment crest on the upstream slope of a Dam or dyke.
Greywater – all liquid Wastes from showers, baths, sinks, kitchens and domestic washing facilities, but does not include Toilet Wastes.
Groundwater – any Water defined as Groundwater as per section 1 of the Waters Regulations.
Inspector – an Inspector designated by the Minister under subsection 65(1) of the <i>Waters Act</i> .
Licensee – the holder of this Licence.
Maximum Average Concentration – the concentration of a parameter that cannot be exceeded by the running average of any four consecutive analytical results.
Maximum Grab Concentration – the concentration of a parameter that cannot be exceeded in any one grab sample.
Metal Leaching – the release of metals and metalloids in leachate, Seepage, or drainage from rock or other materials associated with the Project.
Minewater – Groundwater, surface Water or any Water that is pumped or flows out of any underground mine working or open pit.
Settling Pond – any natural or human-made depression designed to separate solids from Water or Wastewater.
Minister – the Minister of the Government of the Northwest Territories (GNWT) – Environment and Natural Resources.
Ordinary High Water Mark – the usual or average level to which a Watercourse rises at its highest point and remains for sufficient time so as to change the characteristics of the land. In flowing Watercourses (rivers, streams), this refers to an active channel/bank-full level, which is often the 1:2 year flood flow return level. In inland lakes, wetlands or marine environments, it refers to those parts of the Watercourse bed and banks that are frequently flooded by Water so as to leave a mark on the land and where the natural vegetation changes from predominantly aquatic vegetation to terrestrial vegetation (excepting Water tolerant species). For reservoirs, this refers to normal high operating levels (full supply level).

<p>Polishing Pond - the Engineered Structure designed to contain the liquid waste from the decline development and operation process, located adjacent to the crusher and concentrator building as shown on the drawing titled “Prairie Creek Mine: Mine water Management Site Plan”, dated January 31, 2003.</p>
<p>Prairie Creek Valley Aquifer - the saturated bed, formation, or group of formations in the Prairie Creek Valley which yields water in sufficient quantity to be of consequence as a source of water.</p>
<p>Professional Engineer – a person registered with the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists to practice as a Professional Engineer in the Northwest Territories as per the territorial <i>Engineering and Geoscience Professions Act</i>, and whose professional field of specialization is appropriate to address the components of the Project at hand.</p>
<p>Progressive Reclamation – Closure and Reclamation activities conducted during the operating phase of the Project.</p>
<p>Project – the undertaking described in Part A, condition 1.</p>
<p>Receiving Environment – the natural environment that, directly or indirectly, receives any deposit of Waste from the Project.</p>
<p>RECLAIM – the Government of the Northwest Territories’ or Crown-Indigenous Relations and Northern Affairs Canada’s model for estimating Closure and Reclamation costs.</p>
<p>Reclamation Research – has the same meaning as that in the MVLWB/AANDC <i>Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories</i>.</p>
<p>Remediation – the removal, reduction or neutralization of substances, Wastes or hazardous materials from a site in order to prevent or minimize any adverse effects on the environment and public safety, now or in the future.</p>
<p>Response Framework – a systematic approach to responding to the results of a monitoring program through adaptive management actions.</p>
<p>Response Plan – a document describing the actions that will be taken by a licensee in response to an Action Level exceedance.</p>
<p>Runoff – the overland flow of Water or Wastewater that occurs when precipitation, meltwater, or other Water is not absorbed by the land, and instead drains downslope towards a Watercourse.</p>
<p>Seepage – any Water or Waste that drains, passes through, or escapes from any structure designed to contain, withhold, divert, or retain Water or Waste.</p>
<p>Sewage – all Toilet Wastes and Greywater.</p>
<p>Sewage Disposal Facilities – the area(s) and structures designated to contain and treat Sewage.</p>
<p>Significance Threshold – a limit of environmental change which, if reached, would likely result in significant adverse impacts.</p>

Solid Waste Disposal Facilities – the area(s) and structures designated to contain solid Waste.
Spill Contingency Plan (SCP) – a document, developed in accordance with INAC’s <i>Guidelines for Spill Contingency Planning</i> .
Sump – a human-made pit, trench, hollow, or natural depression used for the purpose of depositing Water and/or Waste.
Surveillance Network Program (SNP) – a monitoring program established to define environmental sampling, analysis, and reporting requirements, as detailed in Annex A of this Licence.
Tailings – the material rejected from the mill after the recoverable valuable minerals have been extracted.
Tailings Containment Facilities – the area(s) and Engineered Structures designated to contain Tailings.
Temporary Closure – a state of care and maintenance, with the intent of resuming activities in the near future.
Toilet Wastes – all human excreta and associated products, not including Greywater.
Traditional Knowledge – the cumulative, collective body of knowledge, experience and values built up by a group of people through generations of living in close contact with nature. It builds upon the historic experiences of a people and adapts to social, economic, environmental, spiritual, and political change.
Unauthorized Discharge – a release or Discharge of any Waters or Waste not authorized under this Licence.
Waste – any substance defined as Waste by section 1 of the <i>Waters Act</i> .
Waste Disposal Facilities – the area(s) and structures designated for the disposal of Waste.
Waste Management Plan (WMP) – a document, developed in accordance with the MVLWB <i>Guidelines for Developing a Waste Management Plan</i> , that describes the methods of Waste management from Waste generation to final disposal.
Waste Rock – all rock materials, except ore and Tailings, which are produced as a result of mining and milling operations.
Waste Rock Storage Facilities – the area(s) and Engineered Structures designated for the disposal of Waste Rock and till.
Wastewater – any Water that is generated by Project activities or originates on-site, and which contains Waste, and may include, but is not limited to, Runoff, Seepage, Sewage, Minewater, and Effluent.
Wastewater Treatment Facilities – the area(s) and-structures designated for the treatment of Wastewater.
Water – any Water as per section 1 of the <i>Waters Act</i> .

Watercourse – a natural watercourse, body of Water or Water supply, whether usually containing Water or not, and includes Groundwater, springs, swamps, and gulches.
Water Management Area – a geographical area of the Northwest Territories established by section 2 and Schedule A of the Waters Regulations.
Waters Regulations – the regulations proclaimed pursuant to section 63 of the <i>Waters Act</i> .
Water Supply Facilities – the area(s) and structures designated to collect and supply Water for the Project.
Water Use – a use of Water as per section 1 of the <i>Waters Act</i> .
Water Use Fee – the fee for use of Water as per the Waters Regulations pursuant to section 63 of the <i>Waters Act</i> and the Mackenzie Valley Land and Water Board’s <i>Water Use Fee Policy</i> .

DRAFT

Scope

1.	<p>This Licence entitles the Licensee to use Water and deposit Waste for mining exploration and associated uses including underground decline development to be accessed at the 870 metre elevation at the Prairie Creek Mine.</p> <p>The scope of this Licence includes the following:</p> <p>a) [note to CZN and reviewers – suggestions for further detail in the scope are welcome – the above scope is what is included in the existing Licence MV2001L2-0003];</p>	SCOPE
2.	<p>This Licence is issued subject to the conditions contained herein with respect to the use of Water and the deposit of Waste in any Waters or in any place under any conditions where such Waste or any other Waste that results from the deposits of such Waste may enter any Waters. Whenever new Regulations are made or existing Regulations are amended by the Commissioner in Executive Council under the <i>Waters Act</i>, or other statutes imposing more stringent conditions relating to the quantity or type of Waste that may be so deposited or under which any such Waste may be so deposited, this Licence shall be deemed, upon promulgation of such Regulations, to be automatically amended to conform with such Regulations.</p>	REGULATIONS SUBJECT TO CHANGE
3.	<p>Compliance with the defined terms and conditions of this Licence does not relieve the Licensee from responsibility for compliance with the requirements of any applicable federal, territorial, or municipal legislation.</p>	LEGISLATIVE COMPLIANCE

DRAFT

Part B: General Conditions

1.	The Licensee shall ensure a copy of this Licence is maintained on site at all times.	COPY OF LICENCE
2.	The Licensee shall take every reasonable precaution to protect the environment.	PRECAUTION TO PROTECT ENVIRONMENT
3.	In conducting its activities under this Licence, the Licensee shall make every reasonable effort to consider and incorporate any scientific information and Traditional Knowledge that is made available to the Licensee.	INCORPORATE SCIENTIFIC INFORMATION AND TRADITIONAL KNOWLEDGE
4.	In each submission required by this Licence or any directive from the Board, the Licensee shall identify all recommendations based on Traditional Knowledge received, describe how the recommendations were incorporated into the submission, and provide justification for any recommendation not adopted.	IDENTIFY TRADITIONAL KNOWLEDGE
5.	All references to policies, guidelines, codes of practice, statutes, regulations, or other authorities shall be read as a reference to the most recent versions, unless otherwise denoted.	USE UP-TO-DATE REFERENCES
6.	The Licensee shall ensure all submissions to the Board: <ul style="list-style-type: none"> a) Are in accordance with the MVLWB <i>Document Submission Standards</i>; b) Include a conformity statement or table which identifies where the requirements of this Licence, or other directives from the Board, are addressed; and c) Include any additional information requested by the Board. 	SUBMISSION FORMAT AND CONFORMITY
7.	The Licensee shall ensure management plans are submitted to the Board in a format consistent with the MVLWB <i>Standard Outline for Management Plans</i> , unless otherwise specified.	MANAGEMENT PLAN FORMAT
8.	The Licensee shall comply with all plans, programs, and studies approved pursuant to the conditions of this Licence, including such revisions made as per the conditions of this Licence, and as approved by the Board.	COMPLY WITH SUBMISSIONS AND REVISIONS
9.	The Licensee shall conduct an annual review of all plans and programs, and make any revisions necessary to reflect changes in operations, contact information, or other details. No later than March 31 each year, the Licensee shall send a notification letter to the Board, listing the documents that have been reviewed and do not require revisions.	ANNUAL REVIEW
10.	The Licensee may propose changes at any time by submitting revised plans, programs, or studies to the Board, for approval, a minimum of 90 days prior to the proposed implementation date for the changes. The Licensee shall not implement the changes until approved by the Board.	REVISIONS
11.	The Licensee shall revise any submission and submit it as per the Board's directive.	REVISE AND SUBMIT
12.	If any date for any submission falls on a weekend or holiday, the Licensee may submit the item on the following business day.	SUBMISSION DATE

13.	The Licensee shall comply with the Schedules, which are annexed to and form part of this Licence, and any updates to the Schedules as may be made by the Board.	COMPLY WITH SCHEDULE(S)
14.	The Licensee shall comply with the Surveillance Network Program (SNP), which is annexed to and forms part of this Licence, and any updates to the SNP as may be made by the Board.	COMPLY WITH SNP
15.	The Schedules, the SNP, and any compliance dates specified in this Licence may be updated at the discretion of the Board.	UPDATES TO COMPLIANCE DATE(S)
16.	The Licensee shall ensure signs are posted for all active SNP stations. All sign(s) shall be located and maintained to the satisfaction of an Inspector.	POST SNP SIGN(S)
17.	The Licensee shall install, operate, and maintain meters, devices, or other such methods used for measuring the volumes of Water used and Waste discharged to the satisfaction of an Inspector.	MEASURE WATER USE AND WASTE DISCHARGED
18.	The Licensee shall adhere to all commitments as outlined in the following: a) Attachments 1 and 2 of the Mackenzie Valley Environmental Impact Review Board's Attachments to Reasons for Decision; and b) The new commitments made by the Licensee in their January 31, 2003 response to the Mackenzie Valley Environmental Impact Review Board's information request.	EA COMMITMENTS
19.	Beginning March 31, 2020 and no later than every March 31 thereafter, the Licensee shall submit an Annual Water Licence Report to the Board and an Inspector. The Report shall be in accordance with the requirements of Schedule 1, Condition 1.	ANNUAL WATER LICENCE REPORT
20.	The Licensee shall comply with the Engagement Plan , once approved.	ENGAGEMENT PLAN
21.	A minimum of ten days prior to commencement of the Project, the Licensee shall provide written notification to the Board and an Inspector. Notification shall include the commencement date, and the name and contact information for the individual responsible for overseeing the Project. Written notification shall be provided to the Board and an Inspector if any changes occur.	NOTIFICATION – COMMENCEMENT
22.	The Licensee shall immediately provide written notification to the Board and an Inspector of any non-compliance with the conditions of this Licence or any direction from the Board pursuant to the conditions of this Licence.	NOTIFICATION – NON-COMPLIANCE
23.	The Licensee shall submit a current Project schedule to the Board and an Inspector upon request.	SUBMIT CURRENT PROJECT SCHEDULE

Part C: Security

1.	The Licensee shall post and maintain a security deposit with the Minister in accordance with Schedule C.	POST SECURITY DEPOSIT
2.	Upon request of the Board, the Licensee shall submit an updated Closure Cost Estimate using the current version of RECLAIM or another method acceptable to the Board.	UPDATE CLOSURE COST ESTIMATE
3.	The amount of the security deposit required by Part C, Condition 1 may be adjusted by the Board: a) Based on an updated Closure Cost Estimate as per Part C, Condition 2; or b) Based on such other information as may become available to the Board.	ADJUSTED SECURITY AMOUNT
4.	If the amount of the security deposit is adjusted by the Board as per Part C, Condition 3, the Licensee shall post the adjusted amount with the Minister within the timeframe set by the Board.	POST ADJUSTED SECURITY AMOUNT
5.	Unless otherwise approved by the Board, the Licensee may not submit security adjustment requests except with any of the following submissions: a) Closure and Reclamation Plans; b) Closure and Reclamation Completion Reports; or c) Performance Assessment Reports.	SECURITY ADJUSTMENT REQUESTS

Part D: Water Use

1.	The Licensee shall only obtain Water for the Project from existing groundwater wells fed by the Prairie Creek Valley Aquifer. The Licensee may withdraw up to 204 m ³ per year of Water from this source.	WATER SOURCE AND MAXIMUM VOLUME
2.	The Licensee shall only withdraw Water using the Water Supply Facilities, unless otherwise authorized in writing by an Inspector.	WATER WITHDRAWAL – FACILITIES
3.	Prior to obtaining Water from a licensed Water source, the Licensee shall post sign(s) to identify the intake for the Water Supply Facilities. All sign(s) shall be located and maintained to the satisfaction of an Inspector.	POST WATER INTAKE SIGN(S)
4.	Each year, prior to the [enter: the day and month of the effective date] and in advance of any Water use, the Licensee shall pay the Water Use Fee in accordance with the MVLWB's <i>Water Use Fee Policy</i> .	WATER USE FEE

Part E: Waste and Water Management

1.	The Licensee shall manage Waste and Water with the objective of minimizing the impacts of the Project on the quantity and quality of Water in the Receiving Environment through the use of appropriate mitigation measures, monitoring, and follow-up actions.	OBJECTIVE – WASTE AND WATER MANAGEMENT
2.	The Licensee shall minimize erosion by implementing suitable erosion control measures that shall be located and maintained to the satisfaction of an Inspector.	EROSION CONTROL
3.	The Licensee shall comply with the Effluent Treatment Options Plan , once approved. The Plan shall outline options to meet the effluent quality requirements from Part D, Item 4 for the water discharged from SNP Station 3-4. This plan shall be implemented before discharge of water to Prairie Creek, Harrison Creek or the Catchment Pond.	EFFLUENT TREATMENT OPTIONS PLAN
4.	The Licensee shall comply with the Minewater Treatment Contingency Plan , once approved. The Plan shall be in accordance with the requirements of Schedule E, Condition 1	MINEWATER TREATMENT CONTINGENCY PLAN
5.	Placeholder, in case revisions to any plans are required following review: Within 90 days following the effective date of this Licence, the Licensee shall submit to the Board, for approval, a revised [enter plan name]. The Plan shall be in accordance with the requirements of Schedule x, Condition x. The Licensee shall not commence [enter: Project activities OR activities described in the Plan] prior to Board approval of the Plan.	[ENTER PLAN NAME] – REVISED
6.	The Tailings Containment Facilities are not to be used in conjunction with the licenced undertakings.	TAILINGS CONTAINMENT FACILITIES
7.	The Licensee shall install and maintain a Catchment Pond discharge control structure to the satisfaction of an Inspector prior to licenced activity, for the control of discharge from the Catchment Pond to Harrison Creek.	CATCHMENT POND CONTROL STRUCTURE
8.	The Licensee shall submit to the Board for approval a geotechnical assessment carried out by a qualified Geotechnical Engineer certifying the integrity and capacity of the Polishing Pond and related water treatment facilities before they may be used in conjunction with the licenced undertakings. This report shall include as-built drawings certified by a qualified Geotechnical Engineer.	POLISHING POND GEOTECHNICAL ASSESSMENT
9.	The Licensee shall submit to the Board for approval a geotechnical assessment carried out by a qualified Geotechnical Engineer certifying the integrity and capacity of the Tank Farm Facility and associated containment structures before it may be used in conjunction with the licenced undertakings. This assessment shall certify that the capacity of the containment structures associated with the Tank Farm Facility is 10% greater than the volume of the largest container placed therein.	TANK FARM GEOTECHNICAL ASSESSMENT
10.	The Licensee shall maintain a freeboard limit within the Polishing Pond to the satisfaction of an Inspector.	POLISHING POND - FREEBOARD
11.	The Licensee shall operate and maintain the Waste Disposal Facilities to prevent structural failure and to the satisfaction of an Inspector.	PREVENT STRUCTURAL FAILURE

12.	All flood protection work, including but not limited to, armoring and rip-rap placements, shall be inspected annually during the summer by a qualified Geotechnical Engineer, or as otherwise directed by an Inspector or the Board. Records of these inspections shall be made available to the Board or an Inspector upon request.	ANNUAL INSPECTION OF FLOOD PROTECTION WORK																																				
13.	The Licensee shall conduct daily erosion inspections of Discharge locations during periods of Discharge, or more frequently as directed by an Inspector. Records of these inspections shall be made available to the Board or an Inspector upon request.	DAILY INSPECTIONS OF DISCHARGE LOCATIONS																																				
14.	The Licensee shall dispose of all Waste as described in the approved Waste Management Plan .	WASTE MANAGEMENT PLAN																																				
15.	All Water from the 870 metre portal shall be discharged to the Polishing Pond.	870 Metre Portal																																				
16.	The Licensee shall ensure that all water measured at Surveillance Network Program station 3-4 has a pH value between 6.0 and 9.5, no visible sheen of oil and grease or floating solids, and meets the following Effluent Quality Criteria (EQC):	EFFLUENT QUALITY CRITERIA																																				
	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Maximum Average Concentration (mg/L)</th> <th>Maximum Concentration of any Grab Sample (mg/L)</th> </tr> </thead> <tbody> <tr> <td>Total Ammonia</td> <td>5.0</td> <td></td> </tr> <tr> <td>Total Arsenic</td> <td>0.5</td> <td>1.0</td> </tr> <tr> <td>Total Cadmium</td> <td>0.005</td> <td>0.01</td> </tr> <tr> <td>Total Chromium</td> <td>0.15</td> <td>0.3</td> </tr> <tr> <td>Total Copper</td> <td>0.1</td> <td>0.2</td> </tr> <tr> <td>Total Lead</td> <td>0.15</td> <td>0.3</td> </tr> <tr> <td>Total Mercury</td> <td>0.02</td> <td>0.04</td> </tr> <tr> <td>Total Nickel</td> <td>0.2</td> <td>0.4</td> </tr> <tr> <td>Total Zinc</td> <td>0.4</td> <td>0.8</td> </tr> <tr> <td>Total Suspended Solids</td> <td>15.0</td> <td>30.0</td> </tr> <tr> <td>Total Petroleum Hydrocarbons</td> <td>5.0</td> <td>10.0</td> </tr> </tbody> </table>	Parameter	Maximum Average Concentration (mg/L)	Maximum Concentration of any Grab Sample (mg/L)	Total Ammonia	5.0		Total Arsenic	0.5	1.0	Total Cadmium	0.005	0.01	Total Chromium	0.15	0.3	Total Copper	0.1	0.2	Total Lead	0.15	0.3	Total Mercury	0.02	0.04	Total Nickel	0.2	0.4	Total Zinc	0.4	0.8	Total Suspended Solids	15.0	30.0	Total Petroleum Hydrocarbons	5.0	10.0	
Parameter	Maximum Average Concentration (mg/L)	Maximum Concentration of any Grab Sample (mg/L)																																				
Total Ammonia	5.0																																					
Total Arsenic	0.5	1.0																																				
Total Cadmium	0.005	0.01																																				
Total Chromium	0.15	0.3																																				
Total Copper	0.1	0.2																																				
Total Lead	0.15	0.3																																				
Total Mercury	0.02	0.04																																				
Total Nickel	0.2	0.4																																				
Total Zinc	0.4	0.8																																				
Total Suspended Solids	15.0	30.0																																				
Total Petroleum Hydrocarbons	5.0	10.0																																				
17.	The Licensee shall ensure that Discharge to Prairie Creek shall not be acutely toxic to aquatic life as determined at SNP station 3-6 by the test methods referenced in Part B of SNP.	EFFLUENT QUALITY – TOXICITY – HARRISON TO PRAIRIE CREEK																																				

18.	All decant water from the Tank Farm Facility berm discharged by the Licensee to any Waters shall have no visible sheen of oil and grease or floating solids, and have a Total Petroleum Hydrocarbon Maximum Average Concentration of 5.0 mg/L and a Maximum Grab Sample Concentration of 10.0 mg/L.	TANK FARM DECANT WATER – QUALITY CRITERIA
19.	The Licensee shall notify an Inspector at least 10 days prior to decanting the Tank Farm Facility.	TANK FARM DECANT – INSPECTOR NOTIFICATION
20.	<p>If Water quality data from any sample collected at SNP station 3-4 exceeds the EQC specified in Part E, Condition 16, or is determined to be acutely toxic as per Part E, Condition 17, the Licensee shall:</p> <ul style="list-style-type: none"> a) Cease the Discharge; b) Notify the Board and an Inspector within 24 hours; c) Report the spill immediately in accordance with the Spill Contingency Plan referred to Part F, Condition 2; d) Comply with the approved Minewater Treatment Contingency Plan referred to in Part E, Condition 4; and e) Submit a detailed report on the occurrence, including a summary of corrective actions taken, to the Board and an Inspector within 30 days. 	EQC – EXCEEDANCE

DRAFT

PART F: Spill Contingency Planning

1.	The Licensee shall ensure that Unauthorized Discharges associated with the Project do not enter any Waters.	OBJECTIVE – PREVENT WASTE INTO WATER
2.	The Licensee shall comply with the Spill Contingency Plan , once approved.	SPILL CONTINGENCY PLAN
3.	<p>During the period of this Licence, if a spill or an Unauthorized Discharge occurs or is foreseeable, the Licensee shall:</p> <p>a) Implement the approved Spill Contingency Plan referred to in Part F, Condition 2;</p> <p>b) Report it immediately using the NU-NT Spill Report Form by one of the following methods:</p> <ul style="list-style-type: none"> • Telephone: (867) 920-8130 • Fax: (867) 873-6924 • E-mail: spills@gov.nt.ca • Online: Spill Reporting and Tracking Database <p>c) Within 24 hours, notify the Board and an Inspector; and</p> <p>d) Within 30 days of initially reporting the incident, submit a detailed report to the Board and an Inspector, including descriptions of causes, response actions, and any changes to procedures to prevent similar occurrences in the future. Written notification shall be provided to the Board and an Inspector if any changes occur.</p>	REPORT SPILLS
4.	The Licensee shall ensure that spill prevention infrastructure and spill response equipment is in place prior to commencement of the Project.	SPILL PREVENTION AND RESPONSE EQUIPMENT
5.	The Licensee shall restore all areas affected by spills and Unauthorized Discharges to the satisfaction of an Inspector.	CLEAN UP SPILLS
6.	The Licensee shall not establish any fuel storage facilities or refueling stations, or store chemical or deleterious substances within 100 metres of the Ordinary High Water Mark of any Watercourse, unless otherwise authorized in writing by an Inspector.	MATERIAL STORAGE – ORDINARY HIGH WATER MARK

PART G: Closure and Reclamation

1.	Within 90 days following the effective date of this Licence, the Licensee shall submit to the Board, for approval, a Closure and Reclamation Plan. The Plan shall be in accordance with the requirements of Schedule G, Condition Y.	CLOSURE AND RECLAMATION PLAN
2.	Every three years following the previous approval, or as directed by the Board, the Licensee shall submit to the Board, for approval, a revised Closure and Reclamation Plan . The Plan shall be in accordance with the requirements of Schedule G, Condition Y .	CLOSURE AND RECLAMATION PLAN – REVISED
3.	One year prior to the expiration of this Licence, or a one year prior to the end of operations, whichever occurs first, the Licensee shall submit to the Board, for approval, a final Closure and Reclamation Plan . The Plan shall be in accordance with the requirements of Schedule G, Condition Y .	CLOSURE AND RECLAMATION PLAN – FINAL
4.	One year prior to Progressive Reclamation of any specific component of the Project, the Licensee shall submit to the Board, for approval, a component-specific Closure and Reclamation Plan . The Plan shall be in accordance with the requirements of Schedule G, Condition Y . The Licensee shall not commence activities described in the Plan prior to Board approval.	CLOSURE AND RECLAMATION PLAN – COMPONENT-SPECIFIC
5.	The Licensee shall endeavor to carry out approved Progressive Reclamation as soon as is reasonably practicable.	PROGRESSIVE RECLAMATION
6.	The Licensee shall not conduct Progressive Reclamation except as approved by the Board.	PROGRESSIVE RECLAMATION – CARRY OUT AS APPROVED
7.	A minimum of ten days prior to the commencement of any Progressive Reclamation, the Licensee shall provide written notification to the Board and an Inspector. Notification shall include the name and contact information for the individual responsible for overseeing the Progressive Reclamation.	PROGRESSIVE RECLAMATION – NOTIFICATION
8.	Within 60 days of completing Closure and Reclamation of any specific component of the Project, the Licensee shall submit to the Board a Closure and Reclamation Completion Report . The Report shall be in accordance with the MVLWB/AANDC <i>Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories</i> .	CLOSURE AND RECLAMATION COMPLETION REPORT
9.	Within 60 days of completing Closure and Reclamation of any specific component of the Project, the Licensee shall submit to the Board, for approval, a Performance Assessment Report . The Report shall be in accordance with the MVLWB/AANDC <i>Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories</i> .	PERFORMANCE ASSESSMENT REPORT – COMPONENT-SPECIFIC
10.	Within 90 days of completing Closure and Reclamation of the Project, or as otherwise directed by the Board, the Licensee shall submit to the Board for approval, a Post-Closure and Reclamation Monitoring and Maintenance Plan . The Plan shall be in accordance with the requirements of Schedule X, Condition Y .	POST-CLOSURE AND RECLAMATION MONITORING

		AND MAINTENANCE PLAN
--	--	----------------------------

Signed on behalf of the Mackenzie Valley Land and Water Board

Mavis Cli-Michaud, Chair

Amanda Gauthier, Witness

DRAFT

Schedule B: Annual Water Licence Report

1.	The Annual Water Licence Report referred to in Part B, Condition X of this Licence shall include, but not be limited to, the following information about activities conducted during the previous calendar year:
a)	A brief summary of Project activities;
b)	An updated Project schedule;
c)	The monthly and annual quantities in cubic metres of fresh Water obtained from all sources, as required in Part B, Condition x of this Licence;
d)	A summary of the calibration and status of the meters and devices referred to in Part B, Condition x of this Licence;
e)	A summary of engagement activities conducted in accordance with the approved Engagement Plan , referred to in Part B, Condition x of this Licence;
f)	A summary of how Traditional Knowledge influenced decision making;
g)	A summary of major maintenance activities conducted in accordance with this Licence;
h)	The monthly and annual quantities, in cubic metres, of each and all Waste Discharges, and deposits to Waste Disposal Facilities, identified by location, including all Minewater and Tailings discharge;
i)	A summary of activities conducted in accordance with the approved Spill Contingency Plan, required in Part I, Condition x of this Licence, including: <ul style="list-style-type: none"> i. A list and description for all Unauthorized Discharges, including the date, NWT spill number, volume, location, summary of the circumstances and follow-up actions taken, and status (i.e. open or closed), in accordance with the reporting requirements in Part I, Condition X of this Licence; and ii. An outline of any spill training carried out.
j)	A summary of activities conducted in accordance with the Closure and Reclamation Plan], required in Part J, Condition x of this Licence, including: <ul style="list-style-type: none"> i. Details of any Remediation/Progressive Reclamation undertaken; ii. A discussion on whether planning and implementation remains on schedule, and a summary of any new scheduling setbacks; iii. A summary of Reclamation Research completed; iv. A summary of engagement conducted regarding Closure and Reclamation; v. A list of any factors that would increase or decrease the Closure Cost Estimate the next time the Estimate is updated;
k)	Tabular summaries of all data and information generated under the SNP annexed to this Licence and graphical summaries of parameters with EQC referred to in Part G, Condition x , at the points of compliance (SNP Stations XXX), in Excel format.
l)	A list of any non-compliance(s) with the conditions of this Licence or any directive from the Board pursuant to the conditions of this Licence;
m)	A summary of actions taken to address concerns, non-conformances, or deficiencies in any reports filed by an Inspector;
n)	A table detailing all commitments related to Water use and the deposit of Waste made during the Environmental Assessment, with descriptions of how each commitment is being or has been met; and
o)	Any other details requested by the Board by March 31 of the year being reported.

Schedule C: Security

1.	Pursuant to section 35 of the Act and section 11 of the Regulations, the Licensee shall post and maintain a security deposit in accordance with Part C, Condition 1 of this Licence in the amount of \$X...
----	---

DRAFT

Schedule G: Water and Waste Management

- | | |
|----|---|
| 2. | <p>The Minewater Treatment Contingency Plan referred to in Part G, Condition X of this Licence shall include, but not be limited to, the following information:</p> <ul style="list-style-type: none">a) contingencies for the treatment of Minewater in the event it does not meet discharge criteriab) a description of the risk of the Minewater exceeding the Polishing Pond freeboard limit.c) the process and facilities for the collection and management of surface runoff generated on site;d) details of monitoring, including a rationale for each component of the Water management system;e) a description of the Response Framework that will be implemented by the Licensee to link the results of monitoring to those corrective actions necessary to ensure that the objectives listed in Part D Item 11 are met including:<ul style="list-style-type: none">a. definitions, with rationale for Action Levels applicable to the performance of the Polishing Pond with respect to geotechnical stability, thermal characteristics, seepage quality and quantity, and run off; andb. for each action level, a description of how exceedances of the Action Level will be assessed and what actions may be taken if the Action Level is exceeded. |
|----|---|

Schedule J: Conditions Applying to Closure and Reclamation

3.	The Closure and Reclamation Plan referred to in Part J, Condition x of this Licence shall include, but not be limited to the following information:
a)	A plain language summary of the Plan;
b)	A description of the overall goals for Closure and Reclamation of the Project, including expected future land use;
c)	A description of the Closure and Reclamation planning team;
d)	A description of engagement related to Closure and Reclamation planning, including a summary of completed and planned engagement, and links to the Engagement Plan referred to in Part B, Condition x for the Project;
e)	A list of any other regulatory instruments required for Closure and Reclamation of the Project;
f)	A description of the pre-existing and current Project environment, including, but not limited to: <ul style="list-style-type: none"> i. climatic conditions; ii. physical conditions; iii. chemical conditions; iv. biological conditions; v. any physical or chemical assessments of soil, water, and permafrost; and vi. traditional uses.
g)	A description of the Project, including, but not limited to: <ul style="list-style-type: none"> i. site history; ii. Project development; iii. current status of the Project; iv. maps delineating all disturbed areas, borrow material locations, site facilities, hydrological features, and elevation contours; and v. photographs.
h)	A description of each Project component, including, but not limited to: <ul style="list-style-type: none"> i. The water intake facilities; ii. The water treatment and waste disposal sites and facilities; iii. The petroleum and chemical storage areas; iv. The natural runoff waters from the development site; v. The restoration of natural drainage and the restoration of stream banks at the operation site(s); vi. The potential for groundwater contamination; vii. Any facilities or areas which may be affected by development such that potential pollution problems exist; viii. A Solid Tailing Final Disposal Plan for the Solid Tailings generated by the operation of the Pilot Plant; ix. The waste rock storage areas; x. areas affected by spills or Unauthorized Discharges; and xi. other areas affected by Project activities.
i)	For each Project component identified in condition (h) above, a description of Closure and Reclamation plans, including, but not limited to: <ul style="list-style-type: none"> i. Closure Objectives and Criteria; ii. preferred Closure and Reclamation option and method; iii. design drawings, signed and stamped by a Professional Engineer, for any Engineered Structures; iv. Water management and restoration of natural drainage; v. predicted environmental effects during and after Closure and Reclamation activities;

	<ul style="list-style-type: none"> vi. post-closure monitoring, maintenance, and reporting; vii. uncertainties and contingencies; viii. climate change considerations; and ix. Closure and Reclamation Research plans
j)	A description of any planned Progressive Reclamation;
k)	<p>A plan for Temporary Closure, including, but not limited to the following information:</p> <ul style="list-style-type: none"> i. Temporary Closure goals and objectives; ii. a description of activities and methods; iii. a description of monitoring, maintenance, and reporting; iv. contingencies; and v. an implementation schedule.
l)	An implementation schedule that includes Progressive Reclamation and final Closure and Reclamation activities; and
m)	A Closure Cost Estimate.

DRAFT

Annex A: Surveillance Network Program
Annexed to Water Licence MV2019L2-0006
Canadian Zinc Corporation. – Mineral Exploration

Table of Contents

Part A: Reporting Requirements

Part B: Site Descriptions and Monitoring Requirements

Part A: Reporting Requirements

1. The effective date of this Surveillance Network Program (SNP) is XX.
2. Beginning on XX, 2019, and for every month thereafter, the Licensee shall submit to the Board and an Inspector, a **Surveillance Network Program Report**, which shall include, but not be limited to the following:
 - a) Electronic and tabular summaries of all data and information generated under the SNP for the month being reported, including rationale for SNP stations where samples were not collected and results and interpretation of quality assurance/quality control procedures;
 - b) Graphical summaries and interpretation of the analytical results from the SNP samples collected at the point of compliance (SNP station 3-4) compared to the EQC under Part E of this Licence, for the previous 2 consecutive years;
 - c) An explanation of any actions taken in response to any exceedances of the effluent quality criteria;
 - d) Information regarding the calibration and status of the meters and devices referred to in Part B of this Licence;
 - e) The coordinates of all SNP stations which were established within the month being reported, including an updated map identifying the locations of all the SNP stations; and
 - i. Weekly quantity of Water in cubic metres withdrawn from the Water Supply Facilities;
 - ii. Weekly quantity of Waste in cubic metres Discharged;
 - iii. Observations from the weekly inspection of the Waste storage areas as required by Part E of this Licence.
 - f) A tabular summary of cumulative Water use.
3. More frequent sample collection may be required at the request of an Inspector.
4. All sampling, sample preservation, and analyses shall be conducted in accordance with methods prescribed in the edition of American Public Health Association's (APHA) *Standard Methods for the Examination of Water and Wastewater* current at the time of analysis, or by other such methods approved by an Analyst.
5. All analyses shall be performed in a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA) for the specific analyses to be performed or as approved by an Analyst.
6. Prior to the collection of SNP samples, the Licensee shall submit to the Board and an Analyst, a **Quality Assurance and Quality Control Plan**, which shall include a list of techniques that will be used to collect and analyze samples collected under the SNP, for the purposes of quality assurance and quality control. An Analyst shall provide a recommendation to the Board.
7. The Licensee shall operate in accordance with the Quality Assurance and Quality Control Plan, once approved.

8. If the Quality Assurance and Quality Control Plan is not approved by the Analyst, the Licensee shall revise the Plan according to the Analyst's direction and re-submit it to an Analyst for a decision.

Part B: Site Descriptions and Monitoring Requirements

- The location of sampling sites is subject to approval of an Inspector.
- The sampling station locations and monitoring requirements are as follows:

SNP station 1-1

Description	The daily Water Use for all purposes. Water Use shall be measured and recorded in m ³ .
Location	CZN to Provide
Sampling Frequency	Daily when pumping is in progress
Sampling parameters	Flow – Meter, Volume (m ³)
Rationale	Compliance monitoring site, in accordance with daily quantity Water Use limits identified in Part D, item 1 of this Licence. To monitor the quantity of daily Water use.
Status	Active

Note: Footnotes are defined after the final table in Part B.

SNP station 3-1

Description	Freshwater pump house wet well
Location	CZN to Provide
Sampling Frequency	Every 6 months during winter and summer
Sampling Parameters	Standard ^b , Nutrients ^a , Major Ions ^c , Solids ^d , Total Metals ^e
Rationale	
Status	Active

SNP station 3-3

Description	Wastewater discharge from Pilot Plant
Location	CZN to Provide

Sampling Frequency	Weekly during operations, and twice during the summer months after operations have ceased
Sampling Parameters	Solids ^d , Total Metals ^e , Standard ^b , Nutrients ^a , Major Ions ^c , Hydrocarbons ^f
Rationale	
Status	Active

SNP station 3-4

Description	Polishing Pond Discharge		
Location	CZN to Provide		
Sampling Frequency	Continuous	Weekly during operations, and twice during the summer months after operations have ceased	Twice per year during open water
Sampling Parameters	Volume (Cubic Metres)	EQC outlined in Part G, item 16, Solids ^d , Total Metals ^e , Standard ^b , Nutrients ^a , Major Ions ^c , Hydrocarbons ^f	Toxicity ²
Rationale	Compliance Monitoring		
Status	Active		

SNP station 3-5

Description	Catchment Pond Discharge
Location	CZN to Provide
Sampling Frequency	Weekly during operations, and twice during the summer months after operations have ceased

² Toxicity shall be assessed at an accredited bioassay laboratory for the following analyses:

- i. Acute toxicity – fish using Environment Canada. 2007. Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout. Environmental Protection Series, Report EPS 1/RM/13. Method Development and Application Section, Environmental Technology Centre, Ottawa, ON, Canada.
- ii. Acute toxicity – invertebrates using Environment Canada. 2000. Biological Test Method for Determining Acute Lethality of Effluents to Daphnia magna. Environmental Protection Series, Report EPS 1/RM/14. Method Development and Application Section, Environmental Technology Centre, Ottawa, ON, Canada.

Sampling Parameters	Solids ^d , Total Metals ^e , Standard ^b , Nutrients ^a , Major Ions ^c , Hydrocarbons ^f
Rationale	
Status	Active

SNP station 3-6

Description	Final discharge from Harrison Creek to Prairie Creek – confluence at culvert
Location	CZN to Provide
Sampling Frequency	Weekly during operations, and twice during the summer months after operations have ceased
Sampling Parameters	Solids ^d , Total Metals ^e , Standard ^b , Nutrients ^a , Major Ions ^c , Hydrocarbons ^f
Rationale	
Status	Active

SNP station 3-7

Description	870 metre portal final mine water discharge
Location	CZN to Provide
Sampling Frequency	Weekly during operations, and twice during the summer months after operations have ceased
Sampling Parameters	Solids ^d , Total Metals ^e , Standard ^b , Nutrients ^a , Major Ions ^c , Hydrocarbons ^f
Rationale	
Status	Active

SNP station 3-8

Description	Reagent storage facility catchment basin
Location	CZN to Provide
Sampling Frequency	Twice per year during open water

Sampling Parameters	Solids ^d , Total Metals ^e , Standard ^b , Nutrients ^a , Major Ions ^c
Rationale	
Status	Active

SNP station 3-9

Description	Harrison Creek upstream from the reagent storage facility
Location	CZN to Provide
Sampling Frequency	Monthly during decline operations and twice during the summer months after operations have ceased.
Sampling Parameters	Solids ^d , Total Metals ^e , Standard ^b , Nutrients ^a , Major Ions ^c
Rationale	
Status	Active

SNP station 3-10

Description	Prairie Creek upstream from the Airstrip
Location	CZN to Provide
Sampling Frequency	Monthly during decline operations and twice during the summer months after operations have ceased.
Sampling Parameters	Solids ^d , Total Metals ^e , Standard ^b , Nutrients ^a , Major Ions ^c
Rationale	Background monitoring
Status	Active

SNP station 3-11

Description	Downstream from the confluence of Prairie Creek and Harrison Creek
Location	CZN to Provide
Sampling Frequency	Monthly during decline operations and twice during the summer months after operations have ceased.
Sampling Parameters	Solids ^d , Total Metals ^e , Standard ^b , Nutrients ^a , Major Ions ^c

Rationale	Monitoring
Status	Active

Notes:

- a. Total Ammonia (NH₃ + NH₄⁺ - N), Total Nitrate + Nitrite (NO₃ + NO₂), Total Phosphorous (TP), Orthophosphate (OP), and Total Organic Carbon (TOC).
- b. pH, Temperature (T), and Conductivity (Cond). These parameters should be measured both in the field as well as in the laboratory.
- c. Alkalinity (Alk), Calcium (Ca), Chloride (Cl), Hardness, Magnesium (Mg), Potassium (K), Sodium (Na), and Sulphate (SO₄).
- d. Total Suspended Solids (TSS) and Total Dissolved Solids (TDS).
- e. Full = Total elemental analysis by ICP-Metal Scan of: ICP-MS 24 element scan: includes all elements in Total Metals plus Antimony (Sb), Arsenic (As), Barium (Ba), Bismuth (Bi), Cesium (Cs), Chromium (Cr), Lithium (Li), Thallium (Tl), Titanium (Ti), Uranium (U), & Vanadium (V).
- f. Extractable Hydrocarbons (ExtHC), and Benzene, Toluene, Ethyl-benzene, and Xylene (BTEX).

Signed on behalf of the Mackenzie Valley Land and Water Board

Mavis Cli-Michaud, Chair

Amanda Gauthier, Witness

Annex B: Concordance Table of Items Requiring Submission

Annexed to Water Licence MV2019L2-0006

Canadian Zinc Corporation. – Mineral Exploration

This table summarizes the information the Licensee is required to submit as per the Water Licence conditions.

Table 1: Water Licence Submission Requirements

Part of Licence	Item	Date

Annex C: Table of Revision History
Annexed to Water Licence MV2019L2-0006
Canadian Zinc Corporation. – Mineral Exploration

Table 1: Updates and changes that have been made to the Water Licence since issuance

Date	Location of change	Description of change

DRAFT