



DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 49TH FIGHTER WING (ACC)
HOLLOMAN AIR FORCE BASE, NEW MEXICO

09 JUL 1997

U.S. AIR FORCE



1947 - 1997

MEMORANDUM FOR NEW MEXICO ENVIRONMENT DEPARTMENT

Attn: Ms. Stephanie Kruse
RCRA Permits Management Program
Hazardous & Radioactive Materials Bureau
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Santa Fe NM 87502

FROM: 49 CES/CEV
550 Tabosa Avenue
Holloman AFB NM 88330-8458



SUBJECT: Final Construction Workplan, Sewage Lagoons

1. Attached please find the Final Construction Workplan Sewage Lagoons Final Closure Project. This workplan was prepared in accordance with the approved Sewage Lagoons Closure Plan. Holloman AFB has begun preliminary field activities in support of the sewage lagoons closure. No variances from the schedule established in the Sewage Lagoons Closure Plan are anticipated.
2. If you have any questions regarding our recommendation, or require additional information, please contact Warren Neff or Fred Fisher at (505) 475-3931.

Howard E. Moffitt
HOWARD E. MOFFITT
Deputy Base Civil Engineer

Attachment:
Final Construction Workplan Sewage Lagoons Final Closure Project

LIBRARY COPY



*Headquarters, Air Combat Command
Langley Air Force Base,
Virginia*

*FINAL CONSTRUCTION WORKPLAN
SEWAGE LAGOONS
FINAL CLOSURE PROJECT*

*HOLLOMAN AFB
ALAMOGORDO, NM*

JUNE 1997



*49 CES/CEV
Holloman Air Force Base
New Mexico*

**FINAL CONSTRUCTION WORKPLAN
FOR
SEWAGE LAGOONS FINAL CLOSURE PROJECT
HOLLOMAN AIR FORCE BASE, NEW MEXICO**

Prepared for:

49 CES/CEVR
Holloman Air Force Base, NM

and

HQ ACC CES/ESV
Langley Air Force Base, VA

Prepared by:

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Under Contract No. DACW45-94-D-0003

Delivery Order 8, Work Authorization Directive 23

U.S. Army Corps of Engineers
Omaha District
Omaha, Nebraska

June 1997

TABLE OF CONTENTS

LIST OF FIGURES iv
LIST OF ACRONYMSv

1.0 INTRODUCTION 1-1
 1.1 PROJECT OBJECTIVES 1-4
 1.2 WORKPLAN OVERVIEW 1-4
 1.3 DISEASE VECTOR CONTROL 1-5
 1.4 ODOR CONTROL 1-6
 1.4.1 Lagoon Liquids 1-6
 1.4.2 Lagoon Sludges 1-6

2.0 SITE DESCRIPTION 2-1
 2.1 SITE LOCATION AND EXISTING CONDITIONS 2-1
 2.2 SITE GEOLOGY AND HYDROGEOLOGY 2-2

3.0 SCOPE OF WORK 3-1
 3.1 ON-SITE ACTIVITIES 3-1
 3.1.1 Pre-work Meeting 3-1
 3.1.2 Mobilization/Demobilization 3-2
 3.1.3 Construction Activities 3-2
 3.1.4 Field Engineering and Quality Control 3-3
 3.1.5 Health and Safety 3-3
 3.1.6 Site Security 3-4
 3.1.7 Community Relations 3-4
 3.2 OFF-SITE ACTIVITIES 3-4

4.0 PROJECT IMPLEMENTATION PLAN 4-1
 4.1 BASE ACCESS AND SITE SECURITY 4-1
 4.1.1 Transportation Operations 4-1
 4.1.2 Field Communications 4-1
 4.1.3 Site Access and Security 4-2
 4.2 MOBILIZATION 4-2
 4.2.1 Temporary Facilities and Utilities 4-2
 4.2.2 Staging and Storage Areas 4-3
 4.2.3 Miscellaneous Site Preparation 4-3
 4.3 TECHNICAL SPECIFICATIONS AND CONSTRUCTION DRAWINGS 4-3
 4.4 DEMOBILIZATION 4-3

6.6 DOCUMENT CONTROL	6-14
6.6.1 <u>Daily Quality Control Report</u>	6-15
6.6.2 <u>Conference Notes and Confirmation Notes</u>	6-16
6.7 SUBMITTALS	6-17
6.7.1 <u>Preparation and Maintenance of Submittals</u>	6-17
6.7.2 <u>Review of Submittals</u>	6-18
6.7.3 <u>Execution</u>	6-18
6.7.4 <u>Submittal Register</u>	6-18
6.7.5 <u>Scheduling</u>	6-19
6.8 NONCONFORMANCES	6-20
6.8.1 <u>Control and Segregation</u>	6-20
6.8.2 <u>Nonconformance Report</u>	6-20
6.8.3 <u>Disposition</u>	6-20
6.8.4 <u>Corrective Actions</u>	6-22
6.9 MANAGEMENT INSPECTIONS	6-22
6.10 INDEPENDENT REVIEW AND CLOSURE CERTIFICATION	6-22
7.0 <u>PROJECT MANAGEMENT PLAN</u>	7-1
7.1 PROJECT SCHEDULE.....	7-1
7.2 PROJECT PERSONNEL	7-1
7.3 PROJECT MEETINGS	7-4
7.4 DATA MANAGEMENT.....	7-5
7.5 DOCUMENT CONTROL.....	7-5
7.6 REPORTS.....	7-5
8.0 <u>REFERENCES</u>	8-1
Appendix A	Odor Control Chemical Information - Bioxide by US Filter/Davis
Appendix B	Draft Final (Revision 2) Site Safety and Health Plan for Sewage Lagoons Final Closure Project
Appendix C	Technical Specifications
Appendix D	Construction Drawings
Appendix E	Spill Prevention Control and Countermeasures Plan
Appendix F	Stormwater Pollution Prevention Plan

LIST OF FIGURES

<u>FIGURE</u>	<u>TITLE</u>	<u>PAGE</u>
1-1	Location Maps	1-2
1-2	Sewage Lagoons	1-3
6-1	Inspection Checklist.....	6-7
6-2	Daily Quality Control Report.....	6-9
6-3	Nonconformance Report.....	6-21
6-4	Field Change Request	6-23
7-1	Sewage Lagoons Final Cover Construction Schedule	7-2
7-2	Sewage Lagoons Final Cover Project Organization Chart	7-3

LIST OF ACRONYMS

AFB	Air Force Base
AHA	Activity Hazard Analysis
AOC	Area of Concern
BMP	Best Management Practices
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulation
CIH	Certified Industrial Hygienist
COC	Contaminant of Concern
CQC	Contractor Quality Control
DOM	Delivery Order Manager
DOT	Department of Transportation
DQCR	Daily Quality Control Report
EIB	Environmental Improvement Boards
EPA	U. S. Environmental Protection Agency
ERP	Emergency Response Plan
Foster Wheeler	Foster Wheeler Environmental Corporation
FCR	Field Change Request
FFCA	Federal Facilities Compliance Agreement
ft	Feet/Foot
HWMR	Hazardous Waste Management Regulations
HWMU	Hazardous Waste Management Unit
IRA	Interim Remedial Action
IRP	Installation Restoration Program
LDR	Land Disposal Restriction
MSDS	Material Data Safety Sheet
NCP	National Contingency Plan
NMED	New Mexico Environment Department
NOI	Notice of Intent
NPDES	National Pollution Discharge Elimination System
O&M	Operations and Maintenance
OSHA	Occupational Health and Safety Administration
PCB	Polychlorinated Biphenyl
PPE	Personal Protective Equipment
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RBC	Risk-Based Concentration
RCP	Regulatory Compliance Plan
RCRA	Resource Conservation and Recovery Act

1.0 INTRODUCTION

The Holloman Air Force Base (AFB) Federal Facilities Compliance Agreement (FFCA) was signed in December 1988 to provide a comprehensive plan for environmental actions at the Base. One requirement of the FFCA was preparation of a Closure Plan for the Sewage Lagoons, designated Site WP-49. Location maps for the sewage lagoons are shown in Figure 1-1, and a schematic of the lagoons is shown in Figure 1-2 (note that Pond G is not addressed by this project). Closure of the sewage lagoons was to be implemented after the new waste water treatment plant (WWTP) was constructed and began operating. The required closure plan was submitted and further discussions regarding sewage lagoons closure took place over a period of several years. During January 1991 meetings between Holloman AFB, the U.S. Environmental Agency (EPA) Region VI, and the New Mexico Environment Department (NMED), Holloman AFB proposed that the lagoons be allowed to undergo clean closure supported by a site-specific demonstration (i.e., risk assessment). The agencies agreed that a risk-based equivalency demonstration to clean closure was an option for closure of the sewage lagoons, and any sewage lagoon that could not meet the site-specific health-based standard would undergo closure in place. Results from the site-specific risk assessment provide the basis of this workplan, which represents a risk-based equivalency demonstration to clean closure of the lagoons.

Use of the lagoons was discontinued in August 1996, when the new WWTP came on-line. Design and construction activities associated with closure of the lagoons began in the fall of 1996, when Foster Wheeler Environmental Corporation (Foster Wheeler) was retained to implement an Interim Remedial Action (IRA) for disease vector and odor control at the sewage lagoons. The scope of the IRA was originally to minimize potential disease vectors and odors from the lagoons as they dried, and to install a 6-inch thick clean soil cover over the dried lagoon beds. Due to slow drying of the lagoons during the winter of 1996/1997, the IRA field activities were suspended in March 1997. Field activities are planned to resume in August 1997 after the

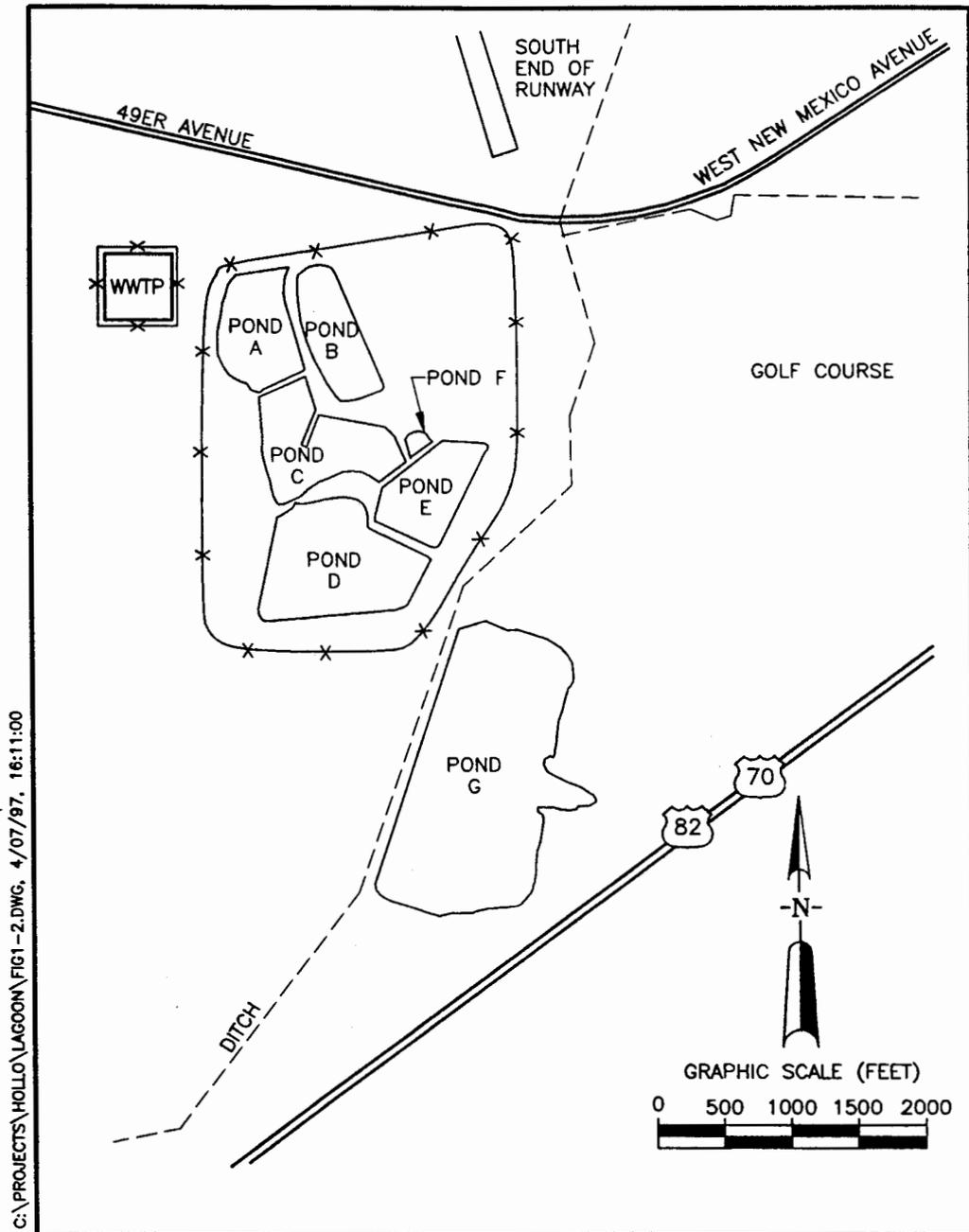


FIGURE 1-2 SEWAGE LAGOONS

site activities from mobilization through demobilization, is presented in Section 4. The Regulatory Compliance Plan (RCP), presented in Section 5, outlines pertinent environmental procedures, permitting and approval requirements, and regulatory procedural and training requirements. The Contractor Quality Control (CQC) Plan is presented in Section 6. The Project Management Plan, including staffing, scheduling, reporting, data management, document control, and meetings, is presented in Section 7. References are provided in Section 8.

Supporting information for this project is contained in the appendices. Pertinent vendor information is presented in Appendix A, technical specifications are presented in Appendix C, and construction drawings are contained in Appendix D. The specifications and drawings (Appendices C and D) contain considerably more detail for parameters such as soil quantities, dimensions, and materials, than what is contained in the body of this workplan. Therefore, the information contained in Appendices C and D should control the technical approach and construction of the lagoon covers.

Several supporting plans are also included in the appendices, including the Site Safety and Health Plan (SSHP) contained in Appendix B, The Spill Prevention Control and Countermeasures Plan (SPCCP) contained in Appendix E, and The Stormwater Pollution Prevention Plan (SPPP) contained in Appendix F.

1.3 DISEASE VECTOR CONTROL

During closure of the sewage lagoons, the potential for disease transmission via mosquitoes will exist. This risk is considered to be very low, and no extraordinary activities are planned to control this vector. Mosquitoes are prevalent only during certain times of the year, and their presence is encouraged by areas of standing water. Creation of additional areas of standing water will be avoided during drying and construction activities. Workers at the site will be protected by personal protective equipment (PPE), and the use of mosquito repellent as needed.

2.0 SITE DESCRIPTION

Holloman AFB is located in the Tularosa Basin in Otero County in southern New Mexico. It is located immediately southwest of the City of Alamogordo. Base operations consist of the 49th Fighter Wing, with associated Fighter and Training Squadrons under the 49th Operations Group, as well as other support organizations. Other tenant organizations are also stationed at Holloman AFB, the largest being the 46th Test Group and the Det 1, 821st Space Group.

2.1 SITE LOCATION AND EXISTING CONDITIONS

The sewage lagoons are located at the southern portion of the Base, south of the southern end of the north-south runway, and south of 49er Avenue. The sewage lagoons consist of seven ponds, designated Pond A through Pond G. The sewage lagoons operated from 1944 to July 1996, when the new WWTP began operating. Ponds A through F will be closed under this contract, and Pond G will be left intact. The area encompassed by the sludge in ponds A through F is approximately 60 acres, and the area encompassed by the soil cover will be approximately 85 acres.

The sewage lagoons consist of seven aeration/evaporation ponds that historically received approximately 1.2 million gallons of domestic and industrial wastewater per day. More than 90 percent of this flow consisted of domestic wastewater. The first three lagoons, Ponds A, B, and C, were aerobic treatment ponds. Ponds D and E were stabilization ponds. After leaving Ponds A, B, and C, the wastewater flowed through ponds D, E, and G. Pond F was a sump that recirculated water from pond E to the headworks of the system. Discharge from the last lagoon, Pond G, flowed via an open ditch to Lake Holloman.

Ponds A through F have an 80-mil geomembrane liner installed on the inside slope of the berms for protection against wave action erosion. The bottoms of the lagoons are unlined.

3.0 SCOPE OF WORK

This section provides an overview of project-related activities that will occur both on site and off site.

3.1 ON-SITE ACTIVITIES

On-site activities will include the following:

- Pre-work meeting
- Mobilization/Demobilization
- Construction activities
- Field engineering and quality control
- Health and safety
- Site security
- Community relations

3.1.1 Pre-work Meeting

A pre-work meeting will be conducted by Foster Wheeler at the Base prior to mobilization. The agenda for this meeting will include some or all of the following topics:

- Introductions, roles, and responsibilities
- Review of scope of work
- Construction schedule
- Mobilization logistics
- Review of off-site delivery schedules
- Forecast of progress until next scheduled meeting
- Coordination of schedules
- Review of submittal schedules
- Review of quality programs and health and safety programs
- Pending changes and substitutions

- Compact the sludge.
- Place and compact clean soil on top of the compacted sludge, to create a final soil cover having a minimum thickness of 1 ft.
- Revegetate the final cover.

3.1.4 Field Engineering and Quality Control

Field engineering is the primary responsibility of the Site Manager and will be performed under his/her direction. Field change requests (FCRs) and nonconformance notices will be documented when discrepancies occur between constructed elements and corresponding Construction Drawings (Appendix D) and Technical Specifications (Appendix C). Locations of installed project features will be incorporated into the record (as-built) drawings.

Quality control (QC) inspections and testing will be performed by the CQC Systems Manager in accordance the CQC Plan (Section 6). The CQC Systems Manager will document daily construction activities on a daily quality control report (DQCR), which is discussed in the CQC Plan (Section 6). FCRs and nonconformance reports, also included within the CQC Plan, will be issued and maintained by the CQC Systems Manager.

3.1.5 Health and Safety

Health and safety activities will be conducted in accordance with the SSHP for the Sewage Lagoons Final Cover Project (Appendix B), Basewide Health and Safety Plan, Foster Wheeler Environmental Corporate Health and Safety Program, and United States Army Corps of Engineers (USACE) Safety and Health Requirements Manual (EM 385-1-1). All employees and subcontractors will be responsible for complying with these documents. The Site Manager, Construction Superintendent, and the Site Health and Safety Officer will ensure implementation of these programs and procedures.

The following administrative support functions will be furnished by the home office:

- **Contract Administration**—The Contract Administrator will assist project management with all issues pertaining to contract compliance.
- **Regulatory Compliance**—Compliance with permits and regulatory requirements will be overseen by designated home office personnel as described in Section 5 - Regulatory Compliance Plan.
- **Safety Compliance**—Home office compliance officers will periodically monitor the Site Safety and Health Program.
- **Compliance Inspections**—All issues regarding corporate, regulatory, health and safety, and project compliance will be evaluated periodically throughout the project by designated corporate representatives from the home office

4.0 PROJECT IMPLEMENTATION PLAN

This section provides the details for accomplishing the on-site work, including mobilization, construction activities, and demobilization.

4.1 BASE ACCESS AND SITE SECURITY

4.1.4 Transportation Operations

On-site transportation operations will conform to the following guidelines:

- Contractor and subcontractor vehicles will access sites at the Base via the main gate located on U.S. Highway 70. Oversized vehicles shall use the Base truck entrance and use truck routes established by the Base.
- All vehicles will travel along improved roads and will not enter areas marked as secure without receiving prior clearance.
- The truck scale nearest to the construction site, located at 1505 U.S. Highway 70 West, will be used when needed.
- The Foster Wheeler Site Manager, Construction Superintendent, and other required personnel, subcontractors, and vendors will receive vehicle passes valid for the duration of the project. A valid driver's license, proof of vehicular insurance, and valid vehicle registration will be required to obtain a pass.
- Particular details for hauling on-site soil borrow material from a borrow area on Base to the sewage lagoons are contained in Technical Specification Section 02200 - Earthwork (Appendix C).

4.1.2 Field Communications

Important points of contact for this project are as follows:

<u>Location</u>	<u>Point of Contact</u>	<u>Telephone Number</u>
Foster Wheeler	Dan Holmquist (Foster Wheeler Trailer)	(505) 479-2668
USACE	Rick Macfarlane	(505) 479-6095

A complete list of project-related telephone numbers is contained in the SSHP (Appendix B).

4.2.2 Staging and Storage Areas

All staging and storage activities shall take place within the fenced limits of the sewage lagoons. These areas will be used for stockpiling material, storing equipment and supplies, and performing maintenance operations.

4.2.3 Miscellaneous Site Preparation

Work zones for the project shall be established in accordance with the SSHP (Appendix B).

4.3 TECHNICAL SPECIFICATIONS AND CONSTRUCTION DRAWINGS

Technical Specifications (Appendix C) and Construction Drawings (Appendix D) have been prepared to provide specific direction for construction of the final soil cover.

4.4 DEMOBILIZATION

Demobilization activities will commence after completion of construction activities and will include removal of temporary facilities, completion of final punch-list inspection items, and removal of equipment and materials from the site.

5.0 REGULATORY COMPLIANCE PLAN

The RCP identifies necessary regulatory requirements applicable to the construction of the final cover at Holloman AFB's IRP Site WP-49, Sewage Lagoons. This RCP discusses the IRP, environmental regulations that impact project activities, and pertinent waste management practices and training requirements necessary for the management and disposal of wastes that will be generated during construction activities. This includes disease vector and odor control for lagoon liquids as the lagoons dry, drying of lagoon sludges, leveling lagoon berms, debris management (e.g., liner material, concrete), and the constructing the final soil cover. Practices that will minimize the volume of waste generated, stored, and buried are also addressed.

5.1 REGULATORY FRAMEWORK

The Sewage Lagoons are a designated IRP site and will be closed under Holloman AFB's IRP. Implementation of the IRP generally follows the provisions of the Superfund Amendments and Reauthorization Act (SARA). All activities associated with closure of the lagoons must also be consistent with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Contingency Plan (NCP). In addition, NMED and EPA Region VI determined in 1994 that the sewage lagoons were to be regulated as hazardous waste management units (HWMUs) under the Resource Conservation and Recovery Act (RCRA) regulations. As a result of the action being conducted entirely on site and under the Air Force's IRP and per 40 Code of Federal Regulations (CFR) 300.400(e)(1), no federal or state permits will be required to implement this action. However, the substantive requirements with regard to any permits that would have been required for this action will be complied with.

In response to a December 1984 RCRA Section 3007 request for information by the U.S. EPA Region VI Office, Holloman AFB identified certain listed hazardous wastes as having been contained in the lagoons prior to 1985. Holloman AFB later indicated in its November 22, 1985, Sewage Lagoons Closure Plan that the majority of the indicated listed hazardous wastes had been

- Sewage Lagoon Closure Plan, Sewage Lagoons Closure Project, June 1996

Results from the 1994/1995 lagoons investigations indicate that no characteristically hazardous wastes exist within the ponds. As previously indicated, listed hazardous wastes, namely nonspecific sources identified as F001 and F003 wastes, may be present in the lagoons. However, through application of the site-specific risk assessment (based on extensive sampling and analysis of the lagoons) and EPA Region III's risk-based concentration levels (RBCs) for residential scenarios in conjunction with EPA's contained-in interpretation to the lagoons, and that no placement of material occurs, the soil/sludge remaining in the lagoons does not present a hazard to human health or the environment with respect to the hazardous constituents. All occurrences of these constituents are below the associated risk-based concentrations; as such, this material is not considered a hazardous waste. Consequently, the lagoons are being closed in place by leaving the material in each lagoon and constructing a final cover of compacted clean-fill soil.

5.1.1 Regulated Site Activities

The following actions are addressed in this workplan and are applicable to the planned construction activities.

- Allow the liquid level in the lagoons to drop by pumping liquid to the new WWTP, by evaporation, and/or by infiltration.
- Minimize disease vectors and odors by using existing aerators and portable pumps to aerate lagoon liquids.
- Apply odor control chemical as necessary to control odors.
- Remove interior berm liner and bury within the lagoon area.
- Dry the sludge using farm implements.
- Compact the sludge.
- Place and compact clean soil on top of the compacted sludge, to create a final soil cover having a minimum thickness of 1 ft.
- Revegetate the final cover.

- Material storage practices
- Vehicle positioning for transfer of materials

6. Dust control

- Irrigation/spraying
- Wind breaks
- Minimize areas being worked on at any given time

Performance standards for the surface water management system are designed to ensure:

- Minimum surface water infiltration
- Minimum erosion
- Minimum maintenance requirements
- Minimum off-site impacts related to runoff water quality and quantity
- Maximum all-weather site accessibility
- No surface water run-on

Due to the nature of the identified contamination at these sites, the following federal and state regulations are potentially applicable and the substantive requirements must be complied with during implementation of planned project activities:

- 40 CFR Parts 190—259 EPA Regulations for Solid Waste
- 40 CFR Parts 260—299 EPA Regulations for Identification and Management of Hazardous Waste
- 40 CFR 122—National Pollution Discharge Elimination System SPPP Requirements (Appendix F)
- 49 CFR Parts 100—178 Department of Transportation (DOT) Rules For Hazardous Materials Transport
- New Mexico Solid Waste Management Regulations (SWMR)
- New Mexico Hazardous Waste Management Regulations (HWMR)
- New Mexico Air Quality Control Regulations

5.2.2 Liner Material

Liner material from lagoon berm sides will be removed prior to berm demolition. This material will be handled similarly to debris, and is assumed to be nonhazardous (for the same reasons debris is assumed nonhazardous). After removal the liner material will be placed into stockpiles which will be buried under the final cover and located by surveying. LDRs are not applicable to these activities because placement does not occur when wastes are left in place or moved within a single area of concern.

5.2.3 Decontamination Water/Solids

Equipment will be decontaminated within the designated site WP-49 area at the end of field activities. During the project, decontamination water/solids will be returned to the lagoons.

5.2.4 Personal Protective Equipment

Protective clothing and sampling equipment that is grossly contaminated with lagoon sludge will be decontaminated as necessary. Once decontaminated, this type of PPE and all other PPE will be collected on a daily basis in plastic garbage bags and disposed in a designated dumpster. The contained-in rule for debris allows that properly decontaminated PPE, clothing, and/or miscellaneous sampling equipment solid wastes will be considered nonhazardous and will be disposed as a solid waste in dumpsters designated by Holloman AFB personnel.

5.3 WASTE MANAGEMENT ACTIVITIES

Waste streams are characterized either by sampling and analysis or by using process knowledge in accordance with New Mexico's SWMR 20 New Mexico Administrative Code (NMAC) 9.1, and New Mexico's HWMR 20 NMAC 4.1. These regulations require the generator to determine if a solid waste is a New Mexico special waste or a listed or characteristic hazardous waste. To meet testing requirements, representative samples are taken in accordance with federal and New Mexico's SWMR and HWMR.

- Use containers to minimize the spread of contamination.
- Do not place contaminated materials with clean materials.
- Cover wooden pallets inside the exclusion zone with plastic.
- Decontaminate and re-use material and equipment when practical.
- Use volume reduction techniques when practicable.
 - Verify that waste containers are solidly packed to minimize the number of containers.
 - Use only the size of container to meet needs (i.e., do not use a drum or garbage can when a small polyethylene bag will do).
 - Use less hazardous substances whenever possible (i.e., bring only the volume of standard solutions needed for testing, and use minimal amounts of decontamination water and solvent rinses).

5.3.2 Waste Containerization and Storage

Containers for the temporary storage of decontamination water/solids will be of the 1A1 and/or 1A2 specified DOT type. (Note: DOT 17 series drums can also be used if present at the site because these drums will not be used for transportation purposes.)

Prior to starting Sewage Lagoon field activities, the Foster Wheeler Site Manager, in conjunction with Holloman AFB personnel, will select areas for the temporary staging and storage of nonregulated debris, liner material, decontamination water/solids, and PPE.

5.4 REPORTING SPILLS AND RELEASES

Precautions shall be taken to prevent oil and hazardous material spills, including daily inspection by the site personnel of equipment, structure(s), and containers. Personnel using hazardous material will inspect the container before and after use. In the event of a spill/release, Warren Neff, the Holloman AFB Fire Department, and USACE will be notified immediately. Spill response will be in accordance with federal, state, local, and Holloman AFB regulations. As there will be no off-site disposal of hazardous materials, DOT training is not required for this project.

Occupational Safety and Health Administration (OSHA) training and certification requirements are contained in the SSHP (Appendix B) and in the Basewide Health and Safety Plan.

5.6 INSPECTION PROCEDURES

The following section describes inspection procedures to be followed by field personnel in the event that a regulatory agency or third party conducts an on-site inspection.

5.6.1 Inspections by Regulatory Agencies

Foster Wheeler personnel shall respond to inspections by regulatory agencies in accordance with Foster Wheeler Environmental Compliance Procedure No. RC 8 for Environmental Inspection by Regulatory Agencies. Dan Holmquist has been designated as the Foster Wheeler on-site representative for inspections by regulatory agencies. Mr. Holmquist has received training on this procedure and is familiar with its implementation. In the event that Holloman AFB is notified of an impending regulatory inspection, Mr. Holmquist will be notified as soon as possible by the informed Base personnel. During any inspection, both a Base and USACE representative should be present. These procedures require that Mr. Holmquist contact the DOM, who must notify Karen Raffa, Foster Wheeler's Environmental, Safety, and Quality Manager, at (206) 688-3768.

The DOM or his deputy will notify Warren Neff at (505) 475-5395 if contacted by a regulatory agency for site inspection.

5.6.2 Inspections by Third Parties

Any outside party requesting access to inspect the site must be referred to Warren Neff. Foster Wheeler personnel must not grant access or answer the questions of unauthorized personnel. Individuals requesting access must be directed to contact Holloman AFB's Public Affairs Office at (505) 475-5406.

Regulatory Compliance Program Manual Policy and Procedure RC 7 - Documentation and Records Retention - Environmental Compliance File Index.

5.8 UPDATING THE REGULATORY COMPLIANCE PLAN

The RCP will be updated as changes in site activities, wastes generated, or changes in applicable regulations occur. The updated plan will follow Base and other regulations regarding waste characterization, storage, manifesting, and disposal. In the event that hazardous wastes are generated, the following personnel will be notified:

- Mr. Warren Neff, Holloman AFB RPM
- Mr. Rick Macfarlane, USACE Project Engineer

All records associated with waste generation will be turned over to Holloman AFB after disposal is complete.

6.0 CONTRACTOR QUALITY CONTROL PLAN

This CQC Plan establishes the QC procedures and methods to be implemented by Foster Wheeler during this project. It combines the quality assurance/quality control (QA/QC) requirements from the USACE-Omaha District with the Foster Wheeler QC system requirements to form a set of common requirements commensurate with the scope and nature of services outlined in this workplan.

6.1 PURPOSE

The purpose of this CQC Plan is to establish the QC procedures and methods to be implemented during construction operations for this project and performed under TERC No. DACW45-94-D-0003, with the USACE-Omaha District. This CQC Plan describes the specific organization, personnel, procedures, controls, instructions, tests, records, submittals, and forms to be used to ensure that all work products comply with the contract requirements.

6.2 SCOPE

The CQC Plan is applicable to all on-site construction operations, including inspections and testing activities performed for this project. All work activities as listed in Section 3 - Scope of Work, will be conducted in accordance with this workplan.

6.3 ORGANIZATION AND RESPONSIBILITIES

This section describes the organizational structure, functional responsibilities, personnel qualifications, levels of authority, and lines of communication that will be used to ensure high-quality work for this project. These descriptions apply to all project personnel performing on-site construction operations, including subcontractors, vendors, fabricators, suppliers, and purchasing agents.

The CQC Systems Manager will maintain current records of QC operation, activities, and tests performed, including the work of subcontractors and suppliers. Specific duties of the CQC Systems Manager as they apply to this project are:

- Provide and maintain an effective QC system for all construction activities.
- Perform QC activities to ensure conformance with authorized policies, Construction Drawings, Technical Specifications, contract specifications, and sound practices.
- Inspect the work performed each day for compliance with the standard operating procedures and prepare the DQCR.
- Ensure that required phases of inspection (preparatory, initial, and follow-up) are implemented for all definable phases of construction.
- Schedule and manage all submittals, as identified in the Submittal Register, including those of subcontractors providing monthly updates.
- Ensure that all required tests and inspections are performed and the results reported.
- Attend required meetings, including field review meetings.
- Review all submittals in detail and verify that they are correct and in strict compliance with contract documents.
- Stop work that is not in compliance with the contract.
- Document quantity of earth work and soil delivered on a daily basis.
- Confirm elevation of the final cover, the quantity of placement material, and the total number of truck deliveries.

6.3.3 Site Manager

Mr. Dan Holmquist will serve as the Site Manager. The primary responsibility of the Site Manager is the timely completion of all field activities as directed by the DOM. The duties of the Site Manager as they apply to the project include the following:

- Establish a field base for operations and mobilize subcontractors and Foster Wheeler Environmental personnel.
- Procure equipment for work crews and health and safety personnel.
- Coordinate all personnel involved in task activities, including obtaining support services.

Subcontractor personnel are responsible for maintaining a daily log of their project activities and for providing information to the CQC Systems Manager that is needed to complete the DQCR.

6.4 CONSTRUCTION INSPECTION PLAN

Contractor QC is the means by which Foster Wheeler ensures that all construction, including that completed by subcontractors and suppliers, complies with the requirements of the contract. The Construction Inspection Plan establishes the measures required to verify both the quality of work performed and compliance with specified requirements, including the inspection of materials and workmanship before, during, and after each definable feature of work. Definable features for this project are listed in Section 3 - Scope of Work, and are detailed in the Technical Specifications (Appendix C) and Construction Drawings (Appendix D).

Inspection requirements defined in the following subsections are adequate to cover all construction operations, including on-site and off-site fabrication, and are keyed to the proposed construction sequence. Contractor QC includes implementation of the following three control phases for all aspects of the work specified:

- Preparatory phase
- Initial phase
- Follow-up phase

6.4.1 Preparatory Phase Inspections

Preparatory phase inspections will be conducted by the CQC Systems Manager prior to starting the definable features of work listed in the Construction Drawings (Appendix D) and Technical Specifications (Appendix C). At a minimum, these inspections will include the following:

- A review of each paragraph of applicable specifications
- A review of the construction documents
- A check to ensure that all materials and/or equipment have been tested, submitted, and approved

FIGURE 6-1
INSPECTION CHECKLIST
Page 1 of 2

ITEM:				DATE:
Contract Specifications:				
MATERIAL	QTY	CONDITION	TESTING	COMMENTS
STORAGE CONDITIONS:				
SUBMITTALS:				

FIGURE 6-2 (Continued)
DAILY QUALITY CONTROL REPORT
Page 3 of 3

7. Submittals Reviewed:

(a) Submittal No.	(b) Spec/Plan Reference	(c) By Whom	(d) Action

8. Off-Site Surveillance Activities, Including Action Taken:

9. Job Safety: List items checked, results, instructions, and corrective actions taken.

10. Remarks: Instructions received or given. Conflict(s) in plans and/or specifications. Delays encountered.

Contractor's Verification: On behalf of the Contractor, I certify this report is complete and correct, and all materials and equipment 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 may be noted above.

CQC SYSTEMS MANAGER

DATE

with an estimated date for correction of each deficiency, which will be scheduled within 5 working days after the conduct of the inspection. The completion inspection will be documented on the Inspection Checklist, shown in Figure 6-1, and attached to the DQCR.

6.4.4 Inspection Documentation

The CQC Systems Manager is responsible for maintaining the inspection records. Inspection records will be legible and clear and will provide all necessary information to verify that the items or activities inspected conform to the specified requirements or, in the case of nonconforming conditions, provide evidence that the conditions were brought into conformance or otherwise accepted by Foster Wheeler and the USACE Project Engineer.

All inspection records will be made available to Holloman AFB and USACE through the Foster Wheeler DOM. All inspection records, including inspection reports and deficiency reports and re-inspections of corrective actions, will be documented.

6.5 TESTING

General requirements for testing to be implemented for this project are included in the Technical Specifications (Appendix C).

6.5.1 Testing Procedures (Other Than Chemical Sampling and Analysis)

The CQC Systems Manager shall verify that all tests specified or required in the Technical Specifications are performed. These tests ensure that control measures are adequate to provide a product conforming to contract specifications. The following activities are the responsibility of the CQC Systems Manager in preparation and performance of testing activities:

- Verify that testing procedures comply with contract requirements.
- Verify that facilities and testing equipment are available and comply with testing standards.
- Check test instrument calibration data against certified standards.

(Appendix C); inspection documentation is discussed in Section 6.4 - Construction Inspection Plan; the DQCR is discussed in Section 6.6.1, below; test results are described in Section 6.5 - Testing; Nonconformance Reports are discussed in Section 6.8 - Nonconformances; the Workplan is this document as a whole; and conference notes and confirmation notes are discussed below in Section 6.6.2.

6.6.1 Daily Quality Control Report

A DQCR will be completed by the CQC Systems Manager to document construction activities covered by the CQC Plan, and will include the following information:

- Contractor/subcontractor(s) and their area of responsibility
- Operating equipment with hours worked, idle, or down for repair
- Work performed that day, giving location, description, and by whom
- Test and/or control activities performed with results and references to specifications/plan requirements, including the control phase (preparatory, initial, follow-up) and deficiencies (along with corrective action)
- Material received with statement as to its acceptability and storage
- Submittals reviewed, with contract reference, by whom, and action taken
- Off-site surveillance activities, including actions taken
- Job safety evaluations stating what was checked, results, and instructions or corrective actions
- A list of instructions given/received and conflicts in plans and/or specifications
- Contractor's verification statement
- Site visitors/purpose, deviations from plans, difficulties/resolution

The records will indicate a description of trades working on the project, the number of personnel working, weather conditions encountered, and any delays encountered. Both conforming and nonconforming features will be discussed with a statement that equipment and materials used during the work and workmanship comply with the contract. The original of this report shall be furnished to the USACE Project Engineer on the first work day following the date covered by the

6.7 SUBMITTALS

Submittals will be scheduled, reviewed, certified, and managed in accordance with procedures defined in this section and as detailed in the Technical Specifications, Section 01300 - Submittals (Appendix C).

Required submittals shall consist of the following types:

- Data—Submittals that provide calculations, descriptions, or documentation of the work.
- Instructions—Preprinted material that describes the installation of a product, system, or material, including special notices and material safety data sheets concerning impedances, hazards, and safety precautions.
- Schedules—Tabular lists that show the location, features, or other pertinent information regarding products, materials, equipment, or components to be used in the work.
- Statements—A required document to confirm the quality or orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel, qualifications, or other verifications of quality.
- Reports—Reports of inspections or tests, each property identified, and an interpretation of results that includes a description of test methods and all results.
- Certificates—A statement signed by an official authorized to certify on behalf of the manufacturer of a product, system, or material, attesting that the product, system, or material meets specified requirements. The statement must be dated after the award of this contract, must state the contractor's name and address, must name the project and location, and must list the specific requirements that are being certified.
- Samples—Samples including both fabricated and unfabricated physical examples of materials, products, and units of work as complete units or as portions of units of work.
- Records—Documentation to record compliance with technical or administrative requirements.

6.7.1 Preparation and Maintenance of Submittals

The CQC Systems Manager is responsible for preparation and maintenance of all required project submittals.

and required approval. Submittals are of two types; subcontractor or vendor submittals to Foster Wheeler, and Foster Wheeler submittals to the USACE.

The following is a list of subcontractor or vendor submittals to Foster Wheeler:

- Odor Control Technical Information
- Laboratory Soil Tests
- Field Density Tests
- Survey Data Taken During Final Cover Grade Control
- Survey of As-Constructed Final Cover
- Revegetation Seed Mix and Mulch – materials, samples, equipment, procedures, and planting season.

Submittals from Foster Wheeler to the USACE are:

- Earthwork Equipment
- Grading Plan
- Project Record Documents
- Preliminary Project Record Drawings
- Project Record Drawings
- Final Closure Report

6.7.5 Scheduling

Submittals of interrelated items or items forming a system are to be scheduled for coordination and submitted concurrently for review and approval. Certifications to be submitted with the pertinent drawings will be scheduled accordingly.

Figure 6-3
Nonconformance Report
FOSTER WHEELER ENVIRONMENTAL CORPORATION
QUALITY ASSURANCE

REPORT NO(1) _____

NONCONFORMANCE REPORT

CLIENT OR PROJECT (2)		DRAWING NO/SPEC NO (3)
SUPPLIER, CONSTRUCTION QC OR CONTRACTOR (4)	P O NO (5)	
DESCRIPTION OF COMPONENT, PART OR SYSTEM (6)		

I DESCRIPTION OF NONCONFORMANCE (7) *(Items involved, Specifications, Code or Standard to Which Items Do Not Comply, Submit Sketch (If Applicable))*

NAME AND SIGNATURE OF PERSON REPORTING NONCONFORMANCE (8)	TITLE/COMPANY	DATE (9)
---	---------------	----------

II RECOMMENDED DISPOSITION (10) *(Submit Sketch If Applicable)*

NAME AND SIGNATURE OF PERSON RECOMMENDING DISPOSITION (11)	TITLE/COMPANY	DATE (12)
--	---------------	-----------

III EVALUATION OF DISPOSITION BY FOSTER WHEELER ENVIRONMENTAL REASON OF DISPOSITION (13)

IV CORRECTIVE ACTION (14) Required Not Required

V <input type="checkbox"/> ENGINEERING	<input type="checkbox"/> QUALITY ASSURANCE	<input type="checkbox"/> CONSTRUCTION	<input type="checkbox"/> OTHER
NAME (SIGNATURE)	NAME (SIGNATURE)	NAME (SIGNATURE)	NAME (SIGNATURE)
DATE	DATE	DATE	DATE
<input type="checkbox"/> ACCEPTED <input type="checkbox"/> REJECTED <input type="checkbox"/> ACCEPTED WITH COMMENTS	<input type="checkbox"/> ACCEPTED <input type="checkbox"/> REJECTED <input type="checkbox"/> ACCEPTED WITH COMMENTS	<input type="checkbox"/> ACCEPTED <input type="checkbox"/> REJECTED <input type="checkbox"/> ACCEPTED WITH COMMENTS	<input type="checkbox"/> ACCEPTED <input type="checkbox"/> REJECTED <input type="checkbox"/> ACCEPTED WITH COMMENTS

VI VERIFICATION OF DISPOSITION REQUIRED NOT REQUIRED (16)

(17) BY _____ SIGNATURE _____ TITLE _____ DATE _____

FIGURE 6-4



FOSTER WHEELER ENVIRONMENTAL CORPORATION
ENGINEERING PROCEDURES
DEVELOPING AND ISSUING ENGINEERING DOCUMENTS

FIELD CHANGE REQUEST

Project _____	Proj. No. _____	Field Change No. _____
TO _____	DEPT _____	LOCATION _____ DATE _____
RE: Drawing No. _____	Title _____	
Spec No. _____	Title _____	
Other _____		
1. Description (Items involved, submit sketch if applicable)		

2. Reasons for Change (If from disposition of nonconformance report, list report number) _____		

3. Recommended Disposition Minor Change Major Change		

4. Project Engineer (Signature) _____		
Date _____	Project Supt. Concurrence (Signature) _____	Date _____
5. Disposition		
NOT APPROVED (Give Reason)		
CONSIDERED MINOR CHANGE - Approved per Recommended Disposition-Design documents will not be normally revised; field to maintain as-built records		
CONSIDERED MAJOR CHANGE - Action will be taken as prescribed on DCN -		
Lead Discipline Engineer or Designee (Signature) _____	Date _____	Project Engineer or Designee _____
_____	_____	_____
<i>Project Engineer signs and returns to LDE for transmittal to Project Engineer with copies to:</i>		
Project Manager _____	Others as Required _____	
Project Supt. _____	_____	
Project Files _____	_____	
_____	_____	
_____	_____	

7.0 PROJECT MANAGEMENT PLAN

This section presents the project schedule and identifies key personnel involved in the construction phase of the project.

7.1 PROJECT SCHEDULE

Figure 7-1 presents the Sewage Lagoons Final Cover Construction Schedule.

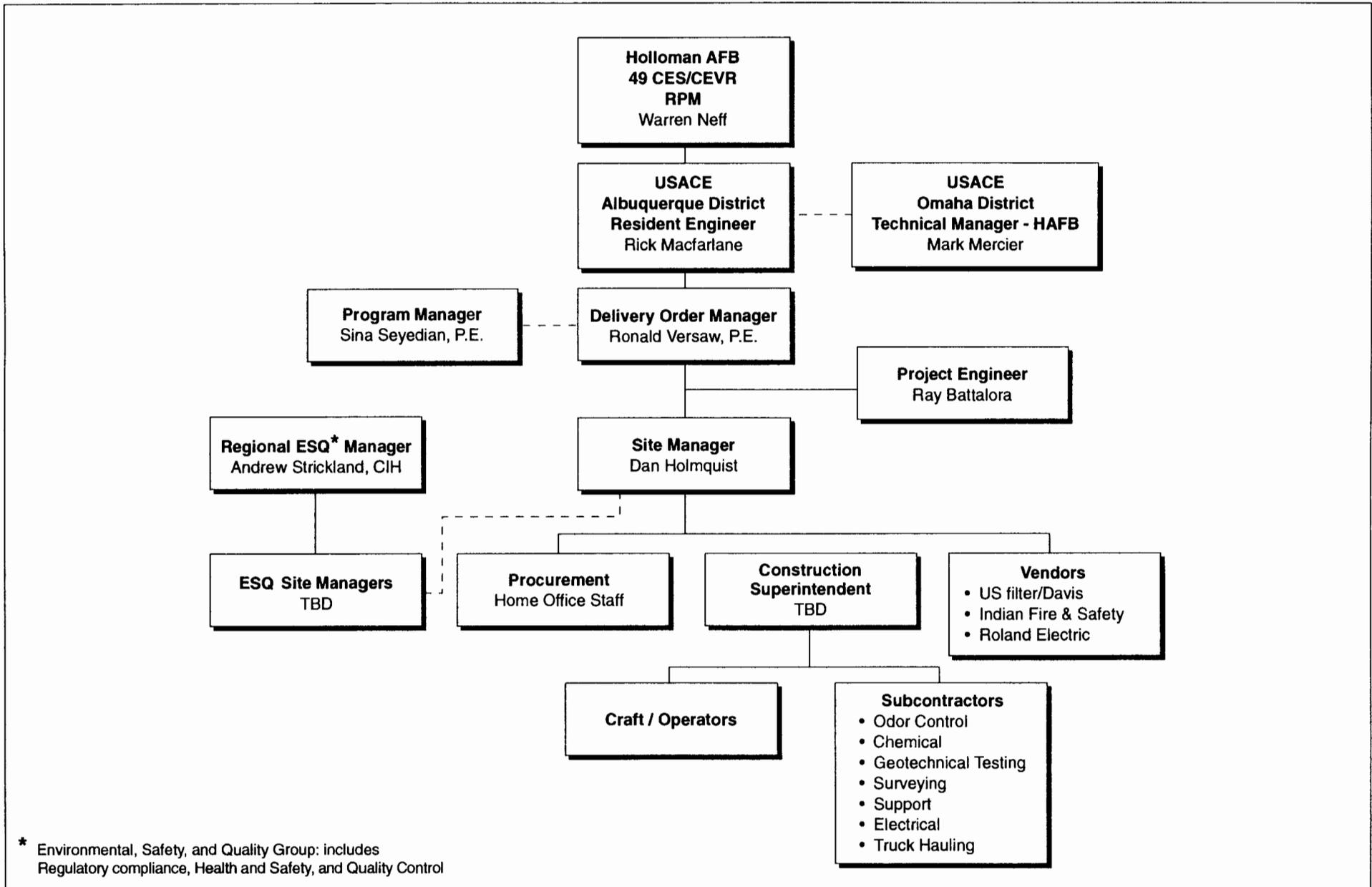
7.2 PROJECT PERSONNEL

An organization chart for this project is presented in Figure 7-2 and shows both Foster Wheeler and non-Foster Wheeler personnel. Non-Foster Wheeler personnel include Mr. Warren Neff, Base RPM; Mr. Rick Macfarlane, USACE Project Engineer at the Base; and Mr. Mark Mercier, USACE Technical Manager based in Omaha, Nebraska.

A brief summary of key Foster Wheeler Environmental project team members and their responsibilities are as follows:

- Sina Seyedian, P.E.—Mr. Seyedian serves as the Program Manager of the TERC Program.
- Scott Jones—Mr. Jones is the Contract Administrator for the Southwest TERC Program. In this role he is responsible for addressing program contractual issues.
- Ronald Versaw, P.E.—Mr. Versaw acts as DOM for Holloman AFB activities on this project. In this role, he is responsible for the implementation of the work in accordance with performance, cost, and schedule goals.
- Dan Holmquist—Mr. Holmquist will act as Site Manager for this project. He will be responsible for overall coordination of the project.
- (To Be Determined)—The Construction Superintendent will be responsible for the daily direction of site-related project activities.

Figure 7-2
Sewage Lagoons Final Closure Project Organization Chart



- Pending changes and substitutions
- Review of proposed changes for effects on construction, construction completion date, and other construction activities
- Any other business

7.4 DATA MANAGEMENT

Data management is addressed in detail in the CQC Plan, Section 6 of this workplan.

7.5 DOCUMENT CONTROL

Document control is addressed in detail in Section 6.6 - Document Control, of this workplan.

7.6 REPORTS

Reports and submittals are discussed in Section 6.7 - Submittals, of this workplan and a Submittal Register and detailed procedures are included in the Technical Specifications, Section 01300 - Submittals (Appendix C).

8.0 REFERENCES

EBASCO/Radian Corporation (EBASCO/Radian)

1995a Draft Final Sewage Lagoons Closure Plan, Sewage Lagoons Closure Project, Holloman AFB, New Mexico. May.

1995b Draft Final Site Characterization Report, Sewage Lagoons Closure Project, Holloman AFB, New Mexico. June.

1996 Sewage Lagoons Closure Plan, Sewage Lagoons Closure Project, Holloman AFB, New Mexico. June.

Enserch Environmental/Radian Corporation (Enserch/Radian)

1994 Site Safety and Health Plan (SSHP), Sewage Lagoons and Lake Closure Project, Holloman AFB, New Mexico. October.

Foster Wheeler Environmental Corporation (Foster Wheeler Environmental)

1997 Final Site Safety and Health Plan for the Sewage Lagoons Final Closure Project. June.

1996 Draft Construction Workplan - Sewage Lagoons Interim Remedial Action Project. October.

1995 Holloman Air Force Base Basewide Health and Safety Plan. December.

1994 Foster Wheeler Environmental Corporate Health and Safety Manual.

Foster Wheeler Environmental Corporation/Radian Corporation (Foster Wheeler Environmental/Radian)

1995a Draft Final Phase I RCRA Facility Investigation Report, Table 2 Solid Waste Management Units. December.

1995b Project Assessment Report, Sewage Lagoons and Lakes Closure Project, Holloman AFB, New Mexico. March.

1995c Risk Assessment Addendum, Sewage Lagoons Closure Project, Holloman AFB, New Mexico. July.

1995d Sampling and Quality Control Summary Report, Sewage Lagoons and Lakes Closure Project, Holloman AFB, New Mexico. February.

WORKPLAN

APPENDIX A

ODOR CONTROL CHEMICAL INFORMATION

BIOXIDE BY US FILTER/DAVIS

Process Division Technical Bulletin No. A-402

BIOXIDE®

Biochemical Process Solution for Controlling Odor and Corrosion in Collection Systems, Sludge Lagoons and Storage Tanks

DESCRIPTION

BIOXIDE® is a patented biochemical process solution which controls odors and corrosion caused by hydrogen sulfide and other compounds in wastewater systems. It is safe to handle, and effective dosage will prevent atmospheric hydrogen sulfide from reaching toxic levels.

Proper dosage of BIOXIDE® treatment solution to a sludge or a wastewater stream, as determined by Davis Process, provides for a population of beneficial bacteria which oxidize dissolved hydrogen sulfide and other reduced sulfur compounds as part of their metabolism.

By treating the hydrogen sulfide in the wastewater stream, the process prevents release of hydrogen sulfide into the air, reducing odors and corrosion.

The BIOXIDE® process has proven effective in many types of wastewater facilities, in widely varying flows, and in any kind of weather.

The BIOXIDE® treatment is typically dosed into a collection system upstream from the problem facility. From a few selected points, the benefits will spread throughout the collection system.

The process has been documented to reduce dissolved hydrogen sulfide from over 50 mg/L to less than 0.1 mg/L in numerous wastewater collection force mains, wet wells and gravity interceptors. Similar results have been achieved with BIOXIDE® treatment in sludge lagoons and storage tanks.

Due to the biochemical nature of this process, complete sulfide removal is extremely cost effective, compared to chemical oxidizers, in applications where extended detention times (12 hrs. - 7 days) produce septic conditions.

SPECIFICATIONS

DESCRIPTION:	Aqueous solution of stable, inorganic salts for biological enhancement
H₂S DOSAGE REQUIREMENT:	0.7 gallon/lb. dissolved H ₂ S
WEIGHT/GALLON:	11.8 - 12.2 lbs./gallon
pH:	4 - 6
FREEZING POINT:	0° - 5°F
COLOR:	Clear to slightly turbid tan
VISCOSITY:	Equivalent to water
CERCLA LISTING:	Contains no CERCLA listed hazardous substances. BIOXIDE® is exempt from Federal DOT placard requirements
EQUIPMENT REQUIREMENTS:	Compatible with storage tanks, piping and pumping equipment made of polyethylene, PVC, FRP, mild or stainless steel & aluminium



Day 941/355-2971
 Emerg # 24 hrs.
 CHEMTREC (800) 424-9300

MATERIAL SAFETY DATA SHEET

SECTION I	
MANUFACTURER'S NAME DAVIS WATER AND WASTE INDUSTRIES, INC. / PROCESS DIVISION	DATE 6/5/95
ADDRESS (Number Street, City, State, and ZIP Code) 2850 Tallevast Road, P.O. Box 29, Tallevast, FL 34270	
CHEMICAL NAME AND SYNONYMS Proprietary Blend	TRADE NAME AND SYNONYMS BIOXIDE®
CHEMICAL FAMILY Inorganic Salt Solution	FORMULA Active: 60%, H₂O: 40%

SECTION II - HAZARDOUS INGREDIENTS					
PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	TLV (Units)	
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
Contains no hazardous substances (as listed in 40 CFR 302)					
Major Active Ingredient - nitrate containing salts					

SECTION III - PHYSICAL DATA			
BOILING POINT (°F) (of solution)	220° F	SPECIFIC GRAVITY (H ₂ O = 1) at 20° C	1.45
VAPOR PRESSURE (mm Hg.)	20	PERCENT VOLATILE BY VOLUME (%) (water)	40-70
VAPOR DENSITY (AIR = 1)	0.03	EVAPORATION RATE (_____ - 1) (water)	0.95
SOLUBILITY IN WATER	COMPLETE	Apparent Viscosity (cP)	1.84
APPEARANCE AND ODOR Clear or light brown solution.			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (Method used)	NONE	FLAMMABLE LIMITS	LEL N/A UEL N/A
EXTINGUISHING MEDIA	N/A		
SPECIAL FIRE FIGHTING PROCEDURES	N/A		
UNUSUAL FIRE AND EXPLOSION HAZARDS	Avoid drying, do not contact with organics, chlorine or hypochlorite products, and caustic products.		

WORKPLAN
APPENDIX B

FINAL
SITE SAFETY AND HEALTH PLAN
FOR
SEWAGE LAGOONS FINAL CLOSURE PROJECT

**FINAL
SITE SAFETY AND HEALTH PLAN
FOR
SEWAGE LAGOONS FINAL CLOSURE PROJECT
HOLLOMAN AIR FORCE BASE, NEW MEXICO**

Prepared for:

49 CES/CEV
Holloman Air Force Base, NM

and

HQ ACC CES/ESV
Langley Air Force Base, VA

Prepared by:

Foster Wheeler Environmental Corporation
143 Union Blvd., Suite 1010
Lakewood, Colorado 80228-1824

Under Contract No. DACW-45-94-D-003

Delivery Order 8, Work Authorization Directive 23

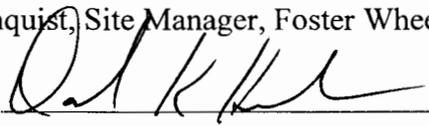
U.S. Army Corps of Engineers
Omaha District
Omaha, Nebraska

June 1997

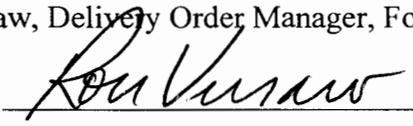
SITE SAFETY AND HEALTH PLAN APPROVAL

This Site Safety and Health Plan was developed to outline health and safety guidelines and procedures for the Sewage Lagoons Final Closure Project (SLFCP) at Holloman Air Force Base, New Mexico. The signatures below indicate concurrence with the procedures specified in the plan and a commitment to the philosophy of quality made by all project personnel.

Dan Holmquist, Site Manager, Foster Wheeler Environmental Corporation

Signature  Date 6/24/97

Ron Versaw, Delivery Order Manager, Foster Wheeler Environmental Corporation

Signature  Date 6/27/97

Andrew Strickland, CIH, Project Health and Safety Manager, Foster Wheeler Environmental Corporation

Signature  Date 6/27/97

TABLE OF CONTENTS

LIST OF TABLES	v
LIST OF FIGURES	vi
LIST OF APPENDICES	vii
LIST OF ACRONYMS	viii
1.0 <u>INTRODUCTION</u>	1-1
1.1 SITE SAFETY AND HEALTH PLAN PURPOSE	1-1
1.2 SCOPE OF WORK	1-2
1.3 SITE LOCATION	1-2
2.0 <u>ORGANIZATION/KEY PERSONNEL AND RESPONSIBILITIES</u>	2-1
2.1 PROJECT TEAM	2-1
2.2 ROLES AND RESPONSIBILITIES	2-1
3.0 <u>HAZARD ANALYSIS</u>	3-1
3.1 HAZARD IDENTIFICATION	3-1
3.2 HAZARD ASSESSMENT	3-1
3.3 CHEMICAL HAZARDS	3-1
3.3.1 <u>Organochlorine Herbicides and Pesticides</u>	3-5
3.3.2 <u>Semivolatile Organic Compounds</u>	3-5
3.3.3 <u>Polychlorinated Biphenyls (PCBs)</u>	3-6
3.3.4 <u>Metals</u>	3-7
3.3.5 <u>Volatile Organic Compounds</u>	3-8
3.3.6 <u>Hydrogen Sulfide</u>	3-9
3.4 PHYSICAL HAZARDS	3-10
3.4.1 <u>Electrical</u>	3-10
3.4.2 <u>Heat and Cold Stress</u>	3-11
3.4.3 <u>Traffic Safety</u>	3-11
3.4.4 <u>Pedestrian Traffic</u>	3-11
3.4.5 <u>Noise</u>	3-12
3.4.6 <u>Manual Lifting and Material Handling</u>	3-12
3.4.7 <u>Boating Safety</u>	3-12
3.5 BIOLOGICAL HAZARDS	3-12
3.5.1 <u>Bloodborne Pathogens</u>	3-12
3.5.2 <u>Insects</u>	3-13
3.5.3 <u>Rattlesnakes</u>	3-13
3.5.3 <u>Mosquitoes</u>	3-14

17.0 REFERENCES 17-1

LIST OF TABLES

Table 3-1 Activity Hazard Analysis 3-2

Table 3-2 Chemical Contaminants Potentially at Holloman AFB Sewage Lagoons and
Lakes Investigation 3-4

Table 7-1 Air Monitoring Requirements and Action Levels 7-2

Table 8-1 Personal Protective Equipment Requirements..... 8-2

Table 11-1 First Aid Equipment and Supplies 11-1

LIST OF FIGURES

Figure 14-1 Location Map for Hospitals 14-3

LIST OF APPENDICES

Appendix A HEALTH AND SAFETY FORMS

Appendix B SPILL/RELEASE REPORTING PROCEDURES

LIST OF ACRONYMS

ACGIH	American Conference of Governmental Industrial Hygienists
AFB	Air Force Base
AHA	Activity Hazard Analysis
ANSI	American National Standards Institute
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
CMC	Corporate Medical Consultant
CPR	Cardiopulmonary Resuscitation
dBA	Decibel
DDD	Dichlorodiphenyl-dichloroethane
DDE	Dichlorodiphenyl-ethane
DDT	Dichlorodiphenyl-trichloroethane
DO	Delivery Order
EMS	Emergency Medical Services
EPA	United States Environmental Protection Agency
eV	Electron Volt
FM	Factory Mutual
GFCI	Ground-Fault Circuit Interrupter
g/L	Grams per Liter
HIV	Human Immune Deficiency Virus
IDLH	Immediately Dangerous to Life or Health
IRA	Interim Remedial Action
lb	Pound
LD ₅₀	Lethal Dose 50%
MGD	Million Gallons per Day
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
mg/m ³	Milligrams per Cubic Meter
MSDS	Material Safety Data Sheet
NEC	National Electric Code
NFPA	National Fire Protection Association
NMED	New Mexico Environmental Department
OSHA	Occupational Safety and Health Administration
PCBs	Polychlorinated Biphenyls
PEL	Permissible Exposure Limit
PFD	Personal Flotation Device
PHSM	Project Health and Safety Manager
PID	Photoionization Detector
POC	Point of Contact
PPE	Personal Protective Equipment
ppm	Parts Per Million
SHSO	Site Health and Safety Officer

1.0 INTRODUCTION

1.1 SITE SAFETY AND HEALTH PLAN PURPOSE

Foster Wheeler Environmental Corporation is conducting environmental services for the United States Army Corps of Engineers (USACE), Omaha District, Total Environmental Restoration Contract (TERC), Contract No. DACW-45-94-D-003. This Site Safety and Health Plan (SSHP) complies with the contract requirements.

The purpose of this SSHP is to provide Foster Wheeler Environmental Corporation field personnel, subcontractors, and site visitors with an understanding of the potential chemical and physical hazards that exist or may arise during performance of tasks associated with these projects, as described in Section 1.2. This SSHP supplements information already contained in the Final Basewide Health and Safety Plan for Holloman Air Force Base (AFB) (FWENC 1995).

This SSHP has been prepared in accordance with Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (CFR) 1910.120 and the USACE Safety and Health Requirements Manual EM 385-1-1. This SSHP delineates the procedures to be followed to minimize employee exposure to potential health hazards that may be present at the project sites or to respond to such hazards.

This SSHP has been prepared to identify the potential health and safety hazards associated with the Sewage Lagoons Final Closure Project (SLFCP) at Holloman AFB, New Mexico, and to document procedures to ensure protection of on-site personnel performing field activities. It meets the OSHA requirements of 29 CFR Section 1910.120 and 29 CFR Part 1926. The general procedures and information presented in Sections 2 through 10 of this SSHP apply to all personnel working at the SLFCP sites. They are based on the current understanding of site conditions, the required scope of field activities, and the anticipated potential hazards. All personnel participating in the field investigation must sign a statement verifying that they have read, understand, and will adhere to the requirements included in this SSHP.

and eating facilities, and family housing; industrial wastewater was generated from aircraft washing facilities, corrosion control facilities, machine and maintenance shops, and analytical laboratories.

2.0 ORGANIZATION/KEY PERSONNEL AND RESPONSIBILITIES

2.1 PROJECT TEAM

The on-site project personnel include the following:

<u>Team</u>	<u>Project Title/Assigned Role</u>	<u>Phone Numbers</u>
Dan Holmquist	Site Manager	(505) 479-2668
(To Be Determined)	Construction Superintendent	
(To Be Determined)	Site Health and Safety Officer (SHSO)	

Other project personnel include the following:

<u>Name</u>	<u>Project Title/Assigned Role</u>	<u>Phone Numbers</u>
Sina Seyedian, P.E.	Program Manager	(303) 988-2202
Andrew Strickland, C.I.H.	Project Health and Safety Manager (PHSM)	(303) 988-2202
Ron Versaw, P.E.	Delivery Order (DO) Manager	(303) 988-2202

2.2 ROLES AND RESPONSIBILITIES

The roles and responsibilities of these personnel are addressed in the Final Basewide Health and Safety Plan (FWENC 1995).

3.0 HAZARD ANALYSIS

3.1 HAZARD IDENTIFICATION

Activity hazard analyses (AHAs) are used to identify hazards associated with job tasks. The Final Basewide Health and Safety Plan includes several AHAs applicable to the tasks associated with the SLFCP.

Table 3-1 presents the AHA for this project. The SHSO will inspect the site to ensure that all of the tasks conducted at the site are performed according to the AHAs. Additional AHAs can be added in the future by amending this document to address any unanticipated hazards. The minimum personal protective equipment (PPE) required for job tasks is work clothes; however, upgrades may be necessary based on dermal or inhalation exposure potential (Table 8-1). The SSHP will also be periodically reviewed by the DO Manager, SHSO, and/or the PHSM to determine whether changes in the SSHP are needed. If any of these changes are the result of a change in the scope of work of this project and/or site conditions, the SSHP will be amended in writing on the Field Change Request Form (Appendix A) and approved by the Certified Industrial Hygienist (CIH).

3.2 HAZARD ASSESSMENT

The following hazard assessment applies only to the activities within the specified scope of this SSHP.

3.3 CHEMICAL HAZARDS

The types of contaminants to which on-site personnel may be exposed during the IRA field effort are discussed in the following paragraphs in terms of the types of health risks posed by these classes of chemicals (or specific constituents, where applicable) and symptoms of exposure. A list of chemical contaminants that may be encountered during field activities is presented in Table 3-2. The contaminants discussed were selected on the basis of previous detection at levels

Table 3-1 Activity Hazard Analysis

Activity	Potential Hazards	Recommended Control Measures
	Chemical exposures	<ul style="list-style-type: none"> • PPE as required by Table 8-1. • Proper storage. • Follow manufacturers and MSDS recommendations for safe storage and handling of odor control chemicals. • Air monitoring if necessary.
	Fuel spill or fire	<ul style="list-style-type: none"> • Operate pump per manufacturer's specification • Only use UL- or FM-approved fuel storage cans used for gasoline or diesel.
	Potential exposure to hepatitis B	<ul style="list-style-type: none"> • All personnel vaccinated for hepatitis B prior to starting work at the ponds.

of concern or their suspected occurrence in soil or groundwater, and are considered representative of chemicals present. The main potential routes of exposure are through dermal contact and inhalation.

3.3.1 Organochlorine Herbicides and Pesticides

The organochlorine pesticides expected to be present at the Holloman AFB site include DDD, DDE, endosulfan I, kepone, and dichloroprop. DDD and DDE are degradation products of DDT and are classified as Class B2 carcinogens by United States Environmental Protection Agency (EPA). OSHA has not established permissible exposure limits (PEL) for DDD and DDE. Both contaminants are experimental liver and thyroid tumorigens by ingestion; ingestion of DDD has caused experimental lung tumors as well.

Endosulfan I is very toxic. Exposure may occur through inhalation, ingestion, or skin and/or eye contact. Human system effects include gagging, vomiting, diarrhea, agitation, convulsions, foaming at the mouth, bluing of the skin, loss of consciousness, and death. The OSHA PEL for endosulfan I is 0.1 milligrams per cubic meter (mg/m^3).

Kepone may be toxic when inhaled, ingested, or absorbed through the skin. Symptoms of exposure include tremors ("kepone shakes"), visual disturbances, loss of weight, nervousness, insomnia, pain in the chest and abdomen, infertility, and loss of libido.

Dichloroprop is a systematic herbicide. It is slightly toxic by ingestion, with a reported oral lethal dose 50% (LD_{50}) in rats of 825–1,470 milligrams per kilogram (mg/kg). It is irritating to the eyes, skin, and mucous membranes.

3.3.2 Semivolatile Organic Compounds

Several semivolatile organic compounds have been identified in the water and sludge of the sewage lagoons. Most of these compounds were detected at very low concentrations. The compounds include 2-Methylnaphthalene, phenanthrene, pyrene, bis(2-ethylhexyl)phthalate, diethyl phthalate, di-n-butyl phthalate, and phenol.

3.3.4 Metals

Several metals have been detected in the water, sludges, and soils of the sewage lagoon system. The metals found include arsenic, beryllium, cadmium, chromium, lead, and mercury. The toxic effects of arsenic exposure are usually observed only in industrial workers who have endured inhalation exposure to arsenic trioxide (As_2O_3), an American Conference of Governmental Industrial Hygienists (ACGIH) confirmed human carcinogen (A_1). Arsenic compounds are capable of producing severe gastrointestinal symptoms and dermatitis. The OSHA PEL for inorganic arsenic compounds is 0.01 mg/m^3 .

Beryllium is highly toxic through inhalation, and ACGIH classifies beryllium as a suspect human carcinogen (A_2). Short-term inhalation exposure to high levels of beryllium leads to the development of lung inflammation with symptoms similar to pneumonia, with the potential to develop berylliosis. Chronic and subacute exposures to beryllium dust may result in the development of the serious lung disease berylliosis. Contact dermatitis may result from dermal exposure to beryllium dusts or metal. The OSHA PEL is 0.002 mg/m^3 .

Cadmium is an ACGIH suspect human carcinogen (A_2). Inhalation is the route of concern for exposure to cadmium. Repeated long-term chronic exposure to cadmium at low concentrations may result in kidney damage and increased risk of lung and prostate cancer. Ingestion of cadmium has been associated with significant detections of protein in urine, which is a symptom of renal (kidney) poisoning. The OSHA PEL for cadmium (as dust) is 0.005 mg/m^3 .

ACGIH recommends that some forms of chromium (hexavalent) be classified as confirmed human carcinogens (A_1). Certain forms of chromium (VI) have been found to cause increased respiratory cancer mortality. Inhalation exposure to most forms of chromium may cause respiratory irritation. Irritation may be severe in the nasal region, resulting in tissue destruction and chrome holes. Dermal exposure to chromium can cause skin necrosis. The OSHA PEL is 0.5 mg/m^3 to 1.0 mg/m^3 , depending on the chromium compound of concern.

Methylene chloride is classified by ACGIH as a suspect human carcinogen (A₂). Routes of entry are inhalation, ingestion, and skin and eye contact. It is irritating to the eyes and skin and is a mild narcotic. Symptoms of exposure include fatigue, headache, giddiness, stupor, irritability, numbness, and tingling in the limbs. The OSHA PEL is 500 ppm and a ceiling value of 1,000 ppm has been established. The ACGIH TLV is 50 ppm.

Xylene, an experimental teratogen, is mildly toxic by ingestion and inhalation and may be narcotic in high concentrations. The OSHA PEL is 100 ppm, with a STEL of 150 ppm.

3.3.6 Hydrogen Sulfide

The anaerobic degradation of sludges in the sewage may produce hydrogen sulfide gas, which has a characteristic odor of rotten eggs. The odor threshold is 0.05 ppm. The odor cannot be used as indicator of the presence of hydrogen sulfide because the sense of smell becomes rapidly fatigued. Hydrogen sulfide acts directly upon the nervous system, resulting in paralysis of the respiratory center and severely diminishing the ability to smell. At low to moderate concentrations, hydrogen sulfide causes eye and respiratory tract irritation. Very high vapor concentrations result in sudden collapse and unconsciousness, with the possibility of death, from rapid respiratory paralysis. The OSHA PEL for hydrogen sulfide is a ceiling concentration of 20 ppm and a peak concentration (ten minute maximum) of 50 ppm. The NIOSH recommended exposure limit (REL) is a ceiling level of 10 ppm. The ACGIH TLV is an 8-hour time-weighted average (TWA) of 10 ppm and a STEL of 15 ppm. The occupational exposure limit that will be used as a target for the SLFCP is the NIOSH REL.

It was anticipated that the exposure to hydrogen sulfide would be low because the initial tests for sulfide concentrations in the sludges showed very low levels of sulfides. When turning of the sludges in Pond E was initiated without the use of odor control chemicals, the exposure levels were much higher than anticipated. The exposure levels have ranged from very short intermittent peaks of hydrogen sulfide to readings greater than 50 ppm but less than the immediately dangerous to life or health (IDLH) level of 100 ppm during the aeration of sludges in Pond E.

All electrical equipment (tools, lights, extension cords) must be visually inspected prior to use. Equipment that could expose personnel to electric shock must be removed from service.

If overhead utilities are present in the work area, all equipment that may come into contact with the utilities must maintain adequate clearance. Clearance requirements are addressed in the Final Basewide Health and Safety Plan (FWENC 1995) and in USACE EM 385-1-1.

3.4.2 Heat and Cold Stress

Overexposure to temperature extremes can present significant risks to personnel if simple precautions are not observed. Typical control measures designed to prevent heat stress include dressing properly, drinking plenty of fluids, and establishing an appropriate work/break regimen. Typical control measures designed to prevent cold stress include dressing properly and establishing an appropriate work/break regimen. The project manager must ensure that the appropriate measures are observed. Refer to the Final Basewide Health and Safety Plan (FWENC 1995) for more information.

3.4.3 Traffic Safety

All project staff operating a vehicle on site must follow all base traffic regulations. The use of seat belts is required when vehicles are in motion.

3.4.4 Pedestrian Traffic

The uncontrolled presence of pedestrians during site activities can be hazardous to both pedestrians and site workers. Prior to the initiation of site activities, the site should be surveyed to determine whether pedestrians can gain access to the site. This survey should include the investigation of walkways, parking lots, gates, and doorways. If work activities are subject to pedestrian traffic, barriers or caution tape should be used to exclude all pedestrian traffic not related to project work.

fecal exposure route. Based on discussions with Foster Wheeler's Corporate Medical Consultant, the risk of exposure to agents addressed by the Bloodborne Pathogen Standard is extremely low. Because of this assessment, the requirements of the Bloodborne Pathogen Standard are not applicable to the work activities during the SLFCP. However, as strictly a precautionary and hazard awareness measure, all workers will be offered the Hepatitis A and B vaccination series and initial awareness training on the potential exposure risk and the contents of the Bloodborne Pathogen Standard.

3.5.2 Insects

Stinging insects, primarily spiders, scorpions, bees, and wasps, are prevalent in site area during the warmer months. Field personnel should be cautious to avoid contact by always looking ahead to where they will be walking, standing, sitting, or leaning.

Personnel who have experienced serious reactions from previous insect bites should be urged to secure any possible immunization or have an antidote readily available to prevent future reactions.

3.5.3 Rattlesnakes

Rattlesnakes could be encountered during the conduct of site activities. Employees are advised to be alert to this danger. Snake bites can be painful and lead to serious illness if not treated immediately. If bitten, employees must seek medical attention immediately. The best thing to do, however, is to avoid contact as follows:

- Wear sturdy leather boots.
- Avoid walking in areas where snakes may hide.
- Use extreme caution when moving or lifting objects that could be used by snakes as cover.
- Never reach under or behind such objects or into other areas where snakes may hide.

4.0 SITE CONTROL

4.1 SITE WORK ZONES

The exclusion zone and contamination reduction zone for the SLFCP are within a fenced area surrounding the lagoons. All personnel entering these areas must have the appropriate training to conduct work activities. Untrained visitors may enter the area if escorted by a trained worker.

All areas outside the fenced area are not access controlled and are considered a part of the support zone. Temporary exclusion zones within the support zone will be established for activities of short duration.

4.2 OTHER SITE CONTROL MEASURES/WORK LIMITATIONS

The following measures are designed to augment the specific health and safety guidelines provided in this plan:

- The “buddy system” will be used by all field personnel. No one performing system maintenance or repair operations is allowed to work alone in the exclusion zone. Employees performing routine surveillance or system monitoring may work alone but must carry a cellular phone at all times.
- Avoidance of contamination is of the utmost importance. Whenever possible, avoid contact with contaminated (or potentially contaminated) surfaces or materials. Walk around (not through) puddles and discolored surfaces.
- Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking, or performing any other activities.
- Eating, drinking, chewing gum or tobacco, smoking, or performing any activity that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited except in the support zone after proper decontamination.
- Beards or other facial hair that interfere with respirator fit are prohibited for anyone who is required to wear a respirator.
- The use of alcohol or drugs is prohibited during the conduct of field operations.

All equipment must be decontaminated or discarded, as designated by the SHSO, before leaving the site.

5.0 DECONTAMINATION

5.1 PERSONNEL DECONTAMINATION

Personnel decontamination will be accomplished by following a systematic procedure of cleaning and removal of PPE. Disposable gloves or Tyvek will be rinsed free of gross contamination and disposed as general refuse. Respirators will be cleaned after each use and will be stored in plastic bags after cleaning. General refuse will be placed in plastic bags and then into an on-site dumpster.

Personnel are required to wash their hands and face following all maintenance, operation, monitoring, or repair activities to minimize the potential for ingesting contaminants.

5.2 EQUIPMENT DECONTAMINATION

All equipment used to perform activities for the SLFCP must be decontaminated.

Decontamination of equipment will be performed with a surfactant (such as Alconox) wash and rinse or by proper disposal methods.

6.0 MEDICAL SURVEILLANCE

6.1 GENERAL

Personnel covered by this SSHP are active participants in the Foster Wheeler Environmental Corporation or a similar medical surveillance program that complies with OSHA 29 CFR 1910.120(f), American National Standards Institute (ANSI) Z88.2, and the USACE Safety and Health Requirements Manual EM 385-1-1, Appendix K. Each individual must complete an annual surveillance examination and/or an initial baseline examination within the last year prior to performing any work on this site that is covered by this SSHP.

In addition to being given required routine physical examinations, employees will be offered the Hepatitis A and B vaccination series.

7.0 AIR MONITORING

Exposure of on-site personnel to chemical and physical hazards will be monitored continuously by the SHSO to ensure that potential hazards are identified, evaluated, and controlled.

Air monitoring will be conducted for total organic vapor, hydrogen sulfide, and total dust during the SLFCP. Hydrogen sulfide will be monitored by both personal monitors and general area monitoring. Action levels for potential air contaminants are addressed in Table 7-1.

7.1 PERSONAL EXPOSURE MONITORING

According to OSHA 29 CFR 1910.120, personal exposure monitoring for the purpose of determining individual TWA exposures is required during certain site cleanup or other remedial activities. Determinations regarding individual exposure potentials will be based on the work area monitoring described above. Personal air sampling will be conducted for hydrogen sulfide. The air sampling will not be conducted by using collection and analysis techniques but instead by using personal monitoring equipment with alarms set at the actions levels as described in Table 7-1.

8.0 PERSONAL PROTECTIVE EQUIPMENT

Upon analysis of the potential site-specific health and safety hazards identified in Section 3 of this plan, the minimum level of PPE expected to be required for performance of the SLFCP field activities is Level D except for the equipment operators, who are turning and moving sludges around in the ponds. Because of the intermittent high concentration releases of hydrogen sulfide occurring during the movement of the sludges, equipment operators will be provided with airline respiratory protection. Table 8-1 is a matrix that identifies the minimum level of PPE required for field activities.

Personnel conducting activities in the floating vessel must wear a Coast Guard-approved Type II PFD (lifevest) over their disposable coveralls at all times while in the vessel.

9.0 RESPIRATORY PROTECTION PROGRAM

Air purifying and air-supplied respiratory protection will be worn during site activities. The respiratory protection selection is based on the anticipated and measured air concentrations of hydrogen sulfide and on other action levels in Section 7.0 of this SSHP. Use and selection of respirators is in accordance with Foster Wheeler's Corporate Respiratory Protection Program, HS 5-2 and the OSHA Respiratory Protection Standard, 29 CFR 1910.134..

All personnel who will be required to don air-purifying respirators will be qualitatively fit tested for the particular brand and size respirator he/she will be wearing on site. Fit tests will be current within the last year.

Normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the face seal. For workers requiring corrective facepiece lenses, special spectacles designed for use with respirators must be made available. Contact lenses should not be worn at sites where the potential for contact with corrosive liquids or solids exists.

10.0 TRAINING AND COMMUNICATION

10.1 GENERAL TRAINING REQUIREMENTS

Personnel covered by this SSHP must be active participants in the Foster Wheeler Environmental Corporation Hazardous Waste Operation and Health and Safety Training Program, which complies with OSHA 29 CFR 1910.120(e), OSHA 29 CFR 1926.20, and the USACE Safety and Health Requirements Manual EM 385-1-1 (Section 28.D).

Individuals who plan to work in the active/designated exclusion zones and/or contamination reduction zones where the potential for exposure to safety or health hazards exists must have completed an annual 8-hour refresher training course and/or initial (40-hour classroom and 3-day on-site supervised training) training course prior to performing any such work.

10.1.1 First Aid Training

Individuals assigned to perform first aid and cardiopulmonary resuscitation (CPR) as specified in Section 11 of this plan must hold current American Red Cross or equivalent training certification. At least two site workers will be currently certified in first aid and CPR during all phases of field work.

10.1.2 Bloodborne Pathogen Standard

We have determined that the Bloodborne Pathogen Standard does not apply to the work activities conducted for the SLFCP. However, to promote awareness and alleviate concerns, all employees will receive a site-specific introduction to in the potential bloodborne pathogen exposure risks for their work activities and the contents of the Bloodborne Pathogen Standard.

10.2 ON-SITE COMMUNICATIONS

Verbal communication at the sites may be impeded by on-site background noise, ongoing activities, or the use of PPE. Hand signals may be used between personnel and will be reviewed during daily safety/preshift meetings. The use of the buddy system will ensure that any information is communicated between all workers on site. Visual contact must be maintained between pairs when respiratory protection is used.

11.0 FIRST AID PLAN

The following general guidelines will apply first aid services:

1. Survey the situation. Do not endanger your own life. Do not enter a confined space to rescue someone who has been overcome unless properly equipped and a standby person is present.
2. Call the fire department immediately. Explain the physical injury, chemical exposure, fire, or release.
3. Decontaminate the victim without delaying life-saving procedures.
4. If the victim's condition appears to be noncritical but seems to be more severe than minor cuts, he/she should be transported to the nearest hospital by trained Emergency Medical Services (EMS) personnel. The attending physician has the responsibility for determining the severity of the injury.
5. When transporting an injured person to a hospital, bring this SSHP to assist medical personnel with diagnosis and treatment. In all cases of chemical overexposure, follow standard procedures as outlined for poison management, first aid, and, if applicable, CPR.
6. Notify the DO Manager and the SHSO. Complete the Accident/Incident Report Form and Accident Report ENG Form 3394 (Appendix A) within 24 hours.

First aid equipment and supplies will be kept in a location that is near the field work at the sewage lagoons. Table 11-1 details the first aid equipment that will be present on site during SLFCP field activities.

Table 11-1 First Aid Equipment and Supplies

Equipment	Size	Location
First Aid Kits	10-person capacity for every 5 workers	In each project vehicle
Emergency Eye Wash	1—Portable 15-minute flush capacity	On site or in project vehicle
Spill Control	Absorbent Pads	On site or in project vehicle
	Drum	
	Shovels	
Fire Extinguishers	10 lb ABC— at least 2 units	On site or in project vehicle

12.0 GENERAL SAFETY RULES

1. All site personnel must attend the daily tailgate safety meeting.
2. Any individual taking prescribed drugs shall inform the SHSO of the type of medication. The SHSO will review the matter with the PHSM and the Corporate Medical Consultant (CMC), who will decide whether the employee can safely work on site while taking medication.
3. The PPE specified by the SHSO and the SSHP shall be worn by all site personnel. This includes hard hats and safety glasses, which must be worn at all times in active work areas.
4. Facial hair (beards, long sideburns, or mustaches) that may interfere with a satisfactory fit of a respiratory mask is not allowed on any person who may be required to wear a respirator.
5. Personnel must follow proper decontamination procedures.
6. Eating, drinking, chewing tobacco or gum, smoking, and any other practice that may increase the possibility of hand-to-mouth contact is prohibited in the exclusion zone or the contamination reduction zone. (Exceptions may be permitted by the PHSM to allow fluid intake during heat stress conditions.)
7. All lighters, matches, cigarettes, and other forms of tobacco are prohibited in the exclusion zone.
8. All signs and demarcations shall be followed. Such signs and demarcations shall not be removed except as authorized by the SHSO.
9. No one shall enter a permit-required confined space without a permit. Confined space entry permits must be followed.
10. All personnel must follow Hot Work permits.
11. All personnel must use the buddy system in the exclusion zone.
12. All personnel must follow the work-rest regimens and other practices required by the heat stress program.
13. All personnel must follow lockout/tagout procedures when working on equipment involving moving parts or hazardous energy sources.
14. No person shall operate equipment unless trained and authorized.
15. No one may enter an excavation greater than 4 feet deep unless authorized by the Competent Person. Excavations must be sloped or shored properly. Safe means of access and egress from excavations must be maintained.

13.0 VISITOR REQUIREMENTS

Visitors at the site will be required to participate in a site safety orientation briefing. In accordance with the contract requirements, four sets of PPE (excluding respirators, prescription glasses, and safety shoes) will be maintained in storage for government representatives.

14.0 EMERGENCY ACTION PLAN

14.1 GENERAL REQUIREMENTS

Personnel covered by this SSHP are not expected to participate in an emergency response where there are potential safety or health hazards (i.e., fire, explosion, or chemical exposure).

14.2 EMERGENCY TELEPHONE NUMBERS

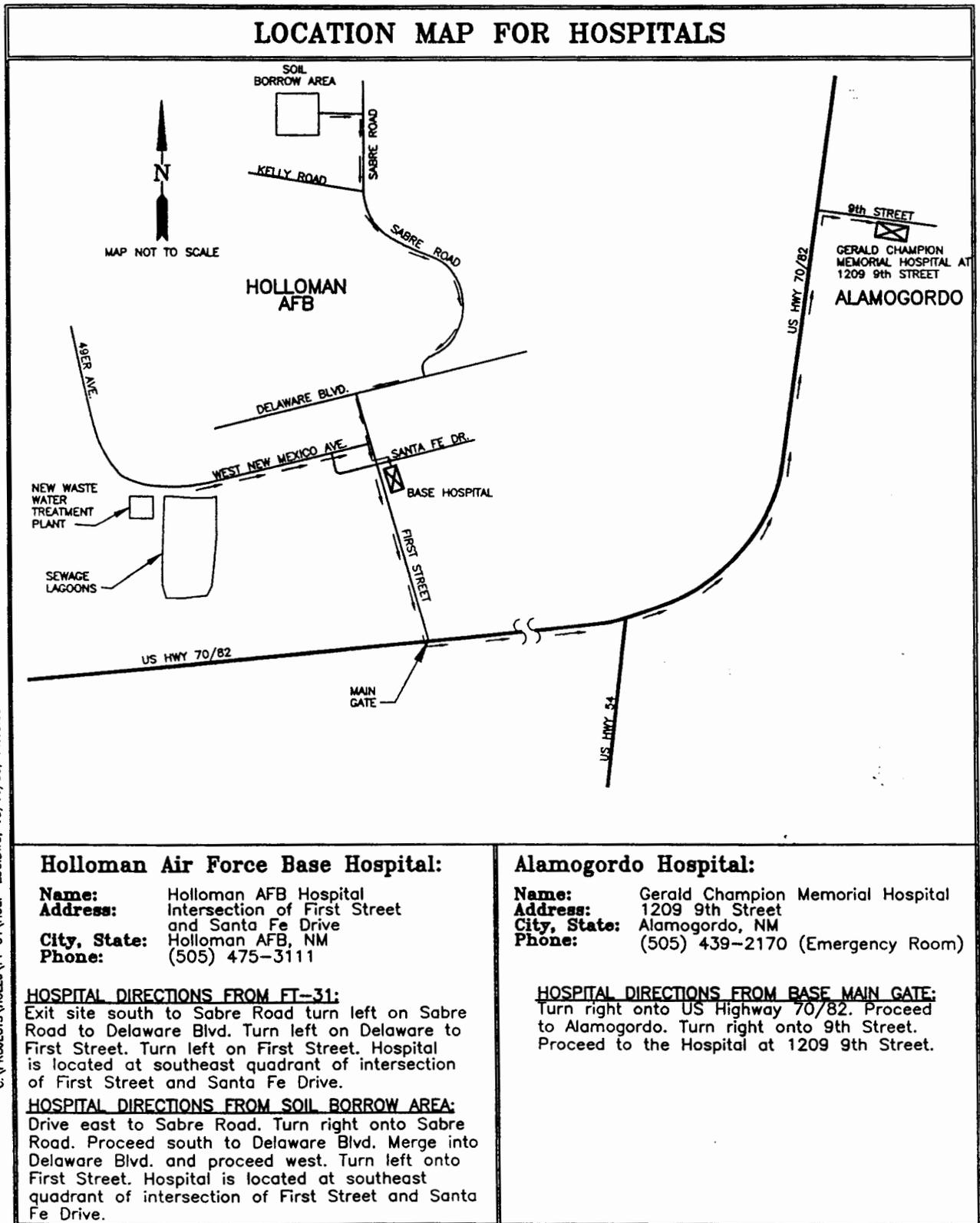
Ambulance (Base)		475-3111
Fire Dept. (Base)		475-1117 or 479-6117
Base Hospital		475-3111
Poison Control		(800) 432-6866
EPA (Info line)		(800) 424-9346
Nat. Response Center		(800)424-8802
Chemtrec		(800) 424-9300
Gerald Champion Memorial Hospital:	Civilian Hospital	(505) 439-2170
Sina Seyedian	Program Manager	(303) 988-2202
Daniel Holmquist	Site Manager	(505) 479-2668
Andrew Strickland	Project Health and Safety Mgr.	(303) 988-2202
Ron Versaw	DO Manager	(303) 980-3598
Mark Mercier	Technical Mgr.	(402) 221-7666
Warren Neff	Base POC	(505) 479-3931
Lee Snowwhite	Regional Compliance Mgr.	(303) 988-2202

14.3 INCIDENT REPORTING PROCEDURES

In the event of an accident or incident, an Accident/Incident Report Form and Accident Report ENG Form 3394 (Appendix A) must be completed within 24 hours. Depending upon the nature of the incident, additional agencies or individuals that may need to be notified include the EPA, New Mexico Environmental Department (NMED), OSHA, and Base Point of Contact (POC). Unless otherwise mandated by law, no outside agency may be contacted without explicit approval by the Holloman AFB.

All incidents resulting in injury, illness, or property damage require an accident investigation and report to be completed. The investigation should be initiated as soon as emergency conditions are under control. The purpose of this investigation is not to attribute blame but to determine the pertinent facts so that repeat or similar occurrences can be avoided.

Figure 14-1



C:\PROJECTS\HOLLO\FT-31\HOSP-LOC.DWG, 10/11/96, 14:15:00

15.0 DANGEROUS WEATHER RESPONSE PLAN

Work will not be permitted during severe weather conditions or if there is an imminent threat of severe weather that will endanger the health and safety of on-site workers. Additionally, site workers are advised to do the following:

1. Stop work during electrical storms and other extreme weather conditions such as extreme heat or cold temperatures.
2. Take cover.
3. Listen to local forecasts for warnings about specific weather hazards such as tornadoes, flash floods, or electrical storms.
4. Take frequent work breaks during extreme heat or cold conditions.

16.0 SPILL PREVENTION AND CONTROL

A Spill Prevention, Control, and Countermeasures Plan (SPCCP) has been prepared to address the unlikely event of a diesel fuel spill from the 2,000-gallon capacity dispensing tank used to provide fuel for the earthwork equipment, and from the four other 55-gallon capacity drums containing vehicle fluids such as lubrication oil, hydraulic oil, and antifreeze. The SPCCP is provided in Appendix E of the construction workplan.

17.0 REFERENCES

EBASCO/Radian Corporation

1995 Draft Final Site Characterization Report for Sewage Lagoons Closure Project,
Holloman AFB, June.

FWENC (Foster Wheeler Environmental Corporation)

1994 Foster Wheeler Environmental Corporation Health and Safety Program Manual.

1995 Final Basewide Health and Safety Plan, Holloman AFB, December.

Radian Corporation

1992 Site Characterization Report for Sewage Lagoon Investigation, Holloman AFB,
August.

SSHP APPENDIX A

HEALTH AND SAFETY FORMS

- FIELD CHANGE REQUEST FORM
- INCIDENT REPORT AND INVESTIGATION FORM
- ACCIDENT INVESTIGATION REPORT FORM
(USACE ENG FORM 3394)

FOSTER WHEELER ENVIRONMENTAL CORPORATION
FIELD CHANGE REQUEST FORM

PROJECT: _____

CHARGE NUMBER: _____

PROJECT LOCATION: _____

DESCRIPTION OF CHANGE: _____

REASON FOR CHANGE: _____

RECOMMENDED DISPOSITION: _____

SITE MANAGER: _____

Signature

Date

DISPOSITION: _____

PROJECT SAFETY AND HEALTH MANAGER:

Signature

Date

DISTRIBUTION: Project Health and Safety Manager
 Site Health and Safety Officer
 Quality Assurance Representative
 Field Operation Leader

INVESTIGATION REPORT

DATE OF INCIDENT: _____

DATE OF INVESTIGATION REPORT: _____

INCIDENT COST: ESTIMATED: \$ _____ ACTUAL: \$ _____

OSHA RECORDABLES: YES NO # RESTRICTED DAYS _____ # DAYS AWAY FROM WORK _____

CAUSE ANALYSIS

IMMEDIATE CAUSES - WHAT ACTIONS AND CONDITIONS CONTRIBUTED TO THIS EVENT? (SEE EXAMPLES NEXT PAGE)

BASIC CAUSES - WHAT SPECIFIC PERSONAL OR JOB FACTORS CONTRIBUTED TO THIS EVENT? (SEE EXAMPLES NEXT PAGE)

ACTION PLAN

REMEDIAL ACTIONS - WHAT HAS AND OR SHOULD BE DONE TO CONTROL THE CAUSES LISTED? INCLUDE MANAGEMENT PROGRAMS (SEE ATTACHED LIST) FOR CONTROL OF INCIDENTS IF APPLICABLE.

ACTION	PERSON RESPONSIBLE	TARGET DATE

PERSONS PERFORMING INVESTIGATION

INVESTIGATOR'S NAME: (PRINT) _____ SIGN: _____ DATE: _____

INVESTIGATOR'S NAME: (PRINT) _____ SIGN: _____ DATE: _____

INVESTIGATOR'S NAME: (PRINT) _____ SIGN: _____ DATE: _____

MANAGEMENT REVIEW

PROJECT OFFICE MANAGER (PRINT) _____ SIGN: _____

COMMENTS: _____

H&S MANAGER (PRINT) _____ SIGN: _____

COMMENTS: _____

NOTE: Attach additional information as necessary.

(For Safety Staff only)	REPORT NO.	EROC CODE	UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT <i>(For Use of this Form See Attached Instructions and USACE Suppl to AR 385-40)</i>		REQUIREMENT CONTROL SYMBOL: CEEC-S-8(R2)
ACCIDENT CLASSIFICATION					
PERSONNEL CLASSIFICATION		INJURY/ILLNESS/FATAL		PROPERTY DAMAGE	
GOVERNMENT <input type="checkbox"/> CIVILIAN <input type="checkbox"/> MILITARY		<input type="checkbox"/>		<input type="checkbox"/> FIRE INVOLVED <input type="checkbox"/> OTHER	
<input type="checkbox"/> CONTRACTOR		<input type="checkbox"/>		<input type="checkbox"/> FIRE INVOLVED <input type="checkbox"/> OTHER	
<input type="checkbox"/> PUBLIC		<input type="checkbox"/> FATAL <input type="checkbox"/> OTHER		X	
PERSONAL DATA					
a. NAME (Last, First, MI)		b. AGE	c. SEX <input type="checkbox"/> MALE <input type="checkbox"/> FEMALE		d. SOCIAL SECURITY NUMBER
e. GRADE		f. JOB SERIES/TITLE		g. DUTY STATUS AT TIME OF ACCIDENT	
		<input type="checkbox"/> ON DUTY <input type="checkbox"/> TDY <input type="checkbox"/> OFF DUTY		h. EMPLOYMENT STATUS AT TIME OF ACCIDENT <input type="checkbox"/> ARMY ACTIVE <input type="checkbox"/> ARMY RESERVE <input type="checkbox"/> VOLUNTEER <input type="checkbox"/> PERMANENT <input type="checkbox"/> FOREIGN NATIONAL <input type="checkbox"/> SEASONAL <input type="checkbox"/> TEMPORARY <input type="checkbox"/> STUDENT <input type="checkbox"/> OTHER (Specify)	
GENERAL INFORMATION					
a. DATE OF ACCIDENT (month/day/year)	b. TIME OF ACCIDENT (Military time)	c. EXACT LOCATION OF ACCIDENT			d. CONTRACTOR'S NAME
/ /					(1) PRIME:
e. CONTRACT NUMBER		f. TYPE OF CONTRACT		g. HAZARDOUS/TOXIC WASTE ACTIVITY	
<input type="checkbox"/> CIVIL WORKS <input type="checkbox"/> MILITARY <input type="checkbox"/> OTHER (Specify)		<input type="checkbox"/> CONSTRUCTION <input type="checkbox"/> SERVICE <input type="checkbox"/> A/E <input type="checkbox"/> DREDGE <input type="checkbox"/> OTHER (Specify)		<input type="checkbox"/> SUPERFUND <input type="checkbox"/> DERP <input type="checkbox"/> IRP <input type="checkbox"/> OTHER (Specify)	
				(2) SUBCONTRACTOR:	
CONSTRUCTION ACTIVITIES ONLY (Fill in line and corresponding code number in box from list - see instructions)					
a. CONSTRUCTION ACTIVITY			(CODE)	b. TYPE OF CONSTRUCTION EQUIPMENT	
			#		
INJURY / ILLNESS INFORMATION (Include name on line and corresponding code number in box for items e, f & g - see instructions)					
a. SEVERITY OF ILLNESS / INJURY			(CODE)	b. ESTIMATED DAYS LOST	c. ESTIMATED DAYS HOSPITALIZED
			#		
d. ESTIMATED DAYS RESTRICTED DUTY					
e. BODY PART AFFECTED			(CODE)	g. TYPE AND SOURCE OF INJURY/ILLNESS	
PRIMARY			#	TYPE	
SECONDARY			#	SOURCE	
f. NATURE OF ILLNESS / INJURY			(CODE)		
			#		
PUBLIC FATALITY (Fill in line and corresponding code number in box - see instructions)					
a. ACTIVITY AT TIME OF ACCIDENT			(CODE)	b. PERSONAL FLOATION DEVICE USED?	
			#	<input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A	
MOTOR VEHICLE ACCIDENT					
a. TYPE OF VEHICLE		b. TYPE OF COLLISION		c. SEAT BELTS	
<input type="checkbox"/> PICKUP/VAN <input type="checkbox"/> AUTOMOBILE <input type="checkbox"/> TRUCK <input type="checkbox"/> OTHER (Specify)		<input type="checkbox"/> SIDE SWIPE <input type="checkbox"/> HEAD ON <input type="checkbox"/> REAR END <input type="checkbox"/> BROADSIDE <input type="checkbox"/> ROLL OVER <input type="checkbox"/> BACKING <input type="checkbox"/> OTHER (Specify)		USED NOT USED NOT AVAILABLE (1) FRONT SEAT (2) REAR SEAT	
PROPERTY/MATERIAL INVOLVED					
a. NAME OF ITEM		b. OWNERSHIP		c. \$ AMOUNT OF DAMAGE	
(1)					
(2)					
(3)					
VESSEL / FLOATING PLANT ACCIDENT (Fill in line and corresponding code number in box from list - see instructions)					
a. TYPE OF VESSEL/FLOATING PLANT			(CODE)	b. TYPE OF COLLISION/MISHAP	
			#		
ACCIDENT DESCRIPTION (Use additional paper, if necessary)					

GENERAL. Complete a separate report for each person who was injured, caused, or contributed to the accident (excluding uninjured personnel and witnesses). Use of this form for reporting USACE employee first-aid type injuries not submitted to the Office of Workers' Compensation Programs (OWCP) shall be at the discretion of the FOA commander. Please type or print legibly. Appropriate items shall be marked with an "X" in box(es). If additional space is needed, provide the information on a separate sheet and attach to the completed form. Ensure that these instructions are forwarded with the completed report to the designated management reviewers indicated in sections 16. and 17.

INSTRUCTIONS FOR SECTION 1 – ACCIDENT CLASSIFICATION. (Mark All Boxes That Are Applicable.)

- a. **GOVERNMENT.** Mark "CIVILIAN" box if accident involved government civilian employee; mark "MILITARY" box if accident involved U.S. military personnel.
 - (1) **INJURY/ILLNESS/FATALITY**—Mark if accident resulted in any government civilian employee injury, illness, or fatality that requires the submission of OWCP Forms CA-1 (injury), CA-2 (illness), or CA-6 (fatality) to OWCP; mark if accident resulted in military personnel lost-time or fatal injury or illness.
 - (2) **PROPERTY DAMAGE**—Mark the appropriate box if accident resulted in any damage of \$1000 or more to government property (including motor vehicles).
 - (3) **VEHICLE INVOLVED**—Mark if accident involved a motor vehicle, regardless of whether "INJURY/ILLNESS/FATALITY" or "PROPERTY DAMAGE" are marked.
 - (4) **DIVING ACTIVITY**—Mark if the accident involved an in-house USACE diving activity.
- b. **CONTRACTOR.**
 - (1) **INJURY/ILLNESS/FATALITY**—Mark if accident resulted in any contractor lost-time injury/illness or fatality.
 - (2) **PROPERTY DAMAGE**—Mark the appropriate box if accident resulted in any damage of \$1000 or more to contractor property (including motor vehicles).
 - (3) **VEHICLE INVOLVED**—Mark if accident involved a motor vehicle, regardless of whether "INJURY/ILLNESS/FATALITY" or "PROPERTY DAMAGE" are marked.
 - (4) **DIVING ACTIVITY**—Mark if the accident involved a USACE Contractor diving activity.
- c. **PUBLIC.**
 - (1) **INJURY/ILLNESS/FATALITY**—Mark if accident resulted in public fatality or permanent total disability. (The "OTHER" box will be marked when requested by the FOA to report an unusual non-fatal public accident that could result in claims against the government or as otherwise directed by the FOA Commander).
 - (2) **VOID SPACE**—Make no entry.
 - (3) **VEHICLE INVOLVED**—Mark if accident resulted in a fatality to a member of the public and involved a motor vehicle, regardless of whether "INJURY/ILLNESS/FATALITY" is marked.
 - (4) **VOID SPACE**—Make no entry.

INSTRUCTIONS FOR SECTION 2 – PERSONAL DATA

- a. **NAME**—(MANDATORY FOR GOVERNMENT ACCIDENTS. OPTIONAL AT THE DISCRETION OF THE FOA COMMANDER FOR CONTRACTOR AND PUBLIC ACCIDENTS). Enter last name, first name, middle initial of person involved.
- b. **AGE**—Enter age.
- c. **SEX**—Mark appropriate box.
- d. **SOCIAL SECURITY NUMBER**—(FOR GOVERNMENT PERSONNEL ONLY) Enter the social security number (or other personal identification number if no social security number issued).
- e. **GRADE**—(FOR GOVERNMENT PERSONNEL ONLY) Enter pay grade. Example: O-6; E-7; WG-8; WS-12; GS-11; etc.

- f. **JOB SERIES/TITLE**—For government civilian employees enter the pay plan, full series number, and job title, e.g. GS-0810/Civil Engineer. For military personnel enter the primary military occupational specialty (PMOS), e.g., 15A30 or 11G50. For contractor employees enter the job title assigned to the injured person, e.g. carpenter, laborer, surveyor, etc..
- g. **DUTY STATUS**—Mark the appropriate box.
 - (1) **ON DUTY**—Person was at duty station during duty hours or person was away from duty station during duty hours but on official business at time of the accident.
 - (2) **TDY** - Person was on official business, away from the duty station and with travel orders at time of accident. Line-of-duty investigation required.
 - (3) **OFF DUTY** - Person was not on official business at time of accident
- h. **EMPLOYMENT STATUS**—(FOR GOVERNMENT PERSONNEL ONLY) Mark the most appropriate box. If "OTHER" is marked, specify the employment status of the person.

INSTRUCTION FOR SECTION 3 – GENERAL INFORMATION

- a. **DATE OF ACCIDENT**—Enter the month, day, and year of accident.
- b. **TIME OF ACCIDENT**—Enter the local time of accident in military time. Example: 1430 hrs (not 2:30 p.m.).
- c. **EXACT LOCATION OF ACCIDENT**—Enter facts needed to locate the accident scene: (installation/project name, building number, street, direction and distance from closest landmark, etc.).
- d. **CONTRACTOR NAME**
 - (1) **PRIME**—Enter the exact name (title of firm) of the prime contractor.
 - (2) **SUBCONTRACTOR**—Enter the name of any subcontractor involved in the accident.
- e. **CONTRACT NUMBER**—Mark the appropriate box to identify if contract is civil works, military, or other; if "OTHER" is marked, specify contract appropriation on line provided. Enter complete contract number of prime contract, e.g., DACW 09-85-C-0100.
- f. **TYPE OF CONTRACT**—Mark appropriate box. A/E means architect/engineer. If "OTHER" is marked, specify type of contract on line provided.
- g. **HAZARDOUS/TOXIC WASTE ACTIVITY (HTW)**—Mark the box to identify the HTW activity being performed at the time of the accident. For Superfund, DERP, and Installation Restoration Program (IRP) HTW activities include accidents that occurred during inventory, pre-design, design, and construction. For the purpose of accident reporting, DERP Formerly Used DoD Site (FUDS) activities and IRP activities will be treated separately. For Civil Works O&M HTW activities mark the "OTHER" box.

INSTRUCTIONS FOR SECTION 4 – CONSTRUCTION ACTIVITIES

- a. **CONSTRUCTION ACTIVITY**—Select the most appropriate construction activity being performed at time of accident from the list below. Enter the activity name and place the corresponding code number identified in the box.

CONSTRUCTION ACTIVITY LIST

- | | |
|-------------------------|----------------------------|
| 1. MOBILIZATION | 14. ELECTRICAL |
| 2. SITE PREPARATION | 15. SCAFFOLDING/ACCESS |
| 3. EXCAVATION/TRENCHING | 16. MECHANICAL |
| 4. GRADING (EARTHWORK) | 17. PAINTING |
| 5. PIPING/UTILITIES | 18. EQUIPMENT/MAINTENANCE |
| 6. FOUNDATION | 19. TUNNELING |
| 7. FORMING | 20. WAREHOUSING/STORAGE |
| 8. CONCRETE PLACEMENT | 21. PAVING |
| 9. STEEL ERECTION | 22. FENCING |
| 10. ROOFING | 23. SIGNING |
| 11. FRAMING | 24. LANDSCAPING/IRRIGATION |
| 12. MASONRY | 25. INSULATION |
| 13. CARPENTRY | 26. DEMOLITION |

* The injury or condition selected below must be caused by a specific incident or event which occurred during a single work day or shift.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
*TRAUMATIC INJURY OR DISABILITY	TA	AMPUTATION
	TB	BACK STRAIN-
	TC	CONTUSION; BRUISE; ABRASION
	TD	DISLOCATION
	TF	FRACTURE
	TH	HERNIA
	TK	CONCUSSION
	TL	LACERATION, CUT
	TP	PUNCTURE
	TS	STRAIN, MULTIPLE
	TU	BURN, SCALD, SUNBURN
	TI	TRAUMATIC SKIN DISEASES/ CONDITIONS INCLUDING DERMATITIS
	TR	TRAUMATIC RESPIRATORY DISEASE
	TQ	TRAUMATIC FOOD POISONING
	TW	TRAUMATIC TUBERCULOSIS
	TX	TRAUMATIC VIROLOGICAL/ INFECTIVE/PARASITIC DISEASE
	T1	TRAUMATIC CEREBRAL VASCULAR CONDITION/STROKE
	T2	TRAUMATIC HEARING LOSS
T3	TRAUMATIC HEART CONDITION	
T4	TRAUMATIC MENTAL DISORDER; STRESS; NERVOUS CONDITION	
T8	TRAUMATIC INJURY - OTHER (EXCEPT DISEASE, ILLNESS)	

**A nontraumatic physiological harm or loss of capacity produced by systemic infection; continued or repeated stress or strain; exposure to toxins, poisons, fumes, etc.; or other continued and repeated exposures to conditions of the work environment over a long period of time. For practical purposes, an occupational illness/disease or disability is any reported condition which does not meet the definition of traumatic injury or disability as described above.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
**NON-TRAUMATIC ILLNESS/DISEASE OR DISABILITY		
RESPIRATORY DISEASE	RA	ASBESTOSIS
	RB	BRONCHITIS
	RE	EMPHYSEMA
	RP	PNEUMOCONIOSIS
	RS	SILICOSIS
	R9	RESPIRATORY DISEASE, OTHER
VIROLOGICAL, INFECTIVE & PARASITIC DISEASES	VB	BRUCELLOSIS
	VC	COCCIDIOMYCOSIS
	VF	FOOD POISONING
	VH	HEPATITIS
	VM	MALARIA
	VS	STAPHYLOCOCCUS
DISABILITY, OCCUPATIONAL	VT	TUBERCULOSIS
	V9	VIROLOGICAL/INFECTIVE/ PARASITIC - OTHER
	DA	ARTHRITIS, BURSITIS
	DB	BACK STRAIN, BACK SPRAIN
	DC	CEREBRAL VASCULAR CONDITION; STROKE
	DD	ENDEMIC DISEASE (OTHER THAN CODE TYPES R&S)
	DE	EFFECT OF ENVIRONMENTAL CONDITION
	DH	HEARING LOSS
	DK	HEART CONDITION
	DM	MENTAL DISORDER, EMOTIONAL STRESS NERVOUS CONDITION
DR	RADIATION	
DS	STRAIN, MULTIPLE	
DU	ULCER	
DV	OTHER VASCULAR CONDITIONS	
D9	DISABILITY, OTHER	

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME
SKIN DISEASE OR CONDITION	S8	BIOLOGICAL
	SC	CHEMICAL
	S9	DERMATITIS, UNCLASSIFIED

g. TYPE AND SOURCE OF INJURY/ILLNESS (CAUSE) - Type and Source Codes are used to describe what caused the incident. The Type Code stands for an ACTION and the Source Code for an OBJECT or SUBSTANCE. Together, they form a brief description of how the incident occurred. Where there are two different sources, code the initiating source of the incident (see example 1, below). Examples:

(1) An employee tripped on carpet and struck his head on a desk.
TYPE: 210 (fell on same level) SOURCE: 0110 (walking/working surface)

NOTE: This example would NOT be coded 120 (struck against) and 0140 (furniture).

(2) A Park Ranger contracted dermatitis from contact with poison ivy/oak.
TYPE: 510 (contact) SOURCE: 0920 (plant)

(3) A lock and dam mechanic punctured his finger with a metal sliver while grinding a turbine blade.
TYPE: 410 (punctured by) SOURCE: 0830 (metal)

(4) An employee was driving a government vehicle when it was struck by another vehicle.
TYPE: 800 (traveling in) SOURCE: 0421 (government-owned vehicle, as driver)

NOTE: The Type Code 800, "Traveling In" is different from the other type codes in that its function is not to identify factors contributing to the injury or fatality, but rather to collect data on the type of vehicle the employee was operating or traveling in at the time of the incident.

Select the most appropriate TYPE and SOURCE identifier from the list below and enter the name on the line and the corresponding code in the appropriate box.

CODE	TYPE OF INJURY NAME
	STRUCK
0110	STRUCK BY
0111	STRUCK BY FALLING OBJECT
0120	STRUCK AGAINST
	FELL, SLIPPED, TRIPPED
0210	FELL ON SAME LEVEL
0220	FELL ON DIFFERENT LEVEL
0230	SLIPPED, TRIPPED (NO FALL)
	CAUGHT
0310	CAUGHT ON
0320	CAUGHT IN
0330	CAUGHT BETWEEN
	PUNCTURED, LACERATED
0410	PUNCTURED BY
0420	CUT BY
0430	STUNG BY
0440	BITTEN BY
	CONTACTED
0510	CONTACTED WITH (INJURED PERSON MOVING)
0520	CONTACTED BY (OBJECT WAS MOVING)
	EXERTED
0610	LIFTED, STRAINED BY (SINGLE ACTION)
0620	STRESSED BY (REPEATED ACTION)
	EXPOSED
0710	INHALED
0720	INGESTED
0730	ABSORBED
0740	EXPOSED TO
0800	TRAVELING IN
CODE	SOURCE OF INJURY NAME
0100	BUILDING OR WORKING AREA
0110	WALKING/WORKING SURFACE (FLOOR, STREET, SIDEWALKS, ETC)
0120	STAIRS, STEPS
0130	LADDER
0140	FURNITURE, FURNISHINGS, OFFICE EQUIPMENT
0150	BOILER, PRESSURE VESSEL
0160	EQUIPMENT LAYOUT (ERGONOMIC)
0170	WINDOWS, DOORS
0180	ELECTRICITY

INSTRUCTIONS FOR SECTION 9—VESSEL/ FLOATING PLANT ACCIDENT

- a. TYPE OF VESSEL/FLOATING PLANT—Select the most appropriate vessel/floating plant from list below. Enter name and place corresponding number in box. If item is not listed below, enter item number for "OTHER" and write in specific type of vessel/floating plant.

VESSEL/FLOATING PLANTS

- | | |
|------------------------|----------------------------|
| 1. ROW BOAT | 7. DREDGE/DIPPER |
| 2. SAIL BOAT | 8. DREDGE/CLAMSHELL BUCKET |
| 3. MOTOR BOAT | 9. DREDGE/PIPE LINE |
| 4. BARGE | 10. DREDGE/DUST PAN |
| 5. DREDGE/HOPPER | 11. TUG BOAT |
| 6. DREDGE/SIDE CASTING | 12. OTHER |

- b. COLLISION/MISHAP—Select from the list below the object(s) that contributed to the accident or were damaged in the accident.

COLLISION/MISHAP

- | | |
|-----------------------------|-----------------------|
| 1. COLLISION W/OTHER VESSEL | 7. HAULAGE UNIT |
| 2. UPPER GUIDE WALL | 8. BREAKING TOW |
| 3. UPPER LOCK GATES | 9. TOW BREAKING UP |
| 4. LOCK WALL | 10. SWEEP DOWN ON DAM |
| 5. LOWER LOCK GATES | 11. BUOY/DOLPHIN/CELL |
| 6. LOWER GUIDE WALL | 12. WHARF OR DOCK |
| | 13. OTHER |

INSTRUCTIONS FOR SECTION 10—ACCIDENT DESCRIPTION

DESCRIBE ACCIDENT—Fully describe the accident. Give the sequence of events that describe what happened leading up to and including the accident. Fully identify personnel and equipment involved and their role(s) in the accident. Ensure that relationships between personnel and equipment are clearly specified. Continue on blank sheets if necessary and attach to this report.

INSTRUCTIONS FOR SECTION 11—CAUSAL FACTORS

- a. Review thoroughly. Answer each question by marking the appropriate block. If any answer is yes, explain in item 13 below. Consider, as a minimum, the following:

- (1) DESIGN—Did inadequacies associated with the building or work site play a role? Would an improved design or layout of the equipment or facilities reduce the likelihood of similar accidents? Were the tools or other equipment designed and intended for the task at hand?
- (2) INSPECTION/MAINTENANCE—Did inadequately or improperly maintained equipment, tools, workplace, etc. create or worsen any hazards that contributed to the accident? Would better equipment, facility, work site or work activity inspections have helped avoid the accident?
- (3) PERSON'S PHYSICAL CONDITION—Do you feel that the accident would probably not have occurred if the employee was in "good" physical condition? If the person involved in the accident had been in better physical condition, would the accident have been less severe or avoided altogether? Was over exertion a factor?
- (4) OPERATING PROCEDURES—Did a lack of or inadequacy within established operating procedures contribute to the accident? Did any aspect of the procedures introduce any hazard to, or increase the risk associated with the work process? Would establishment or improvement of operating procedures reduce the likelihood of similar accidents?
- (5) JOB PRACTICES—Were any of the provisions of the Safety and Health Requirements Manual (EM 385-1-1) violated? Was the task being accomplished in a manner which was not in compliance with an established job hazard analysis or activity hazard analysis? Did any established job practice (including EM 385-1-1) fail to adequately address the task or work process? Would better job practices improve the safety of the task?

- (6) HUMAN FACTORS—Was the person under undue stress (either internal or external to the job)? Did the task tend toward overloading the capabilities of the person; i.e., did the job require tracking and reacting to many external inputs such as displays, alarms, or signals? Did the arrangement of the workplace tend to interfere with efficient task performance? Did the task require reach, strength, endurance, agility, etc., at or beyond the capabilities of the employee? Was the work environment ill-adapted to the person? Did the person need more training, experience, or practice in doing the task? Was the person inadequately rested to perform safely?

- (7) ENVIRONMENTAL FACTORS—Did any factors such as moisture, humidity, rain, snow, sleet, hail, ice, fog, cold, heat, sun, temperature changes, wind, tides, floods, currents, dust, mud, glare, pressure changes, lightning, etc., play a part in the accident?

- (8) CHEMICAL AND PHYSICAL AGENT FACTORS—Did exposure to chemical agents (either single shift exposure or long-term exposure) such as dusts, fibers (asbestos, etc.), silica, gases (carbon monoxide, chlorine, etc.), mists, steam, vapors, fumes, smoke, other particulates, liquid or dry chemicals that are corrosive, toxic, explosive or flammable, by-products of combustion or physical agents such as noise, ionizing radiation, non-ionizing radiation (UV radiation created during welding, etc.) contribute to the accident/incident?

- (9) OFFICE FACTORS—Did the fact that the accident occurred in an office setting or to an office worker have a bearing on its cause? For example, office workers tend to have less experience and training in performing tasks such as lifting office furniture. Did physical hazards within the office environment contribute to the hazard?

- (10) SUPPORT FACTORS—Was the person using an improper tool for the job? Was inadequate time available or utilized to safely accomplish the task? Were less than adequate personnel resources (in terms of employee skills, number of workers, and adequate supervision) available to get the job done properly? Was funding available, utilized, and adequate to provide proper tools, equipment, personnel, site preparation, etc?

- (11) PERSONAL PROTECTIVE EQUIPMENT—Did the person fail to use appropriate personal protective equipment (gloves, eye protection, hard-toed shoes, respirator, etc.) for the task or environment? Did protective equipment provided or worn fail to provide adequate protection from the hazard(s)? Did lack of or inadequate maintenance of protective gear contribute to the accident?

- (12) DRUGS/ALCOHOL—Is there any reason to believe the person's mental or physical capabilities, judgement, etc., were impaired or altered by the use of drugs or alcohol? Consider the effects of prescription medicine and over the counter medications as well as illicit drug use. Consider the effect of drug or alcohol induced "hangovers".

- b. WRITTEN JOB/ACTIVITY HAZARD ANALYSIS—Was a written Job/Activity Hazard Analysis completed for the task being performed at the time of the accident? Mark the appropriate box. If one was performed, attach a copy of the analysis to the report.

INSTRUCTIONS FOR SECTION 12—TRAINING

- a. WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK?—For the purpose of this section "trained" means the person has been provided the necessary information (either formal and/or on-the-job (OJT) training) to competently perform the activity/task in a safe and healthful manner.

- b. TYPE OF TRAINING—Mark the appropriate box that best indicates the type of training; (classroom or on-the-job) that the injured person received before the accident happened.

- c. DATE OF MOST RECENT TRAINING—Enter the month, day, and year of the last formal training completed that covered the activity-task being performed at the time of the accident.

SSHP APPENDIX B
SPILL/RELEASE REPORTING PROCEDURES

Foster Wheeler Environmental Regulatory Compliance Program Manual	REPORTING SPILLS AND RELEASES	RC 6 Revised: 08/18/95 Page 1 of 5
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1.0 PURPOSE

The purpose of this procedure is to implement Foster Wheeler Environmental Corporation's policy of strict compliance with all reporting requirements. This procedure describes the four categories of spills that Foster Wheeler Environmental employees must report, and identifies the specific reporting process to follow for each category.

Numerous federal, state, and local regulatory requirements govern spill/release reporting and response activities. Depending upon the circumstances, reporting may be necessary under federal (CWA, CERCLA, SARA Title III, RCRA, TSCA), state, and/or local spill reporting programs. Some programs specify minimum quantities, others do not. Some programs apply to virtually any spill, others are very specific.

Spill/release reporting can be complex. Outside contractor employees have been indicted and convicted of criminal violations of federal spill/release reporting requirements. This obligation may hold even though the spill was made by the client and not the contractor. In the absence of such requirements, money damages may still be imposed by a court for failure to disclose knowledge of spills that present a hazard to human health.

2.0 SCOPE

This procedure applies to all Foster Wheeler Environmental employees who learn of the existence of a spill or release during the course of a project. The procedure is to be implemented *immediately* once a Foster Wheeler Environmental employee learns of the existence of a spill or release, regardless of who may have caused the spill or when the spill may have occurred.

As noted in the Project Regulatory Compliance Procedure (RC 1), it is critical that spill reporting procedures be coordinated with the client prior to initiation of the project. If the procedures are modified and a mutually agreeable criteria to responding to spills are developed with the client, the Regulatory Compliance Manager must be advised of and must approve of these modified procedures.

3.0 DEFINITIONS

None.

4.0 RESPONSIBILITIES

Foster Wheeler Environmental Regulatory Compliance Program Manual	REPORTING SPILLS AND RELEASES	RC 6 Revised: 08/18/95 Page 3 of 5
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- The spill/release is from, or is suspected to have been from, a facility or equipment that meets one of the following criteria:
 - owned by Foster Wheeler Environmental or a Foster Wheeler Environmental subcontractor
 - operated by Foster Wheeler Environmental or a Foster Wheeler Environmental subcontractor
 - under Foster Wheeler Environmental's direct or indirect control as a construction manager, oversight contractor, or similar capacity.

Client Spill/Release

All other spills/releases are considered "client spills/releases" for purposes of this procedure.

STEP 2: DETERMINE IF THE SPILL OR RELEASE IS REPORTABLE

After responding to the spill as directed in the Foster Wheeler Environmental Health and Safety procedures, the On-Site Coordinator assigned to the project must contact the Regulatory Affairs Advisor to determine if the spill or release is subject to any federal, state, or local reporting requirements. The on-site coordinator must provide an estimate of quantity and concentration of the material spilled or released, and other details of the spill/release. The Regulatory Affairs Advisor will identify what agencies need to be notified and the type of notification (i.e., written or verbal) required.

STEP 3: DETERMINE IF THE SPILL OR RELEASE POSES A THREAT TO HUMAN HEALTH

If *no* reporting requirement is identified in Step 2, the Regulatory Affairs Advisor will contact the Regulatory Compliance Manager. The Regulatory Compliance Manager will determine if the spill or release poses a threat to human health. For purposes of this procedure a spill/release is considered to present a hazard to human health if the following criteria are met:

- The spill or release results, or may result, in downgradient groundwater contamination that has entered, or is about to enter, known drinking water sources (wells or surface water bodies)
- The spill or release has caused, or is about to cause, contamination of surface soils or other materials in areas accessible to the general public

TABLE 1 - CATEGORIES AND ACTIONS FOR REPORTING SPILLS OR RELEASES		
PARTY WHO CAUSED SPILL	REPORTABLE TO AGENCY	NOT REPORTABLE BUT THREAT TO HUMAN HEALTH
<i>Foster Wheeler Environmental</i>	<ul style="list-style-type: none"> ■ Immediately report to the client and regulatory agencies. ■ Regulatory Affairs Advisor must provide Regulatory Compliance Manager with verbal and written notification of the spill. 	<ul style="list-style-type: none"> ■ The Project Manager and Regulatory Compliance Manager will report to client. ■ Regulatory Compliance Manager and client will determine whether to report to agencies.
<i>Client</i>	<p><i>Real-Time Spill Release.</i> If Foster Wheeler Environmental personnel observe the occurrence of the spill or release or learn of it <i>immediately</i> after it happens:</p> <ul style="list-style-type: none"> ■ Project Manager shall <i>immediately</i> contact the client to give the client a "right of first refusal" to report the spill/release, and notify the Regulatory Compliance Manager. ■ If the client cannot be reached or declines to report, Project Manager shall report to the regulatory agencies as specified in Step 2 above. <p><i>Historic Spill or Release.</i> If Foster Wheeler Environmental personnel observe or learn of evidence that a spill or release has occurred in the past:</p> <ul style="list-style-type: none"> ■ Regulatory Affairs Advisor will immediately notify the Regulatory Compliance Manager. ■ The Regulatory Compliance Manager along with Project Manager will notify the client and evaluate whether the spill or release has been reported or whether to report to regulatory agencies. 	<ul style="list-style-type: none"> ■ The Project Manager and Regulatory Compliance Manager will report to client. ■ Regulatory Compliance Manager and client will determine whether to report to agencies.

6.0 TRAINING

All project personnel must be trained in this and other Regulatory Compliance Procedures and Policies. The assigned project Spill/Release Coordinator may contact the Regulatory Affairs Advisor if additional training is required in order to implement this procedure.

7.0 REFERENCES

None.

---End of Section---

**WORKPLAN
APPENDIX C**

TECHNICAL SPECIFICATIONS

**TECHNICAL SPECIFICATIONS FOR CONSTRUCTION
SEWAGE LAGOONS FINAL CLOSURE PROJECT**

**HOLLOMAN AIR FORCE BASE
ALAMOGORDO, NEW MEXICO**

DIVISION 1 - GENERAL REQUIREMENTS

01005	Definitions, Abbreviations, and Reference Standards
01300	Submittals
01500	Temporary Facilities and Utilities
01562	Dust Control
01563	Erosion and Sediment Control
01720	Project Record Documents
01725	Project Record Drawings

DIVISION 2 - SITE WORK

02060	Demolition and Salvage
02100	Site Preparation
02160	Sludge Drying and Compaction
02200	Earthwork
02900	Revegetation

DIVISION 3 THRU 16 - NOT USED

**SECTION 01005
DEFINITIONS, ABBREVIATIONS, AND REFERENCE STANDARDS**

1.0 GENERAL

1.1 Definitions Used in the Technical Specifications

Contract Documents

- Construction Drawings
- Technical Specifications
- Construction Workplan
- Subcontract Agreements

Base - Holloman AFB

USACE - United States Army Corps of Engineers

Contractor - Foster Wheeler Environmental Corporation (FWENC)

Subcontractor or Vendor - A person, firm, or corporation with whom the Contractor has contracted with to perform the Work.

Work - Any and all obligations, duties, and responsibilities necessary to the successful completion of the Project assigned to or undertaken by the Contractor or any Subcontractor or Vendor under the Contract Documents, including all labor, materials, equipment, permits, inspections, and other incidentals, and the furnishing thereof.

1.2 Abbreviations

ac	alternating current
AFB	Air Force Base
ASTM	American Society for Testing and Materials
bgs	below ground surface
bcy	bank cubic yards
CAD	Computer Aided Design
ft	foot or feet
in	inch or inches
lcy	loose cubic yards
MSL	Mean Sea Level
NMDOT	New Mexico Department of Transportation
OSHA	Occupational Safety and Health Act

SECTION 01300 SUBMITTALS

1.0 GENERAL

This section outlines the requirements for submittals to be delivered in accordance with the Contract Documents.

All submittals shall include calculations, shop drawings, material specifications, manufacturer's installation instructions, plans, reports, records, diagrams, and details for review and approval as appropriate.

2.0 EXECUTION

2.1 Submittal Register

The Submittal Register, located at the end of this specification, lists the submittals required from the Contractor throughout the project. This table lists all submittals currently required in the Technical Specifications and Construction Drawings.

2.2 Submittal Process

Engineering data covering all equipment, fabricated materials, and all other materials which will become a permanent part of the Work shall be submitted to the Contractor's Project Engineer at the following address:

Raymond J. Battalora, P.E.
Foster Wheeler Environmental Corporation
143 Union Blvd., Suite 1010
Lakewood, Colorado 80228

The submittals shall include drawings and descriptive information in sufficient detail to show the kind, size, arrangement, operation, and maintenance of component materials, controls, instrumentation, and other devices; the external connections, anchorage, and supports required; performance characteristics; and dimensions needed for installation and correlation with other materials and equipment. The submittals shall be prepared in standard engineering format drawings indicating each specific equipment component, including all identification tags, symbols, and reference points as indicated on the construction drawings. Hand-drawn sketches will not be accepted. Four (4) copies of each submittal shall be provided by the Subcontractor or Vendor within the specified time in the Request for Proposal after the contract is awarded.

by the Contractor on previous submittals.

Requirements specified for initial submittals shall also apply to resubmittals. Resubmittals shall bear the number of the first submittals followed by a letter (A, B, etc.) to indicate the sequence of the resubmittal.

If more than one resubmittal is required because of failure of the Subcontractor or Vendor to provide all previously requested corrected data or additional information, the Subcontractor or Vendor shall reimburse the Contractor for the charges for review of the additional resubmittals.

Resubmittals shall be made within seven (7) workdays of the date of the letter returning the material to be modified or corrected, unless within three (3) workdays the Subcontractor or Vendor submits an acceptable request for an extension, listing the reasons the resubmittal can not be completed within that time.

Any need for more than one resubmission, or any other delay in obtaining the Contractor's review of submittals, will not entitle the Subcontractor to an extension of the Contract Schedule unless delay of the Work is directly caused by a change in the Work authorized by a Change Order.

2.6 Submittals Format

Manuals and other data shall be printed on heavy, first quality paper, 8-1/2 by 11 inch size, with standard three-hole punching. Drawings and diagrams shall be reduced to 8-1/2 by 11 inch or 11 by 17 inches. Where reduction is not practical, larger drawings shall be folded separately and placed in clear plastic envelopes that are bound into the manuals. Each folded drawing shall be folded so that the title block is visible when placed in the clear plastic envelope. Each drawing envelope shall bear suitable identification on the front side for referencing.

Copies of manufacturer's literature or catalog pages shall be highlighted using black pen to indicate particular items to be furnished. Use of yellow or color highlighting to identify specific items is unacceptable.

All submittals shall be submitted with a transmittal letter bearing, at a minimum, the following information on the transmittal letter:

- Company name, address, and phone number of Subcontractor or Vendor
- Printed name and signature of Subcontractor or Vendor representative
- Date of submittal shipment

2.7 Certificates of Compliance

Any certificates required for demonstrating proof of compliance of materials with drawing, specification, and project plan requirements shall be executed in four copies. Each certificate

**SUBMITTAL REGISTER
FOR
SUBCONTRACTOR OR VENDOR SUBMITTALS TO FOSTER WHEELER**

SUBMITTAL	SPECIFICATION SECTION	DATE DUE	NO. OF COPIES	CORPS APPROVAL REQUIRED	COMMENTS
Odor Control Technical Information	NA	14 days prior to delivery of first shipment	4		
Laboratory Soil Tests	02200	Within 5 days of when test is completed	4		
Field Density Tests	02200	Daily handwritten report; and typed weekly summary report due 5 working days following end of week	4		
Survey Data Taken During Final Cover Grade Control	NA	Daily handwritten report; and digital data file due 5 working days following end of week	4		
Survey of As-Constructed Final Cover	NA	Map and digital data file due 5 working days following end of survey	4		
Revegetation Seed Mix and Mulch - Materials, Samples, Equipment, Procedures, and Planting Season	02900	Per Schedule provided in Request for Proposal	4	Yes	

SECTION 01500
TEMPORARY FACILITIES AND UTILITIES

1.0 GENERAL

This section discusses the temporary facilities and utilities needed by the Contractor and Subcontractors during the execution of the Work. Water, power, and sanitary facilities, described below, will be made available to Subcontractors.

2.0 FACILITIES AND UTILITIES

2.1 Office

During the performance of this Contract, the Contractor shall use the existing Field Office as the project office for this Work. This office is staffed with a Contractor representative authorized to receive drawings, instructions, or other communication. Any communication given to the said representative or delivered at this office in his/her absence shall be deemed to have been delivered to the Contractor. Copies of the Construction Drawings, Technical Specifications, and other Contract Documents shall be kept at the Contractor's office for use at all times.

Subcontractors shall provide their own office facilities, if needed.

2.2 Water

All water required for and in connection with the Work to be performed shall be provided for by the Base. The Contractor shall be responsible for coordinating acceptable points of connection, backflow prevention, pipe or hose connections, routing, and temporary storage tank locations, if needed, to the satisfaction of Base personnel.

2.3 Power

Electrical power is currently available at the existing field decontamination area, and is available to Subcontractors.

2.4 Sanitary Facilities

The Contractor shall furnish temporary sanitary facilities at the site for the needs of all construction workers and others performing work or furnishing services on the project. Sanitary facilities shall be of reasonable capacity, and properly maintained throughout the construction period. If toilets of the chemically treated type are used, at least one toilet shall be furnished for each 20 men. The Contractor shall enforce the use of such sanitary facilities by all his personnel at the site.

**SECTION 01562
DUST CONTROL**

1.0 GENERAL

The Contractor shall conduct operations and maintain the project site, soil borrow area, and off-street haul roads so as to minimize the creation and dispersion of dust. The Contractor shall use watering equipment for dust control as necessary. Dust control shall be implemented throughout the Work.

2.0 MATERIALS AND EQUIPMENT

The Contractor shall have clean water available at the site, free from salt, oil, and other deleterious material to be used for dust control at any area involved in the Work. The Contractor shall supply water spraying equipment capable of accessing all work areas.

3.0 EXECUTION

The Contractor shall implement strict dust control measures during active construction periods on site. These control measures will generally consist of water applications as necessary that shall be applied during earthwork operations to prevent dust emissions.

END OF SECTION

**SECTION 01563
EROSION AND SEDIMENT CONTROL**

1.0 GENERAL

The Contractor shall design, furnish, install, and maintain all temporary erosion control measures as specified in this section. This section provides the technical requirements for the design of erosion and sediment control systems to limit discharge of turbid or contaminated water into streams and waterways from construction operations in accordance with state and local ordinances.

2.0 MATERIALS

Materials shall conform to the requirements of the State of New Mexico Standard Specifications for Highway and Bridge Construction, Section 603. The Contractor shall design, furnish, install, and maintain all erosion control measures during the course of construction. Hay bales, silt fencing, or mulching shall be utilized by the Contractor, as necessary, to control erosion during construction activities. Hay bales shall be certified noxious weed-free. Noxious weeds are described in Technical Specification 02900 - Revegetation.

3.0 EXECUTION

The Contractor shall make every effort to minimize erosion from earthwork and backfill operations and be responsible for diverting all runoff from rainfall, directing it to natural drainage pathways.

The Contractor shall construct and maintain all necessary dikes, silt fences, hay bales, and/or temporary diversion, surface impoundments, and protection works. He shall furnish all material required and shall furnish, install, maintain, and operate all necessary pumps, piping, and other equipment required to minimize interference with the Work. After having served their purpose, all dikes, ditches, or other diversion systems shall be removed or leveled so as not to interfere in any way with cover system operation and other facilities, and in a manner approved by the Base.

END OF SECTION

SECTION 01720 PROJECT RECORD DOCUMENTS

1.0 GENERAL

This section covers the requirements for maintenance and submittal of Project Record Documents.

1.1 Maintenance of Documents

The Contractor shall maintain at the site one record copy of:

- Construction Schedule and Progress Record
- Technical Specifications, Construction Drawings, and Construction Workplan
- Addenda and Modifications, including Design Change Notifications
- Change Orders and other Modifications to the Contract
- Field Change Requests and Nonconformance Reports
- Manufacturer's Certificates
- Daily work activity summary reports
- Reports on any emergency response actions
- Test records from all site work
- Quality Control Records
- Geotechnical laboratory testing results and sample locations
- Field density testing results and sample locations
- Daily quantity of placed soil
- Daily quantity of imported soil
- Weekly stormwater pollution prevention inspection report
- Items specifically listed in the Submittal Register and all other construction documents, reports, or records

1.2 Record Storage

Project Record Documents shall be stored in the Contractor's Field Office apart from documents used for construction. The Contractor shall provide secure storage for Record Documents.

1.3 Record Maintenance

Project Record Documents are to be maintained in a clean, dry and legible condition and not used for construction purposes.

**SECTION 01725
PROJECT RECORD DRAWINGS**

1.0 GENERAL

This section covers the preparation of final Project Record Drawings as a requirement of this Contract.

2.0 EXECUTION

The Contractor shall revise the Construction Drawings and Technical Specifications to reflect the as-constructed conditions. A preliminary set of revised Construction Drawings and revised Technical Specifications shall be submitted after Final Inspection, and a final set shall be submitted within 60 days after preliminary acceptance as provided for in Section 01300 - Submittals. These marked record prints shall be neat, legible, and accurate.

2.1 Construction Drawings

The Contractor shall continuously mark up one set of full-size Construction Drawings to show the as-constructed conditions. These marked record prints shall be kept current and available on the jobsite at all times. All changes from the Construction Drawings which are made in the Work or additional information which might be uncovered in the course of construction shall be accurately and neatly recorded as they occur by means of details and notes. The prints shall show the following information, but not be limited thereto:

- Utilities, Appurtenances, and Other Features - The measured horizontal and vertical locations and descriptions of any existing utilities, appurtenances, or other features shall be noted and referenced to permanent surface improvements.
- Site Grading - Correct elevations if changes were made in site grading.
- Drainage - The topography, grades, and invert elevations of all drainage features installed or affected as a part of the project construction.
- Changes made by Addenda or Modifications.
- Final Inspection - All changes or modifications which result from the final inspection.

After the construction is complete and all comments and notes are placed on the Record Drawings, the original CAD files shall be revised to include all comments and notes. Final copies of these CAD drawing computer files and two sets of the revised Construction Drawings shall be submitted to the USACE as permanent construction records.

**SECTION 02060
DEMOLITION AND SALVAGE**

1.0 GENERAL

The Work shall include demolition and removal of concrete material and concrete pads, electrical equipment including aerators in Ponds A and B, an electrical transformer between Ponds A and B, buried wire and conduit, and miscellaneous debris including, but not limited to, pond control gates, pipe, and metal brackets. In addition, concrete plugging shall be performed at one pipe inlet end, two splitter boxes, and two sewer manholes. This Work shall be performed within the fenced area of the sewage lagoons, and shall include the salvaging by removal and storage of designated materials as explained below.

2.0 EXECUTION

2.1 Metal Fences

Where metal fence is required to be temporarily removed and later reinstalled, the metal fence mesh shall be removed and temporarily stored in a manner such that it can be retrieved and reused. Fence posts and other fence materials shall be disposed offsite at a licensed solid waste landfill or transported to the Base recycling area, as directed by USACE.

2.2 Concrete Material and Concrete Pads

All concrete material, pads, debris, etc., shall be broken into pieces and buried in place in the sludge layer and covered with the 1 ft minimum thickness clean soil layer. The burial locations are shown on Sheet 4 of the Construction Drawings.

2.3 Electrical Equipment

Electrical equipment including aerators, transformers, and powerlines within the earthwork areas shall be de-energized in accordance with the National Electrical Code and Base requirements by an experienced electrician licensed in the State of New Mexico. Aerators and transformers shall be removed, spray cleaned, and salvaged by placing them within the fenced area of the headworks building. The final disposition of salvaged equipment shall be determined by the Base at no cost to the Contractor.

2.4 Miscellaneous Materials

Miscellaneous debris within the work areas of the project including, but not limited to, pond control gates, PVC and steel pipe, wire, conduit, and metal brackets shall be either left in place and buried within the pond sludge layer and covered with the 1-ft minimum thickness clean soil

SECTION 02100 SITE PREPARATION

1.0 GENERAL

This Section covers the requirements for site preparation. This Work includes utility identification, geomembrane liner removal from the inside berms of Ponds A, B, and C and on-site burial of the removed liner from all ponds, and clearing areas with vegetation.

2.0 EXECUTION

2.1 Utility Identification

The Contractor shall contact Base personnel to field locate all existing utilities within the earthwork areas and take all precautions to protect them during construction. If active utility lines are encountered, necessary steps shall be taken to assure that any service interruption, if required, is kept to a minimum.

2.2 Berm Liner Removal and On-Site Burial

The interior side of the lagoon berms at Ponds A, B, and C are lined with a geomembrane. The geomembrane is anchored at the top of the berm, and reportedly extends into the lagoon base approximately 20 feet. These berm liners shall be removed. The easily removable portion of the liner, anticipated to be the liner exposed on the berm interior slopes, shall be removed with an excavator. Portions of the liner not easily removed shall be left in place and buried within the sludge layer. The removed liner material shall be disposed of by burial in one or more locations within the lagoon area. In addition, the previously removed liner material from Ponds D, E, and F shall also be buried in the same location. The location of the burial area(s) shall be surveyed by an experienced surveyor licensed in the State of New Mexico.

2.3 Clearing

The Contractor shall clear areas where earthwork is to be performed and the soil cover constructed. This applies to both the off-site soil borrow area, and the area where the final cover will be placed. Clearing shall consist of removal and disposal of all trees, logs, brush, stumps, shrubs, rubbish, and objectionable material resting on the surface of the ground. No clearing material or debris shall be used as backfill material.

Brush and small trees that are removed during clearing operations shall be reduced to wood chips using a portable brush chipper machine. The wood chips shall be stockpiled, and shall later be spread on top of the final cover at the conclusion of the field work.

**SECTION 02160
SLUDGE DRYING AND COMPACTION**

1.0 GENERAL

This section covers the lagoon sludge drying, and compaction of the lagoon sludge layers at the bottom of the existing sewage lagoons.

2.0 MATERIALS

Soil used to for addition to lagoon sludge, if required, shall be obtained from soil excavated on site as specified in Section 02200 - Earthwork. Crushed concrete and crushed asphalt shall be used as a bridging material to fill deep holes in the lagoons. These materials shall be obtained from the Base reuse material area.

3.0 EXECUTION

3.1 Bridging for Deep Holes

At the direction of the USACE Project Engineer, deep holes in the lagoons may be bridged by placing crushed concrete and crushed asphalt. In addition, geogrids may be used to provide a stable working base at the deep holes.

3.2 Sludge/Soil Aeration and Drying

Sludge aeration and drying shall consist of physically tilling the sludge until it is sufficiently dry to allow for compaction.

The sludge shall be aerated and dried by physically tilling the sludge using a bulldozer blade or towed farm implements such as plows, disks, or rakes. The Contractor shall aerate the sludge by tilling as often as required such that soil drying is constant and odors are minimized. The sludge shall be tilled at least once per week, or more often to expose moist sludge to rapid drying. The Contractor shall select, and adjust as necessary, the appropriate implement and frequency of tilling depending on sludge moisture content and rate of drying. Sludge aeration and drying shall continue until it has been dried and moist surfaces are no longer exposed after each tilling pass.

3.3 Sludge Compaction

The sludge shall be compacted using a motor-driven tamping-foot compactor such as a BOMAG BW 213-PDB or equivalent operated with a driver. A maximum of 2 passes with the compactor shall be applied to the dried sludge.

SECTION 02200 EARTHWORK

1.0 GENERAL

This section covers the excavation, hauling, placement, grading, compaction, and testing of soil fill material required to install the temporary cover and final cover over the sewage lagoons.

The temporary cover is defined as the first layer of compacted soil placed on top of the compacted sludge. The compacted thickness of the temporary cover shall be six inches minimum.

The final cover is defined as the compacted soil placed on top of the temporary cover to achieve a minimum total compacted soil thickness of 1 ft over the compacted sludge.

Soil fill shall consist of all material excavated from on-site cut areas, and all soil borrow material hauled to the site from the designated Base borrow area.

The Contractor shall supply all materials, equipment, and services required for excavating, loading, hauling, stockpiling, placing, compacting, geotechnical testing, and grading operations.

2.0 MATERIALS

Soil used to construct the temporary cover and the final cover shall be obtained from the cut areas at the site, and from the designated Base borrow area shown on Figure 02200-1.

3.0 EXECUTION

3.1 On-Site Excavation

On-site excavation shall consist of the excavation of all materials within the construction limits required to complete the work.

Prior to beginning excavation operations, all site preparation, and demolition and salvage shall be completed in accordance with Section 02100 - Site Preparation, and Section 02060 - Demolition and Salvage.

Excavation operations shall be conducted so material outside of the lagoon fenced area will not be disturbed.

Each layer of soil fill shall be compacted by approved tamping-foot rollers to at least 85% of the Standard Proctor maximum dry density. At the time of compaction, the moisture content of the soil fill material shall be such that the specified compaction will be obtained.

A compacted soil fill layer shall not be covered by another soil fill layer until the specified compaction has been achieved and verified by geotechnical field testing. A minimum of one field density test shall be performed on every 2,500 square yards (e.g., 150 ft x 150 ft area) of compacted soil fill using the nuclear method for field density measurement (ASTM D 2167). Field nuclear density tests shall be confirmed by performing one field/laboratory sand cone test (ASTM D 1556) for every five field nuclear density tests performed.

The Geotechnical Testing Subcontractor shall maintain a log book and map containing the date, time, lift number, and approximate location coordinates for all soil samples obtained for laboratory tests and for all field tests performed. A sample identification numbering scheme shall be developed and used to assign a unique sample ID for each sample. One copy of the Subcontractor's log book entries and map shall be furnished to the Contractor daily.

Results of field tests and laboratory tests shall be submitted by the Geotechnical Testing Subcontractor according to Section 01300 - Submittals.

3.5 Final Cover Contours

Excavation slopes shall be finished to smooth and uniform surfaces in conformance with the lines and grades shown on the Construction Drawings. No point on the completed soil cover shall vary from the elevations specified on the Construction Drawings by more than plus or minus 3 inches.

END OF SECTION

**SECTION 02900
REVEGETATION**

1.0 GENERAL

This section outlines the requirements for revegetating the installed final cover by applying a seed mixture and mulch. The areas that shall be revegetated by sowing seed and application of mulch shall be that area enclosed by the final cover, and those areas disturbed by construction activities at the sewage lagoons area. No revegetation shall be performed at the Base borrow area nor at the Base material reuse area or haul road to that area.

2.0 MATERIALS AND EQUIPMENT

2.1 Seed

Seed shall be delivered to the site in standard sealed containers. Seed that has become wet, moldy, or is otherwise damaged shall not be used.

Seed shall be from stock compatible with climatic conditions in the Tularosa Basin in southern New Mexico to ensure that it will germinate and grow. Only certified noxious weed-free native seed shall be used. The Vendor shall provide detailed information and a sample of their proposed seed mix and recommendations for seed installation including equipment, procedures, and time of planting to the Contractor. The Vendor submittal will be reviewed by the Contractor and USACE, and must be approved by the Contractor and USACE prior to material delivery and the start of revegetation operations.

The seed mix shall consist of the following:

Common Name	Botanical Name	Pounds Pure Live Seed per Acre
Alkali Sacaton	Sporobolus Airoides	3.0
Four-Wing Saltbush	Atriplex Canescens	2.0
Giant Dropseed	Sporobolus Giganteus	2.0
Sand Dropseed	Sporobolus Cryptandrus	0.5
	Total (pounds per acre) =	7.5

The seeded area should be watered until germination or the start of the monsoon season occurs, i.e., watering may be reduced when the monsoon season arrives. Watering shall continue, as necessary, for germination and continued growth. Areas shall be maintained until a cover of plants is achieved.

3.2 Mulch

Mulch shall be spread uniformly in a continuous blanket, using 2.5 tons per acre of air dry mulch. The mulch shall be spread either by hand or with a mechanical mulch spreader. When spread by hand, the bales of mulch shall be torn apart and fluffed before spreading. Mulching will not be permitted when wind velocity exceeds 15 miles per hour.

The mulch shall be crimped (anchored) into the soil to a minimum depth of 2 inches. Fifteen to twenty minutes prior to crimping, the mulch shall be wetted down and allowed to soften. A heavy disc such as a mulch-tiller, with flat serrated discs at least 0.25 inches thick, having dull edges and the discs spaced 6 to 8 inches apart, shall be used for crimping. The discs shall be of sufficient diameter to prevent the frame of the equipment from dragging the mulch. Crimping operations shall not be parallel to prevailing west/southwesterly winds.

3.3 Herbicide Treatment

If African rue and/or salt cedar invades the area to be restored, herbicide treatment following methods in Parker and Reiser (1997, in prep) will be implemented prior to seeding. If possible, the treatment should be done in the fall, between 30 September and 15 October. If this is not possible, herbiciding must occur between 15 April and 15 May.

4.0 SUBMITTALS

Submittals provided by the Vendor shall conform to the requirements specified in the above portions of this specification, and Section 01300 - Submittals.

5.0 ADDITIONAL INFORMATION

This section contains information that may be helpful in developing a revegetation strategy.

The following southwest noxious weed list (revised on January 6, 1997) is intended to provide additional guidance in revegetation and/or site restoration projects. These weeds have invaded millions of acres of western lands and cost residents in these states hundreds of millions of dollars to control and contain each year. Pursuant to the Federal Noxious Weed Act of 1974, Section 15 of the 1990 Farm Bill (Management of Undesirable Plants on Federal Lands), and Executive Order 11987 (Exotic Organisms), Holloman AFB has responsibilities to control noxious weeds on the

WORKPLAN

APPENDIX D

CONSTRUCTION DRAWINGS



U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
OMAHA, NEBRASKA

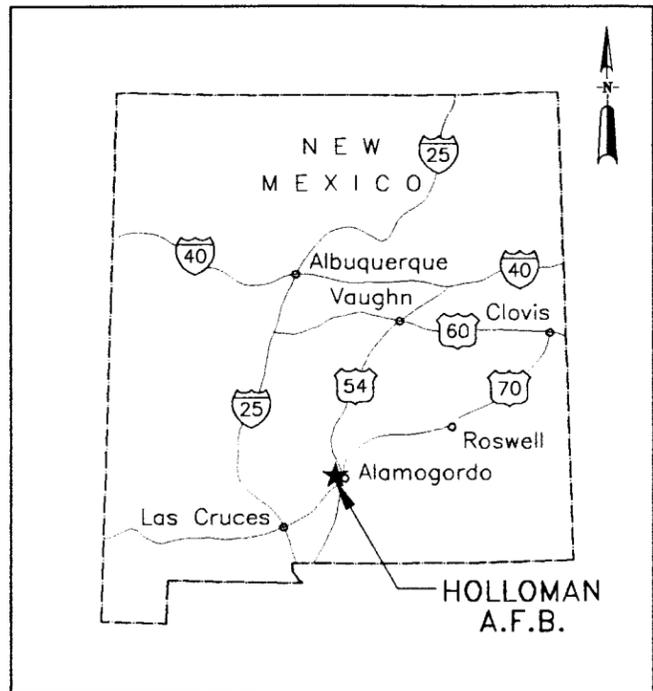
Sewage Lagoons Final Closure Project IRP Site WP-49, Sewage Lagoons Final Design Submittal

Holloman Air Force Base Alamogordo, New Mexico

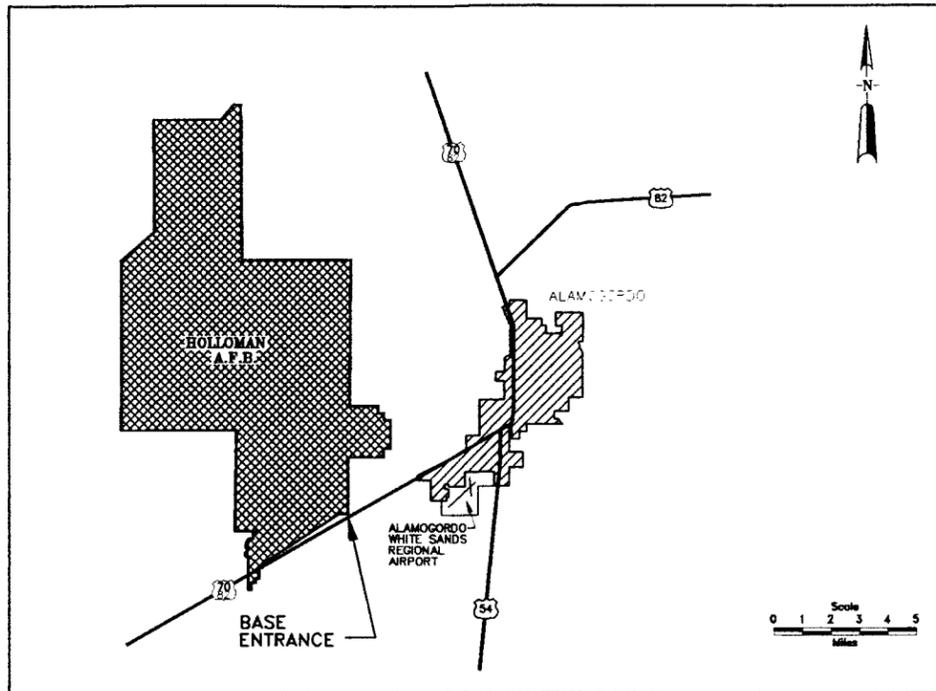
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DELIVERY ORDER NO. 8, WORK AUTHORIZATION DIRECTIVE NO. 23

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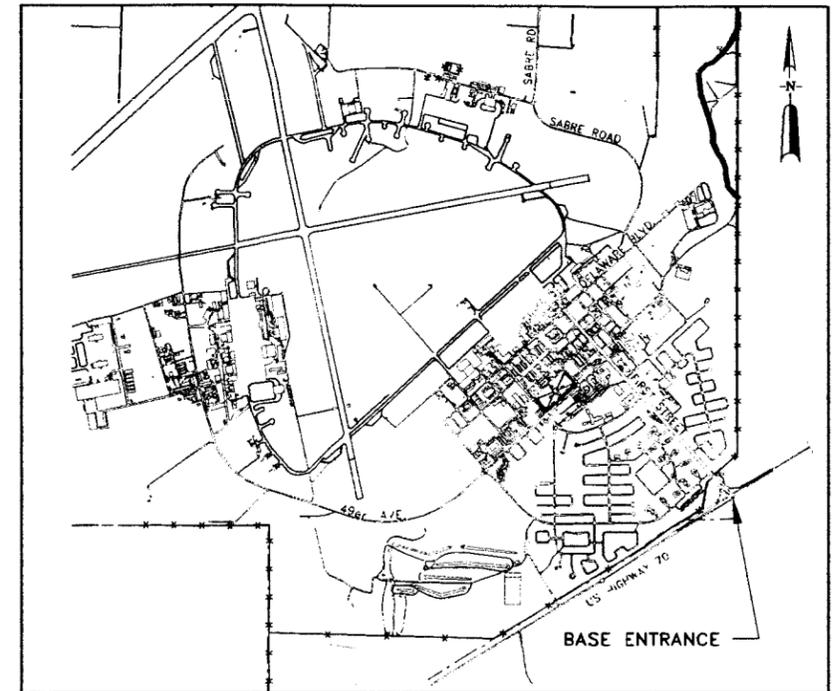
SHEET NUMBER:
1
REVISION:
C



VICINITY MAP



BASE LOCATION PLAN



LOCATION MAP

DRAWING INDEX

SHEET NO.	FILE REF.	REVISION	TITLE
1	5508-2	C	COVER SHEET
2	5508-3	C	VICINITY MAP, LOCATION PLAN, DRAWING INDEX
3	5508-7	C	SITE CONTOUR PLAN
4	5508-1	C	FINAL SOIL COVER CONTOUR PLAN
5	5508-5	C	STORMWATER DRAINAGE MAP
6	5508-6	C	DETAILS
7	5508-8	B	SECTIONS

LEGEND

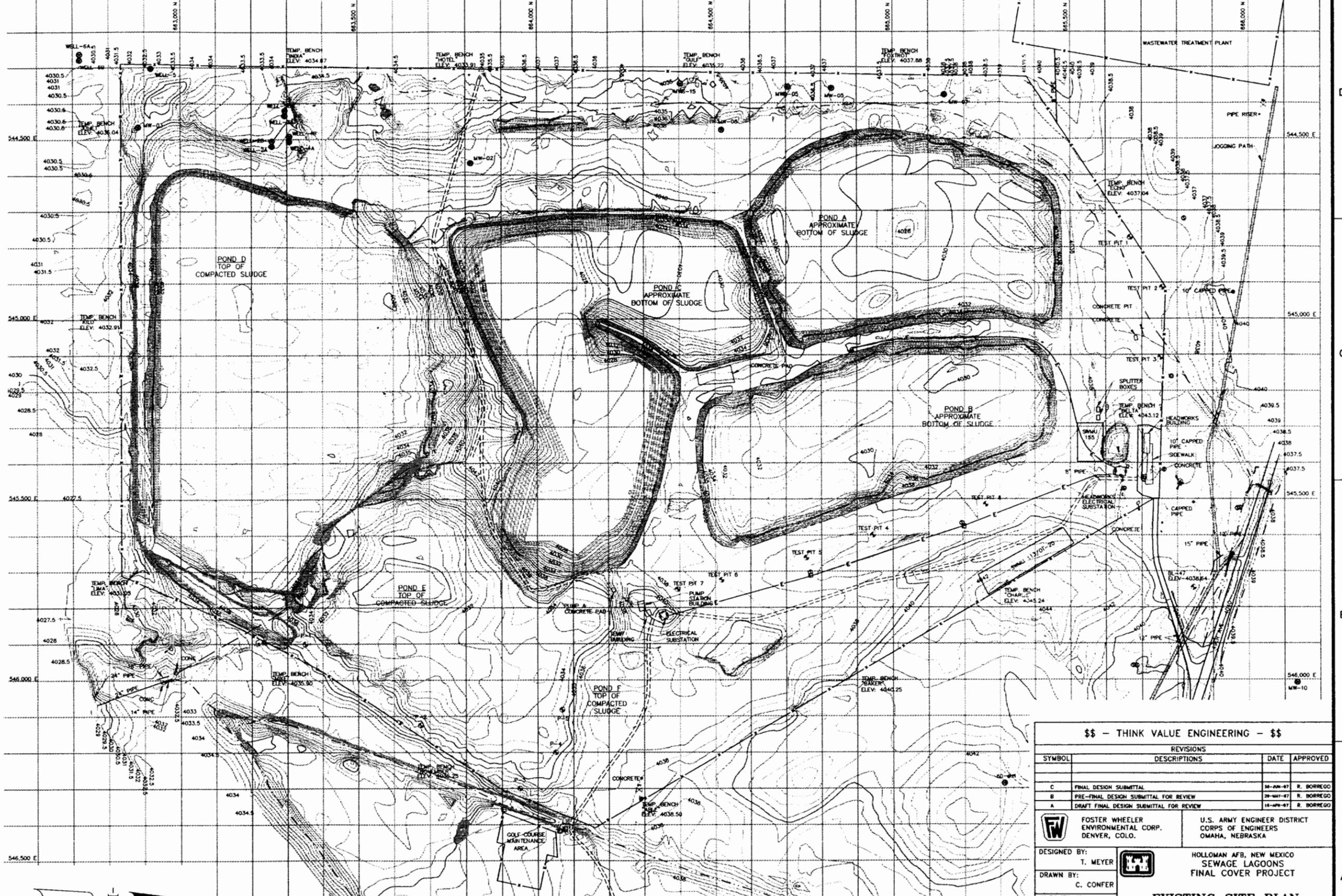


\$\$ - THINK VALUE ENGINEERING - \$\$

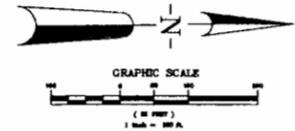
REVISIONS			
SYMBOL	DESCRIPTIONS	DATE	APPROVED
C	FINAL DESIGN SUBMITTAL	30-MAY-97	R. BORREGO
B	PRE-FINAL DESIGN SUBMITTAL FOR REVIEW	29-MAY-97	R. BORREGO
A	DRAFT FINAL DESIGN SUBMITTAL FOR REVIEW	16-APR-97	R. BORREGO

FOSTER WHEELER ENVIRONMENTAL CORP. DENVER, COLO.	U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA		
	DESIGNED BY: D. VANDENBARK	HOLLOWAN AFB, NEW MEXICO SEWAGE LAGOONS FINAL CLOSURE PROJECT	
DRAWN BY: C. CONFER	VICINITY MAP, LOCATION PLAN, DRAWING INDEX		
CHECKED BY: R. BATTALORA			
REVIEWED BY: R. BORREGO	DESIGN FILE: 5508-3.DWG	DATE: 16-APR-97	SHEET NUMBER: 2
SUBMITTED BY: R. VERSAW	CONTRACT NO.: DACW 45-940-0003		REVISION: C

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DATE: 11-17-97
 SCALE: 1" = 40' H.A.
 DRAWN BY: C. CONFER



GENERAL NOTES:
 1. TOPO SHOWN WAS DEVELOPED FROM FIELD DATA COLLECTED BY SOUTHWEST ENGINEERING, INC. IN FEBRUARY, 1997.
 2. SURVEY ELEVATIONS DETERMINED FROM BOAT WITH SURVEY ROD PUSHED TO REFUSAL ON POND BOTTOMS. ELEVATIONS DO NOT REPRESENT TOP OF SLUDGE FOR PONDS A, B, & C.
 3. ALL ITEMS ARE EXISTING UNLESS OTHERWISE NOTED.

LEGEND

△	TEMPORARY BENCHMARK	⊕	PERMANENT BENCHMARK	⊗	WATER VALVE	⋯	JOGGING PATH
⊕	ELECTRIC MANHOLE	⊕	MONITOR WELL	⊗	GAS VALVE	⋯	DIRT ROAD
⊕	SEWER MANHOLE	⊕	POWER POLE	⊗	ELECTRIC BOX/TRANSFORMER PAD	⋯	PAVED ROAD
⊕	ELECTRIC MANHOLE	⊕	TEST PIT	⊗	TOP OF POND	⋯	BASIN LIMITS
				⊗	FLOW LINE	⋯	BURIED ELECTRICAL CABLE
				⊗	TOP OF POND		

\$\$ - THINK VALUE ENGINEERING - \$\$

REVISIONS			
SYMBOL	DESCRIPTIONS	DATE	APPROVED
C	FINAL DESIGN SUBMITTAL	16-JUN-97	R. BORRIGO
B	PRE-FINAL DESIGN SUBMITTAL FOR REVIEW	28-MAY-97	R. BORRIGO
A	DRAFT FINAL DESIGN SUBMITTAL FOR REVIEW	16-APR-97	R. BORRIGO

FOSTER WHEELER ENVIRONMENTAL CORP. DENVER, COLO.	U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA
DESIGNED BY: T. MEYER	HOLLOWMAN AFB, NEW MEXICO SEWAGE LAGOONS FINAL COVER PROJECT
DRAWN BY: C. CONFER	EXISTING SITE PLAN
CHECKED BY: R. BATTALORA	REVIEWED BY: R. BORRIGO
SUBMITTED BY: R. VERSAW	DESIGN FILE: 5508-7.DWG DATE: 16-APR-97 SHEET NUMBER: 3 CONTRACT NO.: DACW 45-94D-0003 REVISION: C

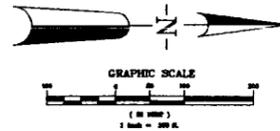
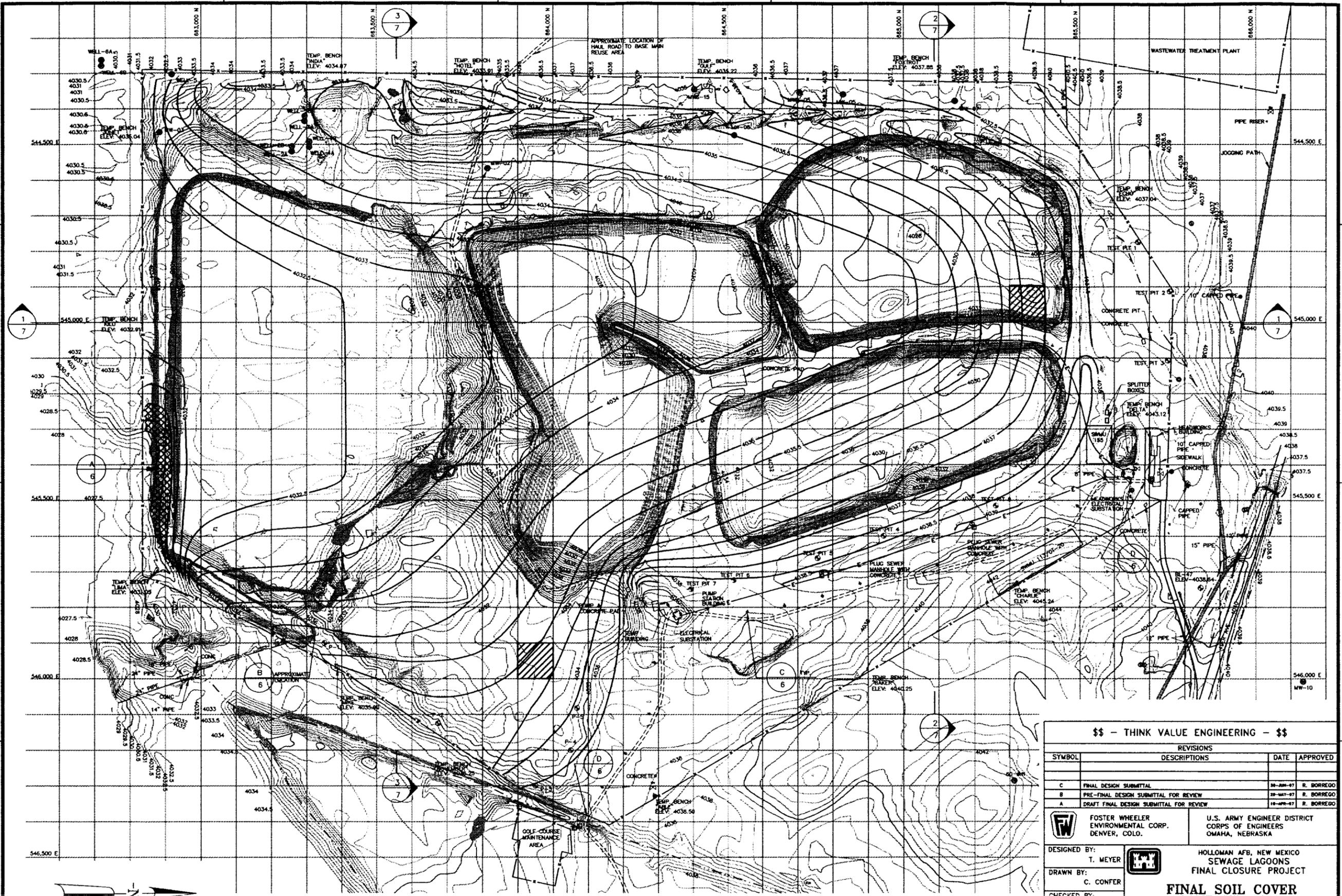
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GENERAL NOTES:
 1. TOPO SHOWN WAS DEVELOPED FROM FIELD DATA COLLECTED BY SOUTHWEST ENGINEERING, INC. IN FEBRUARY, 1997.
 2. ALL ITEMS ARE EXISTING UNLESS OTHERWISE NOTED.
 3. ALL BURIED UTILITIES NOT LOCATED OR SHOWN.
 4. SOIL COVER COMPACTED THICKNESS 1 FT. MIN.
 5. PERIMETER FENCE TO REMAIN UNDISTURBED THROUGH CONSTRUCTION.
 6. CLEARING FENCE TO BE PROVIDED AS NEEDED WEST OF PONDS A, C, AND D; AND SOUTH OF POND D.

LEGEND

▲ TEMPORARY BENCHMARK	● PERMANENT BENCHMARK	⊕ WATER VALVE	⋯ 4038 0.5 FOOT CONTOUR	⋯ JOGGING PATH
⊠ ELECTRIC MANHOLE	⊙ MONITOR WELL	⊕ GAS VALVE	⋯ 4040 5 FOOT CONTOUR	⋯ DIRT ROAD
⊙ SEWER MANHOLE	⊙ POWER POLE	⊠ ELECTRIC BOX/TRANSFORMER PAD	⋯ FENCE	⋯ PAVED ROAD
⊙ ELECTRIC MANHOLE	⊙ TEST PIT	⊠ BURIAL AREA FOR REMOVED LINES AND DEBRIS	⋯ FLOOR LINE	⋯ BASIN LIMITS
⊠ ROCK REVEALMENT TO BE INSTALLED			⋯ TOP OF POND	⋯ BURIED ELECTRICAL CABLE

\$\$ - THINK VALUE ENGINEERING - \$\$

REVISIONS			
SYMBOL	DESCRIPTIONS	DATE	APPROVED
C	FINAL DESIGN SUBMITTAL	16-APR-97	R. BORREGO
B	PRE-FINAL DESIGN SUBMITTAL FOR REVIEW	29-MAY-97	R. BORREGO
A	DRAFT FINAL DESIGN SUBMITTAL FOR REVIEW	16-APR-97	R. BORREGO

FW FOSTER WHEELER ENVIRONMENTAL CORP. DENVER, COLO. U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA

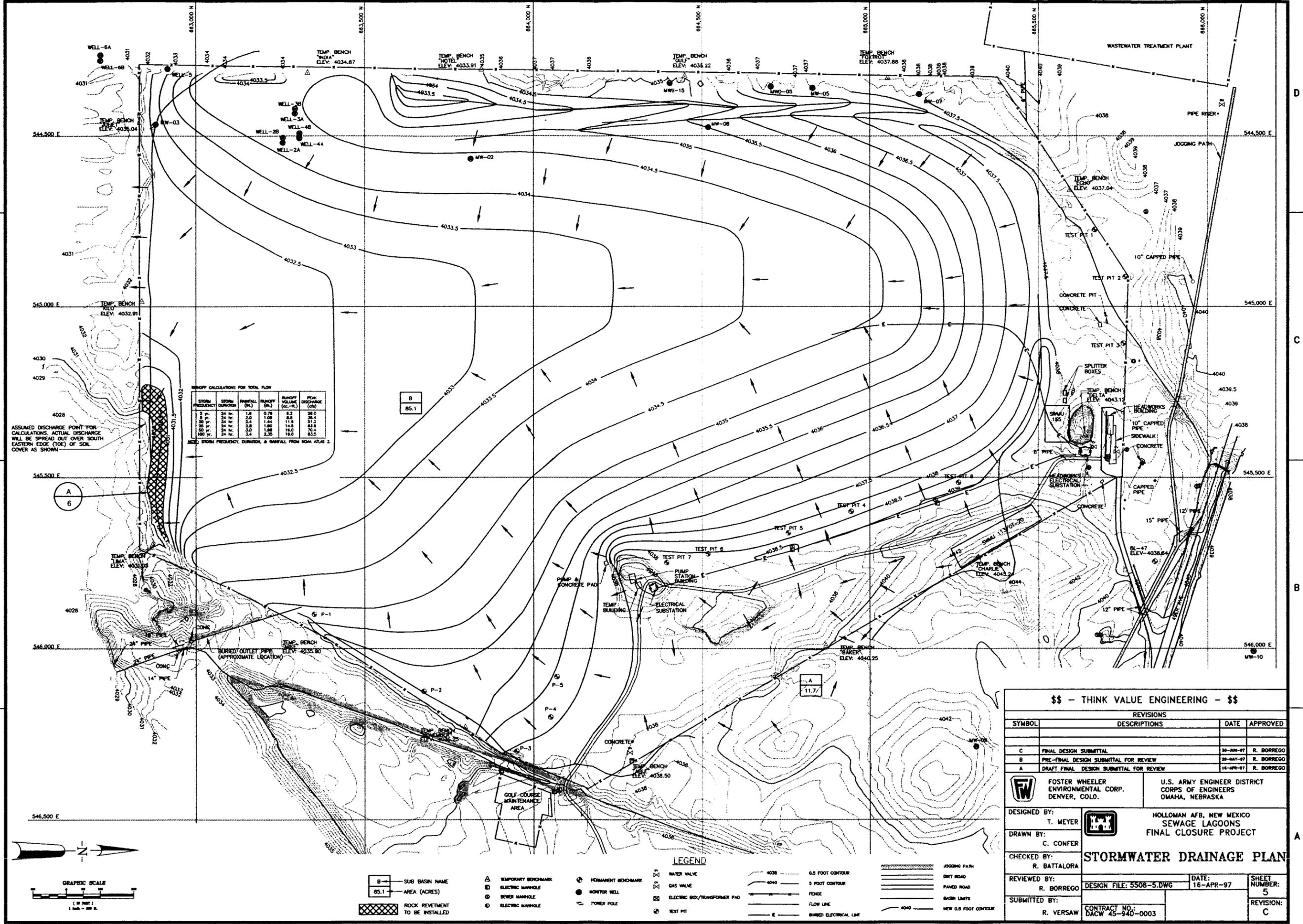
DESIGNED BY: T. MEYER
 DRAWN BY: C. CONFER
 CHECKED BY: R. BATTALORA
 REVIEWED BY: R. BORREGO
 SUBMITTED BY: R. VERSAW

HOLLOMAN AFB, NEW MEXICO
 SEWAGE LAGOONS
 FINAL CLOSURE PROJECT

FINAL SOIL COVER CONTOUR PLAN

DESIGN FILE: 5508-T.DWG DATE: 16-APR-97 SHEET NUMBER: 4 REVISION: C
 CONTRACT NO.: DACW 45-940-0003

HOLLOWMAN AFB, NEW MEXICO
 SEWAGE LAGOONS
 FINAL CLOSURE PROJECT
 SHEET 4 OF 4
 DATE: 16-APR-97
 SCALE: 1" = 200'

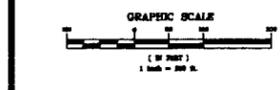


RUNOFF CALCULATIONS FOR TOTAL FLOW

STORM FREQUENCY	STORM DURATION	RAINFALL (IN.)	RUNOFF (IN.)	RUNOFF VOLUME (cu.-ft.)	PEAK DISCHARGE (cfs)
1 yr.	24 hr.	1.8	0.78	6.2	28.0
2 yr.	24 hr.	2.2	1.00	8.6	36.4
5 yr.	24 hr.	2.4	1.04	11.6	51.2
10 yr.	24 hr.	2.5	1.08	14.6	61.8
20 yr.	24 hr.	2.6	1.12	18.0	76.4
50 yr.	24 hr.	2.7	1.16	21.9	93.5

NOTE: STORM FREQUENCY, DURATION, & RAINFALL FROM NOAA ATLAS 2.

ASSUMED DISCHARGE POINT FOR CALCULATIONS. ACTUAL DISCHARGE WILL BE SPREAD OUT OVER SOUTH EASTERN EDGE (TOE) OF SOIL COVER AS SHOWN.



B --- SUB BASIN NAME
 85.1 --- AREA (ACRES)
 [Cross-hatched] --- ROCK REINFORCEMENT TO BE INSTALLED

△ TEMPORARY BENCHMARK
 ⊕ ELECTRIC MANHOLE
 ⊙ SEWER MANHOLE
 ⊙ ELECTRIC MANHOLE
 ⊕ PERMANENT BENCHMARK
 ● MONITOR WELL
 ⊕ POWER POLE

LEGEND

⊕ WATER VALVE
 ⊕ GAS VALVE
 ⊕ ELECTRIC BOX/TRANSFORMER PAD
 ⊕ TEST PIT
 --- 4038 --- 0.5 FOOT CONTOUR
 --- 4040 --- 5 FOOT CONTOUR
 --- FENCE
 --- FLOW LINE
 --- BURIED ELECTRICAL LINE
 --- JOGGING PATH
 --- DIRT ROAD
 --- PAVED ROAD
 --- BASIN LIMITS
 --- NEW 0.5 FOOT CONTOUR

\$\$ - THINK VALUE ENGINEERING - \$\$

REVISIONS			
SYMBOL	DESCRIPTIONS	DATE	APPROVED
C	FINAL DESIGN SUBMITTAL	28-JUN-97	R. BORRERO
B	PRE-FINAL DESIGN SUBMITTAL FOR REVIEW	28-MAY-97	R. BORRERO
A	DRAFT FINAL DESIGN SUBMITTAL FOR REVIEW	18-APR-97	R. BORRERO

FW FOSTER WHEELER ENVIRONMENTAL CORP. DENVER, COLO.

 U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA

DESIGNED BY: T. MEYER
 DRAWN BY: C. CONFER
 CHECKED BY: R. BATTALORA
 REVIEWED BY: R. BORRERO
 SUBMITTED BY: R. VERSAW

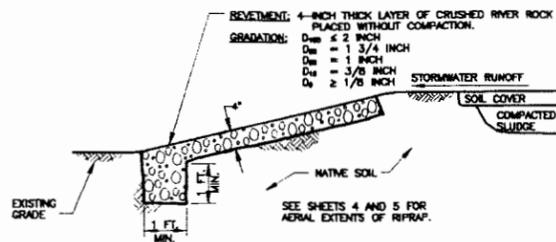
HOLLOWMAN AFB, NEW MEXICO SEWAGE LAGOONS FINAL CLOSURE PROJECT

STORMWATER DRAINAGE PLAN

DESIGN FILE: 5508-5.DWG
 DATE: 16-APR-97
 SHEET NUMBER: 5
 REVISION: C

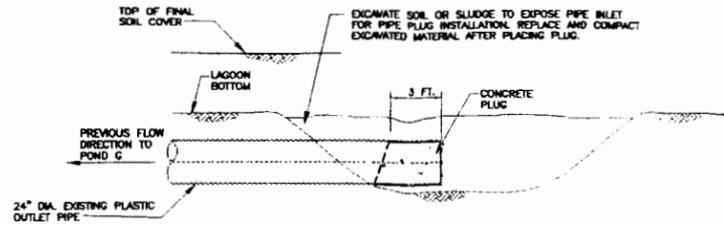
CONTRACT NO. DACW 43-940-0003

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 SHEET 01 OF 01 - R.C. CONFER APR97 11:34:40



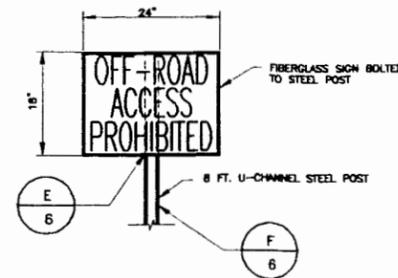
REVIEMENT DETAIL

DETAIL A
NOT-TO-SCALE 4, 5



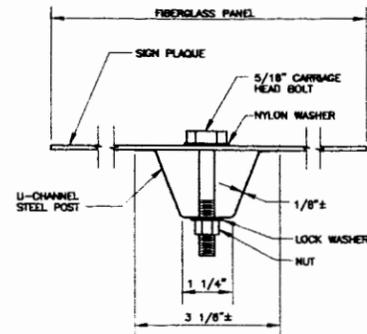
POND E OUTLET PIPING TO POND G PLUGGING DETAIL

DETAIL B
NOT-TO-SCALE 4



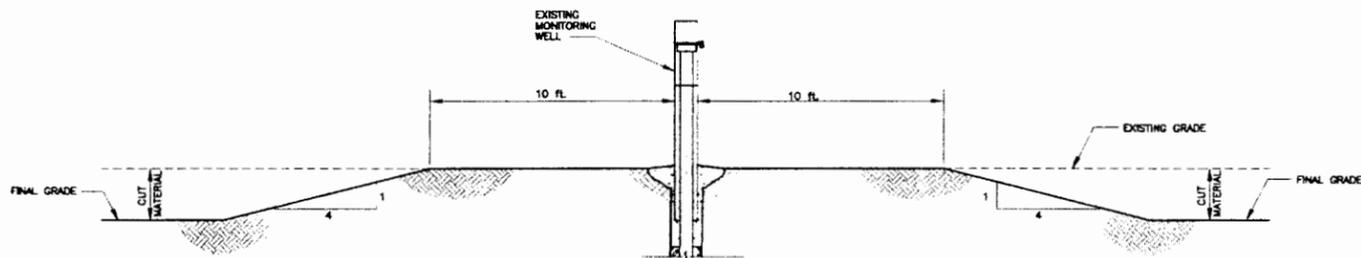
ACCESS ROAD SIGN PANEL DETAILS

DETAIL C
NOT-TO-SCALE 4



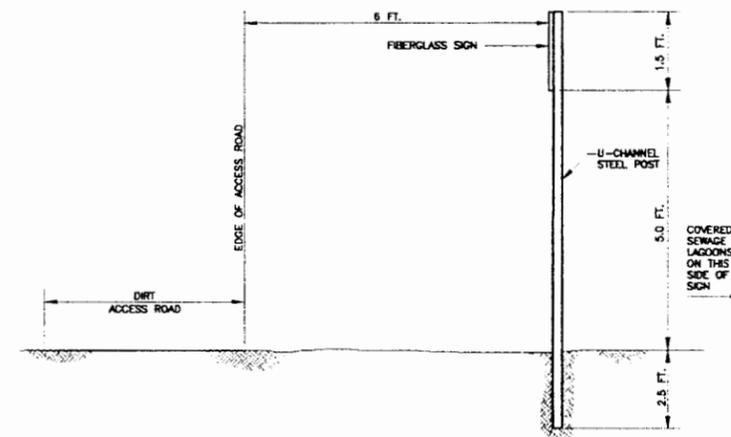
SIGN ATTACHMENT DETAIL

DETAIL E
NOT-TO-SCALE 6



GROUND SURFACE MODIFICATION AT EXISTING MONITORING WELLS

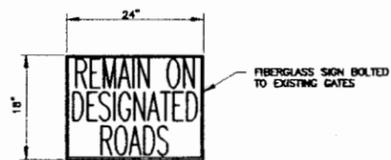
DETAIL G
NOT-TO-SCALE 4



SIGN PLACEMENT

- NOTES:
1. THE CONTRACTOR SHALL ESTABLISH LOCATIONS FOR ALL SIGN POSTS. SIGN POSTS SHALL BE SPREAD AT 100 FT. INTERVALS ALONG THE ACCESS ROAD THAT SPANS THE EAST GATE ENTRANCE AND THE MEADOWS AREA.
 2. SPECIAL CARE SHALL BE TAKEN TO ENSURE AN UNOBSTRUCTED VIEW OF EACH SIGN FROM THE DIRT ACCESS ROAD.
 3. MINIMUM POST EMBEDMENT SHALL BE 2.5 FT. FOR 6 FT. U-CHANNEL POSTS.
 4. MINIMUM 5 FT. CLEARANCE SHALL BE MAINTAINED FROM BOTTOM OF SIGN PANEL TO GROUND SURFACE.

DETAIL F
NOT-TO-SCALE 4



GATE SIGN PANEL DETAILS

DETAIL D
NOT-TO-SCALE 4

\$\$ - THINK VALUE ENGINEERING - \$\$

REVISIONS			
SYMBOL	DESCRIPTIONS	DATE	APPROVED
C	FINAL DESIGN SUBMITTAL	28-APR-97	R. BORREGO
B	PRE-FINAL DESIGN SUBMITTAL FOR REVIEW	28-APR-97	R. BORREGO
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FW FOSTER WHEELER ENVIRONMENTAL CORP. DENVER, COLO.	U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS OMAHA, NEBRASKA		
DESIGNED BY: D. VANDENBARK	HOLLOMAN AFB, NEW MEXICO SEWAGE LAGOONS FINAL CLOSURE PROJECT		
DRAWN BY: C. CONFER			
CHECKED BY: R. BATTALORA	DETAILS		
REVIEWED BY: R. BORREGO	DESIGN FILE: 5508-6.DWG	DATE: 16-APR-97	SHEET NUMBER: 6
SUBMITTED BY: R. VERSAW	CONTRACT NO.: DACW 45-940-0003		REVISION: C

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DATE TIME: 11-17 9:15
DRAWN BY: C. CONFER
CHECKED BY: R. BATTALORA

**WORKPLAN
APPENDIX E**

SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN

**SPILL PREVENTION CONTROL AND
COUNTERMEASURES PLAN
FOR
SEWAGE LAGOONS FINAL COVER PROJECT
HOLLOMAN AIR FORCE BASE, NEW MEXICO**

Prepared for:

49 CES/CEV
Holloman Air Force Base, NM

and

HQ ACC CES/ESV
Langley Air Force Base, VA

Prepared by:

Foster Wheeler Environmental Corporation
143 Union Blvd., Suite 1010
Lakewood, Colorado 80228-1824

Under Contract No. DACW-45-94-D-003

Delivery Order 8, Work Authorization Directive 23

U.S. Army Corps of Engineers
Omaha District
Omaha, Nebraska

June 1997

TABLE OF CONTENTS

LIST OF FIGURES ii

1.0 INTRODUCTION 1

2.0 FACILITY INFORMATION 2

3.0 EMERGENCY CONTACT NUMBERS 3

4.0 SPILL HISTORY..... 6

5.0 POTENTIAL FACILITY DISCHARGES AND
SPILL PREVENTION MEASURES 6

 5.1 POTENTIAL FACILITY DISCHARGES 6

 5.2 SPILL PREVENTION MEASURES 6

6.0 CONTAINMENT, DIVERSIONARY STRUCTURES, AND EQUIPMENT 9

7.0 DEMONSTRATION OF IMPRACTICABILITY 10

8.0 CONFORMANCE WITH GUIDELINES..... 10

 8.1 FACILITY DRAINAGE 11

 8.2 BULK STORAGE TANKS 12

 8.3 FACILITY TANK CAR AND TANK TRUCK
LOADING/UNLOADING 12

 8.4 SECURITY 12

 8.5 PERSONNEL TRAINING AND SPILL PREVENTION
PROCEDURES 13

9.0 SPCCP AMENDMENTS 13

10.0 RELATIONSHIP TO OTHER REGULATORY REQUIREMENTS 13

11.0 CERTIFICATION AND MANAGEMENT APPROVAL..... 14

 11.1 PROFESSIONAL ENGINEER CERTIFICATION..... 14

 11.2 MANAGEMENT APPROVAL..... 14

LIST OF FIGURES

Figure 2-1 Fuel Tank Location4

1.0 INTRODUCTION

The Spill Prevention Control and Countermeasures Plan (SPCCP) was prepared in accordance with U.S. Environmental Protection Agency (EPA) Oil Pollution Prevention Regulations (40 Code of Federal Regulations [CFR] Part 112) to address the potential for spills from a 2,000-gallon diesel fuel storage tank and several 55-gallon oil and antifreeze storage drums located at the Holloman Air Force Base (AFB) Sewage Lagoons Project site. Because the diesel quantity stored at this location exceeds the 660-gallon capacity threshold for an individual container (as specified in 40 CFR 112.1(d)(2)(ii)), an SPCCP is required. The final cover project activities will require the use of heavy earth-moving and material-handling equipment such as excavators, bulldozers, graders/spreaders, dump trucks, front-end loaders, and compactors. Efficient operation of this equipment requires the use of a portable tank to store diesel fuel.

The fuel storage, fueling, and equipment maintenance of construction equipment have been identified as activities having the greatest potential for spills and releases. To minimize the potential for spills and releases, the Holloman AFB SPCCP will be implemented in conjunction with the Sewage Lagoons Workplan and the Base Draft Final Health and Safety Plan. The SPCCP addresses the potential for spills and releases from the temporary diesel storage tank and equipment fueling and maintenance areas. The SPCCP emphasizes spill prevention through the use of best management practices (BMPs) consisting of the following:

- Good housekeeping and on-site management practices, and implementation of preventative maintenance procedures
- Use of secondary containment and liners for selected areas such as fuel storage and decontamination water tank storage areas
- Inspections
- Training

The SPCCP is written to ensure compliance with existing laws and regulations pertaining to safety standards, fire prevention, and pollution prevention rules and to provide an explicit, comprehensive, balanced Spill Prevention Plan. The Site Manager has full approval of Base and Foster Wheeler Environmental Corporation (FWENC) management and has the authority to commit the resources necessary to implement the SPCCP. The SPCCP describes the actions FWENC personnel will take

The facility location, address, contact, and telephone number are identified below.

<u>Facility Name:</u>	Holloman Air Force Base
<u>Address:</u>	49 CES/CD 550 Tabosa Avenue
<u>City/State/Zip:</u>	Holloman AFB, NM 88330-8458
<u>Phone:</u>	(505) 475-5395
<u>Contact:</u>	Warren Neff

3.0 EMERGENCY CONTACT NUMBERS

There are numerous federal, state, and local regulatory requirements that govern spill/release reporting and response activities. Depending upon the circumstances, reporting may be deemed necessary under federal (Clean Water Act [CWA], CERCLA, Superfund Amendments and Authorization Acts [SARA] Title III, RCRA, Toxic Substances Control Act [TSCA]), state, and/or local spill reporting programs. Some programs specify minimum quantities, while others do not; some programs apply to virtually any spill while others are very specific. If hazardous materials are spilled or emitted into the air, both federal and related state and local laws must be followed to protect the environment.

New Mexico law requires that any discharge of oil, antifreeze, or other water contaminant whose quantity may, with reasonable probability, injure or be detrimental to human health, animal, or plant life or property or may unreasonably interfere with the public welfare or the use of the property be reported as soon as possible after learning of such a discharge and no more than 24 hours after the event.

In the event of a spill or release of diesel fuel, the following priorities must be established:

- Protect people from injury by isolating the affected area to prevent unnecessary exposure and contamination of personnel, and, if necessary, evacuate personnel from the area of the release.
- Prevent contamination of soil, water, and air by using sorbent pads/material and containment, as practical.
- Protect property from damage.
- Report the release to appropriate authorities.

The required response for a release will depend on several factors, i.e., the source, type, and quantity of materials released and into what media the material is released (air, soil, or water). As aforementioned, New Mexico law requires the reporting of any unplanned or threatened discharge of hazardous substances or oil unless there is a reasonable belief that no significant present or future threat is posed to human health and safety or to the environment or if the release quantity falls below a specified threshold quantity. Reporting requirements for spills or releases of diesel fuel at the sewage lagoons site will be determined on a case-by-case basis. If a release is to be reported, the following actions will be taken:

1. Call Base Fire Department personnel at Ext. 7228 (immediately if fire emergency exists).
2. Call Warren Neff at (505) 475-5395 or Rick McFarlane at (505) 479-0456.
3. Call FWENC Delivery Order Manager—Ron Versaw (303) 980-3598.
4. Call FWENC Safety and Health Manager—Andrew Strickland (303) 980-3610.
5. Report significant releases to appropriate agencies (if required under FWENC Spill/Release Reporting Procedure RC-6).

In the event of a spill or release, FWENC field personnel will immediately notify Holloman AFB with a follow-up written report submitted within 24 hours. Depending on the type of spill or release encountered (i.e., contaminant, quantity, and location), FWENC will make the proper notifications as indicated in the Holloman AFB Sewage Lagoons Final Cover Workplan Section 5.4 and Appendix B.

If FWENC is required to notify an agency, the notification and subsequent reporting will be made to the following agencies:

- Manual control of all oil/diesel/antifreeze transfer operations. The personnel performing the transfer will remain in the area during the transfer to monitor the operation and check for any pipe, valve, or pump leaks and overflows.
- Grounding and bonding for transfer of liquids.
- Regular inspection of tanks and storage drums for leaks, structural damage, corrosion, etc. Inspections must be documented in the field log book.
- Confinement of piping to an area in which vehicular travel is not allowed. Pipes will be equipped with valves at the tanks, pumps, and unloading/loading stations.
- Placement of pumps, valves, and most oil discharge tank piping within the confines of the lined-bermed protected area.

Loading/Unloading Operations

Diesel Fuel Tank. Filling of the diesel tank will commence by having the vendor tanker truck park parallel to the diesel tank secondary containment. In the presence of a FWENC representative, the driver of the tanker will connect a fill hose from the tanker to the diesel tank top-mounted opening. All hose connections and tanker valving will be inspected by the FWENC representative prior to unloading of product. The clearance between the hose and the sides of the tank opening will also be inspected to ensure that sufficient space is available for air flow into the tank when the vacuum is pulled. This prevents the interior of the tank from being placed under a vacuum that might result in a failure of the tank.

Prior to disconnecting any hoses or moving the tanker, the FWENC representative will inspect the tanker valves to ensure that there are no leaks.

Oil/Antifreeze Drums. New motor oil and hydraulic oil and antifreeze are stored in closed 55-gallon drums, which are stored on wooden pallets within the secondary containment area. Material data safety sheets for each type of oil and antifreeze are maintained at the FWENC construction office. Drums are placed into and removed from delivery trucks and into the secondary containment area by hand, fork-lift, or clamp truck. Drums will be visually inspected by FWENC representative for leaks and damage prior to unloading.

6.0 CONTAINMENT, DIVERSIONARY STRUCTURES, AND EQUIPMENT

This plan relies on secondary containment to prevent the release of diesel fuel and oil to federal or state waters. Provided that these controls are properly operated and maintained, the potential for release is considered very low.

The primary containment for the 2,000 gallons of diesel fuel is a carbon steel tank. The motor oil, hydraulic oil, and antifreeze is contained in steel drums (3 drums, 55 gallons each). The tank is reported to be 10 years old. The 55-gallon drums are new. The tank is supported above a 40-mil HDPE-lined-bermed area by a steel frame designed to adequately support the tank when full. The tank is accessed through a top opening surrounded by a sheet metal spill guard. The top-mounted access port is padlocked when not in use. The diesel tank is an atmospheric tank in which the pressure within the tank is balanced to equal to the ambient pressure outside of the tank via atmospheric vent. The diesel tank will be equipped with a gravity discharge fueling line. The discharge hoses are connected directly to the pump and discharge is controlled via manual nozzle. The tank is equipped with a drain valve, which is not used for unloading and is blinded off with a threaded steel plug. There is no aboveground or buried piping connected to the tank. Transfer of product shall be monitored by FWENC personnel at all times to prevent overfilling of fuel tanks.

A hand pump will be used to pump oil and antifreeze from the 55-gallon drums. Drip pans are used during the transfer of petroleum products to mitigate the potential for drips and spills to leach into the ground. In lieu of drip pans, sorbent pads/materials, plastic sheeting, or other suitable means are an acceptable alternative. Transfer of product shall be monitored by FWENC personnel at all times to prevent overfilling tanks.

A warning sign with the following legend will be posted at the diesel tank:

FLAMMABLE
NO SMOKING OR OPEN FLAME WITHIN 50 FEET

The secondary containment provided for the diesel tank and drums is in excess of 2,000 gallons and provides for containment of not only the fuel but for precipitation. The containment consists of a bermed area lined with a 40-mil HDPE liner. The secondary containment area is slightly sloped to

storage tanks, facility tank car and tank truck loading and unloading, security, and personnel training.

8.1 FACILITY DRAINAGE

The current surface water drainage pattern at the site is to two unlined drainage ditches located to the east and north. As construction progresses and the final cover is completed, drainage will be redirected to the south (see topographic maps in the workplan, Appendix D).

Drainage from the diesel fuel, antifreeze, and oil storage area is restrained by a secondary containment structure to prevent a spill or leakage of material from this area. Stormwater accumulation in the containment area will be emptied using mechanical means, and the condition of the stormwater will be examined prior to emptying to ensure that no diesel fuel, antifreeze, or oil is discharged along with the stormwater. In the event of any product release to the secondary containment area, sorbent pads/material will be used to remove de minimis quantities. Any greater quantities will be manually pumped into steel drums. Because of the relatively flat topography of the area around the secondary containment area, no further engineering controls are deemed necessary, for, in the unlikely event of a release from the secondary containment unit, any release will basically remain in place where the spill occurs. However, if necessary, earth-moving equipment used during sewage lagoons work will be brought to the storage area if there is a major release from the secondary containment and will be used to dike the area ahead of the spill for containment for later recovery or disposal of the release and/or contaminated soil.

Draining rainwater from the diked area to the ground is acceptable if:

- Inspection of the runoff rainwater ensures that the discharge will not cause a film or sheen on or discoloration of the surface of the water or cause a sludge or emulsion to be deposited beneath the surface of the water.
- The results of the inspection are documented in the daily operating log or equivalent.
- Records of the discharge are noted in the daily operating log or equivalent. Discharge records shall consist of, at a minimum:

8.5 PERSONNEL TRAINING AND SPILL PREVENTION PROCEDURES

Site personnel are trained to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency communication systems. Personnel who handle, sample, or contact hazardous materials undergo basic on-the-job training, including 40-hour Occupational Safety and Health Administration (OSHA) training (with 8-hour refresher training, as needed) and supervisor training, DOT training, and CPR/first aid training. The training will always stress pollution control and waste minimization. Spill prevention control procedures are further explained during these sessions. In addition, procedures for loading/unloading diesel fuel and new product containing drums are also reviewed by FWENC personnel.

9.0 SPCCP AMENDMENTS

The SPCCP shall be amended when one of the following occurs:

- The facility changes in its design, construction, operation, maintenance, or other circumstances in such a way that increases the potential for an oil or antifreeze spill.
- The plan fails in an emergency.
- The list of site and local emergency numbers changes.
- The list of emergency equipment substantially changes.

At a minimum, at least once every 3 years there will be a review, an evaluation, and a recertification of the plan by a Registered Professional Engineer (PE).

The current SPCCP was drafted and signed into effect as of July 2, 1997.

10.0 RELATIONSHIP TO OTHER REGULATORY REQUIREMENTS

This SPCCP is designed only to meet the requirements of 40 CFR 112. It is not intended that this plan address all other potential regulatory requirements. The SPCCP, in conjunction with the Holloman AFB Sewage Lagoons Final Cover Workplan and Draft Final Health and Safety Plan, addresses the applicable regulatory requirements regarding spills/releases of chemicals for this site. All spills shall be documented in the Stormwater Pollution Prevention Plan as attachments.

**WORKPLAN
APPENDIX F**

STORMWATER POLLUTION PREVENTION PLAN

**STORMWATER POLLUTION PREVENTION PLAN
FOR
SEWAGE LAGOONS FINAL CLOSURE PROJECT
HOLLOMAN AIR FORCE BASE, NEW MEXICO**

Prepared for:

49 CES/CEV
Holloman Air Force Base, NM

and

HQ ACC CES/ESV
Langley Air Force Base, VA

Prepared by:

Foster Wheeler Environmental Corporation
143 Union Blvd., Suite 1010
Lakewood, Colorado 80228-1824

Under Contract No. DACW-45-94-D-003

Delivery Order 8, Work Authorization Directive 23

U.S. Army Corps of Engineers
Omaha District
Omaha, Nebraska

June 1997

TABLE OF CONTENTS

1.0 INTRODUCTION.....1

 1.1 SITE DESCRIPTION1

 1.2 PURPOSE.....1

 1.3 EXISTING CONDITION1

 1.4 FUTURE SITE USE.....1

 1.5 STUDIES PERFORMED2

2.0 BASIS OF DESIGN.....2

3.0 BASIN CHARACTERISTICS.....2

 3.1 HISTORICAL CONDITIONS2

 3.2 CONSTRUCTION CONDITIONS3

 3.2.1 Potential Pollution Sources.....3

 3.2.2 Construction Process.....4

 3.3 LONG-TERM CONDITIONS.....6

4.0 REQUIRED MAINTENANCE/INSPECTION6

 4.1 MAINTENANCE/INSPECTION DURING CONSTRUCTION6

 4.2 LONG-TERM MAINTENANCE/INSPECTION6

1.0 INTRODUCTION

1.1 SITE DESCRIPTION

The Holloman Air Force Base (AFB) Sewage Lagoons Final Closure Project will close six existing sewage lagoons abandoned by the construction of a new wastewater treatment plant by draining the lagoons, compacting the sludge, and constructing a uniformly graded soil cover. The soil cover will serve to isolate and protect the compacted sewage sludge from surface exposure, wind erosion, or stormwater erosion. The project site discussed in this stormwater pollution prevention plan consists of approximately 100 acres. Detailed construction drawings including drainage patterns, ground slopes of the final cover, outline of area to be disturbed, existing surface water pathways, and storm water discharge locations are presented in Appendix D of this workplan.

1.2 PURPOSE

The purpose of this plan is to provide a description of the existing stormwater drainage conditions, soil cover basis of design, stormwater management and erosion control objectives, and the required maintenance and inspection procedures to be used during and after construction.

1.3 EXISTING CONDITION

A base-wide drainage master plan exists for Holloman AFB, but significant changes, including facility construction with large areas of pavement, have been made to the drainage area tributary to this site. The most significant change is the construction of the Stealth Bed Down Area north of the sewage lagoons. The construction of the Stealth Bed down facility significantly reduced the volume of storm water run-on by re-routing the flow to a basin north of the lagoon site. No other stormwater reports or stormwater runoff data are known to exist for this site. No data are available concerning the current conditions of stormwater flow entering or draining from the site, other than field observations of surface erosion.

1.4 FUTURE SITE USE

The soil cover design and the stormwater management plan was developed with the understanding that the site will be managed as fenced and restricted access open range land, and

connected with the direction of flow from Ponds A and B (normally operated in parallel) through Ponds C, D, and E (in series). Pond F was used to collect and pump water back to Pond A for additional treatment. Stormwater collected in the lagoons was included in the treated volume, and discharged with other wastewater flow off site to Pond G through a buried pipeline. This water ultimately flows out of Pond G and through an open ditch to Lake Holloman, located approximately one mile southwest of the site. The surface area of Ponds A-F is approximately 60 acres, with an additional 40 acres of land surrounding the lagoons within the fenced perimeter.

Stormwater enters the site from a drainage area to the north and passes through the site in a ditch running along the western edge of the site. This water does not enter the lagoons, and remains in the ditch as it passes through the site. This ditch previously carried flow from a tributary area where the Stealth Bed Down Area is now located. With the construction of the Stealth Bed Down area, the majority of this flow is now routed to the north into a different stormwater drainage basin. Current stormwater flow data for this drainage area are not available, and an analysis of this flow or an evaluation of the ditch was not performed. Site observations indicate that ditch velocities do not significantly scour the drainage path, and the ditch bed location is not meandering. This ditch exits the site along the southern edge of the western perimeter.

Stormwater exits the site at three other locations in addition to the ditch described above.

Stormwater collected along the eastern edge of the site flows off site along the southeastern edge. All other surface water exits the site along the southern edge at two main locations. Based on site observations, these three exit points do not experience flow velocities that significantly scour the drainage path, and the flow is not restricted to a defined channel. There are no existing constructed stormwater structures within the site perimeter.

3.2 CONSTRUCTION CONDITIONS

3.2.1 Potential Pollution Sources

During the course of construction, only three materials will be stored, used, or exposed on site that may pose a risk for release and potential pollution of surface water runoff. These materials are:

faces will be removed and buried in designated locations within the lagoons. The earthen berms will be pushed into the lagoons, and additional borrow material will be imported to the site. A compacted soil layer with a minimum thickness of 1 ft will be placed over the entire lagoon area. After the completion of soil placement and compaction, all disturbed areas will be revegetated.

Stormwater entering the site from the north and exiting the site along the western edge will continue to follow historic pathways, and the flowrate and pathway will be unchanged during construction operations. A constructed swale will be built to better define the channel for this flow, and to ensure this volume does not flow on to the soil cover. The discharge point for the constructed swale will be in the same location as the existing ditch discharge.

Stormwater collecting in temporary low areas will be pumped to free draining areas of the site in a manner that minimizes erosion and sediment transport. Silt fencing or other erosion control measures including hay bales or temporary sediment basins will be used to collect sediment from surface runoff during all construction operations. The number and location of erosion control measures will be determined during construction and will be provided as determined during weekly inspections. These weekly inspections will be recorded on the Erosion, Sediment, and Pollution Control Inspection Checklist included in Section 4.2. Details of these erosion control measures and material requirements are provided in Technical Specification Section 10563 - Erosion and Sediment Control.

After sections of the final soil cover are constructed, and all compaction and fine grading activities are completed, the area will be seeded and mulched in accordance with Technical Specification Section 02900 - Revegetation. Silt fencing and hay bales shall remain in place to prevent sediment transport from these areas.

Any stormwater leaving the site from areas disturbed by construction activities will be subject to erosion control measures, free of all sediment, and discharged to existing drainage pathways with a flowrate and velocity that will not erode existing surface contours. Final silt fencing and erosion control measures will be the last temporary construction element removed prior to demobilization.

- Semi-annual inspections after first 6 months
- Inspection after significant storm events
- Periodic regrading or slope repair due to erosion.