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**CONSTRUCTION QUALITY ASSURANCE PLAN  
MID-AMERICA TANNING SITE  
WOODBURY COUNTY, IOWA**

**Prepared for:  
U.S. Environmental Protection Agency,  
Region VII  
Kansas City, Kansas  
EPA Contract No. 68-W5-0004  
Work Assignment No. 035-RARA-077M**

**Prepared by:  
Black & Veatch Special Projects Corp.  
Overland Park, Kansas  
BVSPC Project No. 46117**

**June 1999**



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## **1.0 Introduction**

Black & Veatch Special Projects Corp. (BVSPC), the Contractor, has been tasked to provide design and construction services to support U.S. Environmental Protection Agency (USEPA) Region VII in their efforts to remediate the Mid-America Tanning site in Woodbury County, Iowa. Activities will be carried out under USEPA Contract No. 68-W5-0004, Work Assignment No. 035-RARA-077M.

The Mid-America Tanning site is located approximately 4 miles south of Sergeant Bluff, Iowa, and occupies 98.7 acres in Woodbury County, Iowa.

### **1.1 Purpose**

The purpose of this Construction Quality Assurance Plan (CQAP) is to define those activities necessary to assure that the requirements stipulated in the Subcontract Documents will be satisfied during the construction.

The CQAP is not intended to replace the requirements of the Subcontract Documents but rather is intended to complement them. This is achieved by utilizing the CQAP solely for assuring the quality of all construction. Any other items included in this CQAP are solely for the information of the reader, and the CQAP is not empowered to change any Subcontract Document requirement and does not take precedence over agreements made in accordance with the Subcontract Documents.

The requirements stipulated in this CQAP do not relieve the Subcontractor from any quality control measures it must perform to meet the Subcontract Document requirements.

### **1.2 Subcontract Administration**

The construction Subcontract will be held and administered by BVSPC (Contractor).

### **1.3 Subcontract Scope**

The proposed Work provides for remediation of the Mid-America Tanning Site in Woodbury County, Iowa.

The proposed Work will be completed under two Subcontracts. The proposed Work under Subcontract No. 1 includes excavation and relocation of the on-site

contaminated soil, sediment, and sludge materials, coverage of these contaminated materials with multi-media landfill cap structures, treatment of free wastewater located in several site impoundments, installation of floating geosynthetic covers on existing site lagoons, decontamination by steam cleaning of selected site structures, and construction and installation of other appurtenant site features.

Subcontract No. 2 includes the decontamination of selected buildings, the transfer of wastewaters from and to selected surface impoundments on site, and the installation of chain link security fencing.

## **2.0 Responsibility and Authority**

This section discusses the responsibility and authority during construction for the project. Figure 2-1 presents the organization chart.

### **2.1 Regulatory Agencies**

USEPA Region VII is ultimately responsible for completion of the Mid-America Tanning site remediation and will oversee the construction activities on an as-needed basis. The USEPA's project representatives will be invited to attend all project meetings during construction. Additional regulatory agency oversight may be provided by the Iowa Department of Natural Resources (IDNR), and representatives will be invited to attend the project meetings. Construction oversight by IDNR is anticipated to be minimal.

The regulatory agencies will have complete authorization to visit the site and to observe construction activities subject to compliance with the Construction Safety and Health Program provisions and limitations established by the Contractor's Safety and Health Manager. The regulatory agencies will be consulted as necessary if any changes are made during construction. The regulatory agencies will be provided copies of field activity reports compiled by the Contractor's Construction Quality Assurance Manager.

### **2.2 BVSPC (Contractor)**

#### **2.2.1 Design**

BVSPC is responsible for the design of the project. Any questions and changes will be administered through BVSPC.

#### **2.2.2 Construction Quality Assurance**

BVSPC will assign an individual to serve as both the Resident Engineer and the Construction Quality Assurance Manager. This individual will be responsible for overall field coordination of project administrative and technical activities between the office and the construction subcontractor and for all inspections. This individual will also be responsible for interfacing with the onsite representatives of the regulatory agencies during the construction.

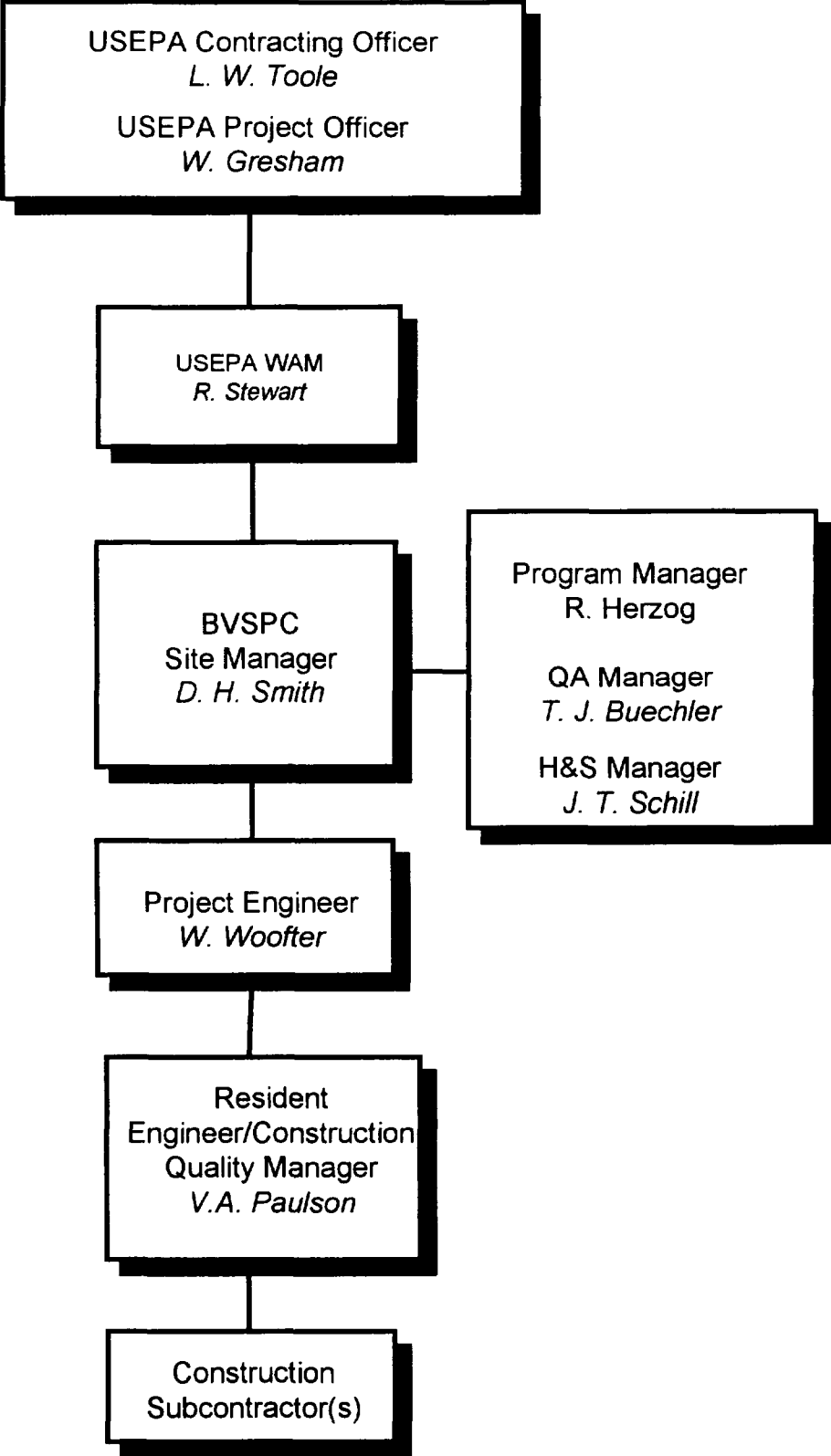


Figure 2-1  
Organization  
Chart



The Resident Engineer/Construction Quality Assurance Manager will execute the activities specified in this CQAP. Specific responsibilities will include:

- Reviewing design criteria, drawings, and specifications for clarity and completeness.
- Scheduling and coordinating construction inspection activities.
- Directing and supporting the construction inspection personnel in performing observations and tests as follows:
  - Confirming that tests are properly performed and the data are accurately recorded and maintained.
  - Confirming that regular calibration of testing equipment is properly conducted and recorded.
  - Confirming that the testing equipment, personnel, and procedures are consistent or that any inconsistencies do not adversely impact the inspection process.
- Providing reports on the inspection results which will include:
  - Review and interpretation of all data sheets and reports.
  - Identification of work that should be accepted, rejected, or uncovered for observation, or that may require special testing, inspection, or approval.
  - Rejection of defective work and verification that corrective measures are implemented.
- Reporting to the Subcontractor results of all observations and tests as the work progresses, interacting with the Subcontractor to provide assistance in modifying the materials, and working to comply with the specified design.
- Attending all meetings, reviewing Subcontractor's submittals, and maintaining record drawings.

### **2.3 Construction Subcontractor**

The construction Subcontractor will be responsible for construction as well as assuring the work is completed in accordance with the drawings and specifications. It will be the construction Subcontractor's responsibility to continually and consistently inspect and review the quality of work performed by his and his lower-tier subcontractors' work forces.

## **2.4 Permitting Agencies**

BVSPC will not be required to obtain any special permits for the remedial action.

### **3.0 Meetings and Communications**

Periodic meetings will be held during construction to enhance communication between all parties and organizations. The meetings to be held are described in the Specifications and are discussed in the following subsections.

#### **3.1 Preconstruction Conference**

A preconstruction conference will be held prior to the start of construction as specified in the Subcontract Documents. BVSPC, its Resident Engineer/Construction Quality Assurance Manager and Site Safety and Health Officer, regulatory agency representatives, and the construction Subcontractors will attend. The topics of this meeting will include those listed in the Specifications and additional construction quality assurance issues as follows:

- Providing each organization with all relevant construction oversight documents and supporting information as needed.
- Familiarizing each organization with the CQAP and its relationship to the design criteria, drawings, and specifications.
- Determining any changes to the CQAP that may be needed for construction to meet the specified design.
- Reviewing the responsibilities and authorities of each organization.
- Reviewing lines of communication for each organization and identifying each organization's project representative.
- Discussing the established procedures or protocol for inspections.
- Discussing procedures or protocol for handling construction deficiencies, repairs, and retesting.
- Reviewing methods for documenting and reporting inspection data.
- Reviewing methods for distributing and storing documents and reports.

The preconstruction conference will be documented by BVSPC, and the conference minutes will be transmitted to all participants and the regulatory agencies, regardless of attendance at the preconstruction conference.

#### **3.2 Meetings**

Good communications will be of the utmost importance during construction. It must be recognized that a cooperative relationship between all parties is critical for

the construction to proceed on schedule and minimize cost changes. The construction Subcontractor will establish the meeting place, date, and time, and notify the Contractor and the regulatory agencies.

The meetings will be documented by the Subcontractor, and the Subcontractor will distribute copies of the meeting minutes to all participants and the regulatory agencies regardless of attendance at the meeting. BVSPC will review the meeting minutes prior to distribution.

Approval by BVSPC and regulatory agencies, as required, is necessary prior to implementing any plan or change in work that arises as a result of the meetings.

### **3.2.1 Project Progress Meetings**

Project progress meetings will be held onsite at least weekly. At a minimum, the meeting will be attended by the construction Subcontractor's superintendent and the Contractor's Resident Engineer/Construction Quality Assurance Manager. The purpose of the meeting will be as follows:

- Review previous period's activities and accomplishments.
- Review the activities planned for the next period.
- Identify the Subcontractor's personnel and equipment assignments for the period.
- Discuss any potential construction problems.
- Discuss health and safety.
- Maintain coordination of efforts.

### **3.2.2 Special Meetings**

Special meetings will be held, as necessary, when construction quality problems, deficiencies, or changes in conditions occur. At a minimum, the meetings will be attended by the construction Subcontractor and the Contractor's Resident Engineer/Construction Quality Assurance Manager. The purpose of the meetings will be as follows:

- Define and discuss the problem, deficiency, or changed condition.
- Review alternative solutions.
- Propose a plan to resolve the problem, deficiency, or changed condition when necessary.

## **4.0 Inspection Activities**

This section of the CQAP describes the inspection activities (observations and tests) that will be performed by the onsite Resident Engineer/Contractor Construction Quality Assurance Manager or the Manager's designee during construction. Specific activities and test methods to be used to inspect the individual components of the construction project are provided in the following sections and the appendices. The inspection activities in the following sections are minimum requirements. Additional activities and testing may be necessary as the Work progresses.

Oversight of safety and health aspects of the project are provided in the Specifications and the Contractor's Construction Safety and Health Program.

### **4.1 General**

The Subcontractor and Contractor Resident Engineer/Construction Quality Assurance Manager will review the construction drawings and specifications for clarity and assurance that the Subcontractor thoroughly understands the work. Preconstruction instructions and training will be provided by the Resident Engineer/Construction Quality Assurance Manager to onsite construction oversight personnel, as necessary, to acquaint them with design concepts and to provide them with a clear understanding of design intent, expected conditions, methods of construction, inspection methods and required documentation, and scope of drawings and specifications.

Specific construction requirements for the work are detailed in the Subcontract Documents and must be referenced to assure the design requirements are achieved. Specific inspection tests and parameters are summarized in Appendix A, Table A-1. Observations will be documented in a log book and on the forms provided in Appendix B. Guidelines and procedures for assuring the appropriate compaction requirements are achieved are provided in Appendix C.

### **4.2 Facility Decontamination and Demolition**

Construction oversight inspection activities for the decontamination, demolition and disposal will include, but not be limited to, the following:

- Observations of decontamination procedures.
- Observations of material handling and disposal methods.

- Sampling and testing to verify satisfactory decontamination.

### **4.3 Soil Excavation, Treatment and Disposal, and Capping**

Construction oversight inspection activities for the soil excavation, treatment and disposal, and capping will include, but not be limited to, the following:

- Observation of excavation techniques including dust control.
- Observation that soils are excavated from the areas and to the depths required in the Subcontract Documents.
- Sampling and testing that treated soils meet the specified requirements.
- Sampling and testing that remaining soils meet the specified requirements.
- Observation of backfilling operations and compaction methods.
- Observation of cap construction methods.
- Observation and documentation of density testing performed by Contractor or its Subcontractor.
- Observation that erosion protection and run-on/run-off controls are as specified.
- Observation that seeding requirements are met as specified (if applicable).
- Observation that the area is returned to its preconstruction condition.
- Observation that excavation and treatment equipment is decontaminated prior to removal from the site.

As indicated in the specifications, certain portions of the work will be administered and paid for on a unit price basis. The Daily Summary Report form (Appendix B) should be used for documenting the work for payment purposes.

### **4.4 Wastewater Treatment**

Construction oversight inspection activities for the wastewater treatment will include, but not be limited to the following:

- Observation of wastewater/sludge transfer between structures.
- Observation of wastewater treatment methods.
- Sampling and testing of wastewater effluent prior to discharge to verify that wastewater discharge complies with NPDES discharge permit requirements.

The Daily Summary Report Form (Appendix B) should be used for documenting the work for payment purposes.

## **4.5 Installation of Floating Cover**

Construction oversight inspection activities for installation of the floating covers will include, but not be limited to the following:

- Observation of the techniques used to make field seams.
- Observation of field testing of the seams of the floating cover.
- Observation of the installation of the floating covers to verify the requirements of the specifications are met.

## **4.6 Chain Link Fence**

Construction oversight inspection activities for the chain link fence will include, but not be limited to the following:

- Observation of the fence construction to verify the completed fence meets the requirements of the specifications.

## **5.0 Documentation**

The ultimate value of the CQAP depends to a large extent on recognizing the construction activities that should be inspected and assigning responsibility for the inspection of each activity. This will be accomplished most effectively by carefully and deliberately documenting all construction oversight activities. The Resident Engineer/Construction Quality Assurance Manager or his designee will document, through required descriptive remarks in log books, inspection forms, and checklists signed by them and the Subcontractor as required, that the inspection activities have been accomplished.

### **5.1 Daily Recordkeeping**

Standard daily reporting procedures include preparation of a summary report with supporting inspection data sheets and, as appropriate, problem identification and corrective measures reports. Forms are included in Appendix B.

#### **5.1.1 Daily Summary Report**

A daily summary report will be prepared by the Resident Engineer/Construction Quality Assurance Manager or designee. This report will provide the chronologic framework for identifying and recording all other reports. At a minimum, the summary reports will include the following information:

- Unique identifying sheet number for cross-referencing and document control.
- Date, project name, location, and other identification.
- Data on weather conditions.
- Average field forces.
- Visitors to the site.
- Reports on any meetings held and their results.
- Construction under way during the timeframe of the daily summary report.
- Equipment and personnel being used in each activity.
- Descriptions of areas or units of work being inspected and documented and observations made.
- Description and quantity of offsite and onsite materials received, including any quality verification (vendor certification) documentation.



- Calibrations, or recalibrations, of test equipment, including actions taken as a result of recalibration.
- Information relative to potential delays.
- Decisions made regarding approval of material or of work and/or corrective actions to be taken in instances of substandard quality.
- Unique identifying sheet numbers of inspection forms and/or non-compliance notices used to substantiate the decisions described in the preceding item.
- Signature of the Resident Engineer/Construction Quality Assurance Manager.

Items above will be summarized into site-specific checklists and data sheets so that details are not overlooked.

### **5.1.2 Inspection Forms**

All observations and field and/or laboratory tests will be recorded on the forms provided in Appendix B. The forms will be filled in or completed by the field personnel or the laboratory conducting the test.

Recorded observations may take the form of notes, charts, sketches, photographs, or any combination of these. If possible, a checklist will be developed and used so that no pertinent factors of a specific observation are overlooked.

At a minimum, the inspection forms will include the following information:

- Unique identifying sheet number for cross-referencing and document control.
- Description or title of the inspection activity.
- Location of the inspection activity or location from which the sample increment was obtained.
- Type of inspection activity procedure used referenced to standard method when appropriate (i.e., American Society for Testing and Materials [ASTM], American Association of State Highway and Transportation Officials [AAHSTO]).
- Recorded observation or test data, with all necessary calculations.
- Results of the inspection activity and comparison with specification requirements.
- Personnel involved in the inspection activity.
- Signature of the Resident Engineer/Construction Quality Assurance Manager.

### **5.1.3 Non-Compliance Notices**

Non-compliance notices will be cross-referenced to specific inspection forms where the problem was identified. The notice will be prepared by the Resident Engineer/Construction Quality Assurance Manager or the laboratory. At a minimum, the report will include the following information:

- Unique identifying sheet number for cross-referencing and document control.
- Detailed description of the problem.
- Location of the problem.
- Probable cause of the problem.
- How and when the problem was located (referenced to inspection form).
- Suggested corrective measure.
- Documentation of correction (referenced to inspection form).
- Final results.
- Suggested methods to prevent similar problems.
- Signature of the Resident Engineer/Construction Quality Assurance Manager.

In some cases, not all of the above information will be available or obtainable. However, when available, such efforts to document problems could help to avoid similar problems in the future.

These notices will be submitted to the regulatory agencies upon specific requests and with the monthly progress reports.

## **5.2 Monthly Progress Reports**

During construction, a monthly progress report will be prepared by the Resident Engineer/Construction Quality Assurance Manager and submitted to the regulatory agencies. Included in these reports will be copies of the daily summary reports, inspection forms, non-compliance notices, and summary of work completed during the reporting period.

## **5.3 Photographic Reporting Data Sheets**

Photographic documentation of the work will be provided by the Resident Engineer/Construction Quality Assurance Manager and the Subcontractor. Photographic reporting data sheets will be cross-referenced or appended to inspection

forms and/or non-compliance notices. At a minimum, photographic reporting data sheets will include the following information:

- A unique identifying number on data sheets and photographs for cross-referencing and document control.
- The date, time, and location where the photograph was taken and weather conditions.
- The size, scale, and orientation of the subject matter photographed.
- Location and description of the work.
- The purpose of the photograph.
- Signature of the photographer and concurrence of the Resident Engineer/Construction Quality Assurance Manager.

These photographs will serve as a pictorial record of work progress, problems, and corrective measures. They will be kept in a permanent protective file in the order in which they were taken. The file will contain color prints. Negatives will be stored in order in a separate file.

#### **5.4 Acceptance of Completed Components**

All daily summary reports, inspection forms, non-compliance notices, and photographic documentation will be reviewed by BVSPC Site Manager. The documentation will be evaluated and analyzed for internal consistency and for consistency with similar work. Timely review of these documents will permit errors, inconsistencies, and other problems to be detected and corrected as they occur, when corrective measures are easiest to implement.

The above information will be assembled and summarized into the monthly progress reports. The reports will indicate that the materials and construction processes comply with the specified design. These reports will be distributed to the regulatory agencies and be archived in the project files, kept by BVSPC.

#### **5.5 Laboratory Reports**

A complete copy of all laboratory test results will be maintained at the field office for review by any of the organizations associated with this project. All laboratory test results will be furnished to the regulatory agencies as part of the monthly reports. Regulatory agencies may be furnished copies of laboratory reports at any time during construction upon request to the BVSPC Site Manager. Originals

of all laboratory results will be delivered to the Resident Engineer/Construction Quality Assurance Manager within 24 hours of their receipt in the construction oversight field office at the site.

## **5.6 Final Documentation and Certification Report**

At the completion of the project, BVSPC will submit a final report to the regulatory agencies. This report will include all of the monthly reports, deviations from design and material specifications (with justifying documentation), and as-built drawings. This document will be certified correct and included as part of the CQAP documentation.

The final documentation will reemphasize that areas of responsibility and lines of authority were clearly defined, understood, and accepted by all parties involved in the project. The signature of BVSPC will be included as confirmation that each party understood and accepted the areas of responsibility and lines of authority and performed their function(s) in accordance with the CQAP.

## **6.0 Field Sampling Plan**

The field sampling plan that addresses confirmation sampling is included in the Site Management Plan prepared by BVSPC for the remedial action efforts.

**Appendix A**  
**Inspection Parameters**

Table A-1  
Inspection Parameters

Inspection Items	Standard Method	Frequency	Specified Value
Excavation Confirmation Soil Samples		One per 400 square feet of surface area.	As specified
Stabilized Soil			
Compressive Strength	As specified	As specified	As specified
Initial Set Time	As specified	As specified	As specified
Density	As specified	As specified	As specified
Equipment Decontamination		As specified	As specified
Backfill			
Material Review	ASTM C136 ASTM D422	Two initial gradation tests for material used; one additional gradation test for each material per 500 tons used.	As specified
Moisture-Density Relationship* (Cohesive Soils)	ASTM D698	As specified	As required to meet in-place density.
In-Place Density*	ASTM D2922 (Nuclear Method)	As specified	95% max. standard dry density (min) at optimum moisture for cohesive soils 70% max. index density (min) for non-cohesive soils
In-Place Moisture Content*	ASTM D3017 (Nuclear Method)	As specified	+/- 4% of optimum
Geotextile Materials	Progress Reports	Daily	As specified

Table A-1 (Continued)  
 Inspection Parameters

Inspection Items	Standard Method	Frequency	Specified Value
Flexible Membrane Liners and Floating Covers	Material Certification	Upon delivery	As specified
	Seam Testing and Sheet Installation	As specified	As specified
Concrete			
Air Content	ASTM C231	One per pour	As specified
Slump	ASTM C143	One per pour	As specified
Test Cylinders	ASTM C31 AND C39	One per pour	As specified
Water Treatment Plant Process Testing	As specified in 40 CFR Part 136, or Table VII of Chapter 63, IAC	As specified	As specified

\* Refer to Appendix C



**Appendix B**  
**Inspection Forms**

# DAILY SUMMARY REPORT NO. \_\_\_\_\_

DATE \_\_\_\_\_

DAY

S	M	T	W	TH	F	SA
---	---	---	---	----	---	----

PROJECT: Mid-America Tanning Remediation  
 PROJECT NO: 46117  
 SUBCONTRACTOR: \_\_\_\_\_

WEATHER	Bright Sun	Mostly Clear	Overcast	Rain	Snow
TEMP.	TO 55	58-70	71-85	86-100	101 up
WIND	Still	Moder	High	Report No.	
HUMIDITY	Dry	Moder	Humid		

AVERAGE FIELD FORCE					
Subcontractor	Employees	No.	Equipment	No.	Remarks

VISITORS			
Time	Name	Representing	Remarks

MEETINGS AT THE SITE.

CONSTRUCTION ACTIVITIES:

SHEET 1 OF \_\_\_\_\_

- DISTRIBUTION: 1. Contractor  
 2. Subcontractor  
 3. Owner  
 4. Contractor Field Office

BY: \_\_\_\_\_ TITLE: \_\_\_\_\_

**DAILY SUMMARY REPORT NO. \_\_\_\_\_**

(Continuation Sheet)

CONSTRUCTION ACTIVITIES (CONTINUED)

SHEET \_\_\_\_ OF \_\_\_\_

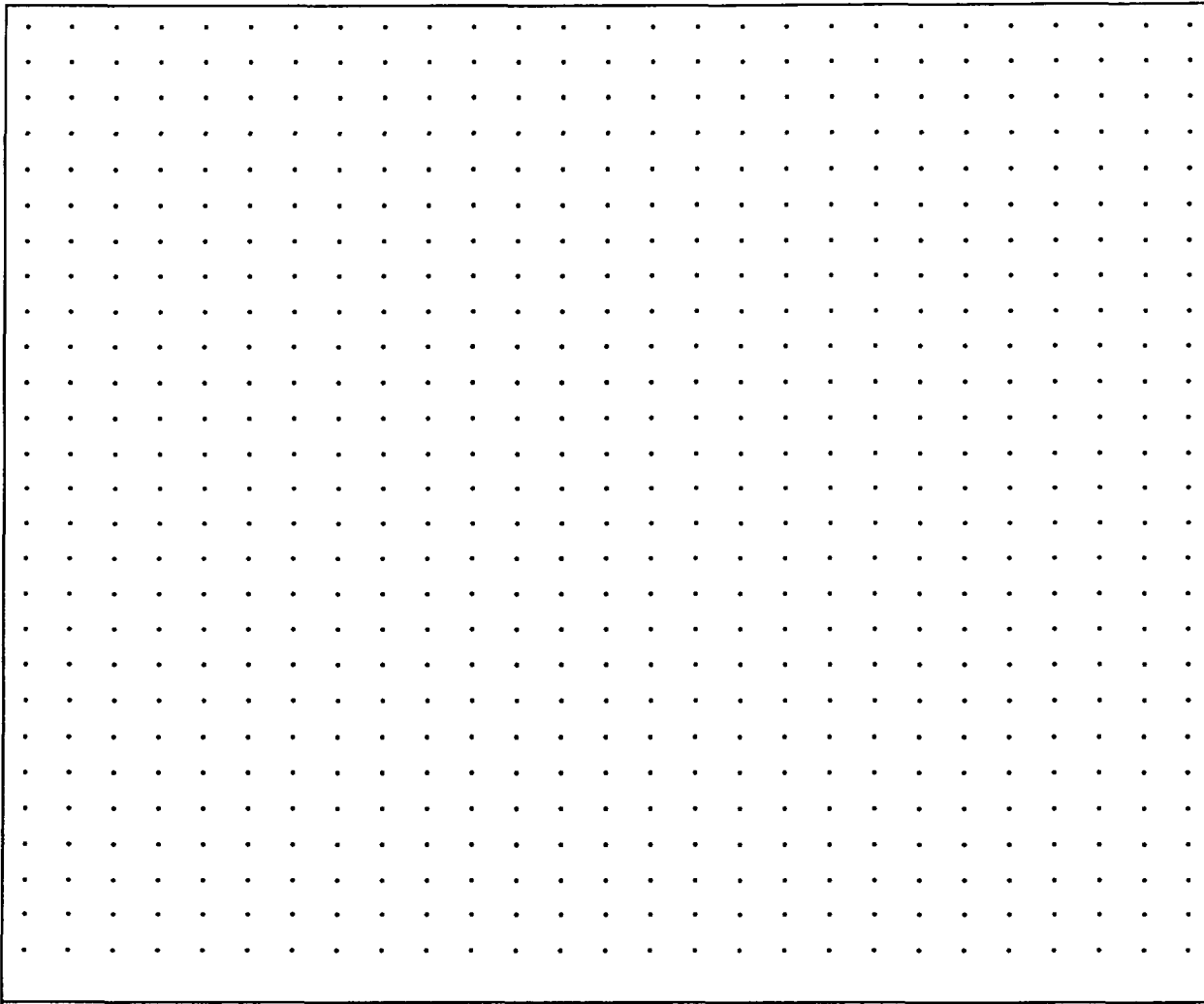
- DISTRIBUTION:**
- 1. Contractor
  - 2. Subcontractor
  - 3. Owner
  - 4. Contractor Field Office

**BY:** \_\_\_\_\_ **TITLE:** \_\_\_\_\_

**DAILY SUMMARY REPORT NO. \_\_\_\_\_**

(Continuation Sheet)

The grid below should be utilized for locations of construction underway during the time frame of the daily summary report as well as descriptions of areas of units of work (blocks) being inspected.



SHEET \_\_\_\_ OF \_\_\_\_

- DISTRIBUTION: 1. Contractor  
2. Subcontractor  
3. Owner  
4. Contractor Field Office

BY: \_\_\_\_\_ TITLE: \_\_\_\_\_

**NON-COMPLIANCE NOTICE NO. \_\_\_\_\_**

To:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Date/Time

\_\_\_\_\_  
Inspector

Project: Mid-America Tanning Remediation

Project No.: 46117

Subcontractor: \_\_\_\_\_

Contract No.: \_\_\_\_\_

You are hereby notified that \_\_\_ tests \_\_\_ inspection indicate that the \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

does not conform to the subcontract requirements. The requirement violated is Section \_\_\_\_\_ Article/  
Paragraph \_\_\_\_\_ Drawing \_\_\_\_\_. Under the provisions of the subcontract documents,  
the requirements are \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Noncomplying work will be required to be corrected, removed, or replaced at no cost to the Contractor.

It shall be your responsibility to determine the corrective action necessary, and to determine whether you wish to discontinue operations until additional investigations by Contractor confirm or refute the initial findings.

By: \_\_\_\_\_ Title: \_\_\_\_\_ Date: \_\_\_\_\_

Subcontractor to complete the following and return to Contractor.

Non-compliance notice was received by Subcontractor on \_\_\_\_\_  
Date

- DISTRIBUTION: 1. Contractor  
2. Subcontractor  
3. Owner  
4. Contractor Field Office

BY: \_\_\_\_\_ TITLE: \_\_\_\_\_

# REPORT OF FIELD CHANGE NO. \_\_\_\_\_

PROJECT: Mid-America Tanning Remediation

Project No. 46117

PAGE \_\_\_ OF \_\_\_ PAGES

CONTRACT NO.: \_\_\_\_\_

DATE \_\_\_\_\_

SUBCONTRACTOR: \_\_\_\_\_

CROSS REFERENCE TO  
DAILY REPORT NO. \_\_\_\_\_

=====

## INSTRUCTIONS

Whenever any corrective change is made in field construction which is at variance with the specifications and drawings as originally issued, a complete detailed report shall be filed, listing the following items, so that specifications or drawings storage data can be corrected.

1. Identify the problem: indicate why originally specified construction was not used.
2. The Solution: Describe, in detail, the recommended changes that were made, as applicable.
3. Indicate whether this is an isolated case or a general condition which could be improved by changing future specifications or drawings.
4. Submit sketches as necessary.

## REFERENCE DATA

SPECIFICATION SECTION No. \_\_\_\_\_ PAGE No. \_\_\_\_\_ PARAGRAPH No. \_\_\_\_\_

DRAWING No. \_\_\_\_\_ ENTITLED \_\_\_\_\_

SKETCH No. \_\_\_\_\_ DATED \_\_\_\_\_ ENTITLED \_\_\_\_\_

## DESCRIPTION

1. DETAILED IDENTIFICATION OF THE PROBLEM \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

2. DETAILED SOLUTION PROPOSED OR ACCOMPLISHED \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. IS THE PROBLEM AN ISOLATED CASE OR GENERAL? \_\_\_\_\_

4. SUBMIT SKETCHES AS NECESSARY \_\_\_\_\_

DISTRIBUTION: 1. Contractor

2. Subcontractor

3. Owner

4. Contractor Field Office

BY: \_\_\_\_\_ TITLE: \_\_\_\_\_

# PUNCH LIST

PROJECT: Mid-America Tanning Remediation

PROJECT NO.: 46117

CONTRACT NO.: \_\_\_\_\_

Date \_\_\_\_\_

Inspection was conducted at above project by: \_\_\_\_\_ at \_\_\_\_\_ o'clock this date.

## REPRESENTATION

Contractor:

Subcontractor:

The following items are to be corrected to comply with the Subcontract Documents:

Type of Inspection	Check	Final	1 Yr. Guar.	Guar.
NO.	ITEM			

- DISTRIBUTION: 1. Contractor  
2. Subcontractor  
3. Owner  
4. Contractor Field Office

BY: \_\_\_\_\_ TITLE: \_\_\_\_\_

**CERTIFICATE OF  
SUBSTANTIAL COMPLETION**

DATE OF SUBSTANTIAL COMPLETION: \_\_\_\_\_ PROJECT TITLE: Mid-America Tanning Remediation

PROJECT COMPONENT: \_\_\_\_\_ PROJECT NO.: 46117

SUBCONTRACTOR: \_\_\_\_\_

CONTRACT NO.: \_\_\_\_\_

The Work performed under this Subcontract has been inspected by authorized representatives of the Owner, Contractor, and Subcontractor, and the Project (or specified part of the Project, as indicated above) is hereby declared to be substantially completed on the above date.

**DEFINITION OF SUBSTANTIAL COMPLETION**

The date of substantial completion of a project or specified area of a project is the date when the construction is sufficiently completed, in accordance with the Subcontract Documents, as modified by any Change Orders agreed to by the parties, so that the Owner can occupy or utilize the project or specified areas of the project for the use for which it was intended.

A tentative list of items to be completed or corrected is appended hereto. This list may not be exhaustive, and the failure to include an item on it does not alter the responsibility of the Subcontractor to complete all Work in accordance with the Subcontract Documents.

\_\_\_\_\_  
CONTRACTOR BY \_\_\_\_\_  
AUTHORIZED REPRESENTATIVE DATE

The Subcontractor accepts the above Certificate of Substantial Completion and agrees to complete and correct the items on the tentative list within the time indicated.

\_\_\_\_\_  
SUBCONTRACTOR BY \_\_\_\_\_  
AUTHORIZED REPRESENTATIVE DATE

The Owner accepts the project or specified area of the project as substantially complete and will assume full possession of the project or specified area of the project at \_\_\_\_\_ (time), on \_\_\_\_\_ (date). The responsibility for heat, utilities, security, and insurance under the Subcontract Documents shall be as set forth under "Remarks" below.

\_\_\_\_\_  
OWNER BY \_\_\_\_\_  
AUTHORIZED REPRESENTATIVE DATE

REMARKS: (Attach additional sheet, if necessary)



## Summary of Backfill Density Testing

PROJECT: Mid-America Tanning Remediation  
 CONTRACT NO.: \_\_\_\_\_

PROJECT NO.: 46117

Date	Sample No./Location	Field Moisture Content, % ASTM D3017 (Nuclear)	Field Density ASTM D2922 (Nuclear)
Specified Value		+/-4% of optimum	95% max dry density
<sup>1</sup> Values given are percent of maximum dry density as determined by modified Proctor testing (ASTM D698).			

**Appendix C**  
**Inspection Guidelines for**  
**Compaction**

## Appendix C

### Inspection Guidelines for Compaction

Inspection guidelines for verifying compaction are given below:

- To control the relationship among density, moisture content, and compaction, the following field variables must be measured and controlled:
  - Compaction equipment type, configuration, and weight.
  - Number of compaction equipment passes over the fill.
  - Method used to control and adjust moisture content and the quantity of water used in the adjustment.
  - Compaction equipment working speed.
  - Uncompacted and compacted lift thicknesses.
- Procedures and methods for observing and testing the soil materials before and after placement, will achieve the following:
  - Removal of roots, rocks, rubbish, and off-spec soil from the material.
  - Identification of changes in soil characteristics requiring a change in construction specifications.
  - Adequate spreading of material to obtain complete coverage and the specified loose lift thickness.
  - Adequate size reduction of soil material.
  - Adequate spreading and incorporation of water to obtain full penetration through soil material and uniform distribution of the specified water content.
- Procedures and methods for observing and testing the compaction process will be employed to confirm the following:
  - Uniformity of coverage by compaction equipment (visual).
  - Consistent achievement of the specified soil density (ASTM D 2922) and water content (ASTM D3017) throughout each completed lift.
  - Consistent achievement of compacted thickness (measurement).
  - Repair of penetrations or holes resulting from the collection of undisturbed soil samples or the use of density or moisture probes.
  - Achievement of sufficient strength to achieve a stable base for supporting overlying materials.