

Midnite Mine Superfund Site

100~~90~~ Percent Design

Appendix U – Remedial Action Construction Quality Assurance Plan

Note: ~~This CQAP has been prepared to a 90-percent level. Minor edits to this plan are anticipated as the Midnite Mine Remedial Design is finalized.~~

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TABLE

Table U-1 Construction Quality Program Summary

FIGURE

Figure U-1 Remedial Action Organizational Chart

ATTACHMENT

Attachment U-1 Example Forms

LIST OF ACRONYMS

CC	Construction Contractor
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CM	Construction Management
Company	Newmont USA, Limited/Dawn Mining Company, <u>LLC</u>
CQA	Construction Quality Assurance
CQAO	Construction Quality Assurance Officer
CQAP	Construction Quality Assurance Plan
CQC	Construction Quality Control
ECN	Engineering Change Notice
EPA	U.S. Environmental Protection Agency
FE	Field Engineer
FI	Field Inspector
NNC	Notice of Non-Compliance
RA	Remedial Action
RAWP	Remedial Action Work Plan
RD	Remedial Design
RFI	Request for Information
ROD	Record of Decision
Site	Midnite Mine Superfund Site
SOW	Scope of Work
QA	Quality Assurance
QC	Quality Control
QCM	Quality Control Manager
Tribe	Spokane Tribe of Indians
TERO	Tribal Employment Rights Ordinance
USACE	United States Army Corps of Engineers
WME	Worthington Miller Environmental

U1.0 INTRODUCTION

This Construction Quality Assurance Plan (CQAP) describes the site-specific components of the quality assurance (QA) program to ensure, to the extent practicable, that the completed remedial action (RA) at the Midnite Mine Superfund Site (Site) meets design criteria, plans, and specifications. This CQAP presents the Construction Quality Assurance (CQA) components that are common to the RAs. This CQAP will be supplemented with task-specific CQA information that will be included in the Remedial Action Work Plan (RAWP). Examples of task-specific CQA information that will be included in the RAWP include identification of key personnel and construction contractors (CCs) and defining the task-specific inspection and testing requirements. Together, this CQAP and the CQA information included in the RAWP identify the methods and procedures that will be used by the Construction Management staff to obtain independent, documented confirmation that the construction standards required by the contract documents have been met.

This CQAP has been prepared in accordance with the *Technical Guidance Document – Construction Quality Assurance for Hazardous Waste Land Disposal Facilities* (U.S. Environmental Protection Agency [EPA], 1987) and the CQAP requirements outlined in the *Consent Decree Statement of Work* (CD SOW; EPA, 2011), and includes the following information:

- Responsibility and Authority – The responsibility and authority of organizations and key personnel involved in the RA.
- Construction Quality Assurance Officer (CQAO) Qualifications.
- Inspection Activities – The observations and tests to assure that the RA meets design criteria.
- Sampling Strategies – The sampling activities, acceptance and rejection criteria, and methods for assuring that corrective measures are implemented.
- Documentation – Reporting requirements for CQA activities.

U1.1 BACKGROUND

The Site is in the Remedial Design/Remedial Action (RD/RA) stage of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) process.

The RD provides the engineering plans and Technical Specifications for implementing the Selected Remedy, which is defined in the *Midnite Mine Superfund Site Record of Decision* (ROD; EPA, 2006) and stipulated in an RD/RA (Remedial Action) CD lodged by the United States District Court on 17 January 2012.

This CQAP supports the RAs and will be updated as necessary to incorporate major changes to the project team or CQA procedures. Newmont USA, Limited and Dawn Mining Company, LLC (Company) collectively are the responsible party for the planned RAs.

U1.2 KEY QUALITY PROGRAM TERMS

Two related, but independent processes that are associated with the construction quality program are CQA and Construction Quality Control (CQC), defined as follows:

Construction Quality Assurance (CQA) - Refers to a planned system of activities that provide documentation that the project is constructed as specified in contract documents, and that the materials used in construction are manufactured according to specification. CQA is the process of planning or managing for quality, and is intended to *prevent defects* in the finished product. CQA includes inspections and audits of materials and workmanship necessary to determine and document that the end product complies with the quality established by the contract. The Construction Management (CM) staff will perform CQA activities on behalf of the Company.

Construction Quality Control (CQC) – Refers to the process by which the characteristics of the constructed product are compared with applicable standards; and the action taken when nonconformance is detected. CQC is the process for verifying predefined requirements for quality, and is intended to *identify defects* in the product during and prior to construction completion. CQC includes surveying, sampling, and testing to directly monitor the quality of all furnished, constructed, and installed components. CQC activities are the responsibility of the CC in order to demonstrate that the work product complies with the Technical Specifications.

U1.3 CONSTRUCTION QUALITY PROGRAM OVERVIEW

Table U-1 presents a summary of the construction quality program. Specific details regarding how the construction quality program will be implemented is presented below.

The Company will contract a Prime CC to perform the construction activities and CM staff to supervise the CC. The approach to managing the quality of the RA includes a combination of CQA performed by the CM staff and CQC performed by the CC. The CC is responsible for

constructing the work in accordance with the contract documents, which incorporate the design plans and Technical Specifications.

The CC CQC is the systematic implementation of a program of surveys, sampling, and tests to attain the required construction standards and to preclude and/or resolve problems related to noncompliance. In accordance with the Technical Specifications, the CC will establish a quality control (QC) system to perform sufficient inspection and tests of all items of work, including that of their subcontractors, to ensure conformance to the functional performance of the project. The CC's QC system shall be established for all construction except where the contract documents provide for specific compliance tests by testing laboratories employed by the Company. The CC's QC system shall specifically include all testing required by the various sections of the Technical Specifications.

Independent of the CC's efforts, the CM staff will provide CQA through monitoring of test results and scheduled inspections to verify the effectiveness of the CC's CQC program, and assure that the quality and contract requirements are achieved and documented.

U1.4 CQA/CQC PROCESS

The two primary CQA/CQC processes that will be implemented during the RA include:

Four-Phase Inspection Program. The CM staff will implement a four-phase inspection program modeled after the U.S. Army Corps of Engineers (USACE) Construction Quality Management regulations (ER 1180-1-6; USACE, 1995). The primary purpose of the program is to require that the CM and CC staff jointly plan, schedule, and review the work as it progresses, identify and correct deficiencies, and confirm that the completed work meets the requirements of the contract documents. The four program phases include 1) Preparatory, 2) Initial, 3) Follow-up, and 4) Completion. The CM staff will facilitate (and the CC staff will participate in) the process for each major work element. The major work elements (or "definable features of work") will be identified in the RAWP.

Compliance with Technical Specifications. The CC staff will perform (and the CM staff will monitor) surveys, inspections, sampling, and testing, as required by the Technical Specifications. The specific CQA/CQC requirements of the Technical Specifications will be summarized in the RAWP.

Additional details regarding the inspection and testing activities to be performed by the CM and CC staff during RA are presented in Section U4.0.

Table U-1 – Construction Quality Program Summary

	Construction Quality Assurance (CQA)	Construction Quality Control (CQC)
Performed by	Construction Management (CM) – Company representative	Construction Contractor (CC) contracted by the Company
What	Planning and oversight conducted to provide documentation that the RA is constructed as specified in contract documents.	Surveying, sampling, and testing performed to compare the constructed product with predefined standards
Primary Goals	<ul style="list-style-type: none"> Prevent nonconformance through planning Monitor quality during construction 	<ul style="list-style-type: none"> Identify nonconformance via testing Correct nonconformance
Roles ^a	<ul style="list-style-type: none"> Construction Quality Assurance Officer (CQAO)/Field Engineer (FE)/Field Inspector (FI) 	<ul style="list-style-type: none"> Quality Control Manager (QCM)/QC Technician(s)
Four-Phase Inspection Program		
Preparatory	<ul style="list-style-type: none"> Plan, schedule, facilitate and document Review pertinent parts of the plans and Technical Specifications before work begins. 	<ul style="list-style-type: none"> Participate Confirm understanding of SOW and commitment to follow pre-established quality procedures.
Initial	<ul style="list-style-type: none"> Plan, schedule, facilitate and document Inspect initial work products to identify nonconformance early during construction. 	<ul style="list-style-type: none"> Participate Correct nonconformance before work progresses too far.
Follow-up	<ul style="list-style-type: none"> Plan, schedule, facilitate and document Routine inspections to ensure compliance with pre-established quality criteria. 	<ul style="list-style-type: none"> Participate Demonstrate that acceptable level of quality in workmanship is maintained.
Completion	<ul style="list-style-type: none"> Plan, schedule, facilitate, and document Verify that completed work meets contractual requirements. 	<ul style="list-style-type: none"> Participate Resolve nonconformance items Demonstrate that completed work meets contractual requirements.
Compliance with Technical Specifications ^b		
Identify required verification tests and inspections	<ul style="list-style-type: none"> Identify and summarize required verification tests and inspections for inclusion in the RAWP Review and approve CC's QC system 	Establish a QC system in accordance with the Technical Specifications
Testing/Monitoring	Perform monitoring and verification of CC's inspections and testing during construction	Perform inspection and tests during construction

^a Roles may be combined for uncomplicated tasks and/or smaller construction projects.

^b The Technical Specifications are the explicit requirements to be satisfied by the CC and are included in the contract documents.

U2.0 RESPONSIBILITIES AND AUTHORITIES

This section presents the responsibilities and authorities of organizations and key personnel involved in the RA, the structure of the CQA/CQC organization, and the minimum training and experience of the CQA/CQC personnel. The overall RA organizational structure and key

CQA/CQC personnel are shown on Figure U-1. The identities and roles and responsibilities of key personnel will be further defined in the CQA section of the RAWP.

U2.1 RESPONSIBILITIES AND AUTHORITIES OF ORGANIZATIONS

U2.1.1 Environmental Protection Agency

The EPA is the lead agency governing the remediation of the Midnite Mine Superfund Site. The EPA issued the ROD and CD, and is responsible for approving all plans and reports related to implementing the Selected Remedy, including this CQAP. The EPA Remedial Project Manager is Ms. ~~Ellen Hale~~ Karen Keeley. The EPA has contracted CH2M Hill as their oversight contractor. The CH2M Hill point of contact is Ms. Kira Sykes.

U2.1.2 Spokane Tribe of Indians

The Site is located on lands owned by the Federal Government and held in trust for the Spokane Tribe of Indians (Tribe) and individual ~~Tribetribes~~ Tribe members. Mr. Randy Connolly is the Tribe Superfund Coordinator. The Tribe has access to contract technical support from AESE, Inc. The AESE, Inc. point of contact is Dr. F. E. Kirschner. In its capacity as a support agency under CERCLA, the Tribe has the opportunity to review each submittal and provide comment to the EPA.

U2.1.3 Newmont USA, Limited/Dawn Mining Company

The Company has responsibility for procuring consultants and contractors to perform the RA work, including budgeting and securing the necessary funds, and assuring that the requirements of the CD are met. The Company is responsible for executing all administrative aspects of the contract with the CC such as contract approval, claims, change orders, amendments, pay applications, and materials through the CM team (described below). The CM team will assist and advise the Company with contract related matters. The Company Project Coordinator is Mr. Nick Cotts and the Alternate Project Coordinator is Mr. William Lyle. ~~Mr. Lyle also is the Company Project Manager.~~

U2.1.4 Supervising Contractor

Mr. Louis Miller, P.E. of Worthington Miller Environmental (WME) is the Supervising Contractor procured by the Company to implement the Selected Remedy and supervise site management activities. As the Supervising Contractor, Mr. Miller will direct and supervise the RA, and is responsible on behalf of the Company for assuring the overall quality of the RA.

U2.1.5 Project Designer

The Project Designer is MWH Americas, Inc. (MWH), a licensed design firm retained by the Company to provide design and engineering services in connection with the RA. The Project Designer reports directly to the Supervising Contractor and is responsible to both the Supervising Contractor and the Company. The Project Designer will identify in the RAWP the tests and inspections required to demonstrate that the RA is performed as specified in the design. The MWH Project Manager is Mr. Vance Drain, P.G., and the MWH Engineering Manager is Mr. Clint Strachan, P.E.

U2.1.6 Construction Management

The CM includes qualified personnel retained by the Company to provide professional construction management and related services in connection with the RA, including CQA. The CM ~~(described below in Section U2.2.1)~~ is responsible for implementation of this CQAP (see Section U2.2.1). The CM will oversee the CC on behalf of the Company (including review of the CC's proposed means and methods) and serve as the primary point of contact with the CCs. The CM provides CQA and monitors the day-by-day CQC activities performed by the CCs to verify compliance with the contract documents, design plans, and Technical Specifications. The CM also will manage, coordinate, and administer all CQA activities and requirements. The CM will be identified in the RAWP.

U2.1.7 Construction Contractor (CC)

The Company will retain the CC to provide the labor, materials, and equipment required to construct the project in accordance with the contract documents. The CC will operate in compliance with the Tribal Employment Rights Ordinance (TERO). The CC is responsible for scheduling, coordinating, and planning the construction work (e.g., the means and methods). The CC is responsible for the quality of their constructed work product as well as the necessary inspections and tests required to ensure that their work complies with the contract documents. They exercise authority over their workforce, including CQC personnel (described below in Section U2.2.2), subcontractors and their CQC support services. The CC and CQC staff will be identified in the RAWP. As described above, the CC will establish a QC system in accordance with the Technical Specifications.

U2.2 RESPONSIBILITIES OF KEY PERSONNEL

The CQA/CQC roles and responsibilities for CM and CC personnel are described below in Section U2.2.1 and Section U2.2.2, respectively. These may vary based on nomenclature used by the actual CM and CCs contracted by the Company to implement the RAs. The CQA/CQC staff will be on Site as needed during the RA based on the nature, volume, or complexity of the tasks being performed at any given time, and the CQA/CQC requirements associated with those tasks. A single qualified person may perform multiple CQA/CQC roles, as approved by the CM CQAO. This will allow the flexibility for staff only to be on Site as necessary when routine or uncomplicated RA tasks are being performed. For example, a single person may assume the roles of Construction Quality Assurance Officer (CQAO), Field Engineer (FE) and Field Inspector (FI) as discussed below. Likewise, because of the long duration of the RA, multiple qualified persons might fill a CQA/CQC staffing role. These details and personnel responsibility will be included in the CQA section of the RAWP.

U2.2.1 Construction Management Quality Assurance Personnel

Construction Quality Assurance Officer (CQAO). The CQAO will coordinate the field implementation of this CQAP, including designating and delegating appropriate CM tasking to provide CQA oversight of the RA at any given time. The CQAO will have responsibility for assembling, tracking, and storing all CQA/CQC related documentation. The primary duty of the CQAO is to confirm and document that the RA is implemented in accordance with the contract documents.

The CQAO will have authority to institute actions necessary for the successful implementation of the CQA/CQC program to ensure compliance with the contract plans and Technical Specifications (including stop-work authority). The CQAO coordinates activities to ensure that FE activities (discussed below), inspection staff, and testing firms as well as CC CQC staff carry out the requirements of this CQAP and the CC's QC system.

The CQAO will track and report nonconformances to CC management and CC CQC staff. The CQAO has authority to obtain direct access to CC CQC files. Other CQAO responsibilities will include:

- Reviewing CC reports, tests, and inspection results
- Facilitating the implementation of the four-phase inspection program (Section U4.1) and participating in the required inspections

- Ensuring that CQA personnel conducting inspections are adequately trained and understand assignment limits and time frames.
- Review and comply with the RA design plans and Technical Specifications.

The CQAO will be an individual with sufficient combined experience, as deemed adequate by the Company and the Supervising Contractor in one or more of the following positions: Project Superintendent, QC Manager, Project Manager, Project Engineer, or Construction Manager on similar size and type construction contracts.

The ~~CQAOCQAF~~ may assume the role of the FE described below.

Field Engineer (FE). The FE's primary responsibility is to administer the CC's contract. This includes ensuring the RA is performed in accordance with the design plans and Technical Specifications. The FE reviews CQC testing documentation with the CC, engineers, and inspectors. The FE also reviews design plans and Technical Specifications for assigned project components and estimates the type and number of CQC tests that should be accomplished for each specification section.

Specific responsibilities of the FE include:

- Coordinate requests for information (RFIs) and facilitating design clarifications with the Project Designer when necessary and distribute them to CQA/CQC team members and construction staff
- Assist in facilitating process change(s) -to eliminate nonconformance trends
- Maintain, control, and supervise the RAWP and required submittals between the CC, subcontractors, suppliers, and the Project Designer.

The FE may assume the role of the FI described below.

Field Inspector (FI). CM staff may include one or more FIs to support the CQAO and FE. The FE/FI will monitor the day-to-day activities of the CC. This includes ensuring that CC complies with the design plans and Technical Specifications, applicable building codes, good workmanship, and the CQC requirements of the contract. As part of this effort, FI will:

- Conduct independent inspections to verify the quality of the work
- Participate in the four-phase inspection program (refer to Section U4.1)
- Review test and inspection reports

- Ensure that the required documentation is generated and submitted to the CQAO.

The FI must be alert to detecting, recording, and reporting any deviation from the design and contract documents, including calling any deficient item to the attention of the FE, the CC superintendent, and/or other representative. The FI must keep accurate and detailed records of the CC's performance and progress, delivery of materials, and other pertinent matters, including the daily inspection report.

U2.2.2 Construction Contractor's Quality Control Personnel

Quality Control Manager (QCM). The QCM is responsible for daily on-site implementation of the CC's QC system and coordinating CQC activities with the CM team. The QCM is responsible for:

- Ensuring all tests and inspections are performed in accordance with the Technical Specifications
- Reviewing CQC reports, tests, and inspection results to determine compliance with design plans and Technical Specifications, and other contractual documents
- Participating in the four-phase inspection program (refer to Section U4.1)
- Documenting all CQC activities, and supplying this documentation to the CM team
- Rectifying nonconformances in a timely fashion
- Ensuring that CC and subcontractor CQC personnel conducting inspections are adequately trained and understand assignment limits and time frames.

QC Technicians. CC staff may include QC Technicians to support the QCM. The QCM may assume the role of the QC Technician, which includes the following functions:

- Inspect materials, construction, and equipment for conformance with the Technical Specifications
- Perform CQC tests, as required by the Technical Specifications.

CQA/CQC staff will be on Site as needed during the RA activities based on the nature, volume, or complexity of the tasks being performed at any given time and the CQA/CQC requirements associated with those tasks. A single qualified person may perform multiple CQA roles as approved by the CQAO. This will allow the flexibility for staff only to be on-site as necessary. Staffing details will be included in the CQA section of the RAWP.

U3.0 PROJECT MEETINGS

U3.1 PRE-CONSTRUCTION MEETINGS

The CQAO will plan and participate in a pre-construction meeting prior to initiating RA work components. The purpose of pre-construction meetings is to resolve uncertainties following award of the construction contract, but prior to the start of construction. At a minimum, the meeting will be attended in person or via telephone by the Company (or Company's representative), the Supervising Contractor, the Project Designer, the CQAO, FE, and CC project manager or superintendents and QCM.

Topics covered in this meeting will include, but will not be limited to, the following:

- Responsibilities of each organization
- Lines of authority and communication for each organization
- Relevant CQA/CQC documents and supporting information
- Procedures and/or protocols for observations, inspections, and tests
- Procedures and/or protocols for handling construction deficiencies
- Submittal requirements
- RFIs and design change process
- Methods for distributing and storing documents and reports
- Work area security and health and safety protocols
- Project schedule

The CQAO will document the meeting and distribute minutes to all parties identified in Section U2.0 within five working days of the meeting.

U3.2 PROGRESS MEETINGS

The FE will plan and participate in weekly progress meetings held at the Site during the RA. Additional progress meetings can be scheduled by either the CM or CC staff. The FE will document these meetings in daily field reports. At a minimum, the progress meetings will be attended by the FE, the CC QCM, and superintendent. Topics covered in the progress meetings will include:

- Previous activities and accomplishments
- Planned work locations and activities
- Personnel and equipment assignments
- Any new test data
- Resolution of previously identified problems
- Any potential construction problems, deficiencies, or nonconformances
- Changes or delays to the construction schedule
- Claims, change orders, and similar items

U4.0 INSPECTION AND VERIFICATION ACTIVITIES

U4.1 FOUR-PHASE INSPECTION PROGRAM

The CQAO will implement a four-phase inspection program for each definable feature of the work (the definable features of work will be identified in the RAWP). The CQAO will plan, schedule, facilitate, and document the inspections, and the CC QCM will participate in all phases. The four phases of inspection are defined below:

U4.1.1 Preparatory Inspection

The CQAO and QCM will perform preparatory inspections prior to beginning any work on any definable feature of work. During the preparatory phase inspections, the CM CQAO and CC QCM generally will:

- Review applicable sections of the contract documents, including the design drawings, RAWP, and Technical Specifications
- Review the Health and Safety Plan and the appropriate activity hazard analysis to ensure that safety requirements are planned
- Verify that all materials and/or equipment requiring submittal and/or testing under that definable feature and are ready to install have been tested, submitted, and approved
- Examine work area to ensure integral preceding work is in compliance so that subject work can proceed

- Physically examine materials that have arrived on the project site for compliance with submittals and contract requirements, if they have not previously been inspected
- Ensure CC is coordinating work processes with CC's subcontractors
- Check to ensure that the portion of the plan for the work to be performed has been approved/accepted by the EPA

The CQAO will document the preparatory phase inspections and associated observations.

U4.1.2 Initial Phase Inspection

The CM CQAO and CC QCM will perform an initial inspection as soon as a representative portion of the particular feature of work has been accomplished. Initial phase inspections generally will include:

- Review preparatory inspection notes
- Check preliminary work to ensure that it is in compliance with the contract documents
- Establish the level of workmanship required and verify that it meets minimum acceptable workmanship standards
- Resolve differences/conflicts
- Review the Health and Safety Plan and the appropriate activity hazard analysis to ensure that safety requirements are met
- Ensure that inspections and testing are being performed

The CQAO will document the initial phase inspections and associated observations.

U4.1.3 Follow-Up Phase Inspection

The CM FE and CC QCM will perform follow-up inspections daily to ensure:

- The work is in compliance with contract requirements
- An acceptable level of quality in workmanship is maintained
- That inspections, field measurements, and testing are being performed
- All "rework" items are being corrected
- Any deficiencies are corrected prior to the start of additional tasks, which may be affected by the deficient work

The CQAO will document the follow-up phase inspection activities and associated observations.

U4.1.4 Completion Inspection

The CM CQAO and CC QCM will perform a completion inspection of the work when major elements of the work are completed. The completion inspection will include:

- Develop a list of items that do not conform to the approved design plans and Technical Specifications
- Include the nonconformance list in the CC CQC documentation. Include the estimated date by which the deficiencies will be corrected
- Perform a second completion inspection after nonconformance items have been resolved and the CM CQAO has been notified by the CC QCM

The CQAO inspection documentation shall identify inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective action taken or proposed. When deficiencies are discovered during the four-phase or other inspection processes, focused inspections shall be considered by the CQAO. When material, performed work, or installation is found on the basis of a focused inspection to be deficient and/or does not meet the project design plans or Technical Specifications, the CQAO will assure deficiency correction is implemented, as discussed in Section U5.0.

U4.2 COMPLIANCE WITH TECHNICAL SPECIFICATIONS

U4.2.1 CQC Testing

The CC will establish a QC system to perform sufficient inspection and tests of all items of work, including that of their subcontractors, to ensure conformance to the functional performance of the project. The CC's QC system shall be established for all construction except where the contract documents provide for specific compliance tests by testing laboratories employed by the Owner. The CC's QC system shall specifically include all testing required by the various sections of the Specifications. The CQAO will review and approve the CC's QC system prior to beginning RA activities.

The CC shall be responsible for establishing a system of daily test reports that will record all CQC test results. Test results from each day's work period shall be submitted to the FE prior to the start of the next day's work period. The CC's responsible technician and the CC QCM shall

sign the daily test reports. The FE will review test results on a daily basis and identify any non-conforming test results for discussion with the CC regarding potential corrective action.

U4.2.2 CQA Monitoring

The CQAO and FE will perform ongoing CQA monitoring and oversight of CC's inspections and testing. The FE will use the inspection-and-test summary tables (included in the RAWP) in the field as a guide and checklist to document completion of the CQC activities for each task. In this manner, the inspections and tests required to measure compliance with the relevant portions of the RAWP and Technical Specifications are established and carried out.

The CQAO will verify the adequacy and effectiveness of the CC's CQC program through review of the FE's inspection documentation and review of the CQC test results. The CQA inspection frequency will be at the discretion of the CQAO based on results of CQC tests, evaluation of daily reports, and audits of the CQC program. Should information become available that indicates a potential problem, the CQAO will review in detail all pertinent information and require additional verification testing or re-work, if necessary.

U4.2.3 Construction Acceptance Criteria

The CQAO will document that the completed work meets the construction acceptance criteria for materials qualifications, inspection, and testing as established by Technical Specifications and as summarized in the inspection-and-test summary tables (included in the RAWP or as modified based on claims, change orders, amendments, etc.) Criteria for materials and equipment have been set by the Project Designer in accordance with the applicable codes and standards, and by manufacturers' recommendations. The CQAO will assemble necessary CC submittals to document conformance with acceptance criteria as detailed in the inspection-and-test summary tables (included in the RAWP).

U4.3 COMPLIANCE WITH HANDLING, STORAGE, PACKAGING, PRESERVATION, AND DELIVERY REQUIREMENTS

The CM will inspect the CC activities to ensure technical compliance in identification, handling, storage, packaging, preservation, and delivery of materials, parts, assemblies, and end products with either the Technical Specifications, manufacturers' recommendations, or generally accepted practices. Related quality records and documents will be maintained and controlled in accordance with the procedures provided in Section U6.0 of this CQAP.

U4.4 MATERIAL IDENTIFICATION AND MANAGEMENTMANAGEMENT

CM will monitor the CC to ensure that material identification and management requirements are met. Products and materials shall be traced from receipt through installation. Documentation such as project control checklists, material receipts, sample and test documentation, and reports will ensure that the applicable material/item is received and installed. Project Technical Specifications and/or procedures define product identification and management requirements, which generally include the following:

- Construction materials or equipment intended for project use are identified and segregated until inspection confirms that they conform to technical and quality requirements.
- Materials or equipment are traceable to documents attesting to their conformance with technical requirements that are stated in Technical Specifications or design drawings.

U5.0 CONSTRUCTION DEFICIENCIES

This section provides procedures for tracking construction deficiencies (noncompliance) from identification through acceptable corrective action. It defines the controls and related responsibilities and authorities for dealing with noncompliant products or services.

U5.1 DEFICIENCY DEFINITION

A deficiency occurs when a material, performed work, or installation does not meet the plans and/or Technical Specifications and/or intended use for the project. A deficiency can be identified by any CC or CM personnel.

U5.2 CC CQC DEFICIENCY IDENTIFICATION AND CONTROL

When material, performed work, or installation is found deficient, the CQAO (or designee) shall ensure that the non-conforming material, work, or installation is identified and controlled to prevent unintended use or delivery. The CQAO will notify the CC of any noncompliance with any of the contract requirements. The CC shall, after receipt of such notice, immediately take corrective action.

U5.2.1 Minor Deficiencies

Minor deficiencies are items that do not require significant rework or repair work to correct, and will not result in significant deviations from required construction standard(s) if corrected

immediately. Minor deficiencies noted by the CQAO or FE during testing or inspection are verbally reported to the CC's representative and noted on the Daily Construction Report form (see Attachment U-1).

Control and disposition of such deficiencies shall be by the originator of the Daily Construction Report form and the CC's supervisor responsible for the work; and do not require formal action by the CC's CQC System Manager or the CM. Ideally, such minor deficiencies can be corrected on the spot by agreement with the CC's supervisor. Failure by the CC to correct a minor deficiency after having been put on notice will result in a nonconformance (discussed below) if it is not corrected within five working days of notification.

U5.2.2 Nonconformances

Nonconformances are major deviations from the contract requirement and/or accepted construction standard which must be formally documented for corrective action by the CQAO or a testing group.

Nonconformances shall be formally documented by the CQAO on a Notice of Non-Compliance form (NNC; see example contained in Attachment U-1). The NNC is a formal notification to the CC that work does not meet the design plans or the Technical Specifications for the project. Nonconformance reports will be included on a nonconformance log and tracked through verification that the nonconformance has been corrected.

U5.3 CC CQC DEFICIENCY CORRECTION

When material, performed work, or installation is found to be deficient and/or does not meet the project Technical Specifications, the CQAO will assure deficiency correction is implemented. The CQAO shall ensure that the non-conforming material, work or installation is identified and controlled to prevent unintended use or delivery. The non-conforming material or work product shall be tagged and segregated by the CC, when practical, from conforming material or items to preclude their inadvertent use. The CQAO is responsible for documenting the nonconformance in an NNC.

The CC will implement corrective actions to remedy work that is not in accordance with the design drawings and Technical Specifications. The corrective actions will include removal and replacement of deficient work using methods approved by the CQAO. Removal must be done in a manner that does not disturb existing work and that meets CQA/CQC criteria; otherwise, the disturbed work must be removed and replaced. Replacement must be done in accordance

with the corresponding design plans, RAWP, and Technical Specifications. Replacement will be subjected to the same scope of CQA/CQC inspection and testing as the original work. If the replacement work is not in accordance with the design drawings and Technical Specifications, the replacement work will be removed, replaced, re-inspected, and re-tested.

U5.4 PREVENTATIVE ACTIONS

The CC and CQA/CQC team shall take preventative actions as necessary to eliminate the causes of potential deficiencies so as to prevent their occurrence. The CQAO will monitor, inspect, and audit processes used to prevent erroneous information or construction products from being passed to the Company. The CQAO has the authority to implement, verify, and review the project's preventative and corrective action effectiveness. He/she is empowered to improve the project's work processes to eliminate the causes of potential nonconformities.

U6.0 DOCUMENTATION

The CC's CQC documentation must cover all aspects of CQC program activities, and includes Daily Inspection Reports and Daily Test Reports. The CC will document the CQC activities pursuant to the contract documents. The CQAO and FE will document ongoing CQA oversight.

U6.1 DAILY RECORDKEEPING

Both the CC and CM personnel will manage project documents through a secure document filing and storage system. Sufficient records shall be prepared and maintained as work is performed to furnish documentary evidence of the quality of construction and laboratory analysis and of activities affecting quality. Each CC QC technician shall maintain a daily log of all inspections performed for both CC and subcontractor operations in a written report form (i.e., field logbook, Daily Construction Report form) acceptable to the CQAO. Typical information to be documented by the CC includes:

- Description or title of the inspection activity
- Location of the inspection activity or location from which the sample was obtained
- Recorded observation or test data
- Results of the inspection activity
- Personnel involved in the inspection activity
- Signature of the inspector

The CQC documentation shall be signed by the responsible QC Technician and the CC QCM. The CC QCM will provide to the FE at least one copy of each daily inspection and test report on the work day following the day of record.

U6.2 DAILY CONSTRUCTION REPORT

The FE will prepare and sign a daily construction report. The report will include a summary of the CC's daily construction activities. Supporting inspection data sheets will be attached to the daily report where needed. An example Daily Construction Report form is included in Attachment U-1.

The daily construction report typically will include the following information:

- Date, project name, location, and other identification
- Description of weather conditions
- Personnel, subcontractors and visitors
- Equipment used
- Summary of construction activities
- CQA and CQC activities (including inspections and test results)
- Discussions with Company and CCs
- Potential causes for delays or change orders
- Photo log

The daily construction reports will be filed on a daily basis in the project CQA/CQC files and will be maintained by the CQAO as part of the permanent project record.

U6.3 RECORD DRAWINGS

The CC will be responsible for red-lining design drawings in the field as preparation for Record Drawings. The red-lined design drawings will document actual field conditions upon completion of the work. Where there was a change to a specified material, dimension, location, or other feature, the red-lined design drawings will indicate the work performed.

The FE working with the CC will be responsible for assuring that red-line design drawings are maintained daily throughout the construction process. These red-lined design drawings will be used to update the design drawings to Record Drawings at the completion of the work.

The CC will submit draft red-line design drawings to the CQAO for review and will prepare final red-line design drawings based on CM-staff comments. The CQAO will provide the red-lined design drawings to the Project Designer who will incorporate the red lines and issue the final Record Drawings to the Company.

U6.4 CONTROL OF QUALITY RECORDS

The CC will provide an electronic or paper copy (suitable for scanning) of CQC documentation associated with the work to the CQAO within five working days of the generation of such documents. The CC shall maintain a fire-resistant file box at the project site for the duration of the field activities. The CC's documentation shall contain all inspection reports, test records, contract documents, project, and daily field reports. The CQAO verifies CQA record accuracy and maintains copies of all quality-related documentation in the permanent project files at the CQAO's home office.

U7.0 CHANGE MANAGEMENT

U7.1 ENGINEERING CHANGE NOTICES

Any changes required to approved Final Designs shall be documented with an Engineering Change Notice (ECN). ECNs shall be prepared and submitted to EPA with weekly reports, unless otherwise directed by EPA. The Company shall specifically identify in the weekly construction reports ECNs which constitute a significant deviation from the approved RAWP or which may affect the project schedule. Such ECNs require EPA review and approval. ECNs shall not impact achievement of the performance standards. ECNs may be required as a result of the Adaptive Management activitiesPlan described in Section 6.0 of the RAWP.

U7.2 CQAP CHANGES

The Company, Supervising Contractor, or the CQAO may initiate revisions to this CQAP. The CQAP may be revised when it becomes apparent that the CQAP procedures or controls are inadequate to support work being produced in conformance with the specified quality requirements, or are deemed to be more excessive than required to support work being produced in conformance with the specified quality requirements. Changes to CQA procedures necessitating modification to this CQAP will be submitted for EPA review and approval. Updates to CQAP staffing will be made by the Company with notification to EPA without submission of a fully revised CQAP.

U7.3 CC QUALITY CONTROL SYSTEM CHANGES

The CC QC system may require revisions as necessary to correct unsatisfactory performance. At any time, the CQAO, Company, or Supervising Contractor, may require the CC to make changes to their QC system, including personnel changes, as necessary to obtain the quality specified. Moreover, the CC may initiate system changes to correct CQC process problems, and is required to notify the CQAO in writing of any desired changes; all changes are subject to the Company and CQAO acceptance.

U8.0 REFERENCES

U.S. Army Corps of Engineers (USACE), 1995. Construction Quality Management. Regulation No. ER 1180-1-6. September 30.

U.S. Environmental Protection Agency (EPA), 1987. Technical Guidance Document – Construction Quality Assurance for Hazardous Waste Land Disposal Facilities. Hazardous Waste Engineering Research Laboratory, Cincinnati, Ohio. EPA/530-(S)SW-86-031. February.

U.S. Environmental Protection Agency (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. 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.

FIGURE

Attachment U-1

Example Forms

Daily Construction Report

Notice of Non-Compliance Form