

**Final
Construction Quality
Control Plan
Non-Public Properties
Newhall Street
Neighborhood Site
Hamden, Connecticut**

Revision 0

Prepared for:

Olin Corporation
Cleveland, Tennessee

Prepared by:


**Sevenson Environmental
Services**
Niagara Falls, New York

August 2009

DOCUMENT CERTIFICATION

I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, that the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information is punishable as a criminal offense under §53a-157b of the Connecticut General Statutes and any other applicable law.

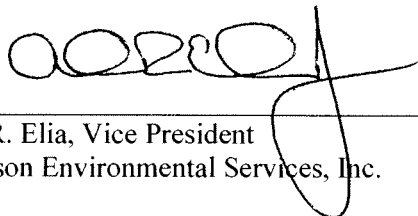
David M. Share, Director, Environmental Remediation



Chief Executive Officer (or duly authorized representative)
Olin Corporation

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A handwritten signature in black ink, appearing to read 'A. Elia', written over a horizontal line.

Alan R. Elia, Vice President
Sevenson Environmental Services, Inc.

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1. INTRODUCTION

This Construction Quality Control Plan (CQCP) will be implemented to ensure remedial and construction procedures are performed in compliance with the plans and specifications under this contract. This CQCP will provide a means to maintain effective quality control at the Non-Public Properties (NPP) Newhall Street Neighborhood Site (the Site). The quality control measures as presented herein include quality control organization; methods of performing, documenting, and enforcing quality control operations of both the primary Contractor and their subcontractors (including inspection and testing); inspections to be performed; and protocol describing corrective actions.

Overall management of the CQCP will be the responsibility of the Contractor's Quality Control Manager (QCM). The QCM will have the authority to act in all construction quality control CQC matters and will be responsible for ensuring that all materials and work comply with the contract specifications. All inspection and testing firms will be at the disposal of the QCM to ensure that all aspects of work are compliant with the contract. The QCM will report any deviations from the CQCP independently to the On-site Project Manager. The resume of the Contractor's designated QCM will be submitted for approval prior to mobilization to the Site.

2. SITE DESCRIPTION

The Newhall Street Neighborhood (Site) is located in the southern part of Hamden, Connecticut, east of Dixwell Avenue and just north of New Haven. The Newhall Street Neighborhood comprises an area that historically consisted of wetlands and low-lying areas. Waste materials were used to fill these areas from the late 1800s to the mid-1900s. Subsequently, homes, public buildings, and parks were built on and next to the historic fill areas.

The primary potential human health risk associated with the Site is from direct exposure to the fill. The Site contains contaminated fill material known to contain contaminants consisting primarily of metals (lead and arsenic), polynuclear aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs). The underlying groundwater generally does not pose a health risk to the residents because the area has a public water source, and the Site groundwater is not used for drinking or other domestic purposes.

The NPP consent order includes an 18-block area (approximately) consisting of approximately of 230 residential properties. In October 2007, the Connecticut Department of Environmental Protection (CTDEP) issued a final Remedy Selection Plan. The selected remedy for the residential properties (and other Non-Public Properties) located inside the Consent Order boundary is as follows:

- Excavation of fill within the top 4 feet and off-site disposal at authorized facilities.
- Backfill with clean soil.
- Restoration of pre-existing features (landscaping, patios, fencing, driveways, etc.) if disturbed during construction.

3. PROJECT ORGANIZATION

The Contractor's key personnel assigned to this project possess a broad range of remedial action experience and skills. All have experience dealing with the handling of contaminated wastes and are familiar with requirements of day-to-day work under this contract.

The Contractor's proposed project organization for this project and the resumes of key personnel, along with their job titles, should be submitted for review and approval. A conceptual project Organizational Chart is included in Appendix A.

The functional responsibilities of key technical personnel are summarized as follows.

3.1 HOME OFFICE PERSONNEL

Contractor – President and Chief Executive Officer

The Contractor's President and Chief Executive Officer (CEO) will ultimately be responsible for the project's success. He will provide the required resources to ensure that the project is successfully executed. He will be kept informed of the project's progress and maintain that the project is meeting its goals. The President and CEO will resolve problems that cannot be resolved by the On-site Project Manager or Corporate Project Manager.

Contractor – Vice President

The Contractor's Vice President will oversee the project at the corporate level and report directly to the President/Chief Executive Officer. He will communicate with the On-site Project Manager regarding all aspects of the project including, but not limited to, project problems, progress,

payments, schedules, administrative duties, and QCM oversight. He will also resolve problems that cannot be resolved by the On-site Project Manager and will periodically visit the site and be acquainted with personnel and procedures.

Contractor - Certified Industrial Hygienist (CIH) - Corporate Director of Health and Safety

Regarding safety and occupational health, the Contractor will:

- Maintain overall responsibility of Site safety.
- Be responsible for assigning Site Safety and Health Officer (SSHO) responsibilities.
- Ensure that all activities are carried out in compliance with the approved site Health and Safety Plan.

The Contractor's CIH and/or Corporate Director of Health and Safety is responsible for the preparation, implementation, and enforcement of the site-specific Health and Safety Plan (HASP). The Contractor's SSHO will report site safety activities to the CIH and/or Corporate Director of Health and Safety on a regular basis, including all safety and occupational health issues. All job safety records generated will be thoroughly reviewed by the CIH and/or Corporate Director of Health and Safety, who will also perform quarterly job-site safety inspections. He will prepare an audit report of findings for each inspection, including identification of deficiencies requiring corrective action.

The CIH and/or Corporate Director of Health and Safety, Dr Paul Hitcho, PhD, CIH (Sevenson Environmental Services, Inc.) will supervise the SSHO and develop the air-monitoring program. When significant construction activities are occurring, he will make quarterly visits to the jobsite to review site operations and observe the administration of this plan, perform record auditing, and make any necessary modifications to the program. Monthly site operations and record auditing will be performed by senior health and safety corporate staff who work under the direct supervision of Dr. Hitcho.

Contractor – Certified Hazardous Materials Manager (CHMM) – Regulatory Specialist

The Regulatory Specialist is responsible for regulatory compliance matters, including oversight of all field sampling and chemical data acquisition plans and correspondence with off-site laboratories. He will review laboratory reports with the selected lab in order to ensure compliance with project specifications and all required protocols. He will coordinate all off-site waste removal

with the designated representative from Olin and or the CTDEP, including transport, disposal, manifests, waste profiles, regulatory compliance, and disposal requirements (as required).

3.2 FIELD PERSONNEL

Contractor - On-site Project Manager

The Contractor's On-site Project Manager, will be the primary contact person at the site with whom MACTEC/Olin will interact with on a daily basis under this contract.

The Contractor's On-site Project Manager will ensure that:

- Appropriate resources are allocated to the project and balanced to ensure best value to Olin.
- All cost tracking and reporting is carried out in a manner compliant with Olin's Contract Management Procedures.
- All tasks are conducted in accordance with the site HASP and project specifications.

The Contractor's field personnel should rely on home office support throughout the course of the project. The Contractor's Vice President and on-site Project Manager will become and remain personally involved until each problem is resolved and appropriate corrective measures are implemented. They will typically communicate at least once daily on the progress of the project. The Project Manager will be present on the jobsite, to ensure that the project is progressing as scheduled.

The On-site Project Manager is responsible for implementation and support of the Contractor's CQCP and will oversee all aspects of work under this contract for remediation at the site, including:

- All procurements.
- Qualified Contractor and subcontractor resources are assigned to the project and balanced to ensure jobs are aligned with project needs.
- The Site is maintained and secure.
- All tasks are carried out safely and in compliance with the project specifications.

His responsibilities include:

- Contractor coordination.
- Acting as site liaison between the Contractor and MACTEC/Olin.
- Maintaining charge of all field operations.

Contractor - Quality Control Manager (QCM)

The Quality Control Manager will report directly to the On-site Project Manager with matters concerning quality control. He will have both the authority and the duty to halt any operation appearing to be out of compliance with contract specifications.

The QCM is responsible for keeping and maintaining all records related to personnel, supplies, equipment use, and equipment calibration and sampling. His function will be to ensure compliance with the contract plans and specifications.

QCM responsibilities include:

- Performing and documenting field inspections.
- Preparing daily Quality Control Reports.
- Scheduling, reviewing, certifying, and managing project submittals.
- Maintaining the Submittal Register.
- Providing coordination of required quality control testing, reviewing results, and submitting.
- Coordinating, documenting, and tracking preparatory, initial, and follow-up inspections.
- Tracking construction deficiencies and ensuring timely corrective action.
- Coordinating field sampling activities (as required).
- Reviewing calibration of test equipment (as necessary).
- Preparing addenda to the CQCP as necessary when additional phases of work are added.
- Maintenance of as-built drawings.
- Coordinating responses to vendors' requests for information and technical issues.
- Serving as main point of contact at the site for MACTEC/Olin questions and discussions on quality and technical issues.
- Delegating duties to alternate QCMs and notifying MACTEC/Olin to whom what duties have been delegated.

The QCM or an alternate will be on-site when work is being performed.

Contractor - Site Safety and Health Officer (SSHO)

The Site Safety and Health Officer will report to the Certified Industrial Hygienist and be responsible for the implementation of the approved Site Health and Safety Plan; including conducting required safety inspections, safety briefings, and reports of safety-related activities. He has received 40-hour HAZWOPER training per 29 CFR 1910.120(e), and possesses current Red Cross First Aid and CPR training.

Contractor - Superintendent

The project Superintendent will be responsible for supervising all field activities. His duties include supervision of the craft labor (equipment operators, truck drivers, and laborers), technical staff (survey crew), and all subcontractors. The designated Superintendent is also responsible for the maintenance of all on-site construction equipment.

Contractor – Transportation and Disposal Coordinator

The Transportation and Disposal Coordinator will be experienced in gathering and analyzing data, and developing and implementing sampling plans and quality control programs. The designated Contractor representative will be responsible for the coordination of transportation and disposal at the Site.

4. QUALITY CONTROL METHODS

The CQCP will be implemented in order to ensure compliance with the specifications for remedial action construction as detailed in the contract specifications. The basis of the CQCP is nationally recognized standards published by the American Society for Testing and Materials (ASTM) and the Project Specifications. In addition, procedures utilized within the CQCP should reflect the experience gained by the prime Contractor in completing construction projects similar to the Newhall Street Neighborhood Project.

Quality control measures will extend to field sampling procedures; staffing; types of material and equipment to be used; and methods of performing, documenting, and enforcing quality control operations of both the Contractor and subcontractors (including inspection and testing).

As previously stated, maintenance of the CQCP will be the responsibility of the QCM. The QCM will be responsible for ensuring that all materials and work comply with the contract specifications. The QCM may have a field engineer at his disposal to assist him with the on-site inspections. Testing firms will be at the disposal of the QCM to ensure contract compliance in all aspects of work. All reports from testing firms will be forwarded to the QCM for his review and approval.

4.1 IMPLEMENTATION

The QCM will be responsible for implementing the CQC Plan by ensuring that quality materials and supplies are provided for the proposed project, and that good workmanship is provided in all aspects of this contract. The QCM will report directly to the On-site Project Manager and will complete daily site inspections to ensure compliance with the quality control specifications.

Daily reports will be completed listing all field testing and sampling activities. These reports will be submitted to the MACTEC/Olin representative on a daily basis. The QCM will be responsible for ensuring that all materials and work comply with the contract plans and specifications, and that all performance standards are met.

It is anticipated that the MACTEC/Olin representative and the Contractor's QCM will meet frequently in order to forecast and/or prevent any potential problems from arising. An on-site quality control meeting will be conducted on a weekly basis as part of the weekly progress meeting in order to review performance during the previous one-week period, and prepare for the upcoming two-week period. It is anticipated that the Contractor's On-site Project Manager, Health and Safety Officer, Superintendent and MACTEC/Olin representatives will attend this meeting. The date and time of the weekly, on-site quality control meeting will be provided to the CT DEP and the Town liaison in advance of the meeting so that they can attend if they wish.

4.2 DOCUMENTING

The QCM will record project activities in a daily quality control report maintained on site at all times. All site activities, site inspections, and field testing of materials will be recorded on a daily basis, along with any unacceptable site occurrences or deficiencies and their associated corrective actions. Each daily entry into the report will be signed by the QCM. Quality control reports will be submitted on a daily basis during all field construction activities.

5. INSPECTIONS

To ensure that all construction and remedial activities comply with the project specifications, the QCM will complete, in conjunction with the subcontractors, three phases of site inspections for each feature of work. These inspections will include the following:

PHASE I - PREPARATORY INSPECTION

Preparatory inspections will be performed prior to beginning work on any definable feature of the project and will include:

- Review of submittal requirements and all other Contract requirements with the performance of the work;
- Check to assure that provisions have been made to provide required field quality control testing;
- Examine the work area to ascertain that all preliminary work has been completed;
- Verify all field dimensions and advise MACTEC/Olin of any discrepancies;
- Perform a physical examination of materials and equipment to assure that they conform to approved shop drawings or submittal data and that all required materials and/or equipment are on hand and comply with the Contract requirements.

Subsequent to the preparatory inspection and prior to commencement of work, the Contractor shall instruct each applicable worker on the level of workmanship required to meet contract specifications.

PHASE II - INITIAL INSPECTIONS

Initial phase inspections will be performed as soon as a representative portion of the particular feature of work has been accomplished. Initial inspections include, but are not limited to, examination of the quality of workmanship; review of control testing for compliance with control requirements; and identification of defective or damaged materials, omissions, and dimensional requirements.

The initial phase inspection is the time to discuss and agree on the required level of quality associated with a given work activity. Any discrepancies relative to work quality should be addressed at this time.

PHASE III - FOLLOW-UP INSPECTIONS

Follow-up inspections will be performed daily as work progresses to ensure continuing compliance with contract requirements, including control testing, until completion of the particular feature of work. Final follow-up inspections will be conducted and deficiencies corrected prior to beginning new work.

The QCM will notify MACTEC/Olin at least 24 hours in advance of any inspections. Notification and meeting minutes of all inspections will be recorded in the Daily Quality Control Report. Examples of the inspection forms to be utilized are presented in Appendix B.

6. FIELD TESTING PROCEDURES

The Contractor will conduct field-testing to verify that control measures are adequate to provide a product that conforms to contract requirements.

Field testing will be conducted under the auspices of the QCM and he or his designee shall:

- Arrange for, or conduct, field testing in accordance with applicable test parameters (ASTM, etc).
- Verify that facilities and testing equipment are available and comply with testing standards and ensure that testing facilities are approved by Olin and are validated.
- Check test equipment calibration data against certified standards.
- Verify that all tests are documented and submitted as part of quality control system reporting.
- Review all test documentation prior to submittal.

7. SUBMITTALS

The QCM will follow standard procedures concerning submittals, including the use of the MACTEC transmittal form. Each submittal form may contain more than one submittal specific to that specification section. A submittal register listing major submittals will be prepared by MACTEC (a sample Submittal Register is included in Appendix C). This register will be prepared in conjunction with the anticipated progress schedule.

The QCM will be responsible for the review and approval of submittals prior to their submittal to MACTEC/Olin representative. This includes reviews of materials and suppliers' catalog cuts, as well as subcontractor submittals. The QCM will review the submittal for completeness and

compliance with the contract specifications. Variations to a submittal will be noted on the MATEC transmittal form. The QCM will actively participate during procurement activities to ensure purchase orders and subcontracts comply with the contract.

8. DOCUMENTATION

All testing results will be recorded on the daily quality control report. A sample Daily QC report is included in Appendix D. Any concerns or deviations from the required material specifications and the actions taken to correct the problems will be noted on the report. Information recorded on the daily quality control report will include:

- Definable features of work that was addressed.
- Description of trades working on the project.
- Numbers of personnel.
- Weather conditions.
- Types and numbers of tests performed.
- Results of testing.
- Nature of defects or cause for rejection.
- Proposed corrective action(s).
- Corrective action taken and date.
- Delays encountered.
- Directions received from the Engineer and actions taken.
- Health and safety issues or deficiencies and how they were resolved.
- Deficiencies.

9. REVISIONS TO WORK

The Contractor will be responsible for ensuring total compliance of field work to the project specifications. Should modifications or revisions to the specifications become necessary, the Contractor will make the request, in writing, to MACTEC/Olin. Approval from MACTEC/Olin must be received prior to allowing the modifications or revisions to be made in the field. The QCM will be informed of and record all such requests in his daily log and on the daily quality control report.

10. DEFINABLE FEATURES OF WORK

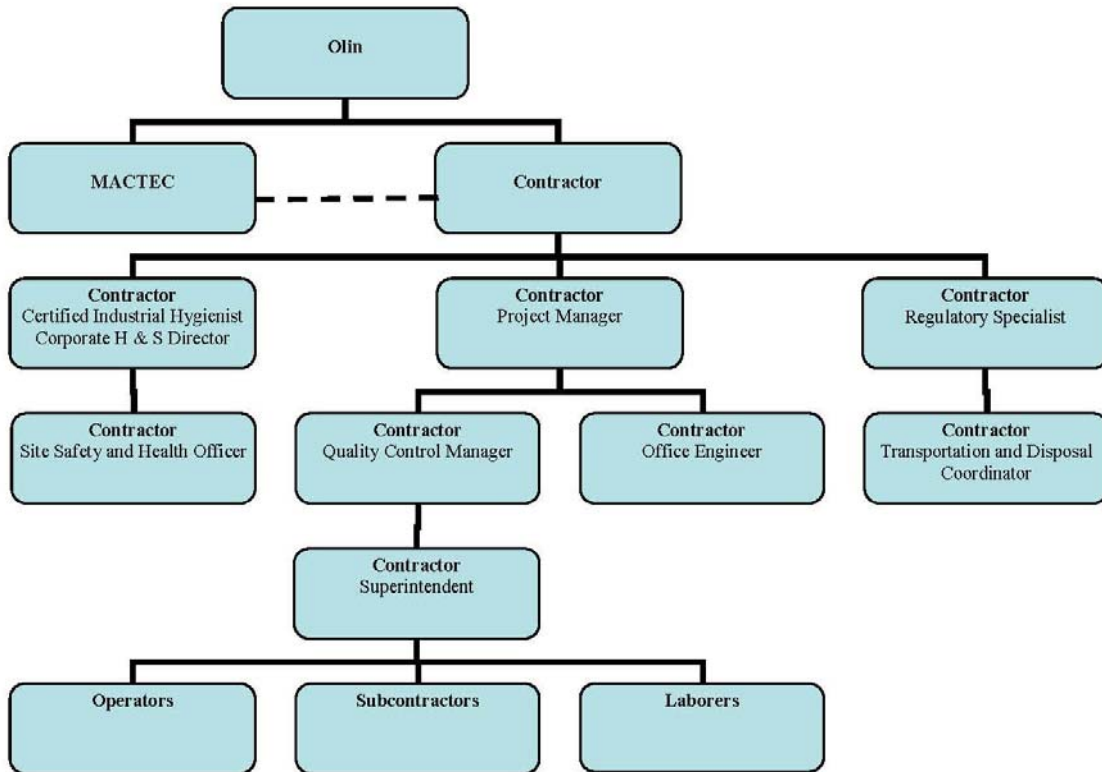
Listed below are the general categories and types of work that will be performed under this contract. These items, known as Definable Features of Work, have been grouped into the various categories in which work will be performed, and correlate to measurement and payment. Suitable quality control methods and procedures will be utilized in order to ensure that all work is

performed to the standards and quality required by the specifications.

The following are the definable features of work that will be performed under this contract:

- Pre-Construction Preparation Activities
- Mobilization
- Site Preparation
- Tire Pond Management
- Clearing and Grubbing
- Demolition and Removal of Above Ground Items
- Excavation of Impacted Fill Material
- Transportation and Disposal of Impacted Fill Material
- Backfill/Utility Replacement
- Restoration
- Demobilization

NPP Newhall Street Neighborhood - Olin Site
Conceptual Project Organizational Chart



Resumes of Key Personnel

-To be added by Contractor prior to mobilization to the Site

**Preparatory Phase Checklist
NPP Newhall Street Neighborhood-Olin Site**

Contract: Spec. Section & Paragraph Drawing Sheet Numbers	Date Preparatory Held: Definable Feature of Work: Major Definable Feature:
--	---

1) Personnel Present

Name

Position

Company

2) Has each spec. paragraph, drawing, and shop drawing detail been studied?
Yes ___ No ___

3) Transmittals Involved

Number and Item

Code

Contractor Approval

C-1 Have all items involved been approved? Yes ___ No

1. Are all materials on-hand? Yes ___ No ___.

Are the materials on the job-site to be incorporated the same as those approved?

Yes ___ No

Have all materials been checked for contract compliance against approved shop drawings?

Yes ___ No

Equipment to be Used in Executing the Work:

Items not on-hand or not in compliance with transmittals:

2. Tests required in accordance with contract requirements:

Test

Paragraph

**Accident Prevention Planning - Hazard Control Measures:
Activity Hazard Analyses (Job Hazard Analyses)**

F-1 Applicable Outlines (Attach completed copies)

Activity Hazard Analysis

Activity	Hazard(s)	Controls

F-2 Operational Equipment Checklist

Attached For:

On File For:

3. Have procedures for accomplishing work been reviewed with appropriate people?
Yes ___ No ___

Scope of Work/Method of Construction:

Safety Issues:

Spill Prevention Issues:

4. Has all preliminary work been accomplished in accord with contract requirements and is this segment of work ready to start? Yes ___ No ___

H-1 Explain any problems:

1. Remarks:
CQCSM Comments:

Contractor's Comments:

Quality Control Representative

**Initial/Follow-Up Phase Inspection Checklist
NPP Newhall Street Neighborhood-Olin Site**

Inspection Type: Initial Phase Follow-Up Phase

Date: _____

Specifications Paragraph:

Description and Location of Work Inspected:

-

-

Reference Contract Drawings:

A. Personnel Present

Name	Position	Company
-------------	-----------------	----------------

B. Materials Being Used Are In Strict Compliance With The Contract Plans and Specifications

YES _____ **NO** _____

If not, explain:

C. Procedures And/Or Work Methods Witnessed Are In Strict Compliance With The Requirements Of The Contract Specifications: YES _____ **NO** _____

If not, explain:

D. Workmanship Is Acceptable. YES _____ **NO** _____ **State Areas Where Improvement Is Needed:**

E. Safety Violations and Corrective Actions Taken:

F. Remarks:

Quality Control Representative

**Final Phase Inspection Checklist
NPP Newhall Street Neighborhood-Olin Site**

Date: _____

Specifications Paragraph:

Definable Feature of Work:

Description and Location of Work Inspected:

-

-

Reference Contract Drawings:

A. Personnel Present

Name

Position

Company

B. Materials Used In Strict Compliance With The Contract Plans and Specifications

YES _____ NO _____

If not, explain:

C. Procedures And/Or Work Methods Witnessed Are In Strict Compliance With The Requirements Of The Contract Specifications: YES _____ NO _____

If not, explain:

-

C. Workmanship is Acceptable: YES _____ NO _____

State Areas Where Improvement is Needed:

E. Remarks:

Quality Control Representative

**Contractor
Quality Control Daily Report**

REPORT NO.:

JOB NO.:

DATE:

PROJECT TITLE: NPP NEWHALL STREET NEIGHBORHOOD

Location: Hamden, Connecticut

Max Min

WEATHER:

RAINFALL:

TEMP:

**1. Work performed by Prime Contractor (Include Plant and Labor Breakdown)
*See attachment for Labor and Equipment Breakdown**

- None

2. Work performed by Sub-Contractors (Include "Number of Personnel" Breakdown)

- None

3. Material and/ or Equipment delivered to site

- None

4. Type and Results of Inspections

- None

5. Type and Location of Tests performed and results

- None

6. Verbal instructions received from Engineer or Olin, on construction deficiencies or retesting required (include corrective action to be taken)

- None

7. Health and Safety observations or actions taken

- None

APPENDIX D

8. Delays / Problems/Deficiencies

- None

9. Planned Activities

- None

10. Attachments

- None

11. Clarifications to Daily Reports

- None

12. Remarks

- None

Certification: I certify that the above report is complete and correct and that I, or my representative, have inspected the work performed this day by the Prime Contractor and each Subcontractor and have determined that all materials, equipment, and workmanship are in strict compliance with the Contract Documents, Plans and Specifications. Any exceptions to these contract requirements will be noted above.

Contractor's Quality Control Manager

SUBMITTAL STATUS CODES

A – Reviewed

B – Reviewed as Noted

C – Reviewed as Noted, Resubmission Requested

D- Revise and Resubmit

APPENDIX D

COMPANY EQUIPMENT WORKING TODAY	
TYPE OF EQUIPMENT	EQUIPMENT NUMBER

RENTAL EQUIPMENT WORKING TODAY	
TYPE OF EQUIPMENT	VENDOR

MATERIALS AND/OR SERVICES RECEIVED TODAY	
VENDOR NAME	DESCRIPTION

EQUIPMENT LIST			
EQUIPMENT	EQUIPMENT NUMBER	DATE MOBILIZE TO SITE	DATE DEMOBILIZED FROM SITE

RENTAL EQUIPMENT			
EQUIPMENT	VENDOR	DATE MOBILIZE TO SITE	DATE DEMOBILIZED FROM SITE

SUBMITTAL STATUS CODES

A – Reviewed

B – Reviewed as Noted

C – Reviewed as Noted, Resubmission Requested

D- Revise and Resubmit