

Midnite Mine Superfund Site

10090 Percent Design

Appendix T – Water Source Identification and Development Plan

June 2015

Note: This preliminary Water Source Identification and Development Plan is completed to a 90-Percent level of detail. This plan will develop along with the RD and the final Water Source Identification and Development Plan will be included with the Final Basis of Design Report.

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LIST OF ACRONYMS

CFR Code of Federal Regulations

Companies Dawn Mining Company LLC/Newmont USA Limited

Dawn Dawn Mining Company LLC

HDPE high-density polyethylene

MCL maximum contaminant level

MM Midnite Mine

Newmont Newmont USA Limited

OSHA Occupational Safety and Health Administration

RA remedial action

RCW Revised Code of Washington

RO Reverse Osmosis

SVOC semivolatile organic compound

TDS Total Dissolved Solids

VOC volatile organic compound

WRIA Water Resource Inventory Areas

WTP water treatment plant

T1.0 REGULATORY REQUIREMENTS

The Midnite Mine (MM) remediation project will use both potable and non-potable water to meet necessary construction and operational needs. Current water sources are assumed to be from the MM water treatment plant. On May 29, 2015, as part of joint mediation efforts, the Tribe and the companies entered into a non-binding terms of agreement, which sets forth the framework for detailed definitive agreements that will provide for water use. The parties are proceeding to prepare the necessary agreements and leases to implement these terms. The Companies have notified the Superintendent for the Spokane Agency BIA that they are in negotiations for business leases with the Tribe.

~~Negotiations with the Spokane Tribe of Indians are currently being conducted.~~ Non-potable water will be sourced from the treated effluent from the water treatment plant (WTP). This water is not intended for drinking or human contact such as washing, cooking, laundry (29 CFR 1910.141(b)(2)(iii)). The majority of this water will be used on-site for construction water (i.e., dust control).

Potable water will be necessary for use in showers, toilets, laundry, etc. This water will also be used for construction-related purposes in areas outside of the contaminated area. Potable water will be obtained from either the “mancamp” well that was drilled on site, or by providing additional treatment to a portion of the water from the water treatment plant. Potable non-human consumption water supplies will meet Safe Drinking Water Act standards for organic and inorganic constituents and will be appropriately disinfected. Based on an investigation (WME 2015) the well at the mancamp produces approximately 6,000 gallons per day using a pump. The well’s water quality sample was tested for VOCs, SVOCs, radionuclides, metals, total coliform, fecal coliform and E. coli (WME 2015). The sample was also below MCLs for all constituents except uranium. The sample tested at 0.0344 mg/L total uranium, and the MCL for uranium is 0.030 mg/L (WME2015). The water would be treated for uranium using a custom designed system that integrates negatively charged ion exchange resin from a local contractor with extensive experience in treating groundwater wells in the area, unless further well development and water use activities demonstrate the well routinely produces water quality below the uranium MCL. Local vendors indicate that they have extensive experience treating water in the area with uranium concentrations up to 200 mg/l to levels well below the MCL. The water would be stored in a tank for potable use. The resin would be flushed once a week and the resin would be reused. The backwash water used to flush the resin will be treated at the WTP. Once established, the water supply would be tested annually. The resin would be replaced every 15 to 20 years, depending upon its continued effectiveness. Spent resin will be sampled and analyzed and disposed of in accordance with State and Federal regulations.~~The water quality testing of the mancamp well is under way and the results are expected to be available in the summer of 2014 to determine if this water will meet standards without treatment.~~ Commercial potable drinking water suitable for human consumptive use will be purchased from local vendors and supplied to the site for employee, contractor and subcontractor use.

Cross contamination of potable and non-potable water will be avoided with separate plumbing and all non-potable water fixtures would be demarcated and signed in accordance with local and state requirements (29 CFR 1619.1). For facilities with 20 to 200 employees, OSHA requires 1 toilet and 1 urinal for every 40 employees (29 CFR 1926.51(c)(1)). Sizing of the septic system and leach fields will comply with the Northeast Tri-County District requirements for on-site sewer treatment systems and disposal programs.

Water needed for dust control could range from one to eight gallons per cubic yard of material excavated and transported, depending upon the season. The effectiveness of water for dust control is relatively short lived and can last anywhere from ½ to 12 hours (Bolander and Yamada, 1999). Actual water application rates and water demand will be dependent upon the size and type of construction equipment, characteristics of the soil particles, area of exposed soil, ambient weather temperature, and relative humidity. Dust control water usage may be augmented by the use of organic chemical dust suppressant as Ligno-sulfonate. Estimated potable water use will vary as the construction employee work force numbers fluctuate; however, the current estimate of potable water usage is 55 gallons per day per person for consumptive potable water, but does not include drinking water. Water storage facilities will be required to store both potable and non-potable water to allow capacity for peak use times. It is estimated that approximately 350 acre feet of water would be needed for the life of the project of which five to ten percent would be potable.

T2.0 WATER NEEDS, STORAGE, AND DISTRIBUTION

The ~~estimated~~ water needs for construction have been estimated based on the construction schedule ~~and an estimate of~~ the amount of water necessary for dust control, water use to support in the construction support zone and ~~to support the~~ WTP. That estimate is shown on Table T-1. It is assumed that treated water from the water treatment plant could be used for dust control on contaminated surfaces. Water for dust control on un-contaminated surfaces and for use in the construction support zone would meet drinking water standards (potable water). Make up water for the water treatment plant has historically been obtained from Pit 4. It is assumed that water from Pit 4 would continue to supply this water.

Water for construction will be piped from the water treatment plant to selected areas where it will be stored in temporary storage tanks or ponds. The polished water or water from the man-camp well, necessary for off-site use will be kept in a separate system. The potable water will likely be pumped from the man-camp well/wells and piped to a small treatment facility ~~if necessary~~ and then piped to the construction support facilities ~~and water treatment plant~~ for use. Details of the potable and non-potable water storage and distribution systems will be determined by the contractor as required in the Specifications.

Water for fire suppression needs will be provided by the selected RA Contractor, as described in the specifications. A temporary HDPE tank will be provided to store at least 10,000 gallons of clean water for fire suppression during the construction activities. Should a fire start during construction, it is assumed that the Spokane Tribal firefighting crews can be relied on to provide additional fire suppression support.

Table T- 1. Quarterly Water Requirements (acre-feet)

Year	Quarter	On-Site Dust Control	Off-Site Dust Control	Potable Construction Support Facility Water	Total
2015	Q1	0.20	-	0.22	0.42
	Q2	0.20	0.47	0.22	0.89
	Q3	2.16	-	0.66	2.82
	Q4	0.74	-	0.66	1.4

Table T- 2. Quarterly Water Requirements (acre-feet) (Cont.)

<u>Year</u>	<u>Quarter</u>	<u>On-Site Dust Control</u>	<u>Off-Site Dust Control</u>	<u>Potable Construction Support Facility Water</u>	<u>Total</u>
	Total	3.30	0.47	1.76	5.52
2016	Q1	1.09	-	0.66	1.75
	Q2	1.61	-	0.66	2.27
	Q3	3.69	-	0.66	4.35
	Q4	1.53	-	0.66	2.19
	Total	7.93	0.00	2.63	10.56
2017	Q1	0.95	-	0.88	1.83
	Q2	12.32	-	0.88	13.20
	Q3	42.35	-	0.88	43.23
	Q4	2.83	-	0.88	3.71
	Total	58.46	-	3.51	61.97

Table T-1. Quarterly Water Requirements (acre-feet) (Cont.)

Year	Quarter	On-Site Dust Control	Off-Site Dust Control	Potable Construction Support Facility Water	Total
2018	Q1	1.96	-	0.88	3.67
	Q2	11.11	4.99	0.88	12.73
	Q3	7.39	0.98	0.88	8.27
	Q4	0.47	-	0.88	1.35
	Total	20.94	5.97	3.51	26.02
2019	Q1	0.52	-	0.88	1.40
	Q2	9.62	-	0.88	10.50
	Q3	24.11	-	0.88	24.99
	Q4	1.62	-	0.88	2.50
	Total	35.88	-	3.51	39.39
2020	Q1	3.94	-	0.88	4.85
	Q2	22.82	-	0.88	23.70
	Q3	30.36	-	0.88	31.24
	Q4	3.97	-	0.88	4.85
	Total	61.11	-	3.51	64.62
2021	Q1	3.97	-	0.88	4.85
	Q2	22.82	-	0.88	23.70
	Q3	30.36	-	0.88	32.22
	Q4	3.97	-	0.88	2.26
	Total	61.11	-	3.51	63.02
2022	Q1	1.26	-	0.88	2.14
	Q2	15.77	5.49	0.88	22.14
	Q3	12.82	-	0.88	13.70
	Q4	1.78	-	0.88	2.65
	Total	31.63	5.49	3.51	40.63

Table T-3. Quarterly Water Requirements (acre-feet) (Cont.)

Year	Quarter	On-Site Dust Control	Off-Site Dust Control	Potable Construction Support Facility Water	Total
2023	Q1	1.73	-	0.88	2.61
	Q2	1.12	-	0.88	2.00
	Q3	2.34	-	0.88	3.21
	Q4	0.20	-	0.88	1.08
	Total	5.39	-	3.51	8.90

2024	Q1	0.20	-	0.44	0.64
	Q2	8.67	12.04	0.44	21.15
	Q3	0.20	-	0.44	0.64
	Q4	0.20	-	0.44	0.64
	Total	9.27	12.04	1.76	23.07

*Schedule is based on current project assumptions and are subject to change based on input from selected contractor.

T3.0 WATER SOURCES

As stated above, it is anticipated that necessary construction water ~~will~~ be obtained from the water treatment plant effluent. Some additional water treatment process polishing may be required for off-site construction water. Potable water could also come from an existing on-site groundwater well. ~~or on-site up gradient wells. Water quality testing and water rights negotiations are ongoing and will determine if additional treatment is necessary to achieve water quality standards.~~

~~The Company have had several meetings and discussions with Tribal representatives, including their technical and legal representatives, over the past six months. There have been comprehensive offers made that provide for the combination of access to the site, renewal of expired leases, water for construction purposes and long term institutional controls and the Company believe that these offers were well in excess of reasonable, fair market value for these specific items. Discussions are on-going and the parties' representatives are continuing to prepare draft agreements addressing these matters. However, key terms have not been agreed upon, and it is unclear if definitive final agreements on these necessary elements can be obtained in time to begin implementation of the Remedy under the current schedule.~~

~~It is understood that water for construction can be obtained from off the reservation and therefore Tribal approval will not be necessary for this item. However, access to the site and long-term institutional controls must be obtained through the Tribe. The Company has identified available water supplies from off the reservation and will continue to pursue this should the option to obtain water through the Tribe be unavailable or unreasonable.~~

T4.0 REFERENCES

Bolander, Peter and Alan Yamada. 1999. Dust Palliative Selection and Application Guide. Prepared for the US Forest Service (USFS). Accessed at http://www.ecy.wa.gov/programs/air/pdfs/Dust_Palliative.pdf on 11/21/2012.

Worthington Miller Environmental (WME). 2015. Man Camp Water Supply Well, Data Evaluation Report. Accessed at http://www.ecy.wa.gov/programs/air/pdfs/Dust_Palliative.pdf on 11/21/2012.