

Midnite Mine Superfund Site

10090 Percent Design

Appendix A – General Design Information

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Prepared for:

Dawn Mining Company
PO Box 250
Ford, Washington 990413

and

Newmont USA Limited
6363 South Fiddler's Green Circle
Greenwood Village, Colorado 80111

Prepared By:

MWH Americas, Inc.
2890 E. Cottonwood Parkway, Suite 300
Salt Lake City, UT 84121

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LIST OF ACRONYMS

BODR	Basis of Design Report
BPA	Backfilled Pit Area
CD	Consent Decree
CP	chemical precipitation
CSZ	Construction Support Zone
GSR	Green and Sustainable Remediation
IX	Ion exchange
MA	Mined Area
NPDES	National Pollutant Discharge Elimination System
PCP	Pollution Control Pond
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
ROD	Record of Decision
Site	Midnite Mine Superfund Site
SOW	Statement <u>Scope</u> of Work
Tribe	Spokane Tribe of Indians
WTP	Water Treatment Plant

A1.0 INTRODUCTION

This appendix to the Midnite Mine Superfund Site (Site) Basis of Design Report (BODR) summarizes the General Design Information. This includes a description of the General design drawings, reference to how the Remedial Design (RD) addresses the Performance Standards contained in the Consent Decree (CD) Statement of Work (-SOW) (EPA, 2011), a summary of the phased Remedial Action (RA) construction progression, and Green and Sustainable Remediation (GSR) considerations.

A2.0 COMPLIANCE WITH PERFORMANCE STANDARDS

The CD SOW includes the Performance Standards that were developed to define attainment of the Remedial Action Objectives (RAOs) of the Selected Remedy. The Performance Standards include both general and specific standards applicable to the Selected Remedy work elements and associated work components. All of the Performance Standards associated with the Midnite Mine remedy are summarized on Table 4-6 in the BODR. That master table lists each Performance Standard and, summarizes where or how each is addressed in the BODR, ~~and the current status.~~

A3.0 GENERAL DESIGN DRAWINGS

The General design drawings contain information related to site location, access, general location of existing and proposed facilities, site boundaries, survey control points, and standard symbols and abbreviations used in subsequent drawings. The General design drawings also depict the Principal Remedial Components as well as the Site topography and layout upon completion of the RA. All of the Midnite Mine engineering design drawings are contained in Volume II of this BODR. The drawings related to the General design information include:

Table A-1 – Summary of Section 1 General Drawings

Sheet Number	Description
1-1	COVER SHEET
1-2	INDEX OF DRAWINGS (1 OF 3)
1-3	INDEX OF DRAWINGS (2 OF 3)
1-4	INDEX OF DRAWINGS (3 OF 3)
1-5	MASTER LEGEND AND GENERAL NOTES
1-6	SITE LOCATION MAP
1-7	EXISTING CONDITIONS MIDNITE MINE SITE
1-8	EXISTING CONDITIONS NORTHEAST BLUE CREEK
1-9	EXISTING CONDITIONS SOUTHWEST BLUE CREEK
1-10	EXISTING CONDITIONS EAST ACCESS ROAD
1-11	EXISTING UTILITIES MIDNITE MINE SITE
1-12	EXISTING UTILITIES NORTHEAST BLUE CREEK
1-13	EXISTING UTILITIES SOUTHWEST BLUE CREEK
1-14	EXISTING UTILITIES EAST ACCESS ROAD
1-15	SUBSURFACE INVESTIGATION LOCATIONS - BOREHOLES
1-16	SUBSURFACE INVESTIGATION LOCATIONS - TEST PITS (1 OF 2)
1-17	SUBSURFACE INVESTIGATION LOCATIONS - TEST PIT (2 OF 2)
1-18	SEDIMENT AND SURFACE WATER SAMPLING LOCATIONS
1-19	SITE BOUNDARIES MAP
1-20	SURVEY CONTROL MAP
1-21	PRINCIPAL REMEDIAL COMPONENTS DESCRIPTIONS
1-22	PRINCIPAL REMEDIAL COMPONENTS EARLY WORKS
1-23	PRINCIPAL REMEDIAL COMPONENTS PHASE 1
1-24	PRINCIPAL REMEDIAL COMPONENTS PHASE 2 (1 OF 2)
1-25	PRINCIPAL REMEDIAL COMPONENTS PHASE 2 (2 OF 2)
1-26	PRINCIPAL REMEDIAL COMPONENTS PHASE 3
1-27	PRINCIPAL REMEDIAL COMPONENTS FINAL REMEDIATION
1-28	SITE TOPOGRAPHY - END OF PHASE 1
1-29	SITE TOPOGRAPHY - END OF PHASE 2
1-30	SITE TOPOGRAPHY - END OF PHASE 3
1-31	SITE TOPOGRAPHY - END OF REMEDIAL ACTION

Additional information [is presented below](#) regarding the RA phases and the Principal Remedial Action Components included on Drawings 1-21 through 1-27 ~~is presented below~~.

A4.0 REMEDIAL ACTION CONSTRUCTION PROGRESSION

The RA ~~construction~~ will [comprise an Early Works phase, followed by](#) ~~occur in~~ three main phases [of construction, and a final remediation phase](#) as summarized below:

A4.1 PRINCIPAL ~~EARLY WORKS~~ PHASE 1 REMEDIAL COMPONENTS

~~The Phase 1 activities include~~ Early Works ~~phase includes~~ [Site Preparation, Hillside Waste Rock processing, Pit 4 preparation of the , backfilling, capping, and covering/ revegetating,](#)

construction support zone (CSZ), remedial activities in of the footprintSouth Pond, removal and vicinitycleanup of the CSZWest Access Road, Water Treatment Plant (WTP) Construction, construction of a Decontamination Zone, and constructionthe WTP effluent pipeline, installation of a new Site access road, groundwater controls, and revegetation of remediated disturbed areas.

A4.1.1 Construction Support Zone and Surrounding Areas

The CSZ will be prepared for use during all phases of the RA construction. Activities will include:

- Relocation of three topsoil stockpiles (South, Northeast, and Northwest) and any contaminated material
- Cleanup and removal of the existing West Access Road
- Excavation and removal of mine-affected soil and sediment in Whitetail Creek (and verification of removal)
- Demolition of the existing mine buildings on the west side of the Site
- Site grading
- Building and infrastructure construction followed by placement of temporary support facilities

Additional details regarding the CSZ are included in Appendix B –Construction Support Facilities and Early Works./Site Preparation

A4.1.2 Site Access Road

A new road will be ~~Construction.~~ It is proposed that access to the site will be via a new road constructed to provide access from the West End Road to the CSZ on the west side of the Site. ~~Negotiations with the Tribe are on-going to allow this access, but for the purposes of this 90% design it is assumed that the site access will be on this proposed new road.~~ Additional details regarding the new access road are included in Appendix B – Construction Support Facilities and Early Works.

A4.1.3 Decontamination Area Construction. –A Decontamination Zone

A Decontamination ZoneArea and appurtenant facilities will be constructed in the southwest corner of the Mined Area (MA on the border) of the CSZ. During RA construction, equipment

and personnel will pass through the Decontamination Zone prior to entry into the CSZ and leaving the Site. Additional details regarding the Decontamination Zone Area are included in Appendix B – Construction Support Facilities and Early Works. The existing decontamination facilities located near the existing Water Treatment Plant (WTP) will be used until the new Decontamination Zone is operational.

~~A4.1.4 **Construction Support Zone Preparation.** The Construction Support Zone (CSZ) will be prepared for use during RA construction. Activities will include relocation of three topsoil stockpiles (South, Northeast, and Northwest) and any contaminated material, cleanup and removal of the existing West Access Road, demolition of the existing mine buildings on the west side of the site, site grading, building and infrastructure construction, and placement of temporary support facilities. Additional details regarding the CSZ are included in Appendix B – Construction Support Facilities and Early Works.~~

Drain Material Processing and Stockpiling Area (Area 5)

~~)-~~An area south of Pit 4 (referred to as Area 5) will be graded to process and stockpile drain rock from the adjacent Hillside Waste Rock Pile. These details are included in Appendix D – Mine Waste Excavation and Containment.

A4.2 PRINCIPAL PHASE 1 REMEDIAL COMPONENTS

A4.2.1 Hillside Waste Rock Pile Processing for Pit 4 Drain Rock

~~-~~A portion of the Hillside Waste Rock Pile will be processed for use as drain rock and liner bedding in Pit 4. The processed rock will be stockpiled in the prepared area, known as Area 5, just south of Pit 4. Details regarding processing the Hillside Waste Rock Pile and its use as drain rock are included in Appendix D – Mine Waste Excavation and Containment. Additional processing of the Hillside Waste Rock Pile will occur during Phase 2 as discussed below in Section A4.32.2 for use as drain rock in Pit -3.

A4.21.2 Mine Waste Excavation and Backfilling Pit 4

Pit 4 will be prepared (i.e., dewatered, sediments removed, and graded; highwall rock scaling), lined, backfilled, capped, covered, and revegetated during the Phase 1 RA construction activities. Sources of Pit 4 backfill include the sediments removed to prepare the pit bottom, Pit -4 Overburden Pile, reject material from the Hillside Waste Rock Pile, all ore/protore stockpiles, contaminated material from the West Access Road and CSZ, excavated materials

from the Adit Pit and Pit 2 West, and portions of the South Waste Rock Pile. These activities are detailed in Appendix D – Mine Waste Excavation and Containment.

A4.2.1.3 South Pond Construction

A lined impoundment (named the South Pond) will be constructed in the South Waste Rock Pile to be used for water storage during Phase 2 construction (i.e., when Pit 3 is being backfilled and can no longer be used for water storage). The South Pond construction details are included in Appendix E – Water Management Ponds.

A4.2.1.4 Rhoads Property Haul Road Construction and Borrow Area Development

A temporary road will be built in the Rhoads Property to facilitate transportation of cover material from the Rhoads Property to the Site. Portions of the Rhoads Property will be developed to supply cover material for the backfilled and capped pits. These details are included in Appendix C – Borrow Area.

Approval to use the Rhoads Property as a borrow source is contained in Spokane Tribal Resolution 2014-135, dated February 21, 2014. 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 access to Tribal lands for all purposes related to implementing the Midnite Mine remedy, including access for excavating and transporting the Rhoads borrow material. The parties are proceeding to prepare the necessary agreements and leases to implement these terms. Permitting with the county and state for the borrow area is ongoing as discussed in Appendix M.

~~**A4.1.5 Borrow Area Development**~~

~~Portions of the Rhoads Property will be developed to supply cover material for the backfilled and capped pits. These details are included in Appendix C – Borrow Area. Approval to use the Rhoads Property as a borrow source is contained in Spokane Tribal Resolution 2014-135, dated February 21, 2014.~~

A4.2.5.1.6 Water Treatment Plant and Associated Ponds

The new WTP and associated equalization ponds will be constructed in the southwest area of the Site. Construction of temporary influent pipelines from the backfilled Pit 4 and the alluvial groundwater controls will occur during Phase 1. During the final remediation, the temporary piping will be replaced by permanent pipelines from the backfilled Pit 3 and Pit 4, the Backfilled

Pit Area (BPA), and from the groundwater extraction trenches installed in the drainages located down gradient of the Site during Phase 3. The pipeline details are contained in Appendix J – Influent and Effluent Pipelines.

~~The design includes both the ion-exchange (IX) and the chemical precipitation (CP) portion of the WTP. The plant is designed to operate with or without the IX component. Decisions to use the IX portion will be determined based on residuals management alternatives as discussed in the Residuals Management Plan (WME, 2013).~~

The schedule for completing the design and the construction of the new WTP and the effluent pipeline is dependent on finalizing the NPDES permit. It is assumed here that the permit will be finalized to enable the design and construction of the WTP and effluent pipeline to occur during Phase 1. If that is not possible, it will be constructed at a later date.

~~These details are contained in Appendix I – Water Treatment Plant and Appendix J – Influent and Effluent Pipeline Designs.~~

A4.2.61.7 Water Treatment Plant Effluent Pipeline and Diffuser Construction

The new ~~WTP~~ effluent pipeline and diffuser will be constructed during Phase 1 provided that the NPDES permit for the new WTP is finalized in time to design and construct the WTP and effluent line during this phase. The effluent pipeline will be approximately 5.5 miles long and discharge to the Spokane River Arm of Lake Roosevelt. ~~These details are included in Appendix J – Influent and Effluent Pipeline Designs.~~ Soils upstream of the Blue Creek delta that are excavated to install the pipeline are suitable for use as backfill. Sediments in the Blue Creek delta are assumed to be mine affected, and will be consolidated along with the mine wastes in the pits. Construction activities at the two locations where the pipeline will cross Blue Creek will require temporary diversion of the creek. These diversions are expected to have short durations (e.g., 1 to 2 days), and potential impacts to fish passage will be coordinated with the Tribe.

A4.2.71.8 Alluvial Groundwater Controls

Hydraulic barriers and extraction trenches will be installed in the three main drainages that lead away from the mined area to control migration of mine-affected alluvial groundwater. These details are included in Appendix G – Groundwater Controls.

A4.32 PRINCIPAL PHASE 2 REMEDIAL COMPONENTS

~~The Phase 2 activities include Pit 3 preparation and backfilling, processing the remainder of the Hillside Waste Rock Pile, construction of the West Pond, demolition of existing WTP buildings, sediment cleanup in the Eastern and Western Drainages, regrading and backfilling of the Backfilled Pit Area (BPA), and interim capping and covering of Pit 3 and the BPA. The new WTP and effluent pipeline/diffuser also will be constructed during Phase 2.~~

A4.32.1 Mine Waste Excavation and Backfilling Pit 3

Pit 3 will be prepared (i.e., dewatered, sediments removed, and graded; highwall rock scaling), lined, partially backfilled, and partially capped and covered during the Phase 2 RA construction activities. Sources of Pit 3 backfill include the sediments removed to prepare the pit bottom, western drainage waste rock, the East Waste Rock Pile, the remainder of the Hillside Waste Rock Pile, and contaminated soils and sediments from roads and drainages. These activities are detailed in Appendix D – Mine Waste Excavation and Containmentment.

A4.32.2 Hillside Waste Rock Processing for Pit 3 Drain Rock

The remaining Hillside Waste Rock material will be processed for use as drain rock and liner bedding in Pit 3. The processed rock will be stockpiled in the prepared area, known as Area 5, just south of Pit 4. Rejected material will be placed in Pit 3 as backfill.

A4.32.3 Regrading Area 5

The drain material processing and stockpiling area (Area 5) will be regraded and excess material placed in Pit 3 as backfill. These details are included in Appendix D – Mine Waste Excavation and Containmentment.

A4.32.4 Backfilled Pit Area Remediation

The ~~Backfilled Pit Area (BPA)~~, including the Adit Pit and Pit 2 West, will be regraded, and portions of the BPA will be capped and covered/revegetated. These details are contained in Appendix D – Mine Waste Excavation and Containmentment.

A4.32.5 Existing WTP Building Demolition

The existing WTP buildings will be demolished and placed in Pit 3 as backfill. This assumes that the permitting, design and construction of the new WTP occurs during Phase 1. The existing WTP will remain until the new WTP is operational. These details are contained in Appendix H – Demolition.

A4.32.6 Mine Roads Remediation

The contaminated materials in the Internal Mine Roads and the East Access Road will be removed and placed in Pit 3 as backfill. These details are contained in Appendix D – Mine Waste Excavation and Containment.

A4.32.7 Western Drainage Waste Rock Remediation

Any remaining contaminated material in the Western Drainage will be removed and placed in Pit 3 as backfill. These details are contained in Appendix D – Mine Waste Excavation and Containment.

A4.32.8 West Pond Construction

A lined impoundment (named the West Pond) will be constructed in the remediated Western Drainage to be used for water storage when the South Pond is taken off line (so that the remaining South Waste Rock Pile materials that underlie the South Pond can be removed). The West Pond construction details are included in Appendix E – Water Management Ponds.

A4.32.9 Eastern and Western Drainage Sediment Remediation

The contaminated sediments in the Eastern and Western Drainages will be removed and placed in Pit 3 as backfill. These details are contained in Appendix D – Mine Waste Excavation and Containment.

A4.43 PRINCIPAL PHASE 3 REMEDIAL COMPONENTS

~~The Phase 3 activities include removal of the Pollution Control Pond (PCP), removal of the remaining South Waste Rock Pile (including the South Pond), Central Drainage sediment cleanup, and final backfilling, capping, covering, and revegetating Pit 3 and the BPA.~~

A4.43.1 Pollution Control Pond Removal

The Pollution Control Pond (PCP) will be decommissioned and pond materials will be placed in Pit 3 as backfill. These details are included in Appendix D – Mine Waste Excavation and Containment.

A4.43.2 South Pond Removal

The South Pond will be decommissioned and pond materials will be placed in Pit 3 as backfill. These details are included in Appendix D – Mine Waste Excavation and Containment.

A4.43.3 South Waste Rock Pile Remediation

After the South Pond is taken off line, the remaining material in the South Waste Rock Pile will be removed and placed in Pit 3 as backfill. These details are included in Appendix D – Mine Waste Excavation and Containment.

A4.43.4 Central Drainage Sediment Remediation

The contaminated sediments in the Central Drainage will be removed and placed in Pit 3 as backfill. These details are contained in Appendix D – Mine Waste Excavation and Containment.

~~A4.3.5 West Pond Removal~~

~~The West Pond will be decommissioned and pond materials will be placed in Pit 3 as backfill. These details are included in Appendix D – Mine Waste Excavation and Containment.~~

A4.5 PRINCIPAL FINAL REMEDIATION COMPONENTS

A4.5.13-6 Permanent Influent Pipelines, Site Maintenance Roads, and Fencing

Construct permanent influent pipelines from the backfilled Pit 3 and Pit 4, the ~~Backfilled Pit Area (BPA),~~ and from the groundwater extraction trenches to the new WTP. Construct permanent site roads for long-term maintenance of the remediated areas. ~~A permanent doweled jack-leg wooden fence will be erected around the Waste Containment Area to limit access. It will be comprised of doweled jack-leg wooden fence in the steeper areas and a boulder barrier on the more gentle slopes (refer to drawing in Appendix D). The fence will have locking gates on all access routes.~~

A4.5.24 West Pond Removal

~~The West Pond will be decommissioned and pond materials will be placed in Pit 3 as backfill. These details are included in Appendix D – Mine Waste Excavation and Containment.~~

A4.6 CONTINGENT ACTION – BLUE CREEK AND DELTA SEDIMENTS

In accordance with the ~~Record of Decision (ROD) (EPA, 2006),~~ active remediation of the Blue Creek and Delta sediments may be required if the sediment cleanup standards are not achieved within a reasonable timeframe (approximately 10 years following waste containment). Blue Creek and Delta sediments were proposed to be evaluated in accordance with the Blue Creek and Delta Assessment Work Plan that was included in the Appendix Y of the 30% BODR ~~(MWH, 2012).~~ The sediment evaluation approach and timing is currently under discussion with

EPA and the Tribe. If necessary, these sediments would be placed in additional cells constructed in the Contingency Storage Area, which would be constructed on top of the completed Phase 3 cover. These wastes would be completely encapsulated with a separate underliner and drainage system beneath the waste, and a composite cover system over the waste (see Appendix D – Mine Waste Excavation and Containment).

A5.0 GREEN AND SUSTAINABLE REMEDIATION CONSIDERATIONS

A general GSR overview for the Midnite Mine Superfund Site RD/RA is included in Section 4.0 of the BODR. Specific GSR concepts are included in design appendices B through J and AA.

A6.0 REFERENCES

MWH Americas, Inc. (MWH), 2012. Preliminary (30%) Basis of Design Report. Prepared for Dawn Mining Company and Newmont USA Limited. December 19.

U.S. ~~Worthington Miller~~ Environmental Protection Agency (EPA), 2006. ~~(WME)~~, 2013. Residuals Management Plan for the Midnite Mine Superfund Site Spokane Indian Reservation, Washington Record of Decision. Prepared by the Office of Environmental Cleanup, EPA Region ~~Water Treatment Plant – Revision 10~~. September.

U.S. Environmental Protection Agency (EPA), 2011. Consent Decree Statement of Work for the Remedial Action for the Midnite Mine Superfund Site, Spokane Indian Reservation, Washington. Civil Action No. CV-05-020-JLQ. United States of America, Plaintiff v. Dawn Mining Company, LLC and Newmont USA Limited, Defendants. August ~~Prepared for Newmont USA Ltd. and Dawn Mining Company~~. November 4.