



STATE OF ALASKA  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
610 UNIVERSITY AVE.  
FAIRBANKS, AK 99709-3643

DRAFT WASTE MANAGEMENT PERMIT

for

**Mystery Creek Resources, Inc.**

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**Draft Permit No. 2012DB0001**

**Date: XXX, 2012**

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This Waste Management Permit is issued to Mystery Creek Resources, Inc. (MCR), 6400 South Air Park Place, Anchorage, AK 99502, for the disposal of Nixon Fork Mine wastes as defined in sections 1.1 and 1.2. The facilities are located approximately 32 miles northeast of McGrath, Alaska within Section 13, T26S, R21E, Kateel River Meridian. This permit is issued under the provisions of Alaska Statute (AS) 46.03.100, AS 46.03.110, and AS 46.03.120, and the Alaska Administrative Code (AAC), 18 AAC 15, 18 AAC 60, 18 AAC 70 and 18 AAC 72, as amended or revised, and other applicable state laws and regulations. This permit is effective XXX, 2012, and expires after XXX, 2012. It may be terminated or modified in accordance with AS 46.03.120.

This permit is subject to the conditions and stipulations contained in sections 1 - 5. This permit incorporates by reference the *Nixon Fork Mine Plan of Operations & Reclamation Plan, Version 2, Volume I of II* (November 2011), *Nixon Fork Mine Plan of Operations & Reclamation Plan, Version 2, Volume II of II* (November 2011), and *Nixon Fork Mine Monitoring Plan* (November 2011). Changes to the documents incorporated herein must be approved by the Alaska Department of Environmental Conservation (department) if they affect this permit. If the department approves the changes, they become part of this permit.

After completing reclamation activities and terminating active wastewater treatment, the department requires the permittee to conduct post-closure maintenance and monitoring for a minimum of 30 years after closure. The permittee shall assess conditions at the facility and respond accordingly throughout the post-closure care period. At the end of the post-closure period, the department will determine whether post-closure care and monitoring should be extended beyond 30 years, based upon the information collected by that time.

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Wade Strickland  
Program Manager

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## 1 SPECIFIC PERMIT CONDITIONS

### 1.1 PERMIT COVERAGE

1.1.1 This permit covers the disposal and containment of waste in the Tailings Storage Facility (TSF), underground mine workings, the Filtered Tailings Disposal Site (FTDS), FTDS pond, Process Water Recycle Tank (PWRT), surface and solid waste landfill. In addition to disposal of wastes listed above, this permit covers hazardous chemical storage and containment; land application of wastewater; monitoring systems for groundwater, contained water, and surface water; facility reclamation and closure activities; and financial responsibility. Discharge of water from the facility to surface water is prohibited unless permitted by Alaska Pollutant Discharge Elimination System Multi-Sector General Permit No. AKR050000.

1.1.2 This permit covers disposal of mine tailings from three operating programs consisting of different mining and milling scenarios. These operating programs may occur independently or simultaneously.

Program I: *Disposal of Flotation Tailings in the TSF or FTDS* - Mined ore from the underground workings is processed via crushing, grinding, gravity separation, and floatation. Gravity separation produces a gold concentrate and floatation yields copper concentrate. The tailings slurry may either be deposited in the TSF, filter pressed and deposited in the FTDS, or fed to the carbon-in-leach (CIL) circuit for extraction of gold. The mill may process ore at a nominal rate of 150 tons per day (tpd).

Program II: *Disposal of CIL Tailings in the FTDS* - This mode of operation involves recovery of gold from tailings using a CIL circuit, which is a series of tanks containing a cyanide solution and granular activated carbon. The cyanide solution selectively transfers gold and precious metals into the liquid phase, and the carbon adsorbs gold and precious metals from the liquid converting them back to the solid phase. Tailings from the CIL circuit must undergo cyanide detoxification, as required by section 1.2.3.7.3, followed by filter pressing to remove moisture, as required by section 1.2.3.7.2, and disposal in the lined FTDS.

At full capacity, the CIL circuit processes tailings at a rate of 250 tpd. There are two sources of tailings, which may be fed into the CIL circuit. Tailings either originate at TSF or the mill's floatation circuit.

Program III: *Disposal of CIL Tailings in the TSF* - This scenario may occur provided that the TSF has been emptied and its liner replaced as required and approved by the department. Tailings slurry from the CIL circuit may be deposited in the TSF after receiving cyanide detoxification treatment as required by section 1.2.2.7.1.

- 1.1.3 In addition to the stipulations in this permit, the permittee shall adhere to the applicable requirements of 18 AAC 60 Solid Waste Management regulations, 18 AAC 70 Alaska Water Quality Standards (WQS), and 18 AAC 72.500 – 72.600 Non-Domestic Wastewater regulations. The permittee shall also adhere to requirements of the *Nixon Fork Mine Plan of Operations & Reclamation Plan, Version 2, Volume I of II* (November 2011), *Nixon Fork Mine Plan of Operations & Reclamation Plan, Version 2, Volume II of II* (November 2011), and *Nixon Fork Mine Monitoring Plan* (November 2011) as approved by the department. When the terms of this permit differ from the terms of the mine documents, the most recent document, approved in writing by the department, shall control. If there is doubt as to which document has most recently been approved by the department, this permit shall control. Mine documents must also be updated within 90 days from the date of issuance of this permit incorporating any changes necessary to be consistent with the terms of this permit.
- 1.1.4 While this permit is in effect, the permittee is authorized to dispose of solid waste and wastewater as specified in this permit into the TSF, the underground mine workings, the lined FTDS, PWRT, wastewater land application areas, and the surface landfill at the Nixon Fork Mine.

## 1.2 LIMITATIONS

- 1.2.1 All Facilities - The following requirements under section 1.2.1 apply to all disposal facilities at the mine site including the underground mine workings, surface landfill, TSF, FTDS, FTDS pond, PWRT, and the wastewater land application areas.
- 1.2.1.1 The following materials shall not be disposed unless specifically approved by the department in writing:
- 1.2.1.1.1 Other than recycled process water sent to the TSF or interstitial waters entrained in the tailings, treated or untreated process water in quantities or concentrations that would exceed WQS;
  - 1.2.1.1.2 Chemical containers with fewer than three rinses and discarded, unused chemicals;
  - 1.2.1.1.3 Uncombusted household waste;
  - 1.2.1.1.4 Laboratory wastes other than wash waters, neutralized acids and neutralized bases; however, disposal or recycling of refinery slag, fire assay crucibles, and cupels through the grinding and leaching circuit is permitted;
  - 1.2.1.1.5 Sewage solids that are untreated or contain less than 10% solids by weight calculated as dry weight over wet weight;
  - 1.2.1.1.6 Asbestos waste;

- 1.2.1.1.7 Hazardous wastes, as defined by 40 CFR Part 261, and radioactive material, explosives, strong acids, untreated pathogenic waste, glycol, solvents, oily wastes, waste oil, greases, paints, chemical wastes, transformers, and packing material or associated equipment; however, this prohibition does not preclude disposal of Bevill excluded waste, natural minerals found in mine rock or residual wastes included as byproducts of the beneficiation process, which may be discarded into the drystack or underground mine, as long as they are in quantities that would not cause significant impact on mine closure, reclamation, or water quality;
  - 1.2.1.1.8 Fuels, oil, transformers, paint and/or associated equipment and packing material;
  - 1.2.1.1.9 Glycol and solvents;
  - 1.2.1.1.10 Batteries; or
  - 1.2.1.1.11 CIL tailings that have not been subjected to cyanide detoxification as required by sections 1.2.2.7.1 and 1.2.3.7.3.
- 1.2.1.2 Activities at the site which will cause a greater amount of waste material to be treated and disposed of, above that contemplated in this section of the permit are prohibited without the prior approval by the department.
- 1.2.1.3 After consultation with the permittee, the department may set or modify permit conditions based on monitoring results or changes in facility processes in accordance with permit amendment or modification procedures.
- 1.2.1.4 Any disposal area, including open water or soil in the land application and evaporator operational areas, must not become an attractive area for wildlife, waterfowl, or shorebirds. Any wildlife casualties shall be reported to the department and to the appropriate state and federal agencies.
- 1.2.2 TSF - The following requirements under section 1.2.2 apply to the TSF.
- 1.2.2.1 The permittee must operate the TSF in conformance with the current *Certificate of Approval to Operate a Dam* issued by Alaska Department of Natural Resources (ADNR), Division of Mining, Land and Water, Dam Safety and Construction Unit. This includes maintaining three feet of freeboard behind the dam to prevent overtopping.
  - 1.2.2.2 The permittee shall ensure that wastes are deposited into the TSF in a manner that will not damage the impermeability of the liner, or otherwise jeopardize the integrity of the liner.
  - 1.2.2.3 Wash water from the vehicle maintenance shop may go into the tailings disposal facility. Oily water must go through an oil/water separator and the

treated water may not have a sheen prior to entering the TSF. Dry methods of cleanup shall be used for initial cleanup of oil spills in the maintenance shop.

1.2.2.4 If TSF water is discharged through an evaporator, the permittee must:

1.2.2.4.1 Spray the mist at the upgradient end of the TSF and over the water surface; and

1.2.2.4.2 Refrain from operating the evaporator during freezing conditions.

1.2.2.5 Water in the groundwater monitoring wells, located below the toe of the TSF dam, must not exceed WQS and show a statistically significant increase in constituent concentration above the applicable WQS for the parameters monitored. Statistical significance shall be determined using one of the methods outlined in 18 AAC 60.830(h). If a statistically significant increase above the WQS is detected, corrective action outlined in section 1.7 must be implemented.

1.2.2.6 The permittee is prohibited from discharging cyanide-exposed water into the TSF unless:

1.2.2.6.1 The TSF has been refurbished ensuring its no discharge status, and

1.2.2.6.2 The department has provided written approval allowing discharge of cyanide-exposed water into the TSF.

1.2.2.7 If the department has approved the discharge of cyanide-exposed water into the TSF, the permittee must:

1.2.2.7.1 Subject cyanide-exposed water to cyanide detoxification before discharge into the TSF using the SO<sub>2</sub>/air process or other suitable cyanide detoxification process approved by the department, and

1.2.2.7.2 Ensure water samples from detoxified water contain no more than 10 milligrams per liter (mg/L) of weak acid dissociable (WAD) cyanide as a monthly average, and none of the samples shall contain more than 25 mg/L of WAD cyanide.

1.2.3 FTDS - The following requirements under section 1.2.3 apply to the lined FTDS, and disposal activities in any unlined area of the FTDS are prohibited.

1.2.3.1 The lined FTDS is limited to a maximum disposal capacity of 65,120 tons of tailings. After expansion and department approval, the lined FTDS disposal capacity may not be expanded to exceed 302,500 tons of tailings.

1.2.3.2 The permittee shall ensure that wastes are deposited into the FTDS in a manner that will not damage the impermeability of the liner, or otherwise jeopardize the integrity of the liner.

- 1.2.3.3 The permittee shall mechanically compact the filtered tailings placed in the FTDS with a roller compactor or other method approved by the department. The compaction shall take place as soon as practicable after placement and spreading of filtered tailings to minimize creating dust.
- 1.2.3.4 Shallow groundwater monitoring wells shall be installed at the interface of the overburden and bedrock at three locations in the downgradient perimeter of the FTDS. The locations of the shallow groundwater monitoring shall be approved by the department.
- 1.2.3.5 Water in the three FTDS groundwater monitoring wells must not exceed WQS and show a statistically significant increase in concentration above the applicable WQS for the parameters monitored. If a statistically significant increase in a constituent concentration above the WQS is detected, corrective action outlined in section 1.7 must be implemented.
- 1.2.3.6 If FTDS pond water is discharged through an evaporator, the permittee must
  - 1.2.3.6.1 Spray the mist over the lined surface of the FTDS; and
  - 1.2.3.6.2 Refrain from operating the evaporator during freezing conditions.
- 1.2.3.7 Before disposing of cyanide-exposed tailings in the lined FTDS,
  - 1.2.3.7.1 The permittee must receive written department approval;
  - 1.2.3.7.2 The tailings must not contain more than 15% moisture content calculated as weight of water divided by weight of solids;
  - 1.2.3.7.3 Tailings and must be subjected to cyanide detoxification before disposal using the SO<sub>2</sub>/air process or other suitable cyanide detoxification process approved by the department;
  - 1.2.3.7.4 Interstitial water samples from detoxified tailings must contain no more than 10 mg/L of WAD cyanide as a monthly average and none of the samples shall contain more than 25 mg/L of WAD cyanide;
- 1.2.4 Land Application of Wastewater – The following requirements under section 1.2.4 apply to wastewater land application activities.
  - 1.2.4.1 Land application of wastewater is limited to wastewater from the TSF.
  - 1.2.4.2 Department approval is required before commencing each land application event.
  - 1.2.4.3 TSF wastewater must meet the limits in Table 1 before land application unless department approval is otherwise provided.

Error! Reference source not found. **Table 1: Limits on TSF Wastewater Applied to Land**

Parameter	Concentration (mg/L)
Aluminum	0.1
Antimony	0.006
Arsenic	0.21
Cadmium	0.001
Chromium	0.12
Copper	0.7
Lead	0.009
Mercury	0.014
Nickel	0.3
Nitrite and nitrate as nitrogen	10
pH	6.5 to 8.5 standard units
Selenium	0.005
Silver	0.58
WAD cyanide	0.2
Zinc	0.33
Maximum cumulative loading to land	3.5 million gallons per acre

- 1.2.4.4 If vegetation in the area of the land application appears to be stressed, the permittee must discontinue the land application in that area.
- 1.2.4.5 When TSF wastewater is applied to land, it must be in a manner that will promote absorption and prevent runoff and erosion.
- 1.2.4.6 Land application of wastewater is prohibited during freezing or saturated soil conditions.
- 1.2.4.7 The permittee shall land apply wastewater to disturbed ground to the extent practicable (e.g., watering of roads and airstrip during dry weather).
- 1.2.4.8 The land application of wastewater shall not result in a direct overland discharge to surface waters. Daily inspections must be performed when wastewater is being land applied ensuring that there is no runoff.
- 1.2.4.9 Any area of open water, or soil in the land application area, must not become an attractive area for waterfowl or shorebirds. Any wildlife casualties shall be reported to the department and to the appropriate state and federal agencies.
- 1.2.5 PWRT – The following requirements under section 1.2.5 apply to the PWRT located outdoors and adjacent to the mill.
  - 1.2.5.1 Department approval must be received before discharging water into the PWRT.



- 1.2.5.2 Cyanide-exposed water must be subject to cyanide detoxification before discharge into the PWRT using the SO<sub>2</sub>/air process or other suitable cyanide detoxification process approved by the department, and
- 1.2.5.3 Water samples from detoxified water must contain no more than 10 mg/L of WAD cyanide as a monthly average and none of the samples shall contain more than 25 mg/L of WAD cyanide.
- 1.2.5.4 When PWRT water is discharged through an evaporator, the mist must
  - 1.2.5.4.1 Be discharged directly upward;
  - 1.2.5.4.2 The mist must not escape containment over the tank, and
  - 1.2.5.4.3 Evaporator discharge is prohibited during freezing conditions.
- 1.2.6 Surface Landfill – The following requirements under section 1.2.6 apply to the surface landfill.
  - 1.2.6.1 The limitations in section 1.2.1 do not preclude, and authorization is hereby given for disposal of non-hazardous incidental wastes such as (i) settled solids from sumps, ditches, and degritting basins; (ii) incinerator ash and residue; (iii) ash from combustion of scrap wood material; (iv) iron (drill steel, balls, empty case, etc.); (v) used ventilation tubing; (vi) empty plastic and glass containers; (vii) inert domestic waste; (viii) construction debris; (ix) tires; (x) spill cleanup debris approved by the department; (xi) non-terne plated used oil filters that have been gravity hot-drained; and (xii) such other material as would otherwise be disposed of in a surface landfill without special handling.
  - 1.2.6.2 The permittee shall cover disposed solid waste in the surface landfill with six inches of earthen material, or an alternate material approved by the department, as needed to control disease vectors, fire, odor, blowing litter, and scavenging.
  - 1.2.6.3 The permittee shall apply an intermediate cover to any inactive portion, area where no waste has been deposited for more than 90 days, of the surface landfill using a soil material at least 12 inches thick and graded to prevent water from ponding.
  - 1.2.6.4 For the surface landfill to be permanently closed, the following must be achieved.
    - 1.2.6.4.1 The final cover must be soil or another material approved by the department. The final cover must be at least 24 inches thick, or another thickness approved by the department, must be graded to promote drainage without erosion, and must be revegetated or otherwise treated in a manner appropriate to the anticipated future long-term use of the facility; and

- 1.2.6.4.2 The permittee must establish permanent markers or survey monuments, if there are no readily observable, existing monuments or markers, from which the exact location of the surface landfill can be determined.

### 1.3 SITE MAINTENANCE

- 1.3.1 Information on engineering changes to the mill, new waste treatment processes, changes to waste disposal facilities, changes to the groundwater monitoring well system, and the addition of new point sources that discharge into the TSF or FTDS must be submitted to the department and approval must be obtained prior to any such changes or discharges.
- 1.3.2 The permittee shall provide and maintain secondary containment for all process piping and chemical mix tanks containing hazardous or toxic materials. Secondary containment is considered to be 110% of the largest tank within containment, or the total volume of manifolded tanks. The permittee must design and install secondary containment structures in a manner that ensures that solid waste and leachate will not escape from the structures. Facilities to prevent such discharges shall be maintained in good working condition at all times by the permittee.
- 1.3.3 Secondary containment of all hazardous substances, as defined at AS 46.03.826(5), must be impermeable to those stored hazardous substances.
- 1.3.4 The permittee shall design all process piping and chemical mix tanks to allow for routine inspections for leaks. Process piping outside of the mill building must not be buried unless secondary containment is used that provides the ability to inspect for leaks. This stipulation does not apply to the recycle water return lines leading from the TSF to the mill.
- 1.3.5 There are several sites around the facility with hydrocarbon contaminated soils from historic spills. These soils must be managed according to the department-approved *Characterization and Corrective Action Plan for the Nixon Fork Mine, Medfra A-4 Quad, Alaska*, or a successor department-approved plan, with oversight provided by the department's Bethel office.
- 1.3.6 The permittee shall develop the site according to plans submitted by the applicant, as required by this permit and approved by the department, and approved amendments to those plans. Pollution prevention concepts as specified in section 2.10 shall be incorporated into operational plans for the mine.

### 1.4 SITE CONSTRUCTION & OPERATION

- 1.4.1 The permittee shall take reasonable measures to control dust that may occur from tailings disposal facilities, roads, the airstrip or other mine components by wetting or other effective measures.
- 1.4.2 The permittee shall prevent disposal of waste materials from exceeding the design capacity of the disposal facilities.

- 1.4.3 The permittee shall minimize run-on water entering the TSF, FTDS and the surface landfill from upgradient sources of surface and groundwater.
- 1.4.4 The permittee shall control and treat surface water, groundwater and leachate as necessary to prevent off-site WQS exceedances, not place wastewater in the FTDS or the surface landfill, and not allow solid waste to wash away from the facility.
- 1.4.5 The permittee shall notify the department in writing at least 15 days before the introduction of a new chemical into the process or waste treatment streams. Material Safety Data Sheets on new chemicals must be forwarded to the department at time of notification and maintained on site. Introduction of new chemicals into the process require department approval.
- 1.4.6 The permittee shall submit plans to the department for approval at least 60 days before construction of the modification for any changes that will significantly modify the quality or quantity of a discharge, significantly modify the operation of a waste treatment component, or significantly modify the disposal facilities.
- 1.4.7 The permittee must notify the department in writing at least 15 days before the introduction of new process solutions into an existing process or waste treatment component that has been significantly modified.
- 1.4.8 Within 90 days after completing construction of a significant modification to an existing process component, the permittee must submit the following:
  - 1.4.8.1 As built drawings of the process component(s) which show any changes of those aspects that would affect performance of that process component as required in 18 AAC 72.600;
  - 1.4.8.2 A summary of the quality control activities that were carried out during construction; and
  - 1.4.8.3 The revised operating plans that reflect modifications made during construction.
- 1.4.9 The permittee shall maintain fuel handling and storage facilities in a manner that prevents the discharge of hazardous substances.
- 1.4.10 The permittee shall report spills of hazardous substances according to an agreement with the department's Spill Prevention and Response Program at <http://dec.alaska.gov/spar/spillreport.htm>.

## 1.5 MONITORING

- 1.5.1 The *Nixon Fork Mine Monitoring Plan* submitted in November 2011 by MCRI and approved by the department, is incorporated into this permit. Future department-approved changes to project monitoring will be included as modifications to the *Monitoring Plan* and do not require reissuance or

modification of this permit. Within 90 days of the issuance of this permit, the permittee shall submit to the department for approval an update of the *Monitoring Plan* to establish and maintain monitoring procedures as follows:

- 1.5.1.1 Conduct weekly visual monitoring of the facilities for signs of damage or potential damage from settlement, ponding, leakage, erosion or operations at the site. Visual monitoring shall be documented;
  - 1.5.1.2 Surface water and groundwater sampling and analyses for parameters with frequencies, locations, and procedures ensuring that sample results are representative and statistically valid;
  - 1.5.1.3 Sampling and analysis of interstitial water in the tailings slurry and filtered tailings prior to placement in the TSF, FTDS, or PWRT to ensure that the limitations contained in sections 1.2.2, 1.2.3, and 1.2.5, respectively, are met;
  - 1.5.1.4 Sampling and analysis of the TSF pond water prior to land application to ensure the limits in section 1.2.4 are met;
  - 1.5.1.5 Sampling and analysis of the FTDF pond water;
  - 1.5.1.6 Maintain a fluid management monitoring plan including a water accounting of process water discharged to the TSF, process water discharged to the PWRT, TSF water, land applied water, and process water recycled to the mill;
  - 1.5.1.7 Monitoring of waste rock and tailings samples to ensure that there is low potential for production of leachate that is acidic and/or contains elevated levels of metals;
  - 1.5.1.8 Daily inspections, during periods when evaporators are misting, to ensure that runoff is not occurring and that vegetation is not adversely affected;
  - 1.5.1.9 Daily inspections of areas where wastewater is land applied, during periods of land application, to ensure that runoff is not occurring and vegetation is not adversely affected;
  - 1.5.1.10 Water quality monitoring from the three groundwater wells around the perimeter of the FTDS; and
  - 1.5.1.11 WAD cyanide and pH monitoring of soil around PWRT.
- 1.5.2 The permittee must develop a quality assurance project plan (QAPP) for all monitoring required by this permit. The QAPP may be contained in an overall monitoring plan for the entire project. The QAPP, or the QAPP portion of an overall monitoring plan, must be completed within 60 days of the effective date of this permit and made available upon request. Any changes made to the existing

QAPP shall be completed according to section 1.5.2.3.

- 1.5.2.1 The QAPP must be designed to assist in planning for the collection and analysis of effluent and receiving water samples in support of the permit and in explaining data anomalies when they occur.
- 1.5.2.2 Throughout all sample collection and analysis activities, the permittee must use Quality Assurance/Quality Control (QA/QC) chain-of-custody procedures described in the most recent editions of *Requirements for Quality Assurance Project Plans* (EPA/QA/R-5) and *Guidance for Quality Assurance Project Plans* (EPA/QA/G-5). The QAPP must be prepared in the format which is specified in these documents.
- 1.5.2.3 The permittee must amend the QAPP whenever there is a modification in sample collection, sample analysis, or other procedure addressed by the QAPP.
- 1.5.2.4 A copy or copies of the QAPP must be kept on site and made available to the department upon request.
- 1.5.3 The permittee shall conduct inspections of the TSF in conformance with the current *Certificate of Approval to Operate a Dam* issued by ADNR, Division of Mining, Land and Water, Dam Safety and Construction Unit.
- 1.5.4 Samples taken as required by section 1.5.1 shall be analyzed in conformance with the most recently submitted *Monitoring Plan* and QAPP.
- 1.5.5 A sample from any groundwater well or surface water monitoring location that has a positive result for WAD cyanide concentration shall be reported to the department as soon as possible, but no later than the end of the next State of Alaska working day. Re-sampling for sample confirmation shall be performed as soon as practicable.
- 1.5.6 The permittee shall maintain a log of all wastes disposed into the TSF, FTDS, underground mine workings, and the surface landfill. The log shall include the date of disposal, estimated volume of waste and a description of the waste. A summary log of waste disposed shall be included in the annual report required in section 1.6.5.
- 1.5.7 Groundwater monitoring and corrective action shall be in accordance with section 1.7, 18 AAC 60 Solid Waste Management regulations, the most recent *Monitoring Plan*, and QAPP.
- 1.5.8 The department may modify monitoring requirements, including the establishment of additional compliance points in response to trends showing changes in the concentration of parameters being monitored.
- 1.5.9 If the permittee monitors any influent, effluent, receiving water, air or solid waste

characteristic in addition to those identified in this permit, or more frequently than required, the results of such monitoring shall be available for inspection by the department, or other location proposed by the permittee and agreed upon by the department. The permittee shall provide copies of the results to the department upon request.

## 1.6 REPORTING

- 1.6.1 When an exceedance of a WQS is discovered at a groundwater monitoring location, or if noncompliance with a requirement set out in sections 1.1, 1.2, 1.3, or 1.4 is discovered, the permittee shall verbally notify the department no later than the end of the next State of Alaska working day after discovery, and shall conduct corrective actions according to section 1.7.3.
- 1.6.2 Reports for quarters when land application of wastewater occurred shall include a section with the following information:
  - 1.6.2.1 The total amount of solution applied and a map showing the areas of application,
  - 1.6.2.2 The total hydraulic loading rate per acre volume per acre,
  - 1.6.2.3 The total metals loading per acre in mass per acre, for each parameter in Table 1, for the reported land application, and
  - 1.6.2.4 The cumulative metals loading mass per acre for each parameter. This includes all past land application events.
- 1.6.3 Reports for quarters when the evaporator at the PWRT is operated shall include a section with the following information:
  - 1.6.3.1 The WAD cyanide concentration and pH of water in the PWRT,
  - 1.6.3.2 Results of inspections for vegetative stress, and
  - 1.6.3.3 Measurements of WAD cyanide and pH from soil surrounding the PWRT.
- 1.6.4 The permittee shall provide the department with quarterly monitoring reports summarizing inspection and monitoring results required in section 1.5. Reports shall satisfy the following conditions.
  - 1.6.4.1 Due Dates - Reports for the first three calendar quarters are due within 60 days after the quarter ends, and the report for the fourth calendar quarter shall be submitted by March 1<sup>st</sup> of the following year.
  - 1.6.4.2 Form – Reports shall be provided in electronic form using commercially available software or according to other electronic reporting requirements approved by the department. Paper copies of the reports are not required

unless specifically requested.

- 1.6.4.3 Content - Reports shall contain a narrative portion discussing data and information collected during the preceding quarter.
- 1.6.4.4 Graphing - Reports shall present water quality data in graphical form to indicate trends as well as the margin of compliance with limits.
  - 1.6.4.4.1 Graphs of concentration measurement versus time must including the past five years' data, if available, and may contain all historic data.
  - 1.6.4.4.2 The graphs must also include the parameter, units, and applicable permit limit or water quality standard.
  - 1.6.4.4.3 Multiple stations, identified using symbols in a legend, may be included in the same graph.
  - 1.6.4.4.4 Scales shall be proportioned to display the limit or water quality standard, as indicated by a highlighted line, near the top of the graph or when data exceeds the limit, the maximum value shall be near the top of the graph.
  - 1.6.4.4.5 Formatting shall allow addition of new data to each graph's cumulative data when producing the next quarterly report.
  - 1.6.4.4.6 For graphical purposes, non-detect values shall be plotted at one half the method detection limit (MDL), and values between the minimum level of quantification (ML) and MDL shall be plotted at the value of the qualified measurement.
- 1.6.5 Annual Report - In addition to satisfying the requirements of sections 1.6.2, 1.6.3, and 1.6.4, the fourth calendar quarter report serves as the annual report. The annual report shall
  - 1.6.5.1 Be submitted to the department by March 1<sup>st</sup> of the following year;
  - 1.6.5.2 Contain an electronic copy (preferably Excel) of the water quality data for the reporting year, including the past five years' data, if available, and may contain all historic data in spreadsheet form. When a value is less than the ML, it must be identified as less than the ML, and the ML must be provided. Non-detect values must be identified as less than the MDL or non-detect and the MDL must be provided in the electronic water quality data spreadsheets;
  - 1.6.5.3 Be presented at an annual meeting or teleconference with the department and ADNR and open to the public; and
  - 1.6.5.4 Be submitted to the department at least two weeks prior to the annual meeting.

- 1.6.6 All records and information and reports resulting from the monitoring activities required by this permit, including but not limited to all records of analyses performed, calibration and maintenance of instrumentation, and recordings from continuous monitoring instrumentation, shall be retained in Alaska for observation by the department for a minimum of five years. Upon request from the department, the permittee shall submit certified copies of such records.
- 1.6.7 The permittee shall maintain an updated Plan of Operations and Reclamation Plan, as required by U.S. Bureau of Land Management (BLM) and ADNR, showing site use and development plans, and shall provide the department with copies of any amendments to that Plan of Operations affecting the waste disposal operations authorized by the permit.
- 1.6.8 Any wildlife, waterfowl, or shore bird casualties shall be reported to the department and to the appropriate state and federal agencies no later than the next State of Alaska working day after discovery.
- 1.6.9 All written reports submitted under the requirements of this permit shall be sent to:
- Dept. of Environmental Conservation  
Division of Water, Compliance Program  
555 Cordova St.  
Anchorage, AK 99501
- 1.6.10 Knowingly making a false statement, by the permittee, the operator or other employees, including contractors, on any such report may result in the imposition of criminal penalties as provided for under AS 46.03.790.

## 1.7 CORRECTIVE ACTIONS

- 1.7.1 The permittee shall comply with 18 AAC 60.815 if the visual monitoring program in section 1.5.1.1 discovers damage or potential damage to the waste disposal-related facility that could lead to water quality violations.
- 1.7.2 The permittee shall comply with 18 AAC 60.820-860 if a statistically significant increase in a constituent concentration above background groundwater quality and an exceedance of a WQS in any of the groundwater sampling locations is discovered. Statistical significance shall be determined using one of the methods outlined in 18 AAC 60.830(h). The permittee shall comply with the notification requirements in 18 AAC 850(c) upon determining a statistically significant increase in a constituent concentration above WQS.
- 1.7.3 For a single constituent, a statistically significant increase in concentration is discovered at a surface water or groundwater monitoring station and an exceedance of a WQS, or if noncompliance with a requirement set out in sections 1.1, 1.2, 1.3, or 1.4 is discovered, the permittee shall:
- 1.7.3.1 Orally notify the department no later than the end of the next State of Alaska working day.



- 1.7.3.2 Determine the extent of the exceedance or noncompliance.
- 1.7.3.3 In consultation with the department and documented in writing, implement a plan to determine the cause and/or source of the exceedance or noncompliance.
- 1.7.3.4 Submit to the department, within seven working days after an exceedance or noncompliance is verified by the permittee, a plan for corrective actions to prevent adverse environmental impacts and further exceedances of applicable WQS or permit limits.
- 1.7.3.5 Implement the corrective action plan as approved by the department.

## 1.8 SUSPENSION OF OPERATIONS

- 1.8.1 Suspension of operations is defined as a suspension of mining and milling/processing activities for more than 90 days but less than three years. The length of time for the period of suspension may be extended beyond three years by written authorization from the department. The permittee shall submit a conceptual suspension of operations plan to the department within 90 days of permit issuance.
- 1.8.2 The permittee must notify the department within three days of suspending operations. The notice shall provide the nature of and reason for the suspension and its anticipated duration.
- 1.8.3 No later than ten days after operations have been suspended, the permittee shall submit a detailed suspension of operations plan that replaces the suspension of operations conceptual plan required by section 1.8.1 with current information and specific details. The suspension plan shall address the following:
  - 1.8.3.1 Explanation of what would reasonably result in resuming or permanently terminating mining or milling/processing activities;
  - 1.8.3.2 Reclamation or construction activities during the period of temporary suspension;
  - 1.8.3.3 Procedures, methods, and schedule to be implemented for the treatment, disposal, or storage of process water;
  - 1.8.3.4 The control of surface and groundwater drainage to and from the facility and the surrounding area;
  - 1.8.3.5 The control of erosion from the drystack, waste rock disposal areas, mill and camp site, and any other disturbed areas within the facility boundary;
  - 1.8.3.6 The secure storage of chemicals during the period of suspended operations; and

- 1.8.3.7 Procedures for maintaining and monitoring the TSF dam and water balance.
- 1.8.4 The department shall have 15 days to review and approve or request modifications to the suspension plan.
- 1.8.5 Once a suspension of operations plan has been approved, it becomes enforceable under the conditions of this permit and full implementation of the approved suspension plan is required. The plan can be amended by submitting a revised plan to the department for approval.
- 1.8.6 During suspension of operations, the permittee shall:
- 1.8.6.1 Continue pollution control activities associated with the drystack, including but not limited to dust control, maintenance of the drainage diversion structures, maintenance of all discharge and leakage control structures and processes, and maintenance of the TSF as specified by this permit, the current *Certificate of Approval to Operate a Dam*, and/or the suspension plan.
- 1.8.6.2 Continue monitoring and reporting activities of all active portions of the site including the TSF, FTDS, PWRT, surface landfill, and underground mine workings as specified by this permit or the suspension plan.
- 1.8.6.3 Continue reclamation and corrective action requirements under the *Nixon Fork Mine Plan of Operations & Reclamation Plan, Version 2, Volume II of II* in light of the nature of the closure.
- 1.8.7 Written department approval is required before resuming operations after a period of temporary closure.

## 1.9 TERMINATION OF MINING & MILLING

- 1.9.1 Termination of mining and milling/processing activities is defined as the permanent cessation of those activities. Updated reclamation and monitoring plans must be submitted for approval within 90 days after initiating termination of mining and milling/processing. The updated plans must address current conditions at the facility. Updates and changes to those plans must be approved in writing by the department.
- 1.9.2 Termination of mining and milling at the site must be implemented and completed according to the conditions of this permit and with the *Nixon Fork Mine Plan of Operations & Reclamation Plan, Version 2, Volume II of II* approved by the department and incorporated by reference into this permit.
- 1.9.3 Closure of the waste disposal facilities will be complete when the following criteria are met:
- 1.9.3.1 A department-approved engineered soil cover system is installed on the

FTDS and drainage channels are constructed and stable;

- 1.9.3.2 A stable vegetative cover is established on the waste rock, re-contoured areas, and other infrastructure or other facilities as prescribed in the most recent *Nixon Fork Mine Plan of Operations & Reclamation Plan, Version 2, Volume II of II* approved by the department and incorporated by reference into this permit; and
- 1.9.3.3 The department determines that active water treatment is no longer required for any water discharged from the facility.
- 1.9.4 Closure must be achieved before terminating any care and maintenance activities required by section 1.8.6 and the approved suspension plan if a period of suspended operations immediately preceded termination of mining and milling.
- 1.9.5 The permittee shall maintain the facility correcting any erosion or settlement of the TSF dam, drystack, and waste rock disposal sites that may impair water quality or otherwise threaten the environment, up until the time that this permit, or any successor permit, is transferred to another entity or terminated by the department.
- 1.9.6 Disposal of demolition debris in the drystack, waste rock piles, or underground may be approved during closure activities according to a plan approved by the department.
- 1.9.7 Post-closure monitoring of ground and surface water quality and visual monitoring for settlement, seeps, and erosion is required in years 1, 2, 5, 10, 15, 20, and 30 after satisfying the criteria in section 1.9.3. Post-closure monitoring shall be performed according the current *Nixon Fork Mine Plan of Operations & Reclamation Plan, Version 2, Volume II of II* approved by the department. This schedule and the parameters monitored may be modified by the department based on the monitoring results received.

#### 1.10 PROOF OF FINANCIAL RESPONSIBILITY

- 1.10.1 The permittee shall provide the department with proof of financial responsibility for closure of the facility and post-closure monitoring. The proof of financial responsibility shall cover costs incurred for closure and post-closure monitoring of the facility, shall cover the activities set out in section 3, and shall be in the amount shown in section 3. The area covered by the financial responsibility required in this section is shown on the map attached as section 5.
- 1.10.2 The department in consultation with ADNR will review, and modify, if necessary, the financial responsibility requirements including adjustments for inflation, concurrent reclamation and expansion or other changes to the operation of the facility annually, or during the renewal, modification or amendment of this permit. The permittee shall address the adequacy of the financial responsibility in the annual report required in section 1.6.5.

- 1.10.3 The proof of financial responsibility may be in the form of a trust fund, surety bond, letter of credit, insurance, or any other mechanism approved by the department.
- 1.10.4 Approved proof of sufficient financial responsibility must remain available through the post-closure period, up to 30 years, and may not be released until the department certifies in writing that closure of the facility and the required post-closure monitoring have been successfully concluded, or that another entity will assume responsibility for permit compliance and/or post-closure monitoring.
- 1.10.5 It shall be the responsibility of the permittee to provide acceptable proof of financial responsibility by month/day/year, within 60 days of the permit's effective date. The department will accept or reject the financial surety as expeditiously as possible, but in no event later than 30 days after its receipt.
- 1.10.6 If the permittee is unable to provide proof of financial responsibility, which is acceptable to the department and is approved by the department in writing within the time periods stated above, this permit will expire automatically at that time, notwithstanding any other approvals to the contrary, unless the department's failure to act is responsible for the delay in accepting or rejecting this proof.
- 1.10.7 If the permittee fails to comply with the terms and conditions of this permit, as written, modified, or amended; and if the department concludes that such failure may prevent, inhibit or delay satisfactory closure or post-closure monitoring of the facility; then the department may exercise its rights under the approved mechanism for financial responsibility to access the funds and use them for appropriate closure and post-closure activities.

## 1.11 FACILITY AUDIT

Prior to the renewal of this permit every five years, in coordination with a review of the *Nixon Fork Mine Plan of Operations & Reclamation Plan*, and prior to and in preparation for the termination of this permit, a facility audit shall be conducted at the expense of the permittee. The department, in consultation with other agencies having land use management or regulatory authority over the facility and the permittee, shall mutually select a qualified auditor.

The intent of the audits will be to determine if both the facility management and regulatory controls of the facility provide reasonable assurances that the facility and controls are functioning as intended.

The scope of subsequent audits may be revised as mutually agreed upon prior to initiation of each audit, to address specific issues or objectives not previously identified in this permit. Identification of such issues or objectives may be accomplished through a joint permittee/agency meeting prior to the audit.

- 1.11.1 The audit will be an objective, systematic, and documented review of the conditions, operations, and practices related to permit requirements and facility management conducted under this permit. The audit shall evaluate:

- 1.11.1.1 The permittee's compliance with all federal, state, and local permits and authorizations related to the permitted facility, and specific compliance with the conditions of this permit;
  - 1.11.1.2 The reliability and integrity of information relating to facility reporting and compliance;
  - 1.11.1.3 The adequacy of the department's permit and other agencies' oversight of the facility;
  - 1.11.1.4 The condition of chemical containment structures;
  - 1.11.1.5 Laboratories and sample analysis procedures;
  - 1.11.1.6 Implementation of the pollution prevention strategy in section 2.10 of this permit; and
  - 1.11.1.7 The adequacy of the closure and post-closure financial responsibility, including the collection and treatment of contact water;
- 1.11.2 The department and permittee will use the audit results to assist in:
- 1.11.2.1 Updating, renewing, or amending this permit;
  - 1.11.2.2 Updating policies, plans, and procedures;
  - 1.11.2.3 Determining compliance with this permit; and
  - 1.11.2.4 Determining the adequacy of the closure and post-closure financial responsibility, including the collection and treatment of contact water.
- 1.11.3 The facility audit shall be a component of, or combined with, the audit required by the ADNR Reclamation and Closure Plan Approval.

## **2 GENERAL PERMIT CONDITIONS**

### **2.1 ACCESS & INSPECTION**

The permittee shall allow the Commissioner or his/her representative access to the permitted facility at reasonable times to conduct scheduled or unscheduled inspections or tests to determine compliance with this permit, state laws, and regulations.

### **2.2 INFORMATION ACCESS**

Except where protected from disclosure by applicable state or federal law, all records and reports submitted in accordance with the terms of this permit shall be available for public inspection at the Alaska Department of Environmental Conservation, 610 University Avenue, Fairbanks, Alaska.

### **2.3 CIVIL & CRIMINAL LIABILITY**

Nothing in this permit shall relieve the permittee from any potential civil or criminal liability for noncompliance with the permit or with applicable laws.

### **2.4 AVAILABILITY**

The permittee shall post or maintain a copy of this permit available to the public at the facility.

### **2.5 ADVERSE IMPACT**

The permittee shall take all necessary means to minimize any adverse impacts to the receiving waters or lands resulting from noncompliance with any limitation specified in this permit, including any additional monitoring needed to determine the nature and impact of the noncompliant activity. The permittee shall cleanup and restore all areas adversely impacted by the noncompliance.

### **2.6 CULTURAL OR PALEONTOLOGICAL RESOURCES**

Should cultural or paleontological resources be discovered as a result of this activity, work, which would disturb such resources, is to be stopped, and ADNR, Division of Parks and Outdoor Recreation, State Historic Preservation Office (907-465-4563), is to be notified promptly.

### **2.7 APPLICATIONS FOR RENEWAL**

In accordance with 18 AAC 15.100(d), an application for renewal or amendment of this permit must be made no later than 30 days before the expiration date of the permit or the planned effective date of the amendment.

### **2.8 OTHER LEGAL OBLIGATIONS**

This permit does not relieve the permittee from the duty to obtain any other necessary permits from the department or from other local, state, or federal agencies, and to comply

with the requirements contained in any such permits. All activities conducted and all plans implemented by the permittee pursuant to the terms of this permit shall comply with all applicable local, state, and federal laws and regulations.

## 2.9 TRANSFER OF OWNERSHIP

In the event of any change in control or ownership of the permitted facility, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Director of the Division of Water at 555 Cordova Street, Anchorage, AK 99501. The original permittee remains responsible for permit compliance unless and until the succeeding owner or controller agrees in writing to assume such responsibility, and the department approves assignment of the permit. The department will not unreasonably withhold such approval.

As between the state and the permittee, no transfer of this permit shall relieve the permittee of any liability arising out of operations conducted prior to such transfer, regardless of whether such liability accrues before or after such transfer.

## 2.10 POLLUTION PREVENTION

In order to prevent and minimize present and future pollution, when making management decisions that affect waste generation, the permittee shall consider the following order of priority options as outlined in AS 46.06.021:

- 1st waste source reduction,
- 2nd recycling of waste,
- 3rd waste treatment, and
- 4th waste disposal.

**3 FINANCIAL RESPONSIBILITY FOR FACILITY RECLAMATION, MAINTENANCE, CLOSURE, & POST-CLOSURE MONITORING**

Under AS 46.03.100(f), 18 AAC 15.090, and 18 AAC 60.265, it assigns the department authority and responsibility requiring proof of financial responsibility for closure of the facility and post-closure monitoring. The total proof of financial responsibility for the life of this permit, unless modified sooner, shall be **\$6,033,000**. A detailed breakdown of the financial responsibility cost estimate can be found in the *Nixon Fork Mine Plan of Operations & Reclamation Plan, Version 2, Volume II of II* dated November 2011. The permittee can apply to have the amount of the financial responsibility adjusted during the life of the permit, if for example concurrent reclamation has been completed. The Nixon Fork Mine financial responsibility is based on the following.

CLOSURE & MAINTENANCE ITEM		FINANCIAL RESPONSIBILITY		
<b>Direct Costs</b>				
Equipment Capital Costs		\$947,234		
Equipment Operation & Maintenance Costs		\$310,491		
Revegetation		\$109,949		
Manpower		\$1,137,390		
Manpower Support		\$324,974		
Materials, Supplies, Other		\$379,458		
Post-Closure Monitoring		\$242,507		
One Year Holding Period			\$551,379	
<b>Direct Costs Subtotal*</b>		\$3,452,000	\$551,000	<b>\$4,003,000</b>
<b>Indirect Costs</b>				
	Percent	No Holding Period	One Year Holding Period	
Contractor Profit	10%	\$345,000	\$55,000	
Contractor Overhead	4%	\$138,000	\$22,000	
indirect + direct subtotals <sup>1</sup>		\$3,935,000	\$628,000	
Performance and Payment Bond	3%	\$118,000	\$19,000	
Liability Insurance	1.5%	\$17,000	\$3,000	
indirect + direct subtotals		\$4,070,000	\$650,000	
BLM Contract Administration	9.4%	\$324,000	\$52,000	
Engineering Redesign Plan	6%	\$207,000	\$33,000	
Contingency	12%	\$414,000	\$66,000	
State Agency Oversight	1.5%	\$52,000	\$8,000	
indirect + direct subtotals		\$5,067,000	\$809,000	
<b>Indirect Costs Subtotal</b>		\$1,615,000	\$258,000	<b>\$1,873,000</b>
<b>Direct + Indirect Total</b>				\$5,876,000
Inflation (one year at 2.67%)				\$157,000
<b>TOTAL</b>				<b>\$6,033,000<sup>2</sup></b>
<sup>1</sup> All subtotals and totals rounded to the nearest \$1,000				
<sup>2</sup> The financial responsibility will be reevaluated and adjusted as allowed in section 1.10.2.				

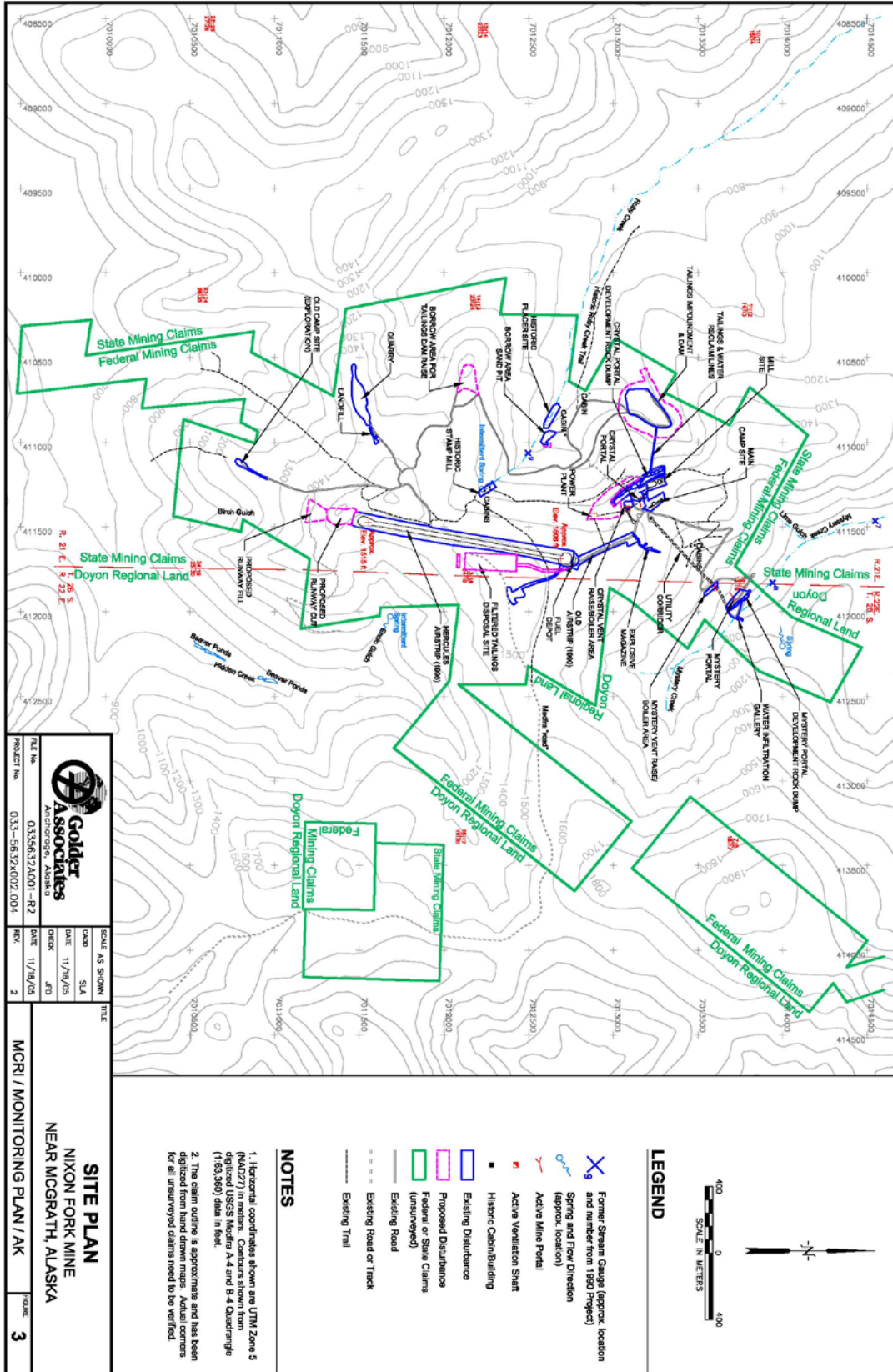


#### **4 LIST OF ACRONYMS**

AAC	Alaska Administrative Code
AS	Alaska Statute
ADNR	Alaska Department of Natural Resources
BLM	United States Bureau of Land Management
CFR	Code of Federal Regulations
CIL	Carbon-in-Leach
DEC	Alaska Department of Environmental Conservation
FTDS	Filtered Tailings Disposal Site
MCRI	Mystery Creek Resources Inc. (permittee)
MDL	method detection limit
mg/L	milligrams per liter
ML	minimum level of quantification
PWRT	Process Water Recycle Tank
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
tpd	tons per day
TSF	Tailings Storage Facility
WAD	weak acid dissociable
WQS	Alaska Water Quality Standards (18 AAC 70)

# 5 FACILITY MAPS

## 5.1 GENERAL MINE AREA MAP



5.2 MINE INFRASTRUCTURE MAP

