Midnite Mine Superfund Site

100~~90~~ Percent Design

Appendix P – Operation, Maintenance and Monitoring Plan

June 2015

~~**July 31, 2014**~~

Prepared for:

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ATTACHMENTS

LIST OF ACRONYMS

ATV	all-terrain vehicle
CD	Consent Decree
DMC	Dawn Mining Company, LLC
EPA	U.S. Environmental Protection Agency
ECN	Engineering Change Notice
Newmont	Newmont USA Limited
O&M	Operations and Maintenance
OM&M	Operations, Maintenance and Monitoring
QAPP	Quality Assurance Project Plan
RA	Remedial Action
RAWP	Remedial Action Work Plan
RD	Remedial Design
ROD	Record of Decision
SDC	Significant Design Changes
Site	Midnite Mine Superfund Site
SMP	Site-wide Monitoring Plan
SOP	Standard Operating Procedure
State	Washington State
Tribe	Spokane Tribe of Indians
WTP	water treatment plant

P1.0 INTRODUCTION

This Operation, Maintenance and Monitoring Plan (OM&M Plan) has been prepared in accordance with the *Midnite Mine Superfund Site Record of Decision* (ROD; United States Environmental Protection Agency [EPA], 2006) and a Remedial Design/Remedial Action (RD/RA) Consent Decree (CD) lodged by the United States District Court on ~~17~~ January 17, 2012.

The existing interim water management system at the Midnite Mine Superfund Site (Site) comprises seep and surface water collection systems (including pits/surface water impoundments), conveyance systems, a water treatment plant (WTP), WTP effluent pipeline system, and WTP residual management facilities. Operation, maintenance and monitoring (OM&M) of the existing system is performed in accordance with the *Operation, Maintenance and Monitoring Plan for the Midnite Mine Water Collection System and Water Treatment Plant for the Phase I RD/RA: Interim Water Management for the Midnite Mine* (Tetra Tech, 2010). A copy of the OM&M Plan for the Phase I RD/RA is included in Attachment 1.

In order to accommodate the water management system as it evolves during the phased RA~~remedial action (RA)~~ construction, the OM&M Plan will be a dynamic document and will be updated and revised as necessary, which likely will be yearly. This will be necessary because components of the pre-RA water management system will change over the course of the multi-year RA construction. For example, the mine pits (i.e., Pit 3 and Pit 4) that currently store mine-affected water will be taken off line during the backfill operation as part of the RA and new temporary impoundments and associated conveyance systems will be constructed. This process will be repeated until the entire site is remediated and the final water capture, transport, treatment, and discharge system is established.

This OM&M Plan~~Manual~~ will be updated annually during the RA by redline/strikeout revisions to add and delete information as the water management system and other components of the RD are constructed throughout the RA. This OM&M Manual will be revised to incorporate the redline/strikeout revisions when significant changes to the water management system have occurred. At the conclusion of the RA, a Remedy Operations and Maintenance (O&M) Plan will be prepared to describe post-RA O&M activities.

P1.1 MODIFICATIONS TO THE PLAN

In the event that changes are made to the WTP (existing or new),) and related facilities or other remedial action components, modifications to this OM&M plan in many cases will be necessary. Modifications to this plan that are minor changes to OM&M procedures intended to improve the operation and maintenance of the facilities can be made without prior United States Environmental Protection Agency (EPA) approval. Modifications will be documented in this OM&M plan and transmitted to the EPA and Tribe within 15 business days after the modification. A submittal letter will be transmitted with the OM&M modification describing the need for the modification and the modification. Examples of minor OM&M changes include, but are not limited to, construction of temporary facilities during maintenance on permanent structures (e.g. bypass pipelines), changing pump or valve types (if the pumps or valves serve a similar function), excavation and repair of plugged pipelines (as long as the pipeline is restored to its original design configuration and intent), upgrade of computer programs and/or upgrade of programmable controller(s), upgrade/improvements to communication systems, and other corrective actions covered by the existing OM&M plan.

Significant Design Changes (SDC) to the existing or new WTP and related facilities must be approved by EPA prior to commencing work. SDCs are defined as substantial changes to the existing designs and/or work plans that require revisions to design calculations, significant modifications to existing drawings to be clearly represented, or significant modifications to existing materials and/or structures. Examples include:

- Installation of flow meters and flumes
- Addition of the sludge press to the existing WTP
- Modifications to structures that alter the design capacity or design criteria
- Modifications to re-route flows or change storage/treatment capacity
- Modifications to disposal procedures (e.g. WTP sludge disposal)
- Modifications that require construction effort, and/or are not covered by the existing OM&M plan.

When Newmont USA, Limited and Dawn Mining Company LLC and Newmont USA Limited (DMC/ (Newmont/DMC) is considering a proposed SDC, DMC/Newmont/DMC will submit to EPA information on the change including descriptions of the change, reasons for the change, drawings (if necessary to show the change), technical specifications, and an implementation schedule. Any SDCs will be documented with a draft Engineering Change Notice (ECN), which

will be submitted 15 days prior to the anticipated date for construction. Draft ECNs will be prepared and submitted to EPA for review. If EPA determines that the ECN does not cover a SDC, comments (if any) will be provided to DMC/Newmont~~/DMC~~ on the ECN. DMC/Newmont~~/DMC~~ will incorporate the EPA comments and issue a final ECN. If EPA determines that the ECN covers a SDN, comments (if any) will be provided on the draft ECN to DMC/Newmont~~. /~~DMC/~~,~~ Newmont~~/DMC~~ will incorporate the EPA comments (if any) and submit a final ECN to EPA for signature prior to implementing the changes noted in the ECN.

When DMC/Newmont~~/DMC~~ is considering a change to existing facilities, and there is a question as to whether the change is a design change or an OM&M change, DMC/Newmont~~/DMC~~ shall notify EPA of the proposed change at least 15 days prior to making the change to request a determination as to whether the change is a design change or an OM&M change except under emergency conditions. Under emergency conditions, maximum possible notice shall be provided to EPA.

Updates to this existing plan will be submitted to EPA within 30 days of final installation or SDCs as defined above.

P1.2 DOCUMENT ORGANIZATION

This overall plan includes information for all site facilities that require operations, monitoring or inspection, and maintenance. Each site facility is included as an individual a~~A~~ttachment to this document as follows:

- The most comprehensive OM&M plan is for the existing WTP and is included as Attachment 1.
- The installation of the existing security fence was completed on August 5, 2009, and the existing Security Fence Alignment Plan is included as Figure 1 in Attachment 2 along with the monthly fence inspection form. Other permanent fences will be installed as the RA progresses and will need to be inspected and maintained during and following the RA. These fences include a permanent wildlife-friendly rail fence around the capped area and a chain-link fence around the WTP and storage ponds associated with the WTP.
- Attachment 3 includes the information for the inspection and maintenance of the existing site access road and culverts.

- Attachment 4 addresses the routine inspection and maintenance for the existing Surface Water Diversions.
- Attachment 5 includes the inspection and maintenance activities associated with the existing Alluvial Groundwater Collection System in the three drainages leading from the Site.
- Attachment 6 discusses the inspection and maintenance for existing Ponds and Tanks.
- Attachment 7 includes the information for the operations and maintenance activities associated with the Filter Press that was installed in the fall of 2013.
- Attachment 8 includes the anticipated inspection and maintenance activities associated with Water Treatment Plant Influent and Effluent Pipelines (FUTURE CONSTRUCTION)
- Attachment 9 includes the anticipated inspection and maintenance activities associated with Dewatering Systems in Pit 3 and Pit 4 (FUTURE CONSTRUCTION)
- Attachment 10 includes the anticipated inspection and maintenance activities associated with Cover Systems (FUTURE CONSTRUCTION)
- Attachment 11 includes the anticipated inspection and maintenance activities for the temporary water management ponds to be installed during RA construction (FUTURE CONSTRUCTION).

Copies of completed inspection forms will be kept initially at the DMC/Newmont~~/DMC~~ Millsite office or during the RA in the contractor's main office located on-site. Additional attachments or revisions to this existing OM&M plan will be incorporated into this document as major components are installed.

P2.0 EXISTING SITE FACILITIES

A seep collection system and pump back system to collect water and direct it back to a pollution control pond and then to Pit 3 was built in 1986, and in 1988 the Midnite Mine WTP~~Water Treatment Plant (WTP)~~ was constructed to treat the water in the open pit, which began operation in 1992.

The Midnite Mine Site Standard Operating Procedures (MM-SOPs) (Tetra Tech, 2009) shall be used to ensure that activities affecting quality meet all regulatory requirements. A copy of the Midnite Mine SOPs are~~will be~~ kept onsite at the WTP and at the Mill Site Office. A master

schedule of activities to be performed and the frequency for each is included as Appendix A to the WTP OM&M (Attachment 1).

Additional facilities including the security fence, access roads and culverts, and surface water diversions requiring periodic inspection and maintenance under the Interim Mechanisms and in the future during the RA are included in this report. The inspection and maintenance for the access roads, culverts, and diversion channels are required quarterly or following a major storm event. Security fence inspection and maintenance is required monthly.

As RA components are installed, this section will be revised to include a description of the new facility.

P3.0 MONITORING AND STANDARDS

The Standard Operating Procedures (SOPs), which are incorporated as part of the Site-Wide Monitoring Plan (SMP), define procedures for sample collection. The SMP, which includes a Quality Assurance Project Plan (QAPP), defines the proposed locations, methods, frequency of sampling, and reporting for surface water, groundwater, and sediment monitoring at the mine site. These documents should be used in conjunction with this OM&M plan to ensure that the monitoring data is properly collected and evaluated.

Following completion of the RA, revegetated areas will be inspected each summer season until the sites achieve 60 percent live vegetation cover and 70 percent total cover that includes live cover and litter. Vegetation surveys will be conducted during each growing season until revegetation success criteria are met. Observed rills and gullies will be repaired as soon as practicable, and the area reseeded and stabilized with mulch or riprap.

In addition to the above surveys, noxious weed surveys will be conducted annually. Should noxious weeds (as defined by the Spokane Tribe of Indians) be documented at the site, control procedures will be taken to eliminate the weed following a weed control program approved by the Tribal Department of Natural Resources. Details regarding the vegetation and noxious weed surveys will be included in the Remedial Action Work~~future updates of this OM&M~~ Plan (RAWP).~~.~~

Access to the facilities addressed by this OM&M Plan will be either by vehicle on the permanent site access roads or on foot. The use of all-terrain vehicles (ATVs) off of the permanent access roads will not be allowed.

P4.0 SUBMITTAL PROCEDURES AND REPORTING

All documents required to be submitted pursuant to the CD shall be submitted electronically and hand delivered or sent by overnight mail to the following persons or to such other persons as the parties hereafter may designate in writing:

1. Documents submitted to EPA shall include one electronic copy and two hard copies sent to:

   Karen Keeley
   ~~Ellen Hale~~
   Remedial Project Manager
   U.S. Environmental Protection Agency
   Region 10 (ECL-113)
   1200 Sixth Avenue, Suite 900
   Seattle, Washington 98101

2. Documents submitted to the Spokane Tribe shall include one electronic copy and one hard copy sent to:

   Spokane Tribe of Indians
   Natural Resources Department
   Attn: Randy Connolly, Superfund Coordinator
   PO Box 480
   Wellpinit, Washington 99040

   (For express mail):
   Spokane Tribe of Indians
   Natural Resources Department
   Attn: Randy Connolly, Superfund Coordinator
   6290-B Ford-Wellpinit Road
   Wellpinit, Washington 99040

In the event of a significant change in conditions or emergency circumstances relating to public health or welfare or the environment related to Work under the CD, DMC/Newmont~~/DMC~~ shall provide notification according to Section XXVI of the Consent Decree.

P5.0 DOCUMENTATION, AVAILABILITY OF INFORMATION, AND RECORD RETENTION

P5.1 CENTRAL FILE

DMC/Newmont~~/DMC~~ shall establish a document control system with the following objectives:

1. Creation of a central file containing all documents pertaining to Work under the CD.
2. Organization of the documents to facilitate retrieval of information.
3. Segregation of documents containing information which DMC/Newmont~~/DMC~~ claims is privileged and confidential.
4. Establishment of procedures to ensure that all documents are routinely placed in the central file.

In addition, DMC/Newmont~~/DMC~~ shall prepare and periodically update an inventory of all documents contained in the central file. The inventory shall contain for each document (1) the document date, (2) the author(s), (3) the recipient(s), and (4) the document title or subject. The DMC/Newmont~~/DMC~~ shall submit the document inventory or an update to EPA upon written request.

P5.2 DOCUMENT MANAGEMENT

The operator shall retain records of all monitoring information, including all calibration and maintenance records, corrective action reports, copies of reports, and data generated. Adequate records will be maintained to document the process by which project objectives are met. Records kept by the operator will be legible, identifiable, and retrievable and will be protected to the extent possible against loss, damage or deterioration. Access to project files will be restricted to project and other authorized personnel only.

The inventory of all required documents contained in the central filing system will be periodically updated. In addition, copies of non-privileged documents will be made available to the EPA and the State upon request. The inventory for each document will contain the following information:

- Document date
- Authors
- Recipients
- Document title or subject

P5.3 DOCUMENT RETENTION

DMC/Newmont~~/DMC~~ shall provide to EPA upon request, copies of all non-privileged documents and information within their possession and/or control or that of their contractors or agents relating to activities at the Site or to the implementation of the CD including but not limited to; sampling, analysis, chain-of-custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, and other documents or information related to the Work.

DMC/Newmont~~/DMC~~ shall preserve for a minimum of ten (10) years after the remedial action has been completed, all records and documents in their possession or control, including the documents in the possession or control of their contractors and agents on and after the Effective Date of the Certificate of Completion that relate in any manner to the Site. DMC/Newmont~~/DMC~~ shall also preserve and shall instruct their contractors and agents to preserve all documents, records and information of whatever kind, nature or description relating to the performance of the Work. At the end of this ten-year period, DMC/Newmont~~/DMC~~ shall notify the ~~U.S.~~ EPA at least ninety (90) days prior to the destruction of any such record, documents, or information and, upon request of the ~~U.S.~~ EPA, DMC/Newmont~~/DMC~~ shall deliver all such documents, records, and information to the EPA.

P6.0 SITE SAFETY

At the start of the RA, the following documents will be used to define the health and safety requirements:

- Health and Safety Plan for the Midnite Mine Superfund Site (WME, 2013) – describes the health and safety requirements for operation of the WTP~~Water Treatment Plant~~.
- Midnite Mine Superfund Site Remedial Action Health and Safety Plan (MWH, 201~~4~~5) – describes the health and safety requirements for the RA construction activities.

P7.0 REFERENCES

MWH Americas, Inc. (MWH), 2015.~~, 2014.~~ Midnite Mine Superfund Site - Remedial Action Health and Safety Plan. Prepared for Dawn Mining Company, LLC and Newmont USA Limited. July.

Tetra Tech, Inc. (Tetra Tech), 2009. Standard Operating Procedures for the Phase I RD/RA: Interim Water Management for the Midnite Mine. Prepared for Dawn Mining Company and Newmont USA Limited. May 5.

Tetra Tech, Inc. (Tetra Tech), 2010. Operation, Maintenance and Monitoring (OM&M) Plan for the Midnite Mine Water Collection System and Water Treatment Plant for the Phase I RD/RA: Interim Water Management for the Midnite Mine.

U.S. Environmental Protection Agency (EPA), 2006. Record of Decision, Midnite Mine Superfund Site, Spokane Indian Reservation, Washington. September.

Worthington Miller Environmental (WME), 2013. Health and Safety Plan for the Midnite Mine Superfund Site. Prepared for Dawn Mining Company, LLC and Newmont USA Limited. June 4.

Attachment P-1

Operation, Maintenance and Monitoring (OM&M) Plan for the Midnite Mine Water Collection System and Water Treatment Plant for the Phase I RD/RA: Interim Water Management for the Midnite Mine

In order to manage the size of this 100~~90~~% design report, this attachment only is included in the electronic submittal. This attachment describes current Site O&M activities, and has not been revised for this submittal.

Note: This OM&M Plan addresses inspection, monitoring, and maintenance activities for the existing water treatment plant and will be used until the existing water treatment facility is taken offline during the implementation of the remedial action. This attachment will be replaced in its entirety when the new water treatment plant is constructed and brought on-line.

Attachment P-2

Security Fence Alignment Plan and Monthly Fence Inspection Form

In order to manage the size of this 100~~90~~% design report, this attachment only is included in the electronic submittal. This attachment describes current Site O&M activities, and has not been revised for this submittal.

Note: This security fence alignment and inspection plan addresses inspection, monitoring, and maintenance activities for the existing security fencing and will be used until the existing security fencing is removed during the implementation of the remedial action. This attachment will be replaced in its entirety when~~the final design documents to address the new inspection and maintenance requirements associated with~~ the final perimeter security fencing around the new water treatment plant and wildlife friendly fencing ~~to be installed~~ around the cover systems is installed.

Attachment P-3

Inspection and Maintenance of Site Access Roads and Culverts

In order to manage the size of this 100~~90~~% design report, this attachment only is included in the electronic submittal. This attachment describes current Site O&M activities, and has not been revised for this submittal.

Note: The inspection and maintenance activities listed in this attachment will be used until the existing access roads and culverts are removed during the implementation of the remedial action. This attachment will be replaced in its entirety when the ~~final design documents to address~~ new ~~inspection and maintenance requirements associated with the~~ final site access road is constructed.

Attachment P-4

Routine Inspection and Maintenance for the Surface Water Diversions

In order to manage the size of this 100~~90~~% design report, this attachment only is included in the electronic submittal. This attachment describes current Site O&M activities, and has not been revised for this submittal.

Note: The inspection and maintenance activities listed in this attachment will be used until the existing surface water diversion facilities are removed during the implementation of the remedial action. This attachment will be replaced in the final design documents to address new inspection and maintenance requirements associated with the final surface water control facilities.

Attachment P-5

Routine Inspection and Maintenance for the Alluvial Groundwater Collection System

In order to manage the size of this 100~~90~~% design report, this attachment only is included in the electronic submittal. This attachment describes current Site O&M activities, and has not been revised for this submittal.

Note: The inspection and maintenance activities listed in this attachment will be used until the existing groundwater collection systems in the Far East, Central, and Western Drainages are removed during the implementation of the remedial action. This attachment will be replaced in its entirety when~~the final design documents to address new inspection and maintenance requirements associated with~~ the final groundwater controls are~~to be~~ installed at the site.

Attachment P-6

Routine Inspection and Maintenance for Ponds and Tanks

In order to manage the size of this 100~~90~~% design report, this attachment only is included in the electronic submittal. This attachment describes current Site O&M activities, and has not been revised for this submittal.

Note: The inspection and maintenance activities listed in this attachment will be used until the existing ponds and tanks are removed during the implementation of the remedial action.

Attachment P-7

Routine Inspection and Maintenance for the Filter Press

In order to manage the size of this 10090% design report, this attachment only is included in the electronic submittal. This attachment describes current Site O&M activities, and has not been revised for this submittal.

Note: This OM&M Plan addresses inspection, monitoring, and maintenance activities associated with the filter press. This attachment will be incorporated in its entirety into the OM&M Plan for new water treatment plant.

Attachment P-8

Routine Inspection and Maintenance for Water Treatment Plant Influent and Effluent Pipelines (Future Construction)

‘

Midnite Mine Superfund Site

10090 Percent Design

WTP Influent and Effluent Pipelines – Operation, Maintenance, and Monitoring Plan

June 2015

July 31, 2014

Prepared for:

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LIST OF ACRONYMS

BODR	Basis of Design Report
BPA	Backfilled Pit Area
CD	Consent Decree
EPA	U.S. Environmental Protection Agency
HDPE	high density polyethylene
~~MWH~~	~~MWH, Americas Inc.~~
NPDES	National Pollutant Discharge Elimination System
OM&M	Operation, Maintenance and Monitoring
ODA	Other Disturbed Areas
RA	remedial action
SDR	standard diameter ratio
Site	Midnite Mine Superfund Site
WCA	Waste Containment Area
WTP	Water Treatment Plant

1.0 INTRODUCTION

Influent pipelines will be used to convey impacted water from backfilled Pit 3, Pit 4, existing extraction well GW-54 location in the Backfilled Pit Area (BPA), and the two Pit 3 toe seep collectors~~three alluvial groundwater dewatering trenches~~ to the new Water Treatment Plant (WTP) and a single effluent pipeline will convey treated water from the WTP to the Spokane River Arm of Lake Roosevelt. Because these influent and effluent pipelines will have similar monitoring and maintenance activities following their construction, they both are~~have been~~ included in this plan. This plan then presents the operation, maintenance, and monitoring (OM&M) activities for the WTP influent and effluent pipelines that will be constructed during the remedial action (RA) at the Midnite Mine Superfund Site (Site).~~Site.~~

As currently planned, implementation of the Selected Remedy will be conducted in three distinct phases with individual components of the overall remedy completed during each phase. As a result, the WTP influent pipeline OM&M activities will be necessary from the time the Waste Containment Area (WCA) cover is installed on Pit 4 during Phase 1, through final installation of the Pit 3 cover system at the end of Phase 3, and into the post-remedy monitoring period. OM&M activities associated with the effluent pipeline will be necessary only after construction of the new WTP is completed and treated water is being discharged to Lake Roosevelt. OM&M activities for other remedial elements that are under construction will be conducted in accordance with the *Remedial Action Site Wide Monitoring Plan* in *Appendix Q of the Basis of Design Report* (BODR; MWH, 20154).

This WTP Influent and Effluent Pipelines OM&M Plan is an attachment to the *Midnite Mine Superfund Site Operation, Maintenance, and Monitoring Plan*, which describes the OM&M for all of the components of the Selected Remedy, which will require monitoring and maintenance.

1.1 PURPOSE, SCOPE, AND OBJECTIVES

The purpose of this WTP Influent and Effluent Pipelines OM&M Plan is to describe the inspection, maintenance and monitoring activities, and to establish frequencies for this work. The primary objectives of this plan are to:

- Monitor and maintain influent and effluent pipelines relative to manhole damage
- Monitor and maintain influent and effluent pipelines relative to pipeline leaks.

To meet these objectives, this WTP Influent and Effluent Pipelines OM&M Plan includes the following:

- Identification of the pipeline runs that require routine inspection, monitoring, and maintenance,
- Documentation of procedures for inspection and maintenance of these pipeline segments, and
- Listing of reporting requirements.

2.0 DESCRIPTION OF WTP INFLUENT AND EFFLUENT PIPELINES

This section of the WTP Influent and Effluent OM&M Plan provides a description of the pipelines to be installed during RA~~remedial action (RA)~~ construction. The configuration of the permanent influent and effluent pipelines as shown in the Midnite pipeline design (Appendix J and Section 10 drawings of the BODR) and discussed in this section are shown on Figures 1 and 2.

2.1 WTP INFLUENT PIPELINES

The influent pipelines mostly will traverse land that will be remediated (i.e., disturbed through mine waste removal) and reclaimed at the end of remediation. As such, the influent pipes during construction will be temporary and will be relocated constantly throughout the remedial action RA process. Due to the highly variable nature the temporary pipeline locations and their alignments, most of the construction and positioning of the temporary pipelines will be left to the selected Contractor's discretion and take place in the field as the land surface changes. Permanent influent pipeline construction will be concurrent with the final cover installation or ground surface remediation/revegetation in areas where covers are not required. The influent pipelines regardless if they are temporary or permanent will be constructed of dual containment high density polyethylene (HDPE) of various sizes and standard diameter ratio (SDR) values. HDPE manholes will be installed at regular intervals to allow maintenance of the pipeline.

2.1.1 Temporary Influent Pipelines

The selected Contractor will be required, through the Drawings and Technical Specifications, to use specific pipeline materials for construction of the temporary piping. They will be required to meet the project performance standards for containment of contaminated water which means continually monitoring the temporary pipelines during the construction process. This process will be straightforward in that most of the temporary lines are above ground. For those that are

subsurface, if a leak is detected it will be repaired and because the temporary pipeline in most cases would be on or buried in contaminated material, it will be cleanup up by excavation and transported to one of the pits for containment.

~~-~~Currently and at the beginning of construction, mine-effected water will be piped directly from Pit 4, Pit 3, and the BPA to the existing WTP for treatment. The existing WTP will be operated until the new WTP is constructed which will be after the NPDES permit for discharge to Lake Roosevelt is approved.

2.1.2 Permanent Influent Pipelines

There will be four primary influent water sources that must be treated during construction and following the RA. These sources are: Pit 3, Pit 4, BPA well GW-54,~~wells~~ and the Pit 3 toe seep collectors~~alluvial dewatering trenches installed in the drainages downhill from the capped areas~~ as depicted on Figure 1. The first permanent pipelines will be installed concurrently with the Pit 4 cover installation. This will be followed by other permanent influent pipeline installation when the subsequent covers are initiated and completed on Pit 3 and the BPA. Permanent influent pipelines from the seep collectors~~dewatering trenches~~ will be installed as mine wastes are removed, the areas are remediated, and the path to the WTP is revegetated.

2.2 WTP EFFLUENT PIPELINE

The selected effluent pipeline alignment is depicted on Figure 2 and leads from the new WTP to Lake Roosevelt. The effluent pipeline is approximately 5.5 miles long and will be constructed of HDPE of various sizes and SDR values as shown on Figure 2. Manholes with H20 traffic rated covers will be installed at regular intervals to allow observation and maintenance of the pipeline.

The pipeline progresses from the new WTP south down what will be the alignment of the proposed future Midnite Mine Access Road until it encounters the Ford-Wellpinit (aka the West End) Road. After passing under the Ford-Wellpinit Road, the pipeline continues downhill in a southerly direction along an unnamed, unpaved 4x4 road until intersecting the Blue Creek Road (BIA Hwy 55). The pipeline then is installed in the Blue Creek Road Bed to the confluence of Blue Creek with the Spokane Arm of Lake Roosevelt (as depicted in more detail in Section 10 of the 100~~90~~% BODR drawings).~~.~~ The effluent pipe enters the lake and the conveyed water is discharged via a subsurface diffuser positioned in the middle of the submerged Spokane River channel.

It should be noted that the design of the effluent pipeline has been held at the 60% design level until the NPDES permitting process has concluded.

3.0 WTP INFLUENT AND EFFLUENT PIPELINE - OPERATION, MAINTENANCE AND MONITORING

WTP Influent OM&M will be performed from the time the final covers are installed in each of the WCAs (i.e., completion of the Pit 4 cover in Phase 1, the Pit 3/BPA cover in Phase 3 of the RA, and remediation/revegetation of the area between the seep collectors~~dewatering trenches~~ and the WTP) and into post-remedy monitoring. As stated previously, Effluent OM&M activities associated with the effluent pipeline will commence once the new WTP is constructed, operational and discharging treated water. Observation and documentation through inspection reports will enable prompt repair scheduling and execution of pipeline repair or maintenance. The monitoring will include visual inspection of the WTP Influent and Effluent pipelines to ensure system integrity is maintained. The monitoring plan, including the individual monitoring tasks, schedule, monitoring criteria, and maintenance, is discussed below.

3.1 WTP INFLUENT PIPELINE

The monitoring requirements for the WTP Influent Pipeline (temporary and permanent) are summarized in Table 1. The inspections will be performed to be protective of the pipeline system. Vehicular access along the dewatering well maintenance roads located on the capped WCA surface will allow the observations from multiple locations along the pipeline alignment as well as access to manholes that will be installed at regular intervals along the pipeline alignments. The WTP influent pipeline will be subjected to the following inspections and monitoring requirements:

1) Routine Inspection:

   a. Manhole Damage – manholes will be observed for signs of structural damage and missing components.

   b. Signs of pipeline leaks – the ground surface along the pipeline alignment will be observed for signs of soil saturation or settlement.

   c. Leak detection – manholes will be monitored for the presence of water or visible flow of water from the containment piping.

The monitoring frequency and unacceptable conditions (action triggers) for each of these monitoring metrics are summarized in Table 1 along with the associated (maintenance) response action.

3.2 WTP EFFLUENT PIPELINE

The monitoring frequency and action trigger requirements for WTP Effluent Pipeline are summarized in Table 2. The inspections will be performed to be protective of the pipeline system. Vehicular access along the Site Access and Blue Creek roads will allow the observations from multiple locations along the pipeline alignment as well as access to manholes that will be installed at regular intervals along the pipeline alignments. ~~-~~The WTP e~~in~~ffluent pipeline will be subjected to the following inspections and monitoring requirements:

1) Routine Inspection:

    a. Manhole Damage – manholes will be observed for signs of structural damage and missing components.

    b. Signs of pipeline leaks – the ground surface along the pipeline alignment will be observed for signs of soil saturation or settlement.

The unacceptable conditions (action triggers) for each of these monitoring metrics are summarized in Table 2 along with the associated (maintenance) response action.

It should be noted that the monitoring requirements for the Effluent Pipeline may be modified as the design is advance once the NPDES permitting process is finalized.

3.3 MAINTENANCE OF WTP INFLUENT AND EFFLUENT PIPELINES

The purpose of the maintenance procedures for the WTP Influent and Effluent Pipelines is to ensure that these pipelines perform as designed and that maintenance activities ensure their long-term integrity and viability. This is accomplished by ensuring the materials and maintenance practices are consistent with the final design and specifications. Below the maintenance activities for the influent and effluent pipelines are presented.

It should be noted that the maintenance requirements for the Effluent Pipeline may be modified as the design is advance once the NPDES permitting process is finalized.

3.3.1 Manhole Damage

Manholes located along or within Site access roads are susceptible to damage. If damage is noted during routine inspections (as defined in Tables 1 and 2), repair procedures may include

replacement of manhole covers and repair or replacement of concrete pads. Corrective action repairs and maintenance will be prioritized following inspections indicating there are problems in accordance with Tables 1 and 2.

3.3.2 Pipeline Leaks

Leaks in HDPE pipelines are extremely rare and may develop due to defects during fusion welding of individual pipe sections together or damage during backfill placement. Visual observations of saturated soil or settlement of the ground surface along the pipeline alignment are all indicative of pipeline leaks.

Influent Pipeline – Faulty materials and/or construction, or damage to the influent pipeline which results in leakage of pipelines on the influent side during construction are of relatively minor concern because they overlie contaminated materials. However, long term the permanent influent pipelines will be installed within clean cap materials and any leakage of contaminated water then is of major concern.

Effluent Pipeline – Faulty materials and/or construction, or damage to the effluent pipeline which results in leakage from effluent pipeline is problematic for a variety of reasons, but is not a major environmental concern because the water has been treated and only a few contaminants remain in the water which are mixed in Lake Roosevelt waters to acceptable standards. As a result, the effluent pipeline maintenance schedule is less stringent than the influent pipeline monitoring and maintenance schedule.

Repairing influent and effluent pipeline leaks may involve excavation to expose damaged pipe, cutting and removing damaged piping, and fusion welding of replacement pipe sections. Corrective action repairs and maintenance will be prioritized following inspections indicating there are problems in accordance with Tables 1 and 2.

3.3.3 Pipeline Maintenance

The influent pipeline will be observed to determine if there is water flowing from the containment pipe into the manholes. Observable flow in the manhole would indicate a pipeline leak. Corrective action repairs and maintenance will be prioritized following inspections indicating there are problems in accordance with Table 1.

The effluent pipeline will be observed to determine if there is water flowing from manhole to manhole down the entire alignment to the Lake Roosevelt. Lack of observable flow could mean a pipeline leak or plugged piping. Once it has been verified that a pipeline leak is not occurring,

the individual manhole overflow piping will be inspected to determine which overflow is active to identify the section of pipe that has become blocked. Once the section of blocked piping has been identified, maintenance of the pipeline to remove obstructions may be required. This typically involves the use of a water jet or pig to dislodge materials that have formed a plug in the pipe. Corrective action repairs and maintenance will be prioritized following inspections indicating there are problems in accordance with Table 2.

4.0 RECORD KEEPING AND REPORTING

4.1 GENERAL

Documentation of WTP Influent and Effluent Pipelines OM&M activities will be completed and retained pursuant to the requirements of the Consent Decree (CD; (EPA, 2011). The final *OM&M Plan* will include a Monitoring and Maintenance Activity form.

4.2 REPORTING

In accordance with the *Midnite Mine Superfund Site Operation, Maintenance, and Monitoring Plan,* to which this plan is attached, an annual summary report of the monitoring and maintenance activities will be prepared pursuant to all Site OM&M activities related to:

- Cover System and Other Disturbed Areas (ODAs) Inspection and Maintenance
- Midnite Mine WTP~~Water Treatment Plant~~
- Fence Inspection and Maintenance
- Site Access Roads and Culverts
- Surface Water Diversions
- Alluvial Groundwater Controls
- Ponds and Tanks
- WTP Influent and Effluent Pipelines
- Pit Area Dewatering and Underdrain Wells

This yearly summary report will be transmitted to the EPA by March 31 annually, summarizing the prior year's activities.

5.0 REFERENCES

MWH Americas, Inc. (MWH), 2015~~4~~. Midnite Mine Superfund Site 100~~Preliminary (90~~ Percent~~)~~ Basis of Design Report. Prepared on behalf of Newmont USA Limited and Dawn Mining Company for submittal to U.S. Environmental Protection Agency, Region 10. June~~July 31~~.

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.

Attachment P-9

Routine Inspection and Maintenance for Dewatering, Underdrain, and Alluvial Groundwater Control Systems (Future Construction)

Midnite Mine Superfund Site

100~~90~~ Percent Design

Underdrain, Waste Rock and BPA Dewatering Systems and Alluvial Groundwater Control Systems – Operation, Maintenance, and Monitoring Plan

June 2015

~~July 2014~~

Prepared for:

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LIST OF ACRONYMS

BODR	Basis of Design Report
BPA	backfilled pit area
CD	Consent Decree
DMC	Dawn Mining Company, LLC
DOPM	DMC Operating Procedures Manual
EPA	U.S. Environmental Protection Agency
HDPE	high density polyethylene
~~MWH~~	~~MWH Americas, Inc.~~
ODA	Other Disturbed Area~~s~~
OM&M	Operation, Maintenance and Monitoring
PCP	Pollution Control Pond
PVC	Polyvinyl chloride
RA	remedial action
ROD	Record of Decision
Site	Midnite Mine Superfund Site
SLCB	slag-cement bentonite
SMP	Site-Wide Monitoring Plan
Tribe	Spokane Tribe of Indians
~~WCA~~	~~waste containment area~~
WTP	water treatment plant

1.0 INTRODUCTION

A variety of groundwater pump back systems will be required to comply with the Consent Decree (CD; EPA, 2011) requirements to contain and treat contaminated water on Midnite Mine Superfund Site (Site) prior to offsite discharge. Three systems will be used to capture groundwater prior to treatment. These systems are:

- Underdrain and Waste rock dewatering pump back systems will be needed for the collection and conveyance of mine-affected water from Pit 3/Pit 4 to the Water Treatment Plant (WTP) during the remedial action (RA) at the Site. During the RA construction, one underdrain pump back system consisting of two side-by-side wells and one waste rock dewatering pump back system consisting of two side-by side wells will be constructed and operated in both Pit 3 and Pit 4.
- One existing extraction well installed within the Boyd Pit waste rock (GW-54) will be used to dewater the Backfilled Pit Area (BPA) and a redundant well will be installed as a backup in case of maintenance issues with GW-54.). ~~Pending the results of on-going pumping tests, additional wells within the BPA could be added prior to the 100 percent design submittal if the single well does not prove to be adequate for capture of groundwater within the BPA.~~
- In addition, an alluvial groundwater controls system consisting of a collection trench and a downgradient low permeability barrier wall will be installed in each of the drainages at the Site (i.e., the Western, Central, and Eastern Drainages). This alluvial groundwater collection system is intended to intercept impacted groundwater in the alluvial and shallow extremely-weathered bedrock and convey it for treatment to the WTP.

These systems will be operated during both the RA construction period and into the long-term operations and monitoring period following completion of the RA construction. This plan presents the operation, maintenance, and monitoring (OM&M) activities for the waste rock dewatering and underdrain pump back systems, as well as the alluvial groundwater control systems in each of the drainages that will be constructed during the RA. The locations of these systems are shown in Figure 1.

As currently planned, implementation of the Selected Remedy will be conducted in three distinct phases with individual components of the overall remedy completed during each phase. As a result, Waste Rock Dewatering and Underdrain System OM&M activities will be necessary from

the time waste placement in Pit 4 is initiated during Phase 1, through the start of Pit 3 dewatering in Phase 2 as the backfilling of waste begins, and into the post-remedy monitoring period. Alluvial groundwater control system OM&M activities will begin in Phase 1 and continue into the post-construction monitoring period.

This Waste Rock Dewatering, Underdrain, and Alluvial Groundwater Control Systems OM&M Plan is an attachment to the *Midnite Mine Superfund Site Operation, Maintenance, and Monitoring Plan*, which describes the OM&M for all of the components of the Selected Remedy, which will require monitoring and maintenance.

1.1 PURPOSE, SCOPE, AND OBJECTIVES

This Waste Rock and BPA Dewatering, Underdrain, and Alluvial Groundwater Controls System OM&M Plan describes the inspection, maintenance and monitoring activities, and to establish frequencies for this work. The primary objectives of this plan are to:

- Monitor and maintain the waste rock dewatering and underdrain systems relative to specific design criteria (i.e., upper and lower water elevations) using water-level monitoring equipment.
- Monitor and maintain the Boyd Pit extraction well (GW-54) relative to specific design criteria (i.e., upper and lower water elevations) using water-level monitoring equipment.
- Monitor and maintain the alluvial groundwater control systems relative to specific design criteria (i.e., upper and lower water elevations) using water-level monitoring equipment.
- Monitor and maintain submersible pumps installed in all of these systems.

To meet these objectives, this Waste Rock Dewatering, Underdrain, and Alluvial Groundwater Controls OM&M Plan includes the following:

- Identification of the system components that require routine inspection, monitoring, and maintenance~~,~~
- Documentation of procedures for inspection and maintenance of these components~~, and~~
- Listing of reporting requirements~~.~~

Performance monitoring requirements for monitoring wells associated with these systems is presented in the Site-wide Monitoring Plan (SMP) which is attached to the Midnite Mine 100 Percent Basis of Design Report (MWH, 2015).

2.0 DESIGN AND OPERATION OF THE PIT UNDERDRAIN, WASTE ROCK AND BPA DEWATERING SYSTEM AND THE ALLUVIAL GROUNDWATER CONTROLS SYSTEM

This section of the Waste Rock Dewatering, Underdrain, and Alluvial Groundwater Controls OM&M Plan provides a description of the individual dewatering systems to be constructed during the RA.

2.1 WASTE ROCK DEWATERING AND UNDERDRAIN SYSTEMS

Currently, impacted water is stored in Pit 3 and Pit 4 prior to treatment at the existing WTP. Over the course of the RA, these pits will be backfilled, and groundwater that enters the underdrain and meteoric water that falls on the backfilled waste before it is capped will be collected and conveyed to the WTP. The design and materials of construction for the Pit 3 and Pit 4 waste rock dewatering and underdrain systems are identical and details are present below.

Pit 3 and Pit 4 will have two similar systems for capture and pump back of mine affected water. The lower system is referred to as the underdrain dewatering system and the upper system is referred to as the sub-waste rock dewatering system. To the extent practicable, water will be kept from accumulating in Pit 3 and Pit 4 during and after consolidation of waste within the pit.

2.1.1 Lower Underdrain Dewatering System

Following removal of the sediment from each of the pits during the RA, bedrock will be excavated using heavy equipment, blasting, or other mean necessary, to create a discrete approximately 20 foot by 20 foot (square) by 20 foot (deep) sump. Sumps in both pits contain two vertical risers that will be installed for the removal of groundwater. This lower underdrain dewatering system's purpose is to collect groundwater before it contacts the overlying reactive mine waste backfill in the pits.

Groundwater accumulating in the underdrain sump will be isolated between high and low water levels which effectively confines the water removal to the excavated sump itself and keeps the overlying drain gravel drained. Water collecting in these sumps will be conveyed by pumping through the vertical risers which penetrate the cover system and is piped the WTP for treatment. The underdrain sump risers will be constructed from stainless-steel well casing, which during construction will be incrementally extended and remain above the backfill surface as waste is being placed in both Pit 4 and Pit 3. Stainless steel well casing will be used for the dewatering risers because of its superior strength, which will allow it to withstand anticipated loadings from

the waste backfill (relative to other corrosion resistant pipe materials such as PVC and HDPE piping). In addition, the stainless steel specified will be much less susceptible to corrosion relative to other high-strength pipe materials.

Because this lower dewatering zone has to convey groundwater inflows effectively, it will be constructed from coarse, non-reactive, highly conductive rock in the excavated sump and similarly permeable gravel overlying the sump drain rock. These materials will be crushed and screened to the specified size from the Hillside Waste Rock Ppile. The drain gravel will be placed in the bottom of each pit to depth which varies depending on the pit geometries. The underdrain sump dewatering system design is shown on Drawings 4-12/4-8176 (Pit 4) and Drawings 4-3736/4-3937 (Pit 3).

2.1.2 Upper Waste Rock Dewatering System

A geomembrane liner (i.e., a sub-waste liner) will be placed on the surface of the underdrain drain rock/gravel to isolate this lower underdrain system from seepage and sediment transport through the overlying waste rock. Any meteoric water collecting on the geomembrane will be conveyed by pumping from a sump in the sub-waste liner through a vertical riser (a waste rock dewatering well) to piping that delivers the water to the WTP for treatment. The waste rock dewatering risers will be constructed from materials and maintained during construction similar to the vertical risers used for the underdrain dewatering system discussed above. The configuration of the Pit 3 and 4 underdrain and sub-waste liner dewatering systems are shown Drawings 4-1312 thru 4-1514 (Pit 4) and 4-4036 thru 4-4139 (Pit 3).

The underdrain and waste rock liner sumps will be dewatered using submersible pumps installed within the backfilled sump. The well-discharge pipes for both the underdrain and sub-waste liner systems will be extended in coordination with the extension of well casings so as to remain above the backfill surface as waste is being placed in Pit 4 and Pit 3. Duplicate dewatering risers, including pumps and piping, will be installed to avoid shutdowns in the dewatering system due to maintenance or mechanical failure during the RA and long-term operations and monitoring period. Therefore, in each of the backfilled pits there will be two wells installed in the underdrain position (the sumps) and two wells installed above the sub-waste liner.

2.1.3 Underdrain Down Time

Concern has been raised about the time period that the underdrain system can be off-line before water entering the backfilled pits fills the drain rock and encounters the overlaying waste

rock. Several considerations are important when discussing the length of time that is necessary to correct a problem encountered in the lower underdrain dewatering system, including complete failure of the pumping system (the maintenance response time). The lower dewatering systems in both Pit 3 and 4 maintain the groundwater level in the excavated sump at a minimum of 20 feet beneath the subwaste liner and overlying waste rock.

First, there is a redundant pump and vertical dewatering well in the underdrain dewatering sumps in both pits. So it is highly unlikely that both pumps and their sumps would fail at the same time. Secondly, if both wells fail in one of the underdrain systems, then the overlying drain gravel will have to be saturated before the backfilled waste rock would be encountered. The existing pits effectively create a bathtub to contain the rising groundwater. The Table 1 shows the storage capacity (gallons) in each pit and the assumed porosity, the groundwater inflow rate, and the length of time that would be necessary to fill this space.

Table 1 – Estimated Time Period to Flood Drain Rock

Pit Name	Porosity	Storage Capacity (gallons) approximate	Groundwater Inflow Rate (Gallons/min)	Time to Flood Waste Rock (days) approximate
Pit 4	30%	1,100,000	13.1	58
Pit 3	30%	370,000	17.5	15

2.2 BPA DEWATERING SYSTEM

Initially, two existing dewatering wells located in the BPA will be used to remove water from the BPA. Water levels maintained by the BPA dewatering system will be maintained at a level that minimizes hydraulic head in the BPA while also minimizing the potential for scaling and fouling of the dewatering system. The locations of these existing wells are shown on Drawing 4-952. These existing wells are located in the two main pits in the BPA complex: 1) GW-54 is located in the Boyd Pit and 2) GW-58 is located in Pit 2 West.

A BPA dewatering test program was completed~~currently is underway~~ to determine effectiveness of these two wells and to provide design information for a system of dewatering wells intended for long-term dewatering. This test program was~~is being~~ conducted in accordance with the approved *Backfilled Pits Area Pumping Plan* (WME, 2013). The objectives of the testing program we~~a~~re to evaluate:

- The operating condition of existing wells and equipment in Pit 2 and the Boyd Pit for use in initial dewatering of the BPA.
- The effects of varying water levels and pumping schemes on groundwater water levels within the waste rock backfill and surrounding bedrock to provide optimal water levels and dewatering well configurations for long-term dewatering of the BPA.

As indicated in the Work Plan, now that BPA dewatering has commenced, it will be continued throughout the design process, the RA construction, and after construction.

Based on preliminary results from the dewatering test program, BPA well GW-54 located in the Boyd Pit appears to provide the necessary hydraulic performance to dewater the entire BPA. Therefore, the BPA dewatering system will consist of a single groundwater extraction well, ~~–~~ GW-54, located ~~installed~~ in the waste rock contained in the backfilled Boyd Pit. Over time, additional wells may be installed to provide redundancy to the dewatering system and allow for continued operation in the event of a well failure, similar to what is proposed for the Pit 3 and Pit 4 dewatering system. However, it is possible that when the cover is installed over the BPA, the groundwater influx to the BPA may be reduced to insignificant amounts because the source of water to the BPA has been cut off, and pumping could be discontinued or greatly reduced. In any case, water removed from the BPA by this well will be conveyed to the storage ponds (Pit 3, South Pond, West Pond, or WTP Pond) depending on the phase of RA construction at the time of removal followed by treatment at the WTP.

2.3 ALLUVIAL GROUNDWATER CONTROLS

Groundwater in the alluvium in the Western, Central, and Eastern Drainages has been identified as exceeding concentrations listed in Table 8-2 of the Record of Decision (ROD) (EPA, 2006). Alluvial pump back systems have been installed and currently are operating in these drainages as part of interim improvements to the water management system. The alluvial groundwater controls described in this OM&M Plan will replace those systems and will be located farther downstream in the Western, Central, and Far East~~Eastern~~ Drainages as shown on Drawings 7-1~~, 7-2,~~ and 7-9.

The alluvial groundwater control system in each of these drainages will consist of an extraction trench installed immediately upslope of a low-permeability barrier wall. The extraction trench will be excavated through the alluvium, residual soils and extremely-weathered bedrock to the point of hydraulic excavator refusal in competent bedrock downgradient of the Mine Area. The low-permeability barrier wall will be installed, also to depths corresponding to excavator refusal

in competent bedrock immediately downgradient of the extraction trench to increase capture efficiency.

The extraction trenches will be backfilled from the trench bottoms to the elevation of a level working platform with drain sand. Groundwater in the trench will be collected in slotted drain pipe installed near the bottom of the trench as shown on Drawings 7-5, 7-8, and 7-11. A vertical riser will be connected to the drain pipe near the low-point of the extraction trench. Groundwater will be extracted from the trenches by pumping intermittently via submersible pumps and discharge pipes installed in each of the pump risers. Initially, groundwater from the extraction trenches will be conveyed to the Pollution Control Pond (PCP), and from there it will be conveyed to the storage ponds and WTP. Once the PCP is decommissioned (in Phase 3), groundwater will be conveyed directly to the WTP Equalization Pond.

Low-permeability barrier walls will be constructed immediately downgradient of the extraction trenches, as shown on Drawings 7-3, 7-6, and 7-10, in order to increase the capture efficiency of the these trenches. The barrier wall will be excavated from a working platform through the underlying alluvium and weathered bedrock materials to a depth where practical excavator refusal is reached. The excavations will be continued into either valley wall as shown on the Drawings 7-45, 7-78, and 7-11 to the point where the working platform contact with the valley wall is reached. Although it is anticipated that the barrier walls will be constructed as slag-cement bentonite (SLCB) slurry walls, it is possible that other methods (such as soil mixing) may be used. Upon completion of the barrier wall, the wall will be allowed to harden to the point where it will not be damaged by backfilling and then covered with a minimum of 2 feet of soil to prevent damage due to desiccation or erosion. The ground surface in the work area then will be restored to its original contours, and areas of disturbance revegetated with native seed mix in accordance with project requirements.

3.0 UNDERDRAIN, WASTE ROCK, AND BPA DEWATERING SYSTEMS, AND ALLUVIAL GROUNDWATER CONTROL SYSTEM - OPERATION, MAINTENANCE AND MONITORING

Underdrain and Waste Rock Dewatering Systems and Alluvial Groundwater Control System OM&M will be performed from the time of Pit 4 backfilling is commenced (in Phase 1) and into long-term operation and monitoring. Observation and documentation through inspection reports will enable prompt repair scheduling and execution of pond repair or maintenance. The

monitoring plan, including the individual monitoring tasks, schedule, monitoring criteria, and maintenance, is discussed below.

Access to the general vicinity of these facilities will be via the existing site roads and later by the permanent access roads. In those cases where the facilities are not immediately adjacent to the existing site or permanent access roads, final access will be via foot.

3.1 UNDERDRAIN, WASTE ROCK, AND BPA DEWATERING SYSTEM OPERATION

Groundwater from the Pit 3/Pit 4 underdrain and waste rock dewatering systems as well as groundwater from the BPA dewatering system will be transferred to storage ponds or the WTP via pumps and conveyed initially by temporary influent pipelines. At the conclusion of RA construction, the water will be conveyed via permanent influent pipelines to the new WTP. Details regarding the OM&M of these pipelines are presented in the *WTP Influent and Effluent Pipelines OM&M Plan* (MWH, 2015~~4~~) which is included as an attachment to the *Midnite Mine Superfund Site Operation, Maintenance, and Monitoring Plan*.

Operation of the underdrain, waste rock, and BPA dewatering systems will be performed in accordance with a new DMC Operating Procedures Manual (DOPM) that will be prepared prior to the initiation of Phase 1 of the RA.

3.2 ALLUVIAL GROUNDWATER CONTROL SYSTEM OPERATION

Water from the alluvial groundwater control pump back systems will initially be conveyed to the PCP, and from there it will be conveyed to the storage ponds and WTP. Once the PCP is decommissioned (in Phase 3), groundwater will be conveyed directly to the WTP Equalization Pond.

Operation of the alluvial groundwater control pump back systems will be performed in accordance with a new DOPM that will be prepared prior to the initiation of Phase 1 of the RA.

3.3 UNDERDRAIN, WASTE ROCK, AND BPA DEWATERING SYSTEMS - INSPECTION AND MONITORING

The monitoring requirements for the Pit 3/Pit 4 waste rock dewatering, underdrain pump back, and BPA dewatering pump back systems are summarized in Table 2. Vehicular access along existing site roads and later along permanent access roads will allow observation of these

systems. The Pit 3/Pit 4 underdrain and waste rock dewatering systems and BPA dewatering system will be subjected to the following inspections and monitoring requirements:

1) Routine Inspection:

   a. Waste Rock Underdrain / Dewatering Vaults – the surface completions will be inspected for damage.

   b. BPA Dewatering Wells – the surface completion will be inspected for damage.

   c. Pumps – the submersible pumps will be periodically inspected for signs of wear

   d. Water Level Monitoring Equipment – Equipment used for monitoring of water levels in the waste rock dewatering and underdrain extraction risers will be checked for proper operation.

2) Routine Measurements:

   a. Survey elevation of Waste Rock Underdrain / Dewatering Vaults

   a. Water Level Monitoring

   b. Flow Rates to individual extraction pumps.

The monitoring frequency and unacceptable conditions (action triggers) for each of these monitoring metrics are summarized in Table 2 along with the associated (maintenance) response action. Please note that because there are redundant vertical risers in both the underdrain and the waste rock sumps the urgency of repairs is not as stringent as some of the other designed elements which require monitoring and maintenance or repairs. Also refer to Table 1 that summarizes the worst case scenario in the Pits 3 and 4 underdrain system when it is assumed that both the primary dewatering well and its backup are down for repair.

3.4 ALLUVIAL GROUNDWATER CONTROL SYSTEM - INSPECTION AND MONITORING

The monitoring requirements for the alluvial groundwater control pump back systems are summarized in Table 3. ~~Vehicular access along existing site roads and later along permanent access roads will allow observation of the systems.~~ The alluvial groundwater control pump back systems will be subjected to the following inspections and monitoring requirements:

3) Routine Inspection:

   a. Pump Vaults – the surface completions will be inspected for damage.

b. Pumps – the submersible pumps will be periodically inspected for signs of wear

c. Water Level Monitoring Equipment – Equipment used for monitoring of water levels in the alluvial groundwater control extraction risers will be checked for proper operation.

d. Surface vegetation. This inspection is to observe and document the establishment of vegetation on the disturbed areas that will require revegetation. This inspection to include noxious weed surveys.

4) Routine Measurements:

a. Vegetation Survey

b. Water Level Monitoring

c. Flow Rates to individual extraction pumps.

The monitoring frequency and unacceptable conditions (action triggers) for each of these monitoring metrics are summarized in Table 3 along with the associated (maintenance) response action.

3.5 MAINTENANCE OF UNDERDRAIN,WASTE ROCK, AND BPA DEWATERING SYSTEM

The purpose of the maintenance procedures for the underdrain and waste rock dewatering systems (including the BPA dewatering system) is to ensure that these systems perform as designed and that maintenance activities ensure their long-term integrity and viability. This is accomplished by ensuring the materials and maintenance practices are consistent with the final design and specifications. Below the maintenance activities for the underdrain and waste rock dewatering systems are presented.

3.5.1 Pumps

Depending on water chemistry, submersible pumps can be susceptible to fouling. In addition, pump components are susceptible to normal wear and tear during operation. Maintenance of the submersible pumps will be conducted in accordance with manufacturer's recommendations.

3.5.2 Water Level Monitoring Equipment

Pressure transducers in the waste rock dewatering risers will be checked periodically for proper operation in accordance with manufacturer's recommendations.

3.6 MAINTENANCE OF ALLUVIAL GROUNDWATER CONTROL SYSTEMS

The purpose of the maintenance procedures for the alluvial groundwater control systems is to ensure that these facilities perform as designed and that maintenance activities ensure their long-term integrity and viability. This is accomplished by ensuring the materials and maintenance practices are consistent with the final design and specifications. Below the maintenance activities for the alluvial groundwater control systems are presented.

3.6.1 Pumps

Depending on water chemistry, submersible pumps can be susceptible to fouling. In addition, pump components are susceptible to normal wear and tear during operation. Maintenance of the submersible pumps will be conducted in accordance with manufacturer's recommendations.

3.6.2 Water Level Monitoring Equipment

Pressure transducers in the alluvial groundwater extraction risers will be checked periodically for proper operation in accordance with manufacturer's recommendations.

3.6.3 Vegetation Maintenance

Revegetated areas may require maintenance to ensure success criteria are met and maintained for percent cover and plant density as identified on Table 3. Initial revegetation of the disturbed areas surrounding the individual alluvial groundwater control systems is described in the *Revegetation Plan* attached to Appendix D of the Basis of Design Report (BODR; ~~(~~MWH, 2015~~4~~). In the event that noxious weeds become established in revegetated areas, control practices will be implemented.

Chronically poor plant growth may signal a need for fertilization or amendments to improve soil conditions. In the event of vegetative die-off or stress, the soils will be evaluated and treated to revitalize vegetation. If necessary, a plan for the application of such nutrients or soil amendments will be submitted for approval to EPA and the Tribe.

4.0 RECORD KEEPING AND REPORTING

4.1 GENERAL

Documentation of Waste Rock Dewatering, Underdrain, and Alluvial Groundwater Control System OM&M activities will be completed and retained pursuant to the requirements of the CD (EPA, 2011). ~~The final *OM&M Plan* will include a Monitoring and Maintenance Activity form.~~

4.2 REPORTING

In accordance with the *Midnite Mine Superfund Site Operation, Maintenance, and Monitoring Plan,* to which this plan is attached, an annual summary report of the monitoring and maintenance activities will be prepared pursuant to all Site OM&M activities related to:

- Cover System and other disturbed areas (ODAs) Inspection and Maintenance
- Midnite Water Treatment Plant
- Fence Inspection and Maintenance
- Site Access Roads and Culverts
- Surface Water Diversions
- Alluvial Groundwater Controls
- Ponds and Tanks
- WTP Influent and Effluent Pipelines
- Pit Area Dewatering and Underdrain Wells

This yearly summary report will be transmitted to the EPA by March 31 annually, summarizing the prior year's activities.

5.0 REFERENCES

MWH Americas, Inc. (MWH), 20154. Midnite Mine Superfund Site 100~~Preliminary (90~~ Percent~~)~~ Basis of Design Report. Prepared on behalf of Newmont USA Limited and Dawn Mining Company for submittal to U.S. Environmental Protection Agency, Region 10. June~~July 31~~.

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TABLES

FIGURES

Attachment P-10

Routine Inspection and Maintenance of Cover Systems (Future Construction)

Midnite Mine Superfund Site

10090 Percent Design

Attachment P10 – Cover System and Other Disturbed Areas – Operation, Maintenance, and Monitoring Plan ~~ATTACHMENT P10 – COVER SYSTEM AND OTHER DISTURBED AREAS - OPERATION, MAINTENANCE, AND MONITORING PLAN~~

June 2015~~May 2014~~

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Figure 3-1 Typical Settlement Plate

LIST OF ACRONYMS/ABBREVIATIONS

BODR	Basis of Design Report
BPA	backfilled pit area
EPA	U.S. Environmental Protection Agency
GDL	geocomposite drainage layer
LLDPE	linear low-density polyethylene
ODAMWH Montgomery Watson Harza	
ODAs	other disturbed areas
OM&M	Operation, Maintenance and Monitoring
RA	remedial action
Site	Midnite Mine Superfund Site
Tribe	Spokane Tribe of Indians
WCA	waste containment area
WTP	water treatment plant
WME	Worthington Miller Environmental LLC

P1.0 INTRODUCTION

The Waste Containment Area (WCA) will be backfilled and capped as described in the Remedial Design for the Midnite Mine Superfund Site (~~the~~ Site). The areas adjacent to the WCA, known as other disturbed areas (ODAs), contain the mine wastes or contaminated soils that will be removed as part of the Selected Remedy and backfilled into the WCA. The ODAs will be reclaimed concurrently with final cover system construction in the WCA. Because these areas will have similar monitoring and maintenance activities following their construction, they both have been included in this plan. This plan then presents the operation, maintenance and monitoring (OM&M) activities for the WCA cover system that will be constructed and the associated ODAs that will be remediated and revegetated during the remedial action at the Site.

As currently planned, implementation of the Selected Remedy will be conducted in three distinct phases with individual components of the overall remedy completed during each phase. As a result, the Cover System and OM&M activities will be necessary from the time the WCA cover is installed on Pit 4 during Phase 1, through final installation of the Pit 3 cover system at the end of Phase 3, and into the post-remedy monitoring period. OM&M activities for other remedial elements that are under construction will be conducted in accordance with the *Remedial Action Site Wide Monitoring Plan* in *Appendix Q of the Basis of Design Report* (BODR; MWH, 2015~~3~~).

This Cover System and ODAs OM&M Plan is an attachment to the *Midnite Mine Superfund Site Operation, Maintenance, and Monitoring Plan*, which describes the OM&M for all of the components of the Selected Remedy, which will require monitoring and maintenance.

P1.1 PURPOSE, SCOPE, AND OBJECTIVES

The purpose of this Cover System and ODAs OM&M Plan is to describe the inspection, maintenance and monitoring activities, and to establish frequencies for this work. The primary objectives of this plan are to:

- Monitor and maintain cover system relative to erosion
- Monitor and maintain cover system relative to veneer stability
- Monitor and maintain cover system to ensure vegetation success
- Monitor and maintain the cover system area stormwater diversion and runoff structures~~.~~
- Monitor and maintain the cover system engineering controls~~.~~

To meet these objectives, this Cover System OM&M Plan includes the following:

- Identification of the WCA Cover System and other disturbed areas that require inspection, monitoring, and maintenance~~,~~
- Documentation of procedures for inspection and maintenance of these areas~~, and~~
- Listing of reporting requirements~~.~~

P2.0 DESCRIPTION OF WCA COVER AND DISTURBED AREAS RECLAMATION

This section of the Cover System OM&M Plan provides a description of the various Site areas that will be disturbed during remedial action (RA) construction and require cover systems and/or revegetation. The various disturbance area locations discussed in this section are shown on Figure 2-1.

P2.1 WASTE CONTAINMENT AREA COVER SYSTEM

The WCA includes the areas where Site mine wastes will be or have been placed in Pits 3 and 4, the Backfilled Pit Area (BPA), and Area 5 as described in the BODR (MWH, 2015~~3~~). A continuous surface cover will be constructed over the WCA as depicted on Figure 2-1. The cover will be revegetated to physically stabilize the surface cover. The proposed cover system in the WCA will consist of the following components:

1) Soil cover, with a total design soil-cover thickness of 3 feet comprising 2.5 feet of cover soil and 0.5 feet of topsoil or growth media.

2) Geomembrane layer consisting of a 40-mil (1.0 millimeter) thickness linear low-density polyethylene (LLDPE) with a textured top surface to be placed over mine waste surface and under the soil cover.

3) Geocomposite drainage layer (GDL) in areas where mine waste are sloped steeper than a 15 percent grade. The GDL will be installed between the soil and geomembrane layers to reduce potential pore water build up in the slope to enhance slope stability.

P2.2 OTHER DISTURBED AREAS

The ODAs at the Site are those areas adjacent to the WCA that either require revegetation where mine wastes (including contaminated soils) are excavated for WCA consolidation or areas where construction activities will result in removal of surface vegetation. The ODAs are shown on Figure 2-1. These ODAs will be revegetated as described in the following paragraphs in an effort to return the Site to a condition that supports historic land uses. The Site ODAs have been categorized based upon topography and include: flat-lying areas (sloped at 3:1 horizontal to vertical [h:v] or flatter) and steeper areas (steeper than 3h:1v). Other ODAs requiring revegetation include the existing East and West haul roads and other existing Site roads that will be removed as part of the RA.

Mine waste in these ODAs will be excavated and transported to the WCA. Contaminated soil will be removed to a depth where either soil cleanup criteria are met or bedrock is encountered in the excavation, at which point excavation will be terminated. In order to support revegetation, a one-foot thick soil layer will be placed over ODAs where slopes are flatter than 2h:1v or where ODA waste cleanup results in excavations that expose bedrock on slope areas flatter than 2h:1v.

P2.2.1 Flat-Lying Areas

Relatively flat-lying areas will be revegetated in a similar manner regardless of whether cleanup excavations are terminated in native soil or bedrock, except for site preparation prior to seeding and planting. Areas excavated to bedrock will be ripped to a depth of 18 inches prior to placement of the one-foot surface soil layer. The soil layer will be scarified to a 12-inch depth to reduce equipment compaction and disked to a six inch depth as a final seedbed treatment prior to seeding and planting.

Areas where native soil remains after waste cleanup will be scarified to a 12- to 18-inch depth and then disked to a 6-six inch depth as a final seedbed treatment prior to seeding and planting. Seeding of grasses and forbs in flat-lying areas will be by hydroseeding and hydromulching. Shrubs and trees will be planted as seedlings one year after seeding of grasses and forbs.

P2.2.2 Steeper Disturbed Areas

There are two types of steep ODAs that will require revegetation and long-term monitoring. The first are steep areas (steeper than 3h:1v, but flatter than 2h:1v) where either native soil or exposed bedrock may remain upon completion of waste and contaminated soil excavations. The second type of steep ODAs are steeper than 2h:1v slope, and are generally in areas of shallow bedrock. It is anticipated that waste excavations in this second type of steep area will expose bedrock during removal of waste material, but that the resulting slopes will be too steep for soil placement.

The ODAs steeper than 3h:1v, but flatter than 2h:1v will be ripped to an 18-inch depth prior to placement of the one-foot-thick surficial soil layer using the procedures described above for flat-lying areas.Flat-Lying Areas. These areas will be scarified, disked, treated with soil amendments and hydroseeded and hydromulched as described above for flat-lying areasFlat-Lying Areas.

Exposed bedrock areas that are steeper than 2h:1v will be too steep to receive a soil cover and will not be seeded or planted. It is believed that these areas will become colonized with trees and shrubs over time as seed volunteers onto these areas from surrounding vegetation. This process of natural revegetation has already occurred on the Site since mining activities ceased.

P2.2.3 Existing Site Roads

Following removal of any contaminated material, the existing East and West Haul Roads and other Site roads that will not be maintained for future use will be ripped at least 18 inches in depth to eliminate roadway compaction and regraded to blend in with the surrounding topography. Contoured surfaces will be scarified to a depth of 12 inches and revegetated using the procedures discussed previously for flat lying areas.

P3.0 WASTE CONTAINMENT AREA COVER SYSTEM - OPERATION, MAINTENANCE AND MONITORING

Cover system OM&M will be performed from the time the final covers are installed in each of the WCAs (i.e., completion of the Pit 4 cover in Phase 1 and the Pit 3 cover in Phase 3 of the RA~~-~~) and into post-remedy monitoring. Observation and documentation through inspection reports will enable prompt repair scheduling and execution of cover system repair or maintenance. The monitoring will include both visual inspection and surveying of the soil cover system and ODAs, the stormwater runoff management system, and any associated engineering controls to ensure system integrity is maintained. The monitoring plan, including the individual monitoring tasks, schedule, monitoring criteria, and maintenance, is discussed below.

Pit 3, Pit 4, the BPA, and Area 5 will be backfilled, covered with a composite cover system, and graded to form sloped soil cover surfaces where stormwater will flow to drainage bench channels oriented perpendicular to the slope that then will route clean stormwater off the cover and into newly constructed downdrain channels that report to site channels in the restored valley bottoms. These reconstructed site channels flow into natural drainages south of the Site. The Master Stormwater Management Plan in Appendix O of the BODR discusses the management, monitoring, and maintenance of the engineering controls that will be in place to handle stormwater and sediment originating on these covered surfaces both during and after RA construction completion.

P3.1 COVER SYSTEM OVER WASTE CONTAINMENT AREA

The monitoring requirements for the WCA Cover System are summarized in Table ~~3-~~1. WCA cover system inspections will be performed to be protective of the cover system. Vehicular access along the dewatering well maintenance roads located on the capped WCA surface will allow the observations from multiple locations on the cap surface. Detailed inspection of any observed deficiencies observed from the roads (as shown on Figure ~~2-~~1) will be conducted on foot so as not to compromise the cover system. The WCA Cover System will be subjected to the following inspections and monitoring requirements:

1) Routine Inspection:

   a. Settlement monitoring - monuments installed throughout the WCA will be visually observed to determine if they are in working condition. Settlement will be monitored

at 62 discrete locations on the WCA cover system as shown on Figure 1. A schematic for a typical settlement plate is illustrated in Figure 3-1.

b. Signs of stormwater erosion/damage – the WCA surface will be observed to see if there is evidence of erosion/damage.

c. Veneer stability - Soil surface conditions will be observed to determine if there has been mass movement of the soil surface.

d. Cap surface vegetation - This inspection is to observe and document the establishment of vegetation on the WCA soil surface. The inspection also will include noxious weed surveys in accordance with the RevegetationWeed Management Plan attached to Appendix D of the BODR.(WME 2013).

e. Wildlife damage – The cover surface will be visually inspected to determine if there is evidence of wildlife damage.

f. Stormwater diversion controls (i.e., bench channels and downdrains) – The drainage benches and downdrains on the WCA cover will be observed to determine if they are operational.

2) 25 Year-24 hour Storm (2.2 inches of rain in a 24-hour period) or Seismic Event:

a. Non-routine inspections for signs of stormwater erosion/damage to the cap and stormwater diversion controls will commence within one day and completed within seven days after a:

1) 25-year, 24-hour storm event or

2) Seismic event greater than a magnitude 5.0 (Richter Scale) with an epicenter within 15 miles of the Site.

3) Routine Measurements:

a. Vegetation Survey

b. Settlement Survey

The monitoring frequency and unacceptable conditions (action triggers) for each of these monitoring metrics are summarized in Table 3-1 along with the associated (maintenance) response action.

P3.2 OTHER DISTURBED AREAS

The monitoring frequency and action trigger requirements for ODA surface grading and revegetation are summarized in Table ~~3-~~2. Because the ODAs are not underlain by a geosynthetic liner and are not covering contaminated materials, they are treated differently than the WCA as reflected in the type and frequency of monitoring in Tables ~~3-~~1 and ~~3-~~2. However, similar to the WCA, all inspections will be performed from nearby access roads that allow vehicular traffic (as shown on Figure ~~2-~~1) with detailed inspection of any observed deficiencies conducted on foot so as not to compromise the revegetated surface. ODA surface grading and revegetation will be subjected to the following inspections and monitoring requirements:

1) Routine Inspection:

   a. Cap surface vegetation. This inspection to include noxious weed surveys in accordance with the Revegetation~~Weed Management~~ Plan attached to Appendix D of the BODR.~~(WME 2013).~~

   b. Erosion/damage from runoff

   c. Wildlife damage

   d. Damage to stormwater diversion controls (East, Central, and West Site Channels).

2) 25 Year-24 hour Storm (2.2 inches of rain in a 24-hour period):

   a. Non-routine inspections for stormwater erosion/damage to the cover and stormwater diversion controls will commence within one day and completed within seven days after a 25-year, 24-hour storm event.

3) Routine Measurements:

   a. Vegetation Survey

The unacceptable conditions (action triggers) for each of these monitoring metrics are summarized in Table ~~3-~~2 along with the associated (maintenance) response action.

P3.3 WCA - STORM WATER MANAGEMENT STRUCTURES MONITORING

The OM&M described below will be performed on the bench channels and downdrains on the WCA. Stormwater management on the WCA surface includes capture and conveyance systems that serve to: 1) minimize erosion and 2) divert stormwater from the cover areas so there is no infiltration using bench channels and downdrains to transfer stormwater into exhumed drainages so that it can drain freely from the Site.

The post-remedial monitoring and maintenance elements shown in Table 3-3 apply only to the stormwater runoff management infrastructure associated with the WCA cover system (i.e., bench channels, downdrains, and site channels immediately adjacent to the cover). These stormwater runoff controls will be subjected to the following inspections and monitoring requirements:

1) Routine inspection:

   a. Erosion/damage;

   b. Performance of stormwater diversion controls.

Non-routine inspections for erosion/damage to stormwater runoff management infrastructure will commence within one day and be completed within seven days following a 25-year storm, 24-hour storm event. The unacceptable condition (action trigger) for each of these monitoring metrics is verified damage as identified by the visual inspections.

P3.4 MAINTENANCE OF WCA COVER AND ODAs

The purpose of the maintenance procedures for the WCA Cover System and ODAs is to ensure that these areas perform as designed and that maintenance activities do not affect the long-term integrity of the cover and vegetation. This is accomplished by ensuring the materials and maintenance practices are consistent with the final design and specifications. All repairs and/or reconstruction shall be conducted in a manner that maintains the final cover system and ODAs surface grading integrity.

P3.4.1 Erosion Damage

Areas most susceptible to rill or gully formation are those steeper slopes around the perimeter of the WCA Cover System. In the event that rilling or gullying develops (as defined in Tables 3-1 through 3-3), repair procedures may include scarifying, regrading, cover soil placement, or placement of erosion matting, followed by re-establishment of vegetation. Corrective action repairs and maintenance will be prioritized following inspections indicating there are problems and scheduled within 30 days. The repairs then will be completed within the field season unless any of the observed damages could present an immediate threat to the WCA cover integrity. The Revegetation Plan attached to Appendix D of the BODR has procedures for establishment of vegetation on the soil covered surfaces including the applicable seed mixes and planting techniques.

P3.4.2 Veneer Slope Instability

Shallow translational (veneer) slope instability may develop especially in areas approaching 2h:1v where a one-foot thick surficial soil layer will be placed over bedrock to aide in vegetation establishment. On these steeper slopes, there is increased potential for slippage of the thin surficial soil layer down-slope. This type of slope movement (shallow translation failures) is often the result of the formation of a saturated soil layer at the bedrock interface during spring melt cycles and normally becomes less of a concern as vegetation is established on the reclaimed ground surface. Visual observations of cracks in soil surface typically at the slide origin (headwall) or long the margins of the slide, a bulged toe area, or groundwater seeps at slide toe are all indicative of downslope soil movement.

Repairing slope stability may entail regrading to reduce infiltration, or in some cases a partial reconstruction of the slopes with subsurface drains or the use of biostabilization (stabilization of surficial soil layers through use of deeper-rooted plant species). Corrective action to address material slippage laterally down slopes shall be completed within thirty days following discovery during an inspection event. Design specifications for the reconstruction activities in areas exhibiting persistent veneer slope movement shall be submitted to the EPA for review and approval within 90 days upon discovery of persistent conditions.

P3.4.3 Vegetation Maintenance

Revegetated areas may require maintenance to ensure success criteria are met and maintained for percent cover and plant density as identified on Tables ~~3-~~1 through 3~~-3~~. Initial revegetation of the capped surfaces is described in the *Revegetation Plan* attached to Appendix D of the BODR. In the event that noxious weeds become established in revegetated areas, control practices will be implemented

Chronically poor plant growth may signal a need for fertilization or amendments to improve soil conditions. In the event of vegetative die-off or stress, the cover soils will be evaluated and treated to revitalize cover vegetation. If necessary, a plan for the application of such nutrients or soil amendments will be submitted for approval to EPA and the Tribe.

P3.4.4 Stormwater Management Structures

The permanent bench channels and downdrains on the WCA will be observed to determine if there is structural damage and maintained free of debris and large vegetation. If structural damage or debris /vegetation is found in these structures during inspections it may result in

inadequate drainage and require corrective action. Corrective action repairs and maintenance will be prioritized following inspections indicating there are problems and scheduled within 30 days. The repairs then will be completed within the field season unless any of the observed damages could present an immediate threat to the WCA cover integrity (see Table ~~3-~~4).

P3.5 ENGINEERING CONTROLS – PERIMETER FENCING

The purpose of the current engineering controls at the Site is to ensure site access is controlled through fences, entrance gate controls, site entrance logs, and warning signs. For the purposes of this Cover System OM&M Plan, the existing eight-foot high chain-link perimeter fence will remain intact until the vegetation has been reestablished enough to allow free ranging herbivores (primarily deer and elk) to access the revegetated surfaces. The acceptable vegetation coverage and conditions are detailed *Revegetation Plan* attached to Appendix D of the BODR. This could be three to five years following the implementation of the Selected Remedy completion of construction activities.

The removal of the perimeter fencing will only occur after agreements are reached with the Tribe approving removal of the perimeter fencing and how public access will be handled on the perimeter of the Site. Prior to removing the existing fence, a perimeter barrier consisting of a boulder barrier, jack-leg fence and gate system, or a combination of both will be established on the perimeter of the WCA to allow deer and elk access to the Site, but prevent vehicular access on this controlled area. The monitoring requirements for the perimeter fencing and associated gates, signs, locks, etc. are summarized in Table ~~3-~~4.

These site engineering controls will be inspected semi-annually to ensure they remain functional. Should damage be observed, maintenance shall be conducted as soon as practicable to maintain the integrity of these engineering controls.

P4.0 RECORD KEEPING AND REPORTING

P4.1 GENERAL

Documentation of Cover System OM&M activities will be completed and retained pursuant to the requirements of the Consent Decree (CD; EPA, 2011). ~~. The final *OM&M Plan* will include a Monitoring and Maintenance Activity form.~~

P4.2 REPORTING

In accordance with the *Midnite Mine Superfund Site Operation, Maintenance, and Monitoring Plan,* to which this plan is attached, an annual summary report of the monitoring and maintenance activities will be prepared pursuant to all Site OM&M activities related to:

- Cover System and ODAs Inspection and Maintenance
- Midnite Mine Water Treatment Plant (WTP)
- Fence Inspection and Maintenance
- Site Access Roads and Culverts
- Surface Water Diversions
- Alluvial Groundwater Controls
- Ponds and Tanks
- WTP Influent and Effluent Pipelines
- Pit Area Dewatering and Underdrain Wells

This yearly summary report will be transmitted to the EPA by March 31st annually, summarizing the prior year's activities.

P5.0 REFERENCES

MWH Americas, Inc. (MWH), 2015~~3~~. Midnite Mine Superfund Site 100~~Preliminary (60~~ Percent~~)~~ Basis of Design Report. Prepared on behalf of Newmont USA Limited and Dawn Mining Company for submittal to U.S. Environmental Protection Agency, Region 10. June~~December 16~~.

~~U.S. EPA, 2006. Midnite Mine Superfund Site Spokane Indian Reservation, Washington Record of Decision. Prepared by the Office of Environmental Cleanup, EPA Region 10. September.~~

U.S. 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.

~~Worthington Miller Environmental LLC (WME), 2013a. Weed Management Plan for the Rhoads Property. Prepared for Newmont USA and Dawn Mining Company. Fort Collins, CO.~~

TABLES

FIGURE

Attachment P-11

Routine Inspection and Maintenance of Temporary Water Management Ponds (Future Construction)

Midnite Mine Superfund Site

10090 Percent Design

Attachment P-11 – Temporary Water Management Ponds – Operation, Maintenance, and Monitoring Plan

June 2015

~~July 2014~~

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LIST OF ACRONYMS/ABBREVIATIONS

~~BODR~~	~~Basis of Design Report~~
CD	Consent Decree
DMOP	Dawn Mining Company LLC Operating Procedure
EPA	U.S. Environmental Protection Agency
HDPE	high density polyethylene
Mgal	million gallons
~~MWH~~	~~MWH Americas, Inc.~~
ODA	other disturbed areas
OM&M	Operation, Maintenance and Monitoring
PCP	Pollution Control Pond
RA	remedial action
Site	Midnite Mine Superfund Site
SWRP	South Waste Rock Pile
WCA	waste containment area
WTP	water treatment plant

1.0 INTRODUCTION

Temporary Water Management Ponds will be needed for the collection, storage, and conveyance of impacted water initially to the existing Water Treatment Plant (WTP) and later to the new WTP during the remedial action (RA) construction activities at the Midnite Mine Superfund Site (Site). During the execution of the RA, two temporary water management ponds referred to as the South and West Ponds will be built and operated as water storage sites, and necessary storage volumes, change over the course of construction. This plan presents the operation, maintenance, and monitoring (OM&M) activities for these temporary water management ponds.

As currently planned, implementation of the Selected Remedy will be conducted in three distinct phases where individual components of the overall remedy will be completed during each construction phase. The construction phases revolve around the Site water management and construction of these temporary water management ponds. Temporary water management ponds and OM&M activities for these ponds will be necessary from the time the Waste Containment Area (WCA) cover is installed on Pit 4 during Phase 1 and Pit 3 backfilling starts in Phase 2. At the end of Phase 1, the South Pond will be constructed to replace lost storage capacity in Pit 3 once is in no longer available for mine-affected water storage. The West Storage Pond will be constructed at the end of Phase 2 when the South Pond will be dismantled as the mine wastes on which it is constructed are backfilled into Pit 3. The West Pond will be smaller in size as more of the Site waters are shed clean and will be operated after construction activities cease. The West Pond will be dismantled only after flows stabilize possible 10 to 15 years after construction is completed.

This Water Management Ponds OM&M Plan is an attachment to the *Midnite Mine Superfund Site Operation, Maintenance, and Monitoring Plan*, which describes the OM&M for all of the components of the Selected Remedy requiring monitoring and maintenance.

1.1 PURPOSE, SCOPE, AND OBJECTIVES

The purpose of this Water Management Ponds OM&M Plan is to describe the inspection, maintenance and monitoring activities at the temporary South and West Ponds, and to establish frequencies for this work. The primary objectives of this plan are to:

- Monitor and maintain the temporary water management ponds relative to water level monitoring equipment

- Monitor and maintain the temporary water management ponds relative to liner leaks
- Monitor and maintain the temporary water management ponds relative to embankment settlement or lateral movement
- Monitor and maintain the West Pond stormwater diversion structures

To meet these objectives, this Water Management Ponds OM&M Plan includes the following:

- Identification of the pond components that require routine inspection, monitoring, and maintenance
- Documentation of procedures for inspection and maintenance of these pond components
- Listing of reporting requirements

2.0 DESCRIPTION OF TEMPORARY WATER MANAGEMENT PONDS

This section of the Temporary Water Management Ponds OM&M Plan describes the temporary water management ponds to be constructed during the RA and decommissioned based on the water storage requirements as construction progresses. Currently, impacted water is stored in Pit 3 ad Pit 4 prior to treatment at the existing WTP. During the course of the RA, these pits will sequentially be backfilled, and ultimately will no longer be available for water storage once backfilling commences. Two temporary storage ponds (the South Pond and the West Pond) will be used for temporary storage of impacted water during the various phases of RA construction as described above in Section 1.0.

The configuration of the temporary water management ponds as shown in the Midnite Water Management Ponds design (Appendix E and Section 10 Drawings of the Basis of Design Report~~BODR~~) and discussed in this section are shown on Figure 1. The selected Contractor will be required, through the Drawings and Technical Specifications, to use specific liner materials for construction of the temporary water management ponds. They will be required to meet the project Performance Standards~~performance standards~~ for containment of contaminated water which means continually monitoring the temporary ponds during the construction process. Once constructed, the ponds will be monitored as described in Section 3.0.

2.1 SOUTH POND

The South Pond will be constructed immediately upslope from the Pollution Control Pond (PCP) by excavating into the South Waste Rock Pile (SWRP) waste. Prior to excavation of the South Pond, existing Ore and Protore Piles 5 and 8 will be removed from the SWRP surface in the South Pond area and placed in Pit 4 as part of Phase 1 construction. After removal of the Protore in this area, additional excavation of SWRP material to depths of up to 70 feet (ft) will occur to create the pond. The South Pond configuration includes an emergency overflow spillway on the east side of the pond as shown on Drawing 5-2. The emergency overflow spillway is an open-channel type spillway with an invert elevation at elevation 2,678 ft and a trapezoidal cross-section with a depth of 5 ft and a bottom width of 10 ft as shown on Drawing 5-15~~10~~.

The South Pond will be a double-lined with leak detection between the primary and secondary geomembranes. The primary liner will consist of a 60-mil high density polyethylene (HDPE) geomembrane overlying a synthetic geonet leak detection layer. The leak detection layer will overlie a secondary liner constructed of a second HDPE geomembrane liner. The primary, geonet leak detection layer, and secondary liner will extend outside of the pond footprint and buried within a 4 ft wide by 3 ft deep anchor trench. The pond will include a divider berm in the pond bottom at elevation 2,635 ft that effectively forms two cells at low-water levels, allowing for maintenance of one side of the pond (cell) while still maintaining the ability to operate in the other cell. The pond bottom in each cell will be sloped toward sump areas, with sump bottoms located at elevation 2,619 ft. The South Pond will have an effective storage capacity of approximately 64 million gallons (Mgal) after accounting for the approximately 3.2 Mgal of dead storage (which corresponds to a pond elevation of 2,633 ft) that will be maintained in the pond bottom to provide ballast for the liner system and prevent wind uplift.

It is anticipated that the South Pond will contain very little water beyond the dead storage needed for liner ballast in each cell for most years when the WTP is operating normally. Under these low-water operating conditions, wind uplift and anchor trench capacity can become a concern. In order to address this concern, evaluations were conducted during the design process of the anchor trench capacity for the anchor trench configuration shown on Drawing 5-12, and of potential wind uplift for both construction and low-water (dead-storage pool) conditions. These analyses indicate the anchor trench design is more than adequate, and the proposed 60-mil HDPE primary (upper) geomembrane has adequate strength to withstand stresses induced by wind uplift for the maximum wind speeds recorded at the Site.

2.2 WEST POND

As stated earlier, the West Pond will replace the South Pond beginning in Phase 3 of the RA as the waste rock on which the South Pond is built is backfilled into Pit 3. The West Pond will remain operational until post-construction water management flows subside to the point where the equalization ponds adjacent to the new WTP provide sufficient storage volume for the overall water management system. The West Pond will be constructed by excavating soils from the impoundment area immediately upstream of the West Pond and using them for construction of the West Pond embankment across the Western Drainage. Use of material from the upstream impoundment area as a borrow source will increase the West Pond capacity and reduce the required embankment height and volume. A diversion channel will be constructed to route clean surface water flow from upstream areas in the Western Drainage around the east side of the West Pond and return it to the Western Drainage channel downstream of the embankment, as shown on Drawing 5-7. A second interceptor channel will be constructed to collect upland runoff from eastern slopes of the Western Drainage above the West Pond and route it to the diversion channel as shown on Drawing 5-7. These diversion and interceptor channels have been designed and sized to convey flows up to, and including those associated with the 500-year, 24-hour storm event.

The West Pond will be constructed using the same design and materials as the South Pond. The only exception is that the West Pond bottom will not include the divider berm and will consist of a single cell.

The West Pond as designed includes an emergency overflow spillway at the left abutment of the embankment as shown on Drawing 5-105~~5~~. The emergency overflow spillway will be an open-channel type spillway with an invert elevation at elevation 2,555 feet and a trapezoidal cross-section with a depth of 5 feet and a bottom width of 10 feet as shown on Drawing 5-15. The pond bottom will be sloped toward a sumps area, with sump bottom located at elevation 2,605 ft. The West Pond will have an effective storage capacity of approximately 24 Mgal after accounting for approximately 1.4 Mgal of dead storage (which corresponds to a pond elevation of 2,619 ft) that will be maintained in the impoundment bottom to provide ballast for the liner system.

The West Pond will contain very little water, beyond the dead storage needed for liner ballast, when the WTP is operating normally. As with the South Pond, wind uplift and anchor trench capacity can become a concern under these low-water conditions. Similar to the South Pond,

evaluations of the anchor trench capacity were completed during design for the anchor trench configuration shown on Drawing 5-12, and of potential wind uplift for both construction and low-water (dead-storage pool) conditions. These analyses indicate the anchor trench design is more than adequate, and the proposed 60-mil HDPE primary (upper) geomembrane has adequate strength to withstand stresses induced by wind uplift for the maximum wind speeds recorded at the Site.

3.0 TEMPORARY WATER MANAGEMENT PONDS - OPERATION, MAINTENANCE AND MONITORING

Water management pond OM&M will be performed from the time of Pit 3 backfilling is commences at the beginning of Phase 2 and into post-construction monitoring. Observation and documentation through inspection reports will enable prompt repair scheduling and execution of pond repair or maintenance. The complete monitoring plan, including the individual monitoring tasks, schedule, monitoring criteria, and maintenance, is discussed below.

3.1 WATER MANAGEMENT POND OPERATION

The temporary water management ponds will be used for water storage prior to transfer to the WTP for treatment and discharge. Water from the ponds will be transferred to the WTP via pumps and conveyed by temporary influent pipelines. Details regarding the OM&M of these pipelines are presented in the *WTP Influent and Effluent Pipelines OM&M Plan* (MWH 2015~~4~~).

Water management and operation of the South and West Ponds will be performed in accordance with a new Dawn Mining Company Operating procedure (DMOP) that will be prepared during Phase 1 of the RA prior to the initiation of construction of the South Pond.

3.2 WATER MANAGEMENT POND INSPECTION AND MONITORING

The monitoring requirements for the water management ponds are summarized in Table 1. The inspections will be performed to be protective of the liner system. Vehicular access along existing site roads will allow the observations from multiple locations along the ponds. The actual inspections will be conducted on foot to avoid damage to the liner or embankments. The Temporary Water Management Ponds will be subjected to the following inspections and monitoring requirements:

1) Routine Inspections:

a. Leak Detection/Submersible Pump Risers – the surface completions for the leak detection and submersible pump risers will be inspected for damage.

b. Pumps – the submersible pump and leak detection pump will be inspected for signs of wear

c. Leak detection – Leak detection sumps will be monitored for the presence of water.

d. Water Level Monitoring Equipment – Equipment used for monitoring of water levels in the ponds and leak detection sumps will be checked for proper operation.

e. Embankment movement~~Settlement~~ monitoring - monuments installed along the embankment of the West Pond and perimeter of the South Pond will be visually observed to determine if they are in working condition. Locations of the movement monuments and a~~A~~ schematic for a typical movement monitoring point are presented~~settlement plate is illustrated~~ in Figure 1~~2~~.

f. Pond embankments – the embankments also will be visually inspected for signs of erosion, seepage, and instability.

~~f.~~g. Stormwater diversion controls (i.e., diversion) – The diversion channels around the West Pond will be observed to determine if they are operational.

~~g.~~h. Liner Positioning – the primary geomembrane liner will be inspected during wind events for movement. These inspections will occur when measured wind speed at the site is greater than 35 miles per hour.

2) Routine Measurements:

a. Movement~~Settlement~~ Survey

b. Flow rates into individual leak detection sumps.

3) Non-Routine Rain Storm and Seismic Events

Non-routine inspections for signs of stormwater erosion/damage to the West Pond stormwater diversion controls will commence within one day and completed within seven days after a:

a. 25-year, 24-hour storm event or

b. Seismic event greater than a magnitude 5.0 (Richter Scale) with an epicenter within 15 miles of the Site.

The monitoring frequency and unacceptable conditions (action triggers) for each of these monitoring metrics are summarized in Table ~~3-~~1 along with the associated (maintenance) response actions. In the event that water is detected in the leak detection sumps, a four-level system for allowable leakage rates and appropriate response actions will be followed as presented in Table 2.

3.3 MAINTENANCE OF TEMPORARY WATER MANAGEMENT PONDS

The purpose of the maintenance procedures for the Temporary Water Management Ponds is to ensure that these facilities perform as designed and that maintenance activities ensure their long-term integrity and viability. This is accomplished by ensuring the materials and maintenance practices are consistent with the final design and specifications. Maintenance activities for the water management ponds are:

3.3.1 Geomembrane Liner System

Although damage to the pond liner is considered unlikely, the liner is susceptible to damage. If damage is noted during routine inspections (as defined in Table 1), repair procedures may include replacement or patching of damaged liner. Corrective action repairs and maintenance will be prioritized following inspections indicating there are problems in accordance with Table 1.

3.3.2 Pumps

Depending on water chemistry, submersible pumps can be susceptible to fouling. In addition, pump components are susceptible to normal wear and tear during operation. Maintenance of the submersible pumps will be in accordance with manufacturer's recommendations.

3.3.3 Water Level Monitoring Equipment

Pressure transducers or other equipment used for monitoring water levels in the temporary water management ponds and detecting the presence of water in the leak detection sumps will be checked periodically for proper operation in accordance with manufacturer's Stormwater Diversion Channels.

The stormwater diversion channels around the West Pond as described in Section 2.2 will be observed to determine if there is structural damage and maintained free of debris and large vegetation. If structural damage or significant debris /vegetation is found in these structures

during inspections it will require corrective action. Corrective action repairs and maintenance will be prioritized following inspections indicating there are problems and scheduled within 30 days.

4.0 RECORD KEEPING AND REPORTING

4.1 GENERAL

Documentation of Temporary Water Management Pond OM&M activities will be completed and retained pursuant to the requirements of the Consent Decree (CD; ~~(~~EPA, 2011). The existing Pond~~final *OM&M Plan* will include a Monitoring~~ and Tank Inspection~~Maintenance Activity~~ form will be used during the initial OM&M efforts and may be revised at a later date.

4.2 REPORTING

In accordance with the *Midnite Mine Superfund Site Operation, Maintenance, and Monitoring Plan,* to which this plan is attached, an annual summary report of the monitoring and maintenance activities will be prepared pursuant to all Site OM&M activities related to:

- Cover System and other disturbed areas (ODAs) Inspection and Maintenance
- Midnite Water Treatment Plant
- Fence Inspection and Maintenance
- Site Access Roads and Culverts
- Surface Water Diversions
- Alluvial Groundwater Controls
- Ponds and Tanks
- WTP Influent and Effluent Pipelines
- Pit Area Dewatering and Underdrain Wells

This yearly summary report will be transmitted to the EPA by March 31 annually, summarizing the prior year's activities.

5.0 REFERENCES

MWH Americas, Inc. (MWH), 2015~~4~~. Midnite Mine Superfund Site 100~~90~~ Percent Basis of Design Report. Prepared on behalf of Newmont USA Limited and Dawn Mining Company for submittal to U.S. Environmental Protection Agency, Region 10. June~~July 31~~.

~~MWH Americas, Inc. (MWH), 2014. Midnite Mine Superfund Site *WTP Influent and Effluent Pipelines OM&M Plan* – Appendix P to 90 Percent Basis of Design Report. Prepared on behalf of Newmont USA Limited and Dawn Mining Company for submittal to U.S. Environmental Protection Agency, Region 10. July 31.~~

U.S. 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.

TABLES

FIGURES