Golder Associates Inc.
2247 Fox Height Lane, Suite C
Green Bay, Wisconsin USA 54304
Telephone: (920) 491-2500
Fax: (920) 491-2510
www.golder.com

CONSTRUCTION QUALITY ASSURANCE WORKPLAN

SUNRISE MOUNTAIN LANDFILL

CLARK COUNTY, NEVADA

TASK 3.3

REVISION 3, JULY 1, 2011

Prepared for:

Republic Services of Southern Nevada
770 East Sahara Avenue
Las Vegas, Nevada 89104

Prepared by:

July 1, 2011

093-9743611

THIS PAGE INTENTIONALLY LEFT BLANK.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ACRONYMS AND ABBREVIATIONS

ASTM	American Society of Testing Materials
CAR	Corrective Action Report
CQAM	Construction Quality Assurance Manager
CQAP	Construction Quality Assurance Plan
CQC	Construction Quality Control
CQCSM	Contractor Quality Control System Manager
DQCR	Daily Quality Control Report
EG	Emission Guidelines
EPA	U.S. Environmental Protection Agency
FID	flame ionization detector
QA	Quality Assurance
QC	Quality Control
GCCS	LFG collection and control system
GMCAWP	Gas Monitoring and Corrective Action Workplan
GPS	global positioning system
GRI	Geosynthetics Research Institute
IGA	infrared gas analyzer
in. Hg	mercury vacuum gage
LEL	lower explosive limit
LFG	landfill gas
M&TE	Measurement and Testing Equipment
Mg/yr	megagram per year
NAC	Nevada Administrative Code
NCR	Nonconformance Report
NMOC	Non-Methane Organic Compound
NSPS	New Source Performance Standards for Municipal Solid Waste Landfills
ppm	parts per million
RCC	Roller compacted concrete
RFI	Request for Information
RSSN	Republic Dumpco, Inc. and Republic Silver State Disposal, Inc., d/b/a - Republic Services of Southern Nevada
SEM	surface emissions monitoring
SOW	*United States v. Republic Dumpco, Inc., Civ. Action No. 2:08-cv-01024-PMP-PAL (D. Nev.),* Appendix A, "Scope of Work for Sunrise Mountain Landfill,"

THIS PAGE INTENTIONALLY LEFT BLANK.

1.0 INTRODUCTION

1.1 Purpose and Scope

The purpose of this Construction Quality Assurance Plan (CQAP) is to present the measures to be taken to determine compliance with plans and specifications through tests and systems of inspection during construction at the Sunrise Mountain Landfill as stipulated in *United States v. Republic Dumpco, Inc., Civ. Action No. 2:08-cv-01024-PMP-PAL (D. Nev.)*, Appendix A, "Scope of Work for Sunrise Mountain Landfill," (SOW) Task 3.3 (EPA, 2008). Republic Dumpco, Inc. and Republic Silver State Disposal, Inc., d/b/a - Republic Services of Southern Nevada (collectively "RSSN"), with its consultants, has prepared this CQAP to meet the requirements of the SOW.

This CQAP was prepared to assist RSSN with the construction and installation of the final cover system and storm water features at the landfill. Following the Contractor's acceptable completion of work, RSSN or their designee will certify that the installation of the final cover system and storm water features were constructed in accordance with the approved construction plans and specifications to address the SOW. To implement the project, RSSN will retain a third party to monitor construction and to serve as a Quality Assurance (QA) Consultant. The QA Consultant will work as an independent party to ensure project conformance by the Contractor to the Construction Quality Control (CQC) standards established in this CQAP.

Construction Quality Control (CQC) is defined as a planned system of activities that ensures that a facility was constructed as specified in the design. The system includes inspections, verifications, audits, and evaluations of materials and workmanship necessary to determine and document the quality of the constructed facility.

The basic components of this CQC program are:

- Preparation of a CQAP
- Field monitoring and confirmatory testing of construction materials
- Field monitoring of soil characteristics testing of each specified material as it is placed and compacted
- Field monitoring of roller compacted concrete (RCC) dam spillway materials installation

- Final walk-over of completed work
- Maintenance of daily reports
- Review and approval of technical and laboratory data
- Identification and documentation of defects and repairs
- Compilation and presentation of applicable data, logs, Contractor as-built documents, photos, and comments into a Construction Certification Report.

The CQC process assures that qualified people are monitoring the progress and quality of construction. The process provides an objective overview of project progress and can help identify potential deficiencies or future problem areas during and after construction. CQC helps the Contractor and RSSN complete the project in a more cost-effective manner by requiring compliance with Quality Control (QC) specifications before the project components proceed to the extent where substantial rework may have to be done in order to correct a defect.

The CQAP identifies the personnel involved in construction quality controls, their inter-relationships, and their responsibilities. The CQAP establishes QC reporting requirements. Finally, the CQAP requires that a compendium of test results, observations, and as-built plans be compiled into a Construction Certification Report, which is signed and sealed by a Professional Engineer and shows the construction was completed as designed.

1.2 Layout and Use of this Document

Section 2.0 Site Description, of this CQAP provides a brief description of the site. Section 3.0, Quality Control Program, provides the QC Program, management systems, and general requirements for controlling the quality of work products and services. This section also defines requirements for control of documents and records, provides the strategy for assessing the effectiveness and implementation of this plan, and describes how the quality of subcontracted work is to be controlled. The rest of sections are laid out in the following manner:

- 4.0 Construction testing
- 5.0 Definable Features of Work.
- 6.0 Certification Report Preparation

- 7.0 Review and Approval of Deliverables
- 8.0 Certification
- 9.0 References

1.3 General Requirements

For the purposes of this plan and any plan developed through its use, the following terms are used in accordance with EPA guidance:

- QC comprises the measures taken by the Contractor to ensure the work performed by the Contractor and its subcontractors and suppliers complies with the requirements of the contract. Although the primary objective of QC is to anticipate potential problems, QC measures also include corrective actions. The QC measures are to be adequate to cover all operations, including both on-site and off-site activities, and keyed to the proposed work sequence.
- QA comprises the measures taken by the Owner (RSSN) to oversee the work of contractors. QA measures include inspections, verification, audits, and evaluations of materials; workmanship; and implementation of the CQC system by the Contractor.

The QC Program defined herein will be implemented for this project by personnel knowledgeable in QC theory and practice, and with adequate and defined responsibilities and authority.

The effectiveness and implementation of the program described herein are to be verified and documented in accordance with the requirements specified in Section 3.5 of this document.

1.4 Applicability of laws, regulations, and guidelines

Strict adherence to this CQAP in no way absolves the Contractor from any obligation or responsibility under applicable regulations. Regulations that apply to this project include, but are not limited to, the following:

- Occupational Safety and Health Administration regulations
- U.S. Environmental Protection Agency (EPA) regulations
- Nevada Administrative Code
- Nevada Division of Environmental Protection

- U.S. Department of the Interior, Bureau of Land Management
- Clark County Regional Flood Control District
- Other local conservation commission regulations

1.5 Project Plans

All work to be performed at the Sunrise Mountain Landfill shall be in accordance with the following documents:

- Health and Safety Plan
- Storm Water Pollution Prevention Plan
- Final Cover Corrective Measures Workplan
- Storm Water Control Workplan
- Gas Monitoring and Corrective Measures Workplan
- Groundwater Monitoring Workplan
- Contractor Quality Control Plan
- CQAP
- Clean Diesel Plan

1.6 Project Scope of Work

The overall project scope of work is defined in the (SOW) and consists of installing the final cover, upgrading storm water control features, burying existing landfill gas (LFG) collection headers, installing new groundwater monitoring wells, and monitoring landfill gases and groundwater at the site.

2.0 SITE DESCRIPTION

2.1 Location and Facility Description

Sunrise Mountain Landfill is located in the northeast quarter of Township 21 South, Range 62 East, Sections 1, 11, and 12, Mount Diablo Base & Meridian, Clark County, Nevada. It is located approximately 3 miles east of Las Vegas in Clark County, Nevada. Figure 2.1, "Site Location," identifies the landfill location.

The Sunrise Mountain Landfill is categorized in Nevada as a Class I Solid Waste facility, which stopped accepting solid waste in 1993. The landfill includes a 720-acre area leased from the U.S. Bureau of Land Management by Clark County, and adjoining off-lease areas where landfill disposal occurred. Currently, the closed landfill is under a Consent Decree issued on August 7, 2008 (EPA, 2008). A site plan depicting the current site conditions is provided as Figure 2.2, "Site Plan." Personnel, equipment, and materials enter and exit the landfill by gated access at the terminus of Vegas Valley Drive, approximately 3 miles east of Las Vegas.

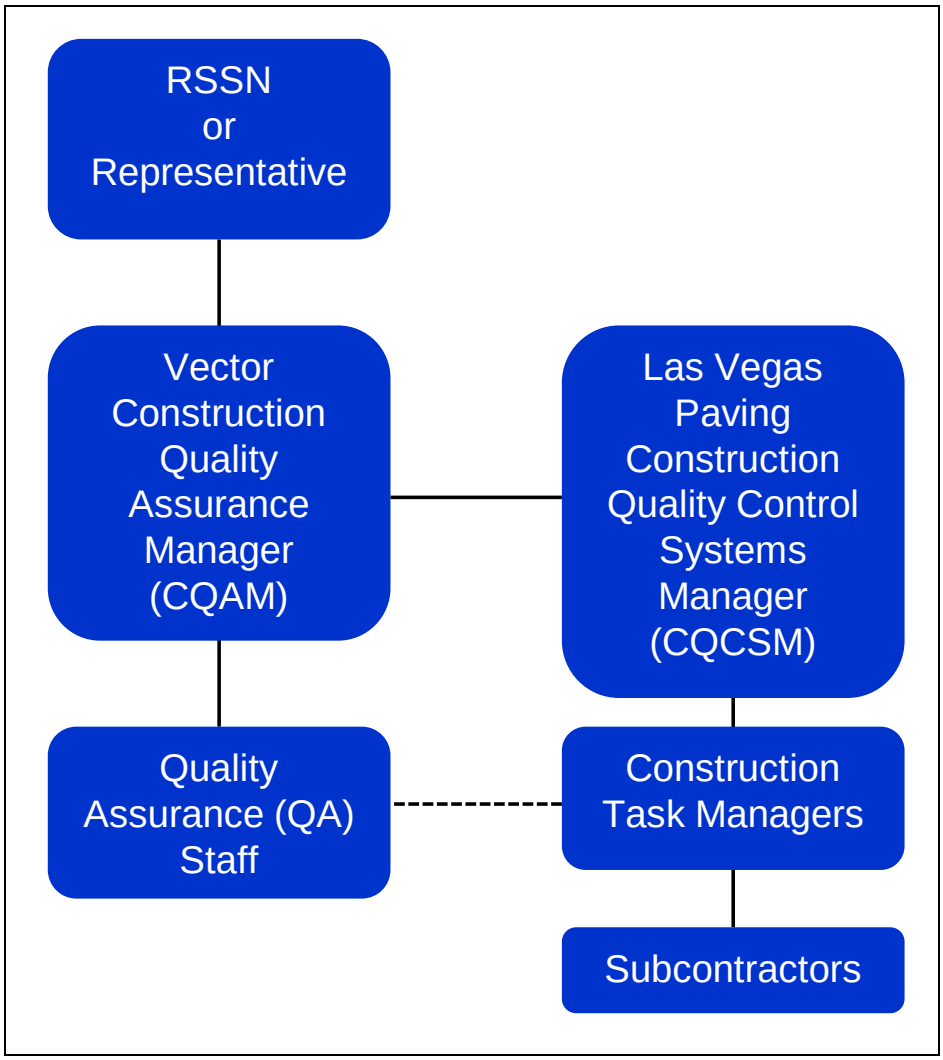
THIS PAGE INTENTIONALLY LEFT BLANK.

3.0 QUALITY CONTROL PROGRAM

3.1 Project Quality Control Organization

The project QC organization shall be adequately staffed and supported for implementing the CQAP. Figure 3.1, "Sunrise Quality Control Organization Chart," presents the QC organization for the performance and support of remedial action at the site, including the lines of authority and interface with other members of the project team. Each member of the project team, including subcontractors, shall be responsible for the quality of their work. The duties and responsibilities of the project QC organization are described in this section.

Figure 3.1
Sunrise Quality Control Organization Chart



3.2 Construction Quality Assurance Manager

The Construction Quality Assurance Manager (CQAM) is a third party manager responsible for the planning, development, implementation, and effectiveness of the project-specific QC Program included in this CQAP. The effectiveness of the program is measured through the use of audits, surveillances, document reviews, and other QA-monitoring activities defined throughout this document.

The duties of the CQAM include but are not limited to the following:

- Implementing the project CQAP
- Reviewing and approving the project-specific CQAP and all revisions
- Reviewing and approving supporting QC procedures
- Evaluating the effectiveness of the QC Program
- Assigning qualified QA personnel to projects
- Performing, either directly or via QA Staff, the monitoring, inspection, and testing activities discussed in Section 5 of this CQA Plan.
- Monitoring laboratory testing activities
- Identifying and reporting nonconforming items, conditions, or activities
- Directing and supporting project QC management staff
- Overseeing training and qualifications
- Ensuring the necessary QC resources are provided consistently with project needs

3.3 Contractor Quality Control System Manager

The Contractor Quality Control System Manager (CQCSM) reports information to the CQAM on all matters within the scope of the project QC Program. The CQCSM is responsible for the overall management of the contractor QC Program on site and off site, including field construction activities for the project. The CQCSM is responsible for daily interactions as applicable with the Project Superintendent and CQSM for field and construction activities.

Duties of the CQCSM include but are not limited to the following:

- Implementing the project QC requirements related to the contractor's activities
- Initiating or recommending corrective actions
- Verifying implementation of corrective actions
- Continuously evaluating the effectiveness of the project CQAP
- Notifying the CQAM of conditions adverse to quality that cannot be resolved at the project level
- Monitoring operation activities for compliance with contract requirements
- Monitoring on-site subcontractors
- Preparing QC reports as required by the contract
- Performing and documenting construction inspection activities for the contractor
- Providing support for testing and sampling activities

3.4 Quality Assurance Staff

Third party Quality Assurance (QA) staff will be assigned as needed by the QA Consultant to perform QA functions during execution of the project. Responsibilities of the QA staff include oversight and verification that the project is being conducted in accordance with applicable quality criteria, as specified in the contract documents, federal, state, or local requirements. QA staff will perform the monitoring, inspection, and testing activities discussed in Section 5 of this CQA Plan as directed by the CQAM.

3.5 Personnel Qualification and Training

All personnel assigned to the project will have the education, training, and experience appropriate to their assigned duties. Personnel performing QA functions will be properly trained and qualified to perform their assigned duties.

The CQAM is responsible for identifying the training needs of third party personnel and initiating the appropriate training required for each construction component. Training will be documented and training records retained as a quality record.

The training program required for management and field work personnel will be structured to be commensurate with the scope, complexity, and nature of the following:

- The individual's participation in the assigned work activities
- The individual's required quality-related functions and anticipated responsibilities
- The individual's education, previous training, and experience

The Contractor's PM is responsible for verifying that all contractor project personnel are properly trained, qualified, and where required, certified to the appropriate level for the work being performed. Training records will be maintained in accordance with project records requirements to establish and document the training requirements for project and management personnel.

When required, the qualifications and certifications of the CQCSM and subcontractor personnel will be submitted to RSSN or their representative for review and acceptance prior to the performance of any functions by an individual. The submittal of a subcontractor's qualifications will be required only in the instance when the subcontractor is solely responsible for QC. The ultimate responsibility for QC resides with the Contractor.

3.6 Inspection Phases

The CQCSM is responsible for verifying compliance with this CQAP through implementation of the three-phase control process for each definable feature of work listed in Section 5.0 of this CQAP, regardless of whether they are performed by the Contractor or its subcontractors. Implementation of this process provides for compliance with the approved plans, specifications, and procedures. This section specifies the minimum requirements that must be met and to what extent QA monitoring must be conducted by the CQCSM and third party QA staff. Each control phase is important for obtaining a quality product. However, the preparatory and initial inspections are particularly invaluable in preventing problems. Production work is not to be performed on a definable feature of work until a successful preparatory phase inspection has been completed.

3.6.1 Preparatory Phase Inspection

The CQCSM (or designee) will perform a Preparatory Phase Inspection prior to beginning each definable feature of work. These inspections are performed to review applicable specifications and to verify that the necessary resources, conditions, and controls are in place and compliant before the start of work activities.

The CQCSM (or designee) will review work plans and operating procedures to ensure they describe pre-qualifying requirements or conditions, equipment and materials, appropriate sequence, methodology, hold/witness points, and QC provisions. They are to verify that the required plans, specifications, and procedures have been prepared and approved, and are available to the field staff. Field equipment should be verified that it is appropriate for its intended use, including availability, functionality, and that it is properly calibrated. The CQCSM will also verify that staff responsibilities have been assigned and communicated; that staff have the necessary knowledge, expertise, and information to perform their jobs; and that arrangements for support services (such as health physics contractors and test laboratories) have been made; and prerequisite site work has been completed. As part of the Preparatory Phase Inspection, the CQCSM (or designee) is to verify that lessons learned during previous similar work have been incorporated as appropriate into the project procedures to prevent recurrence of past problems.

Project staff must correct or resolve any identified discrepancies with the approved plans/procedures identified by the CQCSM (or designee) during a Preparatory Inspection. The CQCSM (or designee) must then verify conformance with the plans and specifications prior to granting approval to begin work. Client notification is required at least 48 hours in advance. Results are to be documented on the Preparatory Phase Inspection Checklist and summarized in the Daily Quality Control Report (DQCR). Example copies of these forms can be found in Appendix A.

3.6.2 Initial Phase Inspection

The CQCSM (or designee) is to perform an Initial Phase Inspection (see Appendix A) the first time a definable feature of work is performed. The purpose of this inspection is to check preliminary work for compliance with procedures and specifications, establish the acceptable level of workmanship, check for omissions, and resolve differences of interpretation. The CQCSM (or designee) is responsible for ensuring that discrepancies between site practices and approved specifications are identified and resolved. Initial inspection results are to be documented by the CQCSM in the Initial

Phase Inspection Checklist and summarized in the DQCR (see Appendix A). Discrepancies between site practices and approved plans/specifications are to be resolved and corrective actions for non-compliant conditions or practices are to be verified by the CQCSM (or designee) prior to granting approval to proceed. Client notification is required at least 48 hours in advance. Results are to be documented in the initial inspection checklist and summarized in the DQCR.

3.6.3 Follow-Up Phase Inspection

The CQCSM (or designee) will perform Follow-Up Phase Inspections (see Appendix A) during the performance of a definable feature of work. The purpose is to provide continuous compliance and level of workmanship. The CQCSM (or designee) is responsible for on-site monitoring of the practices and operations taking place, and for verifying continued compliance with the specifications and requirements of the contract, and approved project plans and procedures. He/she is also responsible for verifying that a daily health and safety inspection is performed and documented. Discrepancies between site practices and approved plans/procedures are to be resolved, and corrective actions for unsatisfactory and nonconforming conditions or practices are to be verified by the CQCSM (or his designee) prior to granting approval to continue work. Follow-up inspection results are to be summarized in the DQCR.

3.7 Record Keeping and Reporting

The CQCSM, with assistance from all project staff, is responsible for the creation, distribution, and filing of all records and reports associated with regard to documentation of QC activities.

3.7.1 Daily Quality Control Report

The CQCSM (or designee) is responsible for maintaining daily records of QC operations, activities, and tests performed, including the work of subcontractors and suppliers. These daily records are to include objective evidence related to meetings, inspections, and tests. This information is to be summarized in the DQCR (Appendix A).

The original copy of the DQCR is to be furnished to the CQAM on the first workday following the date covered by the report. For days in which no work is performed, a DQCR need not be submitted. However, a summary report will be submitted for all periods of no work. Periods of no work that fall over weekends and are expected, as dictated by the project schedule, will be documented on

individual DQCR. The first report for a working day following a day (or period) of no work is to cover only the working day. All calendar days are to be accounted for throughout the life of the project.

3.7.2 Three-Phase Control Procedures

Compliance with the approved project plans and procedures will be conducted by the QA staff through implementation of the three-phase control process. This process provides assurance that project activities comply with the approved plans and procedures. In addition, procedures ensuring cost effectiveness and efficiency will be monitored for compliance. Each control phase is important for obtaining a quality product. However, the preparatory and initial inspections are particularly invaluable in preventing problems. For each definable feature of work discussed in Section 5.0 Definable Features of Work, the three-phase control process will be implemented.

- **Preparatory Phase** – Prior to the conduct of a definable feature of work, a Preparatory Phase Inspection Checklist (see Appendix A) will be performed by the appropriate QA staff to verify that work prerequisites have been satisfied, *i.e.*, prerequisite site activities have been completed; technical and quality procedures have been reviewed for adequacy and appropriateness, and approved for implementation; personnel are suitably qualified; required submittals (equipment, materials, and other resources) are available and meet contract requirements (see Tables 1 and 2, "CQA Testing Requirements Table"); and standards and codes that are either specified or invoked by reference in the contract or Delivery/Task Order are available. The preparatory inspection will include a discussion of procedures for conducting the work, including efficient operations and the level of workmanship required in order to meet contract requirements. Deficiencies will be corrected prior to initiating work.

- **Initial Phase** – After successful completion of the preparatory phase inspection and during the first time the definable feature of work is performed, work activities will be observed to establish standards of efficient operation and workmanship and to verify contractual and regulatory compliance, compliance with established procedures, and achievement of QA criteria. Differences of opinion in the interpretation of project requirements, plans, and procedures will be settled at the onset of work during the initial control phase. Deficiencies will be corrected prior to continuing with the definable feature of work. An Initial Phase Inspection Checklist (Appendix A) will be filed for each definable feature of work.

- **Follow-up Phase** – During execution of the definable feature of work, designated third party QA staff will observe work activities and verify continued compliance with the specifications and requirements of the contract, Delivery/Task Order, and approved project plans and procedures. Identified deficiencies will be corrected prior to continuation of the feature of work being

observed or the start of additional features of work that may be affected by the deficiencies. Identified deficiencies will be documented, as identified in Section 3.6.

- **Final Inspection** – With the completion of the definable feature of work, a Final Inspection will be conducted to document concurrence with the design. A Final Inspection Checklist (Appendix A) will be completed and submitted for each definable feature of work.

Upon conclusion of the definable feature of work and prior to closeout, a Completion Inspection will be conducted to verify that project requirements relevant to the particular feature of work are satisfied. Outstanding and nonconforming items will be identified and documented. As each item is resolved, it will be noted. CQAM and RSSN or their representative acceptance and closeout of each definable feature of work is a prerequisite to project closeout.

Additional preparatory and initial inspections on the same definable feature of work may be required at the discretion of the CQAM or the CQCSM, with approval of the RSSN or RSSN's Representative. Additional inspections are generally warranted under any of the following conditions:

- Unsatisfactory work, as determined by RSSN or RSSN's representative
- Changes in key personnel
- Resumption of work after a substantial period of inactivity (*e.g.*, 2 weeks or more)
- Changes to the project scope of work/specifications

3.7.3 Inspection Procedures

The quality of project work products and services, including subcontractors and suppliers, will be conducted through implementation of approved operating procedures, appropriate use and control of equipment, and the control and management of materials and technical services. These control procedures will be implemented in a manner that produces efficiency, cost-effectiveness, reliability, and technical merit of the resulting work.

- **Receiving and Storage** – The CQCSM (or designee) is to inspect construction materials upon receipt and prior to use. Visual inspection criteria include identification, signs of damage or distortion, completeness, evidence of compliance with specifications, and associated documentation. Results of receiving inspections are to be documented and summarized in the DQCR.

- **Off-Site Control** – Source inspections at facilities of off-site fabricators and suppliers may be required to verify compliance with contract specifications and drawings and to allow for delivery of acceptable items, materials, and/or services.

- **Material Certification** – Copies of purchase orders or subcontracts related to materials requiring receiving inspection are to be provided to the CQCSM for scheduling and record-keeping purposes. If a purchase order requires vendor certification of materials, equipment, or supplies, the certification is to be verified for accuracy and conformance and may be used in lieu of a test for those properties covered by the certification. Copies of certifications are to be maintained in the project QC file and made available to the client upon request or submitted, as specified in the contract.

- **Inspection of Workmanship** – The CQCSM (or designee) is to inspect items that will be embedded in concrete pavements and areas that will be covered as a result of subsequent work. The CQCSM (or designee) is to verify that installed items conform to applicable specifications prior to the placement in concrete or covering. Identified deficiencies are to be communicated to the responsible individual and documented in the Nonconformance Report (NCR). Corrective actions are to be verified by the CQCSM and recorded in the NCR.

- **Operating Procedures** – Workmanship will be performed in accordance with the prepared plans and specifications. Each definable feature of work will be assessed initially and periodically using the three-phase inspection procedure. The quality of work activities will be assessed through inspection of submittals, surveillance of activities, and review of plans/procedures for compliance with project requirements.

- **Equipment Use and Control** – Equipment used in the remedial activities will be controlled as follows:

    - Contractor's equipment (including equipment purchased for work at the landfill) will be inventoried and controlled.

    - Measurement and test equipment (M&TE) will be calibrated to a traceable and appropriate standard, and regularly maintained to assure optimum performance. M&TE that do not meet specified performance criteria will be tagged or segregated to exclude their use.

    - Sampling and field monitoring equipment will be controlled as prescribed in the Safety, Health, Emergency Response Plan, and associated work plans.

- **Management and Oversight of Subcontractor Services** – Once a subcontractor is selected for a project, the quality of the subcontractor's services and products will be verified initially and periodically thereafter using the three-phase inspection. The quality of subcontractor work, activities, and deliverables will be verified through inspection of submittals, monitoring of activities, and review of their plans/procedures for compliance with project requirements. The CQCSM (with assistance from RSSN or their representative and the CQAM) is

responsible for both on-site and off-site subcontractor QC and monitoring of project activities. Discrepancies associated with subcontractor work are to be communicated to the subcontractor for resolution. The deficiency management systems outlined in Section 3.6 are to be followed. The CQCSM and his staff have the authority to act directly with subcontractor representatives on routine QC activities. If a discrepancy is dependent upon subsequent operation, a resolution is to be made by the CQCSM (or designee) and CQAM prior to the performance of the subsequent operation.

3.7.4 Submittal Management

Submittals include deliverables, whether generated on site or off site by the Contractor, subcontractors, fabricators, manufacturers, suppliers, or purchasing agents. Submittals may include, but are not limited to, shop drawings, test samples, letters of certification, test reports, equipment and components thereof, materials, work plans, QC plans, accident prevention plans, final reports, as-built drawings, catalog cuts, diagrams, and operating charts or curves.

For materials used in construction of on-site facilities, submittals for all materials are to be provided to the CQCSM prior to use of the material on site in accordance with the requirements of this plan. Ideally, the submittals should be provided to the CQCSM seven days prior to use. However, based on field changes and schedule constraints, the seven-day prior notice can be superseded upon approval of the CQCSM and/or the CQAM. The submittal shall be reviewed by the CQCSM, or designated QA staff, for conformance with requirements of the corresponding plans and specifications. Upon completion of review, the designated reviewer shall complete "Transmittal of Shop Drawings, Equipment Data, Material Samples," or "Manufacturer's Certificates of Compliance," (see Appendix A) and provide copies of the submittal for CQAM review. Submittals that are not approved or determined to be insufficient for review shall be revised and resubmitted prior to use of the material on site.

Submittals shall be consecutively numbered and maintained in the project file for review by the CQAM.

All submittals generated as part of the project are termed "For Information Only." All submittals will be accessible to the CQAM in the project file, and communication among all interested parties will keep everyone up-to-date on the status of the project. Any clarifications of plans and/or specifications are to be requested using the "Request for Information (RFI)" form (Appendix A). CQCSM, QA staff, or subcontractors may request clarifications. Each RFI will be assigned a

consecutive number and submitted to the appropriate party for response by the CQCSM (or designee). The CQCSM is responsible for tracking the RFI using the RFI Tracking Log (Appendix A) until resolved.

On or before the 25th day of each month, the CQAM will provide a monthly summary of CQA activities and reports to RSSN, the RSSN Project Coordinator and the RSSN Alternative Project Coordinator. The summaries will include Nonconformance Reports for the month and the Nonconformance Tracking Log. The monthly CQA summaries will be included in the EPA Monthly Progress Report.

3.8 Deficiency Management

The QC Program is comprised of the internal systems that evaluate the quality program's effectiveness in ensuring and continually improving the quality of the work. The primary goals of the QC Program defined in this document are to prevent nonconformance and facilitate continual process improvement. To the extent that the first of these goals is not achieved, identified deficiencies or nonconformances are to be corrected in a timely and cost-effective manner and with the intent of preventing their recurrence. This CQAP includes provisions for preventing quality problems and facilitating process improvements as well as for identifying, documenting, and tracking deficiencies until corrective action has been verified.

3.8.1 Preventive Measures

Certain elements of the QC Program are designed to be proactive. The primary tools for problem prevention on this project include: Personnel Qualification and Training (Section 3.5), Preparatory and Initial Inspections (Section 3.6), Submittal Management (Section 3.7), and M&TE Calibration and Maintenance (Section 4.4). Should these preventive measures fail, tracking and communicating deficiencies provide a mechanism for preventing their recurrence.

3.8.2 Continual Improvement

Project personnel at all levels are to be encouraged to provide recommendations for improvements in established work processes and techniques. The intent is to identify activities that are compliant but can be performed in a more efficient or cost-effective manner. Project personnel are to bring their recommendations to the attention of the CQAM, CQCSM or QA staff through verbal or written

means. However, deviations from established protocols are not to be implemented without prior written approval by the CQAM and concurrence of the CQCSM.

3.8.3 Nonconformance Report

Work or materials not conforming to the specifications or contract requirements, including noncompliances and deficiencies identified by the CQAM, RSSN or RSSN's Representative, will be identified and documented on a NCR (Appendix A). The NCR will remain open until the nonconforming condition has been satisfactorily resolved and verified as acceptable by the CQCSM and CQAM.

3.8.4 Nonconformance Tracking and Status

Each identified nonconformance will be documented on the NCR Tracking Log (see Appendix A). At a minimum, the tracking log will include the following information:

- Specification reference or drawing number
- Description of condition
- Location of discrepancy
- Name of individual identifying the condition
- Date the condition was identified
- NCR number
- Corrective action verification date
- Date the NCR was closed out
- Comments

The CQCSM (or designee) is responsible for maintaining the NCR Tracking Log and confirming that the corrective actions were implemented and verified prior to closing the NCR. When RSSN or their representative identifies a noncompliance or deficiency, the NCR will be tracked and the CQAM will be notified in advance of verification of the corrective action so that the RSSN or their representative can participate in the inspection and acceptance of the results prior to closing the NCR.

3.8.5 Corrective Action System

When an adverse quality trend has developed, a discrepancy does not fit into another resolution process, or when earlier actions taken in response to an identified discrepancy are inadequate, a Corrective Action Report (CAR) (see Appendix A) will be initiated. The CAR will be evaluated by the CQCSM and assessed for significance. To the extent commensurate with the significance of the discrepancy, the cause and extent of the condition will be investigated, the corrective action will be identified, and the verification activities required to close the CAR will be identified. Activities addressed by a CAR shall cease until the condition is addressed and corrective actions have been implemented. CARs will be tracked on the CAR Tracking Log (see Appendix A).

3.9 Project Records

The CQCSM, with assistance from all project staff, is to establish and maintain an on-site project file in accordance with contract requirements for document control. RSSN or RSSN's Representative is responsible for controlling access to the project file to prevent records from being lost or misplaced. The purpose of this file is to maintain a complete set of all documents, reports, certifications, and other records that provide information on project plans, contract agreements, and project activities.

As the project activities progress, the CQCSM will monitor usefulness of the project filing system for information retrieval. If it is determined that additional file sections are needed, the initial filing structure shall be modified to include additional sections.

3.10 Project Documentation

The QC file, which is to be controlled as a component of the project files, is to be maintained by the CQCSM and staff.. Shop drawings, work orders, and change orders issued for the work are to be provided to the CQCSM. It is the responsibility of the CQCSM (or designee) to maintain this technical information and keep it current and recorded as it is revised. Technical information is not to be replaced or revised without receipt of a properly authorized change order or revision. Copies of purchase orders or subcontracts requiring inspection are to be provided to the CQCSM for receiving and recording purposes. Copies of required certifications received are to be maintained in the QC file and are to be submitted to the client in accordance with agreements made at the coordination meeting. Changes in submittal progress and QC activities related to submittals are to be summarized in the DQCR.

THIS PAGE INTENTIONALLY LEFT BLANK.

4.0 CONSTRUCTION TESTING

Construction testing is to be performed to characterize materials, work-in-progress, and completed work in order to confirm that specifications and requirements are met. Testing in support of the Sunrise Mountain Landfill will include on-site and off-site testing of materials; characterization, and sampling and analysis of various media; and surveying. This section provides a construction test plan for the Sunrise Mountain Landfill.

4.1 Construction Testing Application

Construction testing will be conducted and reported in accordance with project specifications, drawings, codes, standards, and procedures. The CQCSM, CQAM and the QA staff will use this plan as a guide and checklist throughout the project. A preparatory meeting will be held for each definable feature of work where the testing and frequency of tests are to be reviewed. RSSN or RSSN's Representatives will be notified 48 hours prior to any testing performed. The QA staff is responsible for ensuring that the tests are performed and that the results are summarized in and provided with the DQCR. Any failing test will be noted on the deficiency log so it can be tracked until such time as rework and retesting can be performed and corrective action is verified.

4.2 Testing Procedures

The QC staff will verify that the particular test equipment and criterion for successful completion of the required test are correct as well as confirm that test personnel have a working knowledge of the test and instruments. Upon satisfactory verification of the stated requirements, the test may proceed. Each reading is to be recorded and documented by a member of the QA staff. To the extent practical, tests are to be witnessed by a member of the QA staff. The tests to be conducted, the procedures to be used, and the submittals required for each system are as reported and specified in the applicable specifications, submittal registers, and drawings for definable features of work. The submittal register for the project is provided in Appendix A as "Submittal Register."

4.3 Test Organizations

The qualifications of each on-site or off-site laboratory will be verified by the CQCSM (or designee) as prescribed in accordance with the American Society for Testing and Materials (ASTM) E 329: *Use in the Evaluation of Testing and Inspection Agencies as Used in Construction*. The CQCSM (or

designee) is also responsible for monitoring the performance of each laboratory and verifying compliance with the specifications of this CQAP. Specifically, the CQCSM is to verify that each laboratory performs the prescribed tests in accordance with the requirements of the test plan and ASTM standards. This is to be accomplished through a full review of test data reports. The CQCSM may, at his discretion and with CQAM approval, perform follow-up on-site inspections of a laboratory or procure outside auditing services to supplement data review information, to clarify uncertainties, or as part of a root cause analysis for an identified problem area.

Data reports are to include sufficient information to verify the effectiveness and implementation of laboratory QC systems. Requisite information may include raw data, instrument printouts, preparation logs, calibration records, test results for associated QC samples, dilution factors, instrument settings, equations used in data reduction, and observed deviations or problems.

The geotechnical QA/QC laboratory shall have experience in testing granular soil fills and aggregates, and shall be familiar with ASTM test standards and procedures, as required in the specifications. The geotechnical QA/QC laboratory shall be capable of providing all test results within 4 days of receipt of samples. The geotechnical QA/QC laboratory must submit an acceptable QA/QC Plan to the PM to demonstrate that the laboratory has the capability to complete the QC testing required in the specifications. The geotechnical QA/QC laboratory shall be responsible for performing all tests and formally submitting results to the CQAM and to RSSN or RSSN's Representative as required in the specifications.

Laboratory tests will be performed according to applicable test procedures following the guidelines set forth by ASTM and the Geosynthetics Research Institute (GRI). To assure the accuracy of the data, all test results should be checked and verified by the Laboratory Director or by senior laboratory personnel.

4.4 Measurement and Test Equipment Calibration and Maintenance

M&TE are to be calibrated to the appropriate traceable standards and maintained per manufacturer's specifications. Records of these activities are to be generated by the individual performing the activity with copies provided to the CQCSM for retention in the project QC file.

4.5 Review of Test Results

Prior to their use in decision-making, test data are to be reviewed by the CQCSM (or designee). The review process will include the following:

- Verification that all required documentation was submitted
- Verification that specified test procedures and conditions were followed
- Review of QC data and comparison of achieved results against specified limits of acceptability

4.6 Documentation of Testing

Testing is to be performed to characterize materials, work-in-progress, and completed work, and to confirm that specifications are met. Testing in support of remediation activities generally includes on-site tests of materials and as-built structures, on-site Operation and Maintenance monitoring, and off-site testing and certification such as laboratory tests, factory tests, receiving inspections, manufacturer certifications, and equipment calibrations. Tests related to environmental samples are addressed in the Groundwater Monitoring Workplan, Storm Water Monitoring Plan and Gas Monitoring and Corrective Measures Workplan, and are not necessarily subject to documentation procedures, as specified in this section.

Test results are to be documented by the individual performing the test. Calibration and maintenance records associated with the M&TE are to be generated by the individual performing the activity. Documentation for calibration and maintenance of M&TE is to be made available to RSSN and the CQAM upon request.

Test results are to be retained in the project file and summarized in the DQCR. These results will be compiled into a report for the CQCSM and will include the name of the test, the items tested, test conditions and procedures, units of measurement, the resulting test data for all submitted samples (both passing and failing), and associated QC information (*e.g.*, equipment calibration and maintenance, duplicate measurements, and use of certified reference standards). A copy of each test report is to be attached to the DQCR.

5.0 DEFINABLE FEATURES OF WORK

The definable features of work consist of individual tasks that together comprise each distinct component. The grouping of individual tasks associated with each definable feature of work was established to create the QC requirements for implementation of the three-phase inspection process.

- During each of the construction activities listed in this section, visually observe and document the Contractor's construction methods, including manpower and equipment.

5.1 Mobilization and General Site Preparation

All labor, materials, and equipment necessary to perform the work will be coordinated by the Project Superintendent on site in a timely manner in order to support the approved schedule. The following activities will be included in the general site preparation:

- Installation of temporary facilities such as trailers, offices, utilities, consumable materials, and other support equipment
- Provision for security and communications

5.2 Erosion Layer

5.2.1 Erosion Layer – Both Layer Types

- Obtain bulk samples of each material source and perform testing in accordance with ASTM C88 to determine material loss on exposure to sodium sulfate and magnesium sulfate.
- Perform a particle size analysis (ASTM D6913 or ASTM D5519) for every 5,000 cubic yards of erosion layer material.
- Obtain two bulk samples of gravel-size material from each source and test material retained on a 0.5 inch (12.7 mm) sieve for L.A. abrasion (ASTM C535 or ASTM C131).
- Obtain two bulk samples of gravel-size material from each source and test material retained on a 0.5 inch (12.7 mm) sieve for specific gravity (ASTM C127).
- Observe and confirm that each type of erosion layer is placed to the required minimum thickness.

5.2.2 Erosion Layer – Slopes ≥ 10%

- Visually inspect compaction of erosion layer on ≥ 10% slopes by observing for deflection when a tracked machine with the minimum specified ground pressure passes over placed and compacted material.

5.2.3 Erosion Layer – Slopes < 10%

- Perform dispersive clays test per ASTM D4221-99. A minimum of two tests per source shall be performed.
- Perform Atterberg limits tests (ASTM D4318) to obtain a plasticity index (PI) and liquid limit (LL) for the material. A minimum of two tests shall be performed for each source location.
- Calculate standard deviation for particle sizes less than 3 inches (ASTM D6913).
- Obtain one bulk source sample for every 20,000 cubic yards of blended soil and rock erosion layer material and test for moisture-density relationship per standard proctor method (ASTM D698).
- Test in-place moisture and density of erosion layer on < 10% slopes with a Troxler nuclear density gauge (ASTM D6938) at a frequency of one test per acre (as practicable depending on the coarse fraction of the soils being placed).

5.3 Soil Barrier Layer

- Prior to placement of new barrier layer soil, inspect the existing surface to verify that cracks have been filled, regrading is satisfactory, and that rocks exceeding the specified maximum allowable size have been removed.
- Obtain one bulk source sample for every 20,000 cubic yards and test for moisture-density relationship per standard proctor (ASTM D698).
- For each source, obtain two samples and test for particle size distribution (ASTM D422), Atterberg limits (ASTM D4318), and dispersive clays (ASTM D4221).
- Visually inspect barrier layer placement to verify that maximum loose lift thickness is not exceeded.
- Test in-place moisture and density with a Troxler nuclear density gauge (ASTM D6938) at a frequency of one test per lift per acre to verify that specified values are achieved.

- Verify that the total thickness of the completed barrier layer is greater than the minimum specified value. Measure thickness by before and after survey, use of grade stakes during placement, pot-holing after placement, or other approved method. If pot-holing is performed, backfill pot-holes with maximum 6-inch-thick loose lifts, compacting each lift to a firm and unyielding condition before placing the next lift.

5.4 Reinforced Concrete Channels

- Perform a final walk-though before concrete pour to verify that reinforcing steel has proper spacing and concrete coverage.
- Verify that steel reinforcement complies with CRSI's manual of standard practice.
- Verify that contraction and construction joints meet specifications.
- Verify that concrete meets specifications for slump (ASTM C143), air content (ASTM C231), and compressive strength (ASTM C39). Make and cure test specimens in accordance with ASTM C31. Test at a minimum frequency of one sample for every 100 cubic yards of concrete placed.
- Perform additional tests when test results indicate slump, air content, or other requirements are not met.
- During placement, measure temperature of concrete in accordance with ASTM C1064 to verify that allowable limits are not exceeded.
- Monitor concrete placement, finish, and cure.
- For the rockfall channel, verify that reinforcing steel dowels are installed with specified epoxy in accordance with manufacturer's recommendations at spacing indicated on the Drawings.

5.5 Riprap Channels and Riprap Aprons

- Determine riprap particle size distribution by ASTM D5519 at a rate of one test per source per riprap gradation.
- Measure riprap specific gravity per ASTM D6473 once for every 5,000 cubic yards of each material or whenever the rock type changes significantly, whichever results in the higher number of measurements.
- Test rock material for durability index in accordance with ASTM D5312 at a frequency of one test per source per gradation.

- Verify acceptable stone quality and angularity by visual inspection.
- During riprap placement, verify the following:

  (a) Subgrade condition is acceptable.

  (b) Minimum layer thickness is obtained, by visual observation.

  (c) Specified placement procedures are followed.

  (d) Finished surface is acceptable.

5.6 Grouted Riprap Channels

- For riprap, perform all applicable riprap testing and inspection listed in paragraph 5.5 of this CQA Plan.
- Prior to use, verify that the grout mix conforms to the requirements of the Specifications, including fiber mesh content.
- During construction, verify that weather conditions are suitable for grouting.
- Verify that the riprap is clean and moisture-conditioned prior to grouting.
- Measure air content per ASTM C185 at a minimum frequency of one test for every 100 cubic yards of grout mixed.
- Make test specimens and perform compression testing in accordance with ASTM C1019 at a minimum frequency of one test for every 500 cubic yards of grout mixed.
- Verify that grout completely fills the riprap layer and that stone protrusion at the surface is acceptable, by visual observation.
- Verify that appropriate curing materials (if any) and procedures are used.

5.7 Diversion Berm Embankments

- Perform one particle size analysis (ASTM D422) for every 5,000 cubic yards of embankment material.
- Obtain one bulk sample for every 5,000 cubic yards of soil to be used in diversion berm construction. Determine moisture-density relationship per modified proctor test (ASTM D1557). Perform additional tests whenever material types or sources change.

- Verify that embankment material is placed such that maximum loose lift thickness is not exceeded.

- Test in-place moisture and density of embankment material with a Troxler nuclear density gauge per ASTM D6938 at a frequency of one test per lift per 200 lineal feet of embankment.

- Verify berm slopes are within tolerance in accordance with the plans and specifications before the rip rap or grouted rip rap is placed.

- Verify rip rap and grouted rip rap is placed in accordance with the thicknesses and gradations in the plans and the specifications.

5.8 Asphalt Channels

- Perform test theoretical maximum specific gravity and density of hot mix asphalt (AASHTO T209).

- Review asphalt concrete supplier's certifications to verify that material satisfies the specified requirements.

- Verify that subgrade condition is acceptable.

- During asphalt placement, continuously observe asphalt concrete placement to verify that minimum required thicknesses are achieved. Obtain core samples in accordance with ASTM D979 and measure thickness per ASTM D3549 at intervals of 500 lineal feet of channel. At each location, obtain a core from each sideslope and the channel bottom. Backfill core holes with approved bituminous patching material.

- Measure flatness of channel bottom using a 12 ft long straightedge at 100 foot intervals to verify that specified tolerance is achieved.

- Measure density of placed asphalt channel lining using a nuclear gage (ASTM D2950) or electromagnetic sensing instrument (ASTM D7113). Measure at the center of each sideslope and the channel bottom at maximum intervals of 100 lineal feet along the channel.

5.9 Down Drains

- Observe and document placement of the CMP down drain to verify the correct size of down drain is installed in accordance with the plans

- Verify the CMP down drain is bedded soundly into the cover material.

- Verify 45° bends are installed where downdrains enter into channels.

- Observe, document, and verify that concrete thrust blocks are installed in accordance to the plans and specifications.

- Confirm that formwork remains in place until sufficient time has elapsed for concrete to cure.

- Perform a final walk-though before concrete pour to verify that reinforcing steel has proper spacing and concrete coverage.

- Verify that steel reinforcement complies with CRSI's manual of standard practice.

- Verify that concrete meets specifications for slump (ASTM C143), air content (ASTM C231), and compressive strength (ASTM C39). Make and cure test specimens in accordance with ASTM C31. Test at a minimum frequency of one sample for every 100 cubic yards of concrete placed.

- Perform additional tests when test results indicate slump, air content, or other requirements are not met.

- Measure temperature of concrete during placement in accordance with ASTM C1064 to verify that allowable limits are not exceeded.

- Monitor concrete placement, finish, and cure.

5.10 Landfill Gas Collection Lines

- Observe and document the excavation for gas collection trenches to verify compliance with the lines, locations, and elevations shown on the construction Drawings.

- Observe and document that all backfill is placed in accordance with the construction Drawings and Specifications.

- Observe and document that the installation of all pipe line markings is completed in accordance with the project Drawings and Specifications.

5.11 Dam Construction

- Obtain one bulk sample for every 5,000 cubic yards of soil to be used in dam construction. Determine moisture-density relationship per modified proctor test (ASTM D1557). Perform additional tests whenever material types or sources change.

- Verify that dam embankment material is free of organic matter.

- Perform particle size analysis (ASTM D422) on every 5,000 cubic yards of dam embankment material.

- Perform hydraulic conductivity analysis (ASTM D5084) on every 5,000 cubic yards of dam embankment material.

- Inspect blanket foundation drain installation to verify that the geotextile is not torn and has appropriate overlap/seam, the drain has positive drainage towards the outlet, and required stone thickness is achieved.

- Inspect foundation for gypsum seams.

- Verify that dam material is placed such that maximum loose lift thickness is not exceeded..

- Perform nuclear density testing (ASTM D6938) at a 100-foot grid spacing on each lift, or a minimum of one test per 500 cubic yards of material placed, whichever results in the greater number of tests. Perform additional testing adjacent to 25% of all structures and at 100-foot spacing in trenches.

- Monitor abutment cutoff wall installation to verify that abutment excavations operations are safe, cutoff wall is excavated to bedrock, and cutoff wall is constructed as required by the Specifications.

- Inspect installation of the principal spillway concrete cradle and conduit. Verify that foundation is prepared, cradle is constructed as shown in the construction Drawings, conduit is appropriately restrained to stop floatation during cradle construction, and conduit joints (as installed) are watertight. Verify drainage diaphragm during dam construction.

- Test dam toe drain material for particle size analysis (ASTM D422) at a frequency of one test per 500 cubic yards.

- Test dam toe drain material for hydraulic conductivity analysis (ASTM D2434) at a frequency of one test per 500 cubic yards.

- Test dam toe drain material for soundness AASHTO T104. Perform one test per source.

5.12 RCC Spillway Construction

5.11.1 Drainage Installation:

- Verify that material is obtained from an approved source.

- Verify that geotextile is not torn and has appropriate overlap/seam.

- Perform continuous inspection to verify that the geotextile filter is placed to required lines and grades and has not been contaminated.

- Perform continuous inspection to verify that drain material is placed to the lines and grades shown on the Drawings and in accordance with the Specifications.

- Verify that underdrain collection pipes meet specified size and quality.

5.11.2 Reinforced Concrete Structures:

- Perform continuous inspection during concrete placement for all reinforced structures.

- Review batch plant tickets to verify concrete mixture as specified.

- Confirm that formwork remains in place until sufficient time has elapsed for concrete to cure.

- Obtain at least one composite sample for each 100 cubic yard or fraction thereof of each concrete mix placed each day. Make four cylinders for each set in accordance with ASTM C31. Test for compressive strength (ASTM C39). Test one cylinder at seven days for information. Test two cylinders at 28 days for compliance. If one of the compliance cylinders shows evidence of improper sampling, molding, curing, or testing, it shall be discarded and the remaining cylinder tested.

5.11.3 RCC Construction:

- Verify that in general, the procedures outlined in the Portland Cement Association's Roller Compacted Concrete Quality Control Manual (PCA, 2000) are followed.

- Obtain representative composited aggregate samples from at least 3 accessible locations on the stockpile or at the borrow source for grain size analysis per ASTM C136 and ASTM C117. Sample and test at a minimum frequency of 1 per 1000 cy of aggregated used or one per day, whichever results in the greater number of tests.

- Test for specific gravity and absorption (ASTM C127 or ASTM C128) of aggregate during mix design phase. Test a minimum of 3 samples per aggregate source.

- Test for aggregate quality per ASTM C33 at RCC start and every 2 weeks thereafter until RCC construction is complete.

- Test for aggregate moisture content at a frequency of 1 per 1000 cy (ASTM C70 or ASTM C566).

- Test RCC mix for consistency and density (ASTM C1170) during mix design phase.

- Test RCC for in place density (ASTM C1040), moisture (ASTM D3017), and temperature (ASTM C1064) at a frequency of 1 per 100 cy with a minimum of 1 per lift or 1 per day, whichever results in the greater number of tests. Verify that outer edges of RCC steps are tested and are in compliance with the Specifications.

- Prepare cylinders in accordance with ASTM C1435 and test for compressive strength in accordance with ASTM C 39. Test one set of cylinders for each 1000 cy of RCC placed with a minimum of 1 set per lift or 1 set per day if only a partial lift is placed.

- Verify that bedding mortar is mixed per the proportions required by the Specifications and placed in the locations required by the construction Drawings and Specifications.

- Test bedding mortar for compressive strength (ASTM C39). Make one set of cylinders (ASTM C1435) per lift or one set per day if only a partial lift is placed.

- Verify that RCC is cured per the requirements identified in the Specifications.

6.0 CERTIFICATION REPORT PREPARATION

This section describes the methods and requirements for the preparation, review, and approval of reports. The report type (*e.g.*, Technical Reports, Closure Reports, Remedial Action Reports, *etc.*) will be determined by the scope of work, contractual and regulatory requirements, and the end use of the document.

For each report, the CQAM will perform the following:

- Determine the content of the report based on the task scope of work and regulatory requirements.
- Determine the report format.
- Assign qualified personnel to prepare the various items required for the report.
- Distribute information pertinent to their preparation activities and update this information as required.
- Coordinate with the various groups who may be working on the report.
- Assign qualified personnel to review the prepared report.

6.1 Report Format

Unless specific report formats are required by the scope of work or required regulation, technical reports will in general contain the following items in the order presented:

- **Table of Contents** – Should specify the first page number of the List of Tables, List of Figures, List of Appendices, each section of the report text, and the List of References.
- **List of Tables** – Should sequentially identify the figures referred to in the text by table number and title.
- **List of Figures** – Should sequentially identify the figures referred to in the text by report figure or drawing number and title.
- **List of Appendices** – Should identify each appendix by a letter designation (alphabetically) and title.

- **Executive Summary** – Should present a brief synopsis of report purpose, activities, results, conclusions, and recommendations for high-level management use.

- **Report Text** – Should consist of an introduction, the body of the text, and a section that summarizes the project/site-specific task order work performed, conclusions, and recommendations. The body of the text must be formulated based on the scope of work, design, contractual requirements, and intent of the report.

The introduction should identify and describe the objectives and purpose for which the work was undertaken. It should briefly discuss activities pertinent to the report subject. These may include field work; consultations with the RSSN, regulatory agencies, and others; laboratory testing; collection of data from other sources; analyses and resulting conclusions; and the formulation of recommendations.

The body of the report should describe the work activities and accomplishments in clear and concise detail. The Contractor and subcontractor work relating to the report subject should be discussed. The findings of any field explorations and testing, literature searches, external consultations, and observations should be included.

Any laboratory-testing program should be described and its results discussed. The procedures employed and designs formulated should be indicated. The results of work performed should be discussed in detail and must be traceable to the project/site-specific task order and design records.

The final section of the text should summarize the purpose of the work and the Contractor's undertakings toward meeting that purpose. It should emphasize the results of the work and any conclusions or recommendations reached and any lessons learned. It could include some or all of the following:

- **References** – Should include the references cited in the report text, tables, and figures, whether they are external data, publications, or correspondence. The references should include the author's name, title of the publication, publisher, location of the publisher, and date, if the reference is a publication. If the reference is correspondence, the subject, date, names of the parties contacted, and type of correspondence should be included.
- **Tables** – Tables are generally included as a separate section following the List of References, but may be included within each section of the text. Each table should have a title and a number. The information listed in the table will be clearly labeled. Particular care will be taken to include necessary references, symbols, and reporting

units so that a table is "self-standing" (*i.e.*, it does not depend on the text for explanation).

- **Figures** – Will be identified with a report figure number and/or a unique drawing number, and a title. Figures may be included as a separate section following the tables, or within each section of the text. Figures will be "self-standing," as described in Item 2 above.
- **Appendices** – Should include supplementary information pertinent to the report subject. Often the information contained in an appendix is technical in nature and is included in the report to provide details of topics discussed in the text. Each appendix will be identified by a letter of the alphabet. Pages within the appendix will be in logical sequence, but need not be numbered unless a sequence cannot be reasonably maintained without page numbers.

It is emphasized that the above format is a generalized outline to be followed in report preparation. Other formats are acceptable (*e.g.*, letter reports). In any case, the report will provide sufficient information to allow other organizations to duplicate the work performed and to serve as a complete base for further development or operational use.

6.2 Report Review and Approval

All reports will undergo a technical peer review by qualified personnel, as determined by the CQAM and/or Project Engineer, prior to issuance or release. Section 6.0 of this plan describes the technical review and approval requirements for reports.

6.3 Report Submittal

Following the review and approval process, draft, draft final, and final reports will be issued, distributed, and controlled in accordance with the requirements of Section 3.7.

6.4 Documentation

Draft and final reports will be maintained in the record file system in accordance with the procedures contained in Section 3.7.

Records will be prepared for the following draft and final revision stages according to the procedures contained in Section 3.7:

- Working Draft
- Draft

- Draft Final
- Final Reports

7.0 REVIEW AND APPROVAL OF DELIVERABLES

Both technical review and formal peer review, as necessary, will be performed on deliverables to ensure that they are technically correct and meet the requirements of the scope of work. Technical reviews will be conducted on reports, plans, work instructions, and studies prior to being issued. Peer reviews based on the scope and needs of individual task order deliverables will be identified and scheduled.

7.1 Technical Review

A technical review is an in-depth analysis and evaluation of documents, activities, material, or data for applicability, correctness, technical adequacy, completeness and appropriateness of interpretation, and assurance that established requirements are satisfied. This type of review will be independently performed by qualified members of the program or project team other than the personnel who prepared the original report, plan, study, or instruction. Independent reviewers may be selected from personnel within the Contractor or subcontractors organization, or they may be outside consultants retained in a review capacity. Cursory supervisory reviews do not satisfy the intent of technical reviews.

The review of plans, procedures, studies, and reports is the responsibility of the CQAM. This individual will identify the documents to be reviewed, select qualified personnel to perform the reviews, participate in the review of documents, and verify that the review process is completed prior to document release.

Technical reviews will, as appropriate, consider the following:

- **Requirement Satisfaction** – Is the objective of the report defined? Does the document satisfy the task order scope of work, contract requirements, and pertinent regulatory requirements?
- **Technical Correctness** – Is the content of the document technically defensible? Are conclusions properly supported by correctly interpreted data? Are all figures, tables, and computations presented in the document correct?
- **Executive Summary** – Does it state the purpose of the document? Is it informative? Does it describe the scope of work and summarize pertinent results and conclusions?
- **Introduction** – Does it clearly describe the problem(s) addressed by the document, state the objectives and scope of the document, present pertinent background information, and acknowledge significant help?

- **Methods** – Were appropriate techniques used or recommended for the work? New, nonstandard methods should be described in the document text.
- **Assumptions** – Are they clearly stated and justified?
- **Body of Manuscript (Text)** – Is it organized and presented in a logical sequence that contains the basic information, interpretation of that information, and results or conclusions of the interpretations?
- **Figures and Tables** – Do they clearly present basic information? Figures and tables should be interpreted and referred to in the text, but should be understandable without the text. Have they been prepared, checked, and approved?
- **Conclusions or Results** – Do they summarize the principal findings of the backup work? Do they answer each of the objectives described in the introduction? Are they technically defensible? No information should be given that was not discussed in the body of the document.
- **References** – Are all references cited in the text, tables, and figures included in a list of references? Are references cited correctly? Were pertinent references omitted in preparing the document?

7.2 Peer Review

Peer reviews are documented reviews performed by qualified personnel who are independent of the original work, but whom have the expertise to perform the work. Peer reviews are in-depth critical reviews and evaluations of documents, material, or data that require interpretation or judgment to verify or validate results of conclusions, or when conclusions, material, or data contained in the report or study go beyond reasonably available technology, or when technical criteria and requirements do not exist or are being developed. While verification and technical review provide examination and confirmation of largely definitive work, peer review provides evaluations and assessment of interpretations, judgments, and decisions made.

CQAM will determine, during the planning stage of a task order deliverable, if a peer review will be required, the points in the work when the review will be performed, and the independent individual(s) who will perform the review. The need for peer review will be based on the level of technology required for the task order deliverable. Peer reviews should be considered when the following conditions exist:

- Technical complexity of the work approaches state-of-the-art technology
- When technical criteria and requirements do not exist or are being developed

Peer reviews will be performed after completion of internal document checks and prior to the initiation of work, which will be affected by the peer review process and/or prior to issuing the final

report to the Owner. Site-specific or document QC plans will identify the document(s) requiring peer review.

7.3 Review Process and Documentation

When the document is ready for review, as determined by the author and/or CQAM, the following actions will be taken:

- CQAM selects the appropriate technical/peer reviewers and schedules review times with them.

- The author, or an assigned member of the project team, completes the required portions of the Document Review Comment Record (see Appendix A), and sends the appropriate Document Review Comment Record and a copy of the document to each reviewer. The document copy should contain all texts, tables, figures, appendices, and attachments. Alternatively, the documents and all attachments can be sent to the reviewers by email or can be placed on a server accessible to the document reviewers. As an alternative to the Document Review Comment Record (see Appendix A), review comments can be submitted by email or by annotating the document itself.

- Each reviewer examines the document and records any major comments or corrections on the Document Review Comment Record, the document, or on an email. Recommended corrective actions will be indicated for each comment/correction. Minor comments/corrections (*e.g.*, typos, grammatical errors, incomplete referencing, inconsistencies, drafting errors, and format errors) may be noted in red in the reviewer's document copy or on the electronic copy of the document by redline strikeout or other method and need not be handled through the Document Review Comment Record system.

- The reviewer and author discuss each Document Review Comment Record comment/correction and document the agreed-upon dispositions on the Document Review Comment Record or on an email. If agreement cannot be reached, the CQAM will make the final decision. If no action is to be taken on a particular comment/correction, adequate justification must be indicated.

- The author dispositions agreed-upon corrections.

- The reviewer examines document revisions. The reviewer and author then sign the Document Review Comment Record or document concurrence by email for each satisfactorily completed comment/correction.

- When all comments/corrections have been closed, the author and reviewer then sign the "Closed" portion of the Document Review Comment Record or document closure on an email.

- If approval signatures are required on the document, each individual in the approval chain signs the approval page.

- The author submits the completed Document Review Comment Records, annotated text, or printed out emails to project files along with the original copy of the document. As an alternative to printing out emails, emails may be stored in an electronic format on a server, provided they are backed up on disk or tape.

7.4 Deliverable Submittal

The CQAM will determine RSSN and regulatory agency requirements for the deliverable submittal, including the number of copies required and to whom the report copies should be transmitted. Reports may be issued as "draft," "draft final," or "final" presentations of the work. Draft reports submitted under this project will be considered "drafts" only in the sense that they have not been reviewed and approved by the Owner or the Owner's designee. In all respects, draft reports will be complete, in proper format, and free of grammatical and typographical errors. Draft reports will receive an internal independent technical review or peer review prior to being submitted or issued, unless otherwise requested. When required by the scope of work, "lessons learned" will be prepared as part of the deliverable. Deliverables will be submitted using a signed and completed "Transmittal of Shop Drawings, Equipment Data, Material Samples, or Manufacturer's Certificates of Compliance" (Appendix A).

Draft, draft final, and final reports will be issued, distributed, and controlled in accordance with the requirements of Section 3.7.

7.5 Documentation

Draft, draft final, and final deliverables and associated documentation will be issued, controlled, and maintained in the record file system in accordance with the procedures contained in Section 3.7.

Records prepared under this section included the following:

- Draft, Draft Final, and Final deliverables

- Document Review Comment Records (see Appendix A) or email

8.0 CERTIFICATION

I certify under penalty of law that I have examined and am familiar with the information submitted in this document and all attachments and that this document and its attachments were prepared either by me personally or under my direction or supervision in a manner designed to ensure that qualified and knowledgeable personnel properly gather and present the information contained therein. I further certify, based on my personal knowledge or on my inquiry of those individuals immediately responsible for obtaining the information, that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowingly and willfully submitting a materially false statement.

RSSN Representative

Date

Title

THIS PAGE INTENTIONALLY LEFT BLANK.

9.0 REFERENCES

American Association of State Highway and Transportation Officials, ASSHTO T 104, Standard Method of Test for Soundness of Aggregate by use of sodium sulfate.

American Association of State Highway and Transportation Officials, ASSHTO T 209, Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures.

American Society for Testing and Materials, 2007, ASTM International, West Conshohocken, PA, www.astm.org.

Concrete Reinforcing Steel Institute, Manual of Standard Practice, 28th Edition, 2009

Portland Cement Association, Roller-Compacted Concrete Quality Control Manual, 2000

U.S. Environmental Protection Agency, 1995, Publication EPA/600/R-93/182, "Quality Assurance and Quality Control for Waste Containment Facilities," September.

U.S. Environmental Protection Agency, 1996, SOP GW 0001, "Low Stress (low flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells," Revision 2, July 30.

U.S. Environmental Protection Agency, 2008, EPA Order Docket No. RCRA-7003-09-2008-0002, *Sunrise Mountain Landfill Site Unilateral Administrative Order,* June 6, <http://www.epa.gov/region09/waste/sunrise/pdfs/RCRA-7003-ORDER-20080606.pdf> (July 24, 2008).

THIS PAGE INTENTIONALLY LEFT BLANK.

TABLES

THIS PAGE INTENTIONALLY LEFT BLANK.

TABLE 1

CONSTRUCTION QUALITY ASSURANCE TESTING
(NOTE: THE FOLLOWING TEST PROCEDURES AND FREQUENCIES ARE SUBJECT TO CHANGE)

Material	Test Procedure	Minimum Frequency
Barrier Layer	Particle Size Distribution ASTM D422	Two tests per source
	Atterberg Limits ASTM D4318	
	Dispersive Clays ASTM D4221	
	Standard Proctor ASTM D698	Prior to initial placement and then one per 20,000 cubic yards thereafter
	Nuclear Moisture Density Testing ASTM D6938	One test per 5,000 cy
Erosion Layer	Sodium and magnesium sulfate loss ASTM C88	Two tests per source
	LA Abrasion ASTM C131 or ASTM C535	
	Specific Gravity ASTM C127	
	Dispersive Clays ASTM D4221 *1	
	Atterberg Limits ASTM D4318 *1	
	Particle Size ASTM D5519 - Procedure A for material retained on the 3 inch sieve	One test per 5,000 CY produced
	ASTM D6913 for material passing the 3 inch sieve	
	Standard Proctor ASTM D698 *1	Prior to initial placement and then one per 20,000 cubic yards thereafter
	Nuclear Moisture Density Testing ASTM D6938 *1	One test per acre
Dam Embankment and Low-Permeability Backfill	Particle Size Distribution ASTM D422	One test per 5,000 CY
	Hydraulic Conductivity ASTM D5084	One test per 5,000 CY
	Modified Proctor ASTM D1557	One test per 5,000 CY
	Nuclear Moisture Density Testing ASTM D6938	Test at 100-foot grid spacing on each lift, minimum of one test per 500 cy

TABLE 1 (Continued)

CONSTRUCTION QUALITY ASSURANCE TESTING (NOTE: THE FOLLOWING TEST PROCEDURES AND FREQUENCIES ARE SUBJECT TO CHANGE)		
Material	**Test Procedure**	**Minimum Frequency**
Dam Toe Drain	Particle Size Distribution ASTM D422	One test per 500 CY
	Hydraulic Conductivity ASTM D2434	One test per 500 CY
	Soundness AASHTO T104	One test per source
Asphalt Paving	Theoretical Density AASHTO T209	Two tests per source or mix design
	In-Place Density Test ASTM D2950 or ASTM D7113	Three tests at 100-foot intervals (side slopes and bottom)
	Thickness ASTM D979 and D3549	Three tests at 500-foot intervals (side slopes and bottom)
	Flatness	At 100-foot intervals
Grouted Riprap	Particle Size Distribution ASTM D5519	One test per gradation
	Specific Gravity ASTM D6473	One test per 5,000 CY
	Durability Index ASTM D5312	One test per gradation
	Grout Compression Test ASTM C1019	One sample for each 500 cubic yard or fraction thereof of grout mixed each day. *2
	Gout Air Content ASTM C185	One sample for each 100 cubic yard or fraction thereof of grout mixed
Riprap	Particle Size Distribution ASTM D5519	One test per gradation
	Specific Gravity ASTM D6473	One test per 5,000 CY
	Durability Index ASTM D5312	One test per gradation
Structural Fill	Particle Size Distribution ASTM D422	One test per source
	Modified Proctor ASTM D1557	One test per source
	Nuclear Moisture Density Testing ASTM D6938	One test at 50-foot spacing on each lift

TABLE 1 (Continued)

CONSTRUCTION QUALITY ASSURANCE TESTING (NOTE: THE FOLLOWING TEST PROCEDURES AND FREQUENCIES ARE SUBJECT TO CHANGE)		
Material	**Test Procedure**	**Minimum Frequency**
Diversion Berm Embankment	Particle Size Distribution ASTM D422	One test per 5,000 CY
	Modified Proctor ASTM D1557	One test per 5,000 CY
	Nuclear Moisture Density Testing ASTM D6938	One test per 200 lineal feet of berm on each lift
Sand Bedding	Particle Size Distribution ASTM D422	One test per source
	Standard Proctor ASTM D698	Prior to initial placement and then one per 20,000 cubic yards thereafter
	Nuclear Moisture Density Testing ASTM D6938	One test per lift
Cast-in-Place Concrete (concrete lined channels and dam abutment cutoff wall)	Slump ASTM C143	One for each 100 cubic yard or fraction thereof of each concrete mix placed each day.
	Air Content ASTM C231	One for each 100 cubic yard or fraction thereof of each concrete mix placed each day.
	Compressive Strength ASTM C31 and C39	One for each 100 cubic yard or fraction thereof of each concrete mix placed each day. *2
	Temperature ASTM C1064	Once per truckload

*1 Test required only for erosion layer for slopes < 10%.

*2 Make four (4) cylinders for each set. Test one (1) cylinder at 7 days for information. Test two (2) cylinders at 28 days for compliance. If one of the compliance cylinders shows evidence of improper sampling, molding, curing, or testing, it shall be discarded and the remaining cylinder tested.

TABLE 2

ROLLER COMPACTED CONCRETE (RCC) QUALITY ASSURANCE TESTING

Material	Test Procedure	Minimum Frequency
RCC Aggregate	Aggregate Quality ASTM C33	At initial project start. One every 2 weeks thereafter.
	Particle Size Distribution ASTM C117 and ASTM C 136	Minimum of 1/1000 CY or 1/day
	Moisture Content ASTM C566 or ASTM C70	Minimum of 1/1000 CY or 1/day
	Specific Gravity and Absorption ASTM C127 or ASTM C128	During mix design phase
RCC	Consistency and density ASTM C1170	During mix design phase
	In place Density ASTM C1040	1/100 cy placed with a minimum of 1/lift or 1/day if only a partial lift is placed
	Moisture *1 ASTM D3017	1/100 cy placed with a minimum of 1/lift or 1/day if only a partial lift is placed
	Temperature ASTM C1064	1/100 cy placed with a minimum of 1/lift or 1/day if only a partial lift is placed
	Compressive Strength ASTM C1435 and ASTM C39	Make 1 set of cylinders for each 1000 cy of concrete placed with a minimum of 1 set per lift or 1 set per day if only a partial lift is placed. *3
	Average Maximum Density, Specification Section 03600	During test section and if compaction equipment is modified
	Theoretical Air Free Density, Specification Section 03600	If RCC mix design changes
	Mixture Proportion, *2	1/day or 1/2000 cy
Bedding Mortar	Compressive Strength ASTM C 1435 and ASTM C39	Make 1 set of cylinders per lift where bedding mortar is used or 1 set per day when bedding mortar is used if only partial lift is placed. *3

*1 Nuclear gage testing to verify densities and workability only. Verify moisture contents obtained with nuclear gage by comparing with results obtained from either the direct heat or microwave test method on samples taken from the same batch as the nuclear gage test.

*2 Review daily batch plant records and compute quantities of cement and flyash based on mix design for verification. Supply copies of batch and weigh tickets for each load of RCC leaving the pug mill to the NRCS

*3 Make four (4) cylinders for each set. Test one (1) cylinder at 7 days for information. Test two (2) cylinders at 28 days for compliance. If one of the compliance cylinders shows evidence of improper sampling, molding, curing, or testing, it shall be discarded and the remaining cylinder tested.

FIGURES

THIS PAGE INTENTIONALLY LEFT BLANK.

SITE VICINITY MAP

scale = 1:24,000

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
0						

REPUBLIC SERVICES, INC.

PROJECT

REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL
LAS VEGAS, NEVADA

TITLE

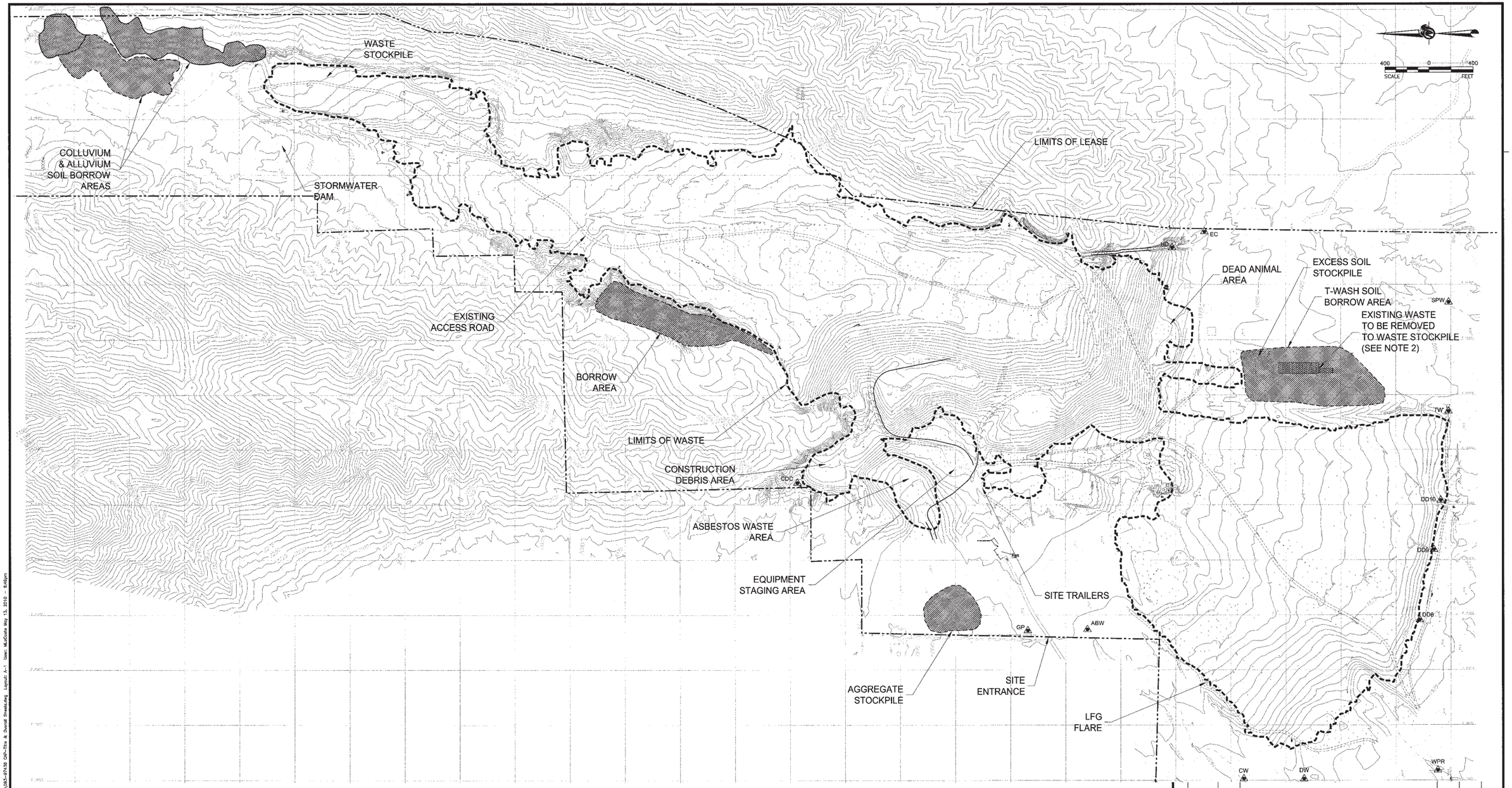
SITE VICINITY MAP

DRAFT

Golder Associates
Sacramento, California

PROJECT No.	093-97432		FILE No.	093-97432
DESIGN			SCALE AS SHOWN	REV. 0
CADD				
CHECK				1
REVIEW				

Drawing file: 093-97436 LFG Plot Sheets.dwg Jun 08, 2009 - 11:05am



LEGEND

- LIMIT OF WASTE
- LEASED AREA
- ACCESS ROAD
- LGW 22 — GROUNDWATER MONITORING WELL
- DD10 — DISCHARGE MONITORING POINT

NOTES

1. TOPOGRAPHY PREPARED BY KENNEY AERIAL MAPPING, INC. FLIGHT DATE: NORTH HALF 03/24/99 SOUTH HALF 08/03/99.
2. WASTE IN T-WASH AREA TO BE DELINEATED BY CONTRACTOR AND SUBSEQUENTLY EXCAVATED AND HAULED TO WASTE STOCKPILE. ALL EXPOSED WASTE TO BE COVERED AT THE END OF EACH DAY WITH 6" OF SOIL OR AN APPROVED ALTERNATIVE DAILY COVER.

N.E. CANYON UPDATED: FLIGHT DATE: MAY 22, 2002.

LANDFILL TOPOGRAPHY UPDATED BY KENNEY AERIAL MAPPING, INC. FLIGHT DATE: 06/25/07, KAM# 070536-N-SUNRISE LANDFILL.

REV	DATE	DES	REVISION DESCRIPTION	CADD	CHK	RVW
0	5/5/10	JP	ISSUED FOR BIDDING	ML	KH	RW

REPUBLIC SERVICES, INC.

PROJECT
REPUBLIC SERVICES, INC.
SUNRISE MOUNTAIN LANDFILL
LAS VEGAS, NEVADA

TITLE
EXISTING CONDITIONS AND SITE PLAN

Golder Associates
Sacramento, California

PROJECT No.	093-97432		FILE No.	093-97432	
DESIGN	JP	5/5/10	SCALE AS SHOWN	REV.	0
CADD	ML	5/5/10	2.2		
CHECK	AN	5/5/10			
REVIEW	RW	5/5/10			

APPENDIX A

SUNRISE QUALITY CONTROL FORMS

THIS PAGE INTENTIONALLY LEFT BLANK.

SUNRISE QUALITY CONTROL FORMS

DAILY QUALITY CONTROL REPORT

PREPARATORY PHASE INSPECTION CHECKLIST

INITIAL INSPECTION CHECKLIST

FINAL INSPECTION CHECKLIST

NONCONFORMANCE REPORT

NONCONFORMANCE REPORT (NCR) TRACKING LOG

CORRECTIVE ACTION REQUEST

CORRECTIVE ACTION REQUEST (CAR) TRACKING LOG

TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE

SUBMITTAL REGISTER

REQUEST FOR INFORMATION (RFI)

REQUEST FOR INFORMATION (RFI) TRACKING LOG

DOCUMENT REVIEW COMMENT RECORD

DEFICIENCY TRACKING LOG.

Daily Quality Control Report

SAMPLE **CONTRACTORS QUALITY CONTROL REPORT (QCR)** **DAILY LOG OF CONSTRUCTION**	REPORT NUMBER Page of DATE
PROJECT Sunrise Mountain Landfill Site	CONTRACT NUMBER
CONTRACTOR a.	WEATHER Weather caused no delay Temperature Min ºF, Max ºF; No Precipitation; MPH Wind

QC NARRATIVES

List Contractors and Subs Working This Day & Area of Responsibility

Description & Location of Work (Also Indicate days of no work and reasons)

Follow-Up Phase Inspection Performed, Results & Corrective Action Taken

Job Safety, Indicate What Was Checked, Results, Corrective Action Taken

CONTRACTORS QUALITY CONTROL REPORT (QCR) DAILY LOG OF CONSTRUCTION	REPORT NUMBER Page of
	DATE
PROJECT Sunrise Mountain Landfill Site	CONTRACT NUMBER

Did Anything Develop that May Lead to a Change Order/Claim?

Delivery of Equipment and Materials

Additional Activities and Remarks (*i.e.*, Submittal Actions, Misc. Remarks)

CONTRACTORS QUALITY CONTROL REPORT (QCR) **DAILY LOG OF CONSTRUCTION**	REPORT NUMBER Page of DATE
PROJECT Sunrise Mountain Landfill Site	CONTRACT NUMBER
Days Activities:	
PREP/INITIAL DATES (Preparatory and initial dates held and advance notice)	
ACTIVITY START/FINISH	
QC REQUIREMENTS	
QC PUNCH LIST (Describe QC Punch List items issued, Report QC and QA Punch List items corrected**)**	
CONTRACTORS ON SITE (Report first and/or last day contractors were on site)	
LABOR HOURS **The following labor hours were reported today:** Total hours worked to date: Total	

CONTRACTORS QUALITY CONTROL REPORT (QCR) DAILY LOG OF CONSTRUCTION	REPORT NUMBER Page of DATE
PROJECT Sunrise Mountain Landfill Site	CONTRACT NUMBER

EQUIPMENT HOURS

The following equipment hours were reported today:

Total hours worked to date: Total

ACCIDENT REPORTING (Describe accidents)

No accidents reported today

CONTRACTOR CERTIFICATION	On behalf of the contractor, I certify that this Report is complete and correct and all equipment and material used and work performed during this Reporting period are in compliance with the contract plans and specifications, to the best of my knowledge, except as noted above.		
QC REPRESENTATIVE'S SIGNATURE	DATE	SUPERINTENDENT'S INITIALS	DATE

Sunrise Mountain Landfill
Preparatory Phase Inspection Checklist (Page 1 of 3)

CONTRACT NO.:_____ DATE:_____

TITLE:_____ SPEC SECTION:_____

MAJOR DEFINABLE FEATURE OF WORK:_____

A. PERSONNEL PRESENT:

	NAME	POSITION	COMPANY
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

B. TRANSMITTALS INVOLVED:

	NUMBER & ITEM	CODE	CONTRACTOR or Gov't APPROVAL
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

B-I. Have all items involved been approved? Yes_____ No_____

B-II. What items have not been approved?

	ITEM	STATUS
1.		
2.		
3.		
4.		
5.		
6.		
7.		

Sunrise Mountain Landfill
Preparatory Phase Inspection Checklist (Page 2 of 3)

C. ARE ALL MATERIALS ON HAND? Yes_____ No_____

C-I. Are all materials on hand in accordance with approvals? Yes_____ No_____

C-II. Items not on hand or not in accordance with transmittals:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

D. TESTS REQUIRED IN ACCORDANCE WITH CONTRACT REQUIREMENTS:

	TEST	**PARAGRAPH**
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
10.	_____	_____

D-I. COMPONENT INSTALLATION CHECKS:

	COMPONENT	**ACCEPTABLE**	**UNACCEPTABLE**
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____
7.	_____	_____	_____
8.	_____	_____	_____
9.	_____	_____	_____
10.	_____	_____	_____

Sunrise Mountain Landfill
Preparatory Phase Inspection Checklist (Page 3 of 3)

E. ACCIDENT PREVENTION PREPLANNING – HAZARD CONTROL MEASURES:

E-I. Applicable Outlines (attach complete copies):

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

E-II. Operational Equipment Checklists:

ATTACHED FOR:

1. _____
2. _____
3. _____

F. OWNER NOTIFIED? Yes_____ No_____

_____
Contractor Quality Control System Manager (CQCSM)

Sunrise Mountain Landfill
Initial Inspection Checklist (Page 1 of 2)

CONTRACT NO.:_____ DATE:_____

TITLE:_____

DESCRIPTION AND LOCATION WORK INSPECTED:_____
_____
_____

REFERENCE CONTRACT DRAWINGS:_____ SPEC SECTION:_____

A. MATERIALS BEING USED ARE IN STRICT COMPLIANCE WITH THE CONTRACT PLANS AND SPECIFICATIONS: Yes ____ No ____
IF NOT, EXPLAIN:_____
_____
_____

B. PROCEDURES AND/OR WORK METHODS WITNESSED ARE IN STRICT COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT SPECIFICATIONS: Yes ____ No ____
IF NOT, EXPLAIN:_____
_____
_____

C-I COMPONENT INSTALLATION CHECKS:

	COMPONENT	**ACCEPTABLE**	**UNACCEPTABLE**
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____
7.	_____	_____	_____
8.	_____	_____	_____
9.	_____	_____	_____
10.	_____	_____	_____

Sunrise Mountain Landfill
Initial Inspection Checklist (Page 2 of 2)

D. WORKMANSHIP IS ACCEPTABLE? Yes ____ No ____
STATE AREAS WHERE IMPROVEMENT IS NEEDED:_____
_____
_____
_____

E. SAFETY VIOLATIONS AND CORRECTIVE ACTION TAKEN:_____
_____
_____

F. OWNER NOTIFIED: Yes ____ No ____

_____
Quality Control System Manager (CQCSM)

Sunrise Mountain Landfill
Final Inspection Checklist (Page 1 of 1)

CONTRACT NO.:_____ DATE:_____

TITLE:_____

MAJOR DEFINABLE FEATURE OF WORK:_____

LOCATION:_____ SPEC SECTION:_____

A. OPEN PUNCHLIST ITEMS FROM FINAL FOLLOW-UP INSPECTION:

	ITEM	DATE OF COMPLETION
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
10.	_____	_____

B. NEW PUNCHLIST ITEMS NOTED:

	ITEM	DATE OF COMPLETION
1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
10.	_____	_____

C. OWNER NOTIFIED? Yes ____ No ____

On behalf of Shaw E&I, I certify this activity is completely in accordance with the Contract Documents, based upon the information available to me.

_____
Quality Control System Manager (CQCSM)

Nonconformance Report			NCR NO.:
J.O. NO.:	P.O. NO.:		REQUISITION NO.:
CLIENT:		PROJECT:	
SUPPLIER'S NAME:	SUPPLIER'S LOCATION:		PRODUCT OR MATERIAL LOCATION:
ID NO./SYSTEM:	SPECIFICATION VIOLATED:	DRAWING VIOLATED:	CODE VIOLATED:

ORIGINATOR:	DATE:	SUPPLIER'S RECEIPT ACKNOWLEDGEMENT:	DATE:

CONDITION DETAILS:

CONCURRENCE:
INSPECTION COORDINATOR DATE

DISPOSITION

ACTION: ☐ ACCEPT-AS-IS ☐ SCRAP ☐ REWORK ☐ RECTIFY ☐ RETURN TO SELLER

DISPOSITION DETAILS:

REQUISITIONING ENGINEER:	DATE:	PROJECT ENGINEER:	DATE:
OTHER:	DATE:	OTHER:	DATE:
REWORK COMPLETE:	DATE:	NCR CLOSED:	DATE:

Nonconformance Report (NCR) Tracking Log

NCR #	Date Condition Identified	Identifying Individual	Location of Discrepancy	Description of Condition	Specification Reference or Drawing No.	Corrective Action Verification Date	NCR Close-out Date	Comments

	Corrective Action Request	CAR No.:
		INITIATING DOCUMENT:

CONDITION DESCRIPTION:

ASSIGNED TO:

NAME/TITLE	DATE	LOCN

CAUSE, CORRECTIVE & PREVENTIVE ACTION:

DISTRIBUTION (UPON SPECIFICATION OF CAUSE, CORRECTIVE & PREVENTIVE ACTION)

CORRECTIVE ACTION VERIFIED:

NAME/TITLE	DATE	LOCN

PREVENTIVE ACTION VERIFIED:

NAME/TITLE	DATE	LOCN

RESOLUTION/CLOSE OUT:

DIRECTOR QA	DATE	LOCN

DISTRIBUTION (UPON CLOSE OUT):

Corrective Action Request (CAR) Tracking Log

CAR #	Specification Reference/Drawing Number	Subject	Location	Date Initiated	Initiator	Document File Object Name	Closure Date

Transmittal of Shop Drawings, Equipment Data, Material Samples, or Manufacturer's Certificates of Compliance

Read instructions on reverse side prior to initiating this form

	Date.	Transmittal No.

Section 1- Request for approval of the following items (section to be completed by the contractor)

TO: Client name and Maiiing Address	FROM:	CONTRACT NO. CTO. #	CHECK ONE: □ This is a new transmittal □ This is a resubmittal of a transmittal
SPECIFICATION NO. (only cover one section with each transmittal)	PROJECT TITLE AND LOCATION:		

ITEM NO.	DESCRIPTION OF ITEM SUBMITTED	MFG. OR CONTR. CAT. CURVE DRAWING OR BROCHURE NO. (see instruction No.8)	NO. OF COPIES	CONTRACT REF. DOCUMENT		FOR CONTRACTOR USE CODE	VARIATION (See instruction No 6)	FOR CE USE CODE
				SPEC PARA NO.	DRAWING SHEET NO.			
A	B	C	D	E	F	G	H	I

REMARKS

cc:
Central Files
Project Files

QUALITY CONTROL MANAGER

_____ Approved

_____ Approved with corrections as noted

Signature: _____

Title: _____

Date: _____

I certify that the above submitted items have been reviewed in detail and are correct in strict conformance with the contract drawings and specifications except as otherwise stated.

CQA Consulatant: _____

Contractor: _____

Section 2 - Approval Action

ENCLOSURES RETURNED (list by Item No.)	NAME, TITLE, AND SIGNATURE OF APPROVING AUTHORITY	DATE

Instructions

1	Section 1 will be initiated by the contractor in the required number of copies
2	Each transmittal shall be numbered consecutively in the space provided for "Transmittal No." This number in addition to the contractor number, will for a serial number for identifying each submittal. For new submittals, mark the appropriate box; on resub
3	The "Item No." will be the same "Item No." as indicated on the Submital Register form for each entry on this form.
4	Submittals requiring expeditious handling will be submitted on a separate form.
5	Separate transmittal form will be used for submittals under separate sections of the specifications.
6	A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications -- also, a written statement to that effect shall be included in the space provided for "Remarks".
7	Form is a self-transmittal; letter of transmittal is not required
8	When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "sample" or "certificate" in column c, Section 1.
9	The approving authority will assign action codes as indicated below in space provided in Section 1, Column I, to each item submitted. In addition, they will ensure enclosures are indicated and attached to the form prior to returns to the contractor. The

THE FOLLOWING ACTION CODES WILL BE GIVEN TO ITEMS SUBMITTED

A	Approved as submitted	E	Dissapproved (see attached)
B	Approved, except as noted on drawings	F	Receipt acknowledged
C	Approved, except as noted on drawings refer to attached sheet Resubmission is required	FX	Receipt acknowledged, does not comply as noted with contract requirements
D	Will be returned by separate correspondence	G	Other (specify)

10	Approval of items does not relieve the Contractor from complying with all the requirements of the contract plans and specifications

Submittal Register

CONTRACT NO.

TITLE AND LOCATION

CONTRACTOR

SPEC. SECT.

Transmittal Number	Item Number	Specification Paragraph Number	Description of Item Submitted	TYPE OF SUBMITTAL									CLASS		Reviewer	CONTR SCHED DATES			CONTR ACTION			GOV ACTION		Remarks
				Date	Drawings	Instructions	Schedules	Statements	Reports	Certificates	Samples	Records	Info Only	Govt Approved		Submit	Approval Needed by or Sampling Date	Material Needed by	Code	Date	Submit to Govt	Code	Date	

Request for Information (RFI) (Page 1 of 1)

CONTRACT NAME:_____

CONTRACT NO.:_____

REQUEST FOR INFORMATION (RFI) NO.:_____ DATE:_____

Clarification of the following item(s) is requested:

Continue on attached page

Requested by: _____
QC Manager

Government Response:

Authorized Representative
Of the Contracting Officer:_____

Date:_____

Request for Information (RFI) Tracking Log (Page 1 1of 1)

RFI #	Date Initiated	Date Answered	Subject

Document Review Comment Record (Page 1 of 1)

Document:
Review Criteria:
Other References:

No.	Comment(s)	Response	Date Response Accepted by Reviewer
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

Deficiency Tracking Log

Date Condition Identified	Location	Test Type	Recorded Test Result	Specification Test Requirement	Remarks