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Naval Facilities Engineering Command
Contracts Department
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CONTRACT NO. N68711-98-D-5713

FINAL
CONTRACTOR QUALITY CONTROL PROGRAM PLAN
April 26, 1999

NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
ENVIRONMENTAL REMEDIAL ACTION CONTRACT

DCN: FWSD-RAC-99-0107

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ADDENDUM

FINAL
BASE-WIDE
CONTRACTOR QUALITY CONTROL PLAN

DATED 17 AUGUST 2001

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ACRONYMS AND ABBREVIATIONS

CAM	Contract Administration Manager
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CIH	Certified Industrial Hygienist
COTR	Contracting Officer's Technical Representative
CPR	Cardiopulmonary Resuscitation
CQC	Contractor Quality Control
CSQ	Client Service Quality℠
CTO	Contract Task Order
DCN	Document Control Number
DOD	Department of Defense
DPM	Deputy Program Manager
DQA	Data Quality Assessment
DQO	Data Quality Objective
EPA	U.S. Environmental Protection Agency
ESQ	Environmental Compliance, Safety and Quality
Foster Wheeler Environmental	Foster Wheeler Environmental Corporation
M&TE	Materials and Test Equipment
MIS	Management Information System
NCR	Nonconformance Report
NEPA	National Environmental Policy Act
NFESC	Navy Facilities Engineering Service Center
NTR	Navy Technical Representative
OJT	On-the-job Training
OSHA	Occupational Safety and Health Administration
PARCC	Precision, Accuracy, Representativeness, Completeness, Comparability
PDCA	Plan-Do-Check-Act
PJM	Project Manager
PM	Program Manager
PQCM	Project QC Manager
PQCP	Project Quality Control Plan
QA	Quality Assurance
QAO	Quality Assurance Officer
QC	Quality Control
QCM	Quality Control Program Manager
RCRA	Resource Conservation and Recovery Act
RE	Regional Engineer
RPM	Remedial Project Manager
RS	Regional Scientist
RTM	Remedial Technical Manager

SAP	Sampling and Analysis Plan
SHSP	Site Health and Safety Plan
SHSS	Site Health and Safety Specialist
SOP	Standard Operating Procedure
SS	Site Superintendent
SWDIV	Southwest Division
TIP	Task Initiation Process
TQM	Total Quality Management

FOREWORD

This Contractor Quality Control (CQC) Program Plan is a program manual for the performance of environmental remedial action within the Naval Facilities Engineering Command area of responsibility services at various U.S. Navy and Marine Corps sites for the Southwest Division (SWDIV), San Diego, California.

This CQC Program Plan combines the quality assurance/quality control (QA/QC) requirements from the U.S. Navy with Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) QC system requirements to form a set of common requirements commensurate with the scope and nature of remedial services planned under the Remedial Action Contract program. General environmental activities covered by this CQC Program Plan may include the following:

- Remedial actions
- Removal actions
- Expedited and emergency response actions
- Pilot and treatability studies
- Facility operation, maintenance, and instruction
- Related activities associated with returning sites to safe and acceptable levels.

This document is structured so that each quality element is easily identified.

This CQC Program Plan addresses quality requirements from a program management perspective, providing managers with QC requirements needed to plan, implement, and assess the Remedial Action Contract program. This CQC Program Plan does not attempt to define quality requirements specific to an individual contract task order (CTO), but should be used as the basis for QC requirements for the overall Remedial Action Contract program. Thus, a specific Project QC Plan (PQCP) and procedures referencing this CQC Program Plan must be developed for each CTO. A discussion of PQCP development and associated QC requirements is provided in Section 3.0, Part A of this CQC Program Plan. The effective implementation of the requirements of this CQC Program Plan, coupled with CTO-specific QC requirements, ensures the quality of all work performed under the Remedial Action Contract program.

This CQC Program Plan represents Foster Wheeler Environmental QC system policy for ensuring the quality of products and services, and covers all aspects of environmental services. The Foster Wheeler Environmental QC system is in accordance with all applicable regulations, including requirements of the National Environmental Policy Act (NEPA), the Resource Conservation and Recovery Act (RCRA), and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

INTRODUCTION

1. PURPOSE AND SCOPE

1.1 This CQC Program Plan identifies and describes the elements of the quality control (QC) system integral to the performance of the Remedial Action Contract program. The CQC Program Plan provides the framework and criteria for establishing CTO-specific PQCPs to plan, implement, and assess the effectiveness of environmental services provided in support of individual CTOs. Effective implementation of individual QC requirements, procedures, instructions, and reports developed from this CQC Program Plan, together with PQCPs, will help to ensure:

- That environmental data are of the appropriate type and quality needed for their intended use based on the Data Quality Objectives and Data Quality Assessment process
- That engineered systems are designed, constructed, and operated according to defined requirements and expectations
- That all items of work performed are in compliance with the provisions of the contract and each individual CTO issued under the Remedial Action Contract.

1.2 This CQC Program Plan provides the framework and basic criteria for developing detailed PQCPs. The PQCPs shall reference applicable QC requirements of this CQC Program Plan as appropriate for collecting and using environmental data, and for the design, construction and operation of engineered environmental systems.

1.3 This CQC Program Plan shall be issued to all senior Foster Wheeler Environmental Remedial Action Contract team members and to others (as determined by the Program Manager) as a controlled document and will be updated in accordance with Foster Wheeler Environmental Quality Control Guideline QC-5 (Attachment 5). The Navy will be issued copies of all updates and revisions to this CQC Program Plan.

2. QUALITY CONTROL SYSTEM DESCRIPTION

The requirements, responsibilities, and authorities for the Foster Wheeler Environmental Quality Control (QC) system are delineated by this CQC Program Plan. The Foster Wheeler Environmental QC system establishes and implements compliance with the basic provisions of the Remedial Action Contract and each individual CTO issued under this contract. Quality control is established for all work performed under this contract, except where specific provisions of an individual CTO provides for government approvals, inspections, and tests. This CQC Program Plan defines and documents the QC system, establishes the structure, defines the authority, identifies responsibilities, and details the procedures, instructions, and reports required to manage, implement and assess quality-affecting activities and assure compliance with the contract. This CQC Program Plan meets the requirements identified in the statement of work and has been reviewed and approved for implementation.

2.1 This CQC Program Plan applies to all quality-affecting items of work performed by Foster Wheeler Environmental for the U.S. Navy in support of the Remedial Action Contract, including all work performed by subcontractors. The extent to which this CQC Program Plan is applied, either wholly or in part will depend upon the nature and scope of the individual CTOs to be performed. These specific CTO requirements shall be addressed through the preparation of PQCPs as an addenda to the CQC Program Plan or the modification of the CQC Program Plan for site-specific activities. All Foster Wheeler Environmental subcontractors must meet those portions of the CQC Program Plan imposed on them through contractual requirements. The CTO-specific quality requirements exceeding the requirements of the CQC Program Plan shall be implemented in addition to the CQC Program Plan requirements. If the U.S. Navy does not provide additional quality requirements under the contract, this CQC Program Plan is implemented as applicable. This type of implementation approach provides a mechanism to address basic QC, while providing the flexibility to implement specific CTO requirements to meet U.S. Navy expectations.

2.2 The Foster Wheeler Environmental QC system is a part of a systematic management approach for planning, implementing, and assessing work to ensure that the results

satisfy stated technical, administrative, and quality objectives. This CQC Program Plan includes provisions to ensure that quality environmental data are produced and documented, and that engineered environmental systems are designed, constructed, and operated to fulfill their intended purposes.

2.2.1 The organizational level of management controls consists of all activities supporting common or standardized functions (e.g., management assessment, personnel qualifications and training, procurement policies, and document control), and fall under management systems within various organizations. These common functions establish the basic structure for performing work.

2.2.2 The technical project level of management controls consists of CTO-specific QC activities necessary to produce the desired quality of products, results, and type of data within the framework defined by and used in conjunction with functions at the organizational level.

3. APPLICABILITY

3.1 This CQC Program Plan is specifically designed for environmental remedial action programs. Tasks to which this CQC Program Plan may be applied under the Remedial Action Contract include characterization of environmental processes and conditions, and the design, construction, and operation of engineered environmental systems. The applicability of this CQC Program Plan, or parts thereof, to specific remedial actions shall be determined by individual CTOs. The following parts of the CQC Program Plan apply as indicated:

Part A: MANAGEMENT SYSTEMS

Management Systems apply to each CTO issued under the Remedial Action Contract program. Part A contains the common elements needed for effective QC programs, regardless of the specific remedial action(s) to which they are applied. Attachments 1 through 3 provide supplemental information augmenting Part A, and are listed in Section 4.1.

Part B: DESIGN, CONSTRUCTION, AND OPERATION OF ENGINEERED ENVIRONMENTAL SYSTEMS

Design, construction, and operation of engineered environmental systems apply to systems or facilities necessary to remediate hazardous waste disposal sites under the Remedial Action Contract program. Part B also applies to the design and operation of processes and methods used for waste remediation. This category includes, but is not limited to, the following topics:

- Methods for the complete remediation of hazardous waste sites, including required removal, remedial, and response actions.
- Design of remedial action work based on performance specifications.
- Performance of pilot studies or bench tests.
- Preparation of technology transfer packages for innovative technologies for remedial actions.

- Drilling, installation, and development of groundwater monitoring well systems.
- Operation and maintenance of all project facilities such as wastewater and collection systems.

Part B provides the quality control elements that must be addressed in order to ensure effective design, construction, and operation of engineered systems and their components for the remediation and removal of environmental contamination. Attachment 3 contains an inspection and testing procedure and checklists that may be used in construction-related tasks.

Part C: CHARACTERIZATION OF ENVIRONMENTAL PROCESSES AND CONDITIONS

Characterization of environmental processes and conditions applies to all activities involving the generation, collection, analysis, evaluation, and reporting of environmental data based on the Data Quality Objective/Data Quality Assessment (DQO/DQA) Process. This category includes, but is not limited to, the following tasks:

- Characterization of hazardous waste sites.
- Characterization of waste discharges to the environment from project facilities such as wastewater and collection systems, during either normal or upset conditions (e.g., operating conditions that cause excessive pollutant or contaminant discharges).
- Assessment of the performance of engineered environmental systems used for the performance of remedial and removal actions under individual CTOs.
- Performance of geotechnical analyses.
- Multimedia sampling for chemical and geotechnical characteristics to characterize environmental or ecological systems involving biological or chemical processes.
- Assessment of the behavior of chemical or biological constituents in environmental and ecological systems.

- Collection and analysis of data for computer or mathematical modeling used to characterize environmental processes or conditions.
- Multimedia chemical analyses for a variety of compounds including explosives and surety agents.

Part C contains the quality control elements pertaining to planning, implementing, and assessing operations to collect, analyze, and evaluate chemical, biological, ecological, and physical data in the environment. The Foster Wheeler Environmental Sampling and Chemical Analysis Program Plan, Attachment 4, is a guide for development of a CTO sampling and analysis plan which will be used on characterization tasks and addresses these elements; supplemental information is provided in this CQC Program Plan.

3.2 When using this CQC Program Plan to develop a PQCP for a CTO, all of Part A is required to be applied, as all programs require management processes. Part B shall be applied when an engineered system, such as those listed under Part B, becomes a part of remedial action (e.g., bench or pilot treatability studies, feasibility studies [e.g., bench tests, analysis of alternatives], or remedial actions [e.g., design, operation, monitoring remedial action results]). Part C shall be applied when any of the topics listed in Part C are a part of the overall project.

4. CONTRACTOR QUALITY CONTROL PROGRAM PLAN DESCRIPTION

4.1 This CQC Program Plan details the procedures, requirements, instructions, and reports to ensure compliance with the Remedial Action Contract. This basic CQC Program Plan and the following five supplemental attachments are as follows:

- Attachment 1—Sample Contractor Quality Control Forms and Letters
- Attachment 2—Terms and Definitions
- Attachment 3—Inspection and Testing Procedure and Checklists
- Attachment 4—Foster Wheeler Environmental Corporation Sampling and Analysis Program Plan
- Attachment 5—Foster Wheeler Environmental Corporation QC Guidelines

PART A:

Management Systems

PART A: MANAGEMENT SYSTEMS

Part A defines the QC elements that provide a framework for management systems supporting environmental remedial action programs. Part A contains the common quality management functions (e.g., leading, planning, organizing, and controlling all QC activities), plus specific QC activities that enable CTO-specific operations to be planned, implemented, and assessed for each CTO issued under the Remedial Action Contract. The QC elements contained in Part A are used in conjunction with the other sections of this CQC Program Plan to formulate a complete QC system.

1. MANAGEMENT COMMITMENT

1.1 Foster Wheeler Environmental management is responsible for planning, implementing, and assessing environmental programs, including the design, construction, and operation of engineered environmental systems, and the characterization of environmental processes and conditions (e.g., environmental data operations). Management will provide the resources required to plan, implement, and assess the quality of environmental remedial action programs.

2. CONTRACTOR MANAGEMENT STRUCTURE AND ORGANIZATION

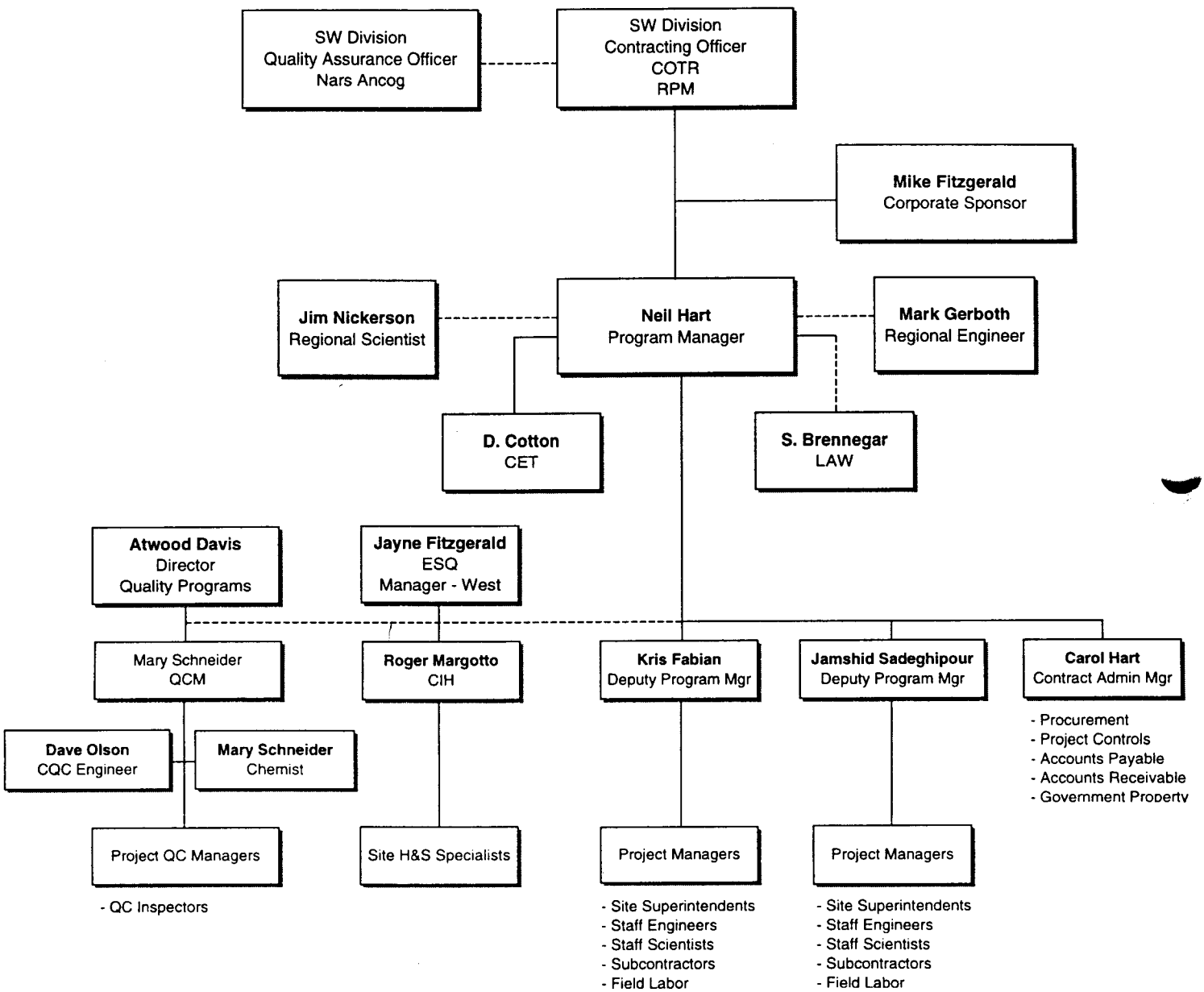
2.1 This section describes the organization and authority for the development, implementation, and verification of this CQC Program Plan. This section also documents the organizational structure, functional responsibilities, personnel qualifications, levels of authority, and lines of communication established within the organization to ensure high quality work and data. Exhibit 1 presents the program organization showing the reporting lines for each position within Foster Wheeler Environmental.

2.2 Management's commitment to quality is demonstrated by the corporate organizational structure. Foster Wheeler Environmental's program organization has been developed to meet the U.S. Navy's needs on an efficient and cost-effective basis. Primary considerations for the organization are direct and clear lines of authority and responsibility; ability to interface at the appropriate levels with U.S. Navy counterparts; location of program management and support services in one office readily accessible to U.S. Navy offices in San Diego, and the ability to effectively direct and manage a national remediation program with multiple sites, multiple tasks, variable staffing levels and discipline mix, and schedule changes.

2.3 The Senior Vice President, Remediation of Foster Wheeler Environmental Corporation, Foster Wheeler Environmental's Corporate Sponsor, will oversee Project Activities with direct reporting lines from the Foster Wheeler Environmental Program Manager for the Remedial Action Contract.

2.4 The Program Manager (PM) is responsible for all Remedial Action Contract remediation operations and will report directly to the Corporate Sponsor. The PM will be Foster Wheeler Environmental's chief representative as specified in the Basic Contract and will interface with the Navy Contracting Officer, the Navy Technical Representative (NTR), the Navy Quality Assurance Officer (QAO), the Navy Contracting Officer's Technical Representative (COTR), and the Navy Remedial Project Manager (RPM).

Exhibit 1. Program Organization



2.4.1 The PM, as Foster Wheeler Environmental's chief contract representative, has authority to perform the following quality-related activities:

2.4.1.1 Negotiate, sign, and execute CTOs awarded under Remedial Action Contract; negotiate change orders; negotiate and approve subcontract agreements.

2.4.1.2 Approve proposed personnel and a selected lead firm prior to initiation of a CTO.

2.4.1.3 Approve project policies and procedures.

2.4.1.4 Oversee procurement of subcontractors.

2.4.1.5 Approve project expenditures.

2.4.1.6 Authorize the QC Program Manager and Project QC Managers (PQCMs) to act on his behalf for quality activities.

2.4.1.7 Issue stop-work orders when necessary.

2.4.1.8 Obtain a signed letter of appointment from the Corporate Director of Quality Programs assigning the QC Program Manager responsibilities for implementation of the QC Program (Attachment 1).

2.4.1.9 Monitor and control the CQC Program Plan, ensuring that all relevant portions of the plan are implemented through audits, inspections, and surveillance of project activities.

The PM may delegate contract administration activities to the Contract Administration Manager.

2.4.2 The PM technically and administratively manages all CTOs, and is responsible for the following activities:

2.4.2.1 Allocate all required project resources (personnel and equipment); develop staffing plans for all personnel, assign projects consistent with contract requirements.

2.4.2.2 Provide leadership and project direction; identify personnel to conduct training sessions as appropriate.

2.4.2.3 Monitor and control project costs; monitor CTO progress; oversee procurement activities.

2.4.2.4 Prepare and deliver required technical and administrative reports; specify personnel to perform appropriate document review and approval.

2.4.2.5 Maintain awareness of and enforce all CERCLA regulations and other applicable or relevant and appropriate regulatory requirements pertaining to each CTO.

2.4.2.6 Interface directly with the COTR to maintain awareness of the U.S. Navy's planning processes and maintain an awareness of potential new CTOs; perform reviews with the COTR to identify special skills or expertise required to perform specific work assignments.

2.4.2.7 Establish a records management system for the project that ensures clarity, completeness, retrievability, and conformance to contract requirements; ensure document security.

2.4.2.8 Maintain management information system (MIS) software and user document for each CTO.

2.5 Senior Management constitutes those managers reporting directly to the PM unless otherwise specified below. Senior Management includes the Deputy Program Managers (DPMs), Contract Administration Manager (CAM), Regional Scientist (RS), Regional Engineer (RE), QC Program Manager (QCM), CTO Project Managers (PJMs), and Program Health and Safety Officer (Certified Industrial Hygienist). Senior Management provide technical support within their specific discipline for project management and operations.

2.5.1 Deputy Program Managers are responsible for the oversight of technical, cost, schedule, and project management issues in their geographic area. DPMs may be assigned to manage specific CTOs as well. However, the DPM's primary responsibility is to provide management oversight and assistance to Project Managers. The DPM is also responsible to ensure that monthly narratives are submitted to Project Controls for incorporation into Monthly Reports.

2.5.2 The CAM oversees contract compliance, procurement, subcontracts, project controls, and accounting activities. The CAM ensures compliance with applicable Federal, Department of Defense (DOD), and Navy regulations, policy, and contract terms and conditions; maintains an adequate procurement system which includes overseeing procurement of subcontractors; maintains an adequate estimating system which includes ensuring the adequacy of proposals; tracks costs; and interfaces with Navy contracts personnel during contractual matters.

2.5.3 The Regional Scientist (RS) and Regional Engineer (RE) are the primary resource managers who are responsible to provide qualified Foster Wheeler Environmental staff in the areas of science and engineering to support the Remedial Action Contract program. The PM with the assistance of the DPMs will coordinate with the RS and RE to secure the necessary staff from Foster Wheeler Environmental resources. The RS and RE also have overall responsibility to ensure that technical staff are trained.

2.5.4 The QC Program Manager (QCM) reports directly to the Foster Wheeler Environmental Corporate Director of Quality Programs. The QC Program Manager has two direct quality control designees (i.e., the Construction Quality Control Manager (CQC) and the Program Chemist (PC) that assist the QCM in implementing the QC program. The CQC is responsible for the oversight of quality issues related to technical documents (i.e., consistency) and construction activities. The CQC will manage the Site CTO Project QC Managers (PQCMs) and assist them in implementing the project-specific quality

control plan. The PC is responsible for the oversight of quality issues pertaining to chemical data acquisition activities including environmental sampling, chemical analysis data validation and electronic transfer activities. The PC will manage the project chemists and sampling technicians and assist them in achieving quality analytical data to meet the project objectives. The QC Program Manager and the Site Project QC Managers (PQCMs) have the authority to act on behalf of the PM on site-related issues affecting the quality of the work performed. They have the authority to stop work when poor quality conditions are identified and to direct the removal and replacement or re-performance of the defective work. They interface with the PJM, Site Superintendent, QAO, COTR, and NTR on issues affecting the quality of work performed. The PQCMs report directly to the QCM on quality-related issues to ensure the necessary independence for unbiased and objective assessments. QCM and PQCM responsibilities include the following:

2.5.4.1 Provide and maintain an effective QC system for each CTO.

2.5.4.2 Monitor QC activities to ensure conformance with authorized policies, procedures, and sound practices; recommend improvements as necessary.

2.5.4.3 Conduct training sessions in the requirements of the CQC Program Plan as appropriate.

2.5.4.4 Inform the PM, DPM, RS, RE, and PJM of nonconformances to the CQC Program Plan.

2.5.4.5 Ensure that all records, logs, standard procedures, and project plans are maintained in a retrievable fashion, and that controlled copies of standard procedures and project plans are distributed to all appropriate personnel.

2.5.4.6 Ensure that a document control system is established and maintained for the project.

2.5.4.7 Perform inspections of CTO activities to ensure that plans and procedures are followed. The QCM and the PQCM have the authority to require re-performance of any activity determined to have been adversely affected by improper application of prescribed plans and procedures with the concurrence and approval of the PJM, DPM, RS, and RE.

2.5.4.8 Maintain awareness of each CTO to detect any conditions that may affect quality.

2.5.4.9 Monitor corrective action documentation for conditions adverse to quality, verify implementation of corrective action, track and analyze corrective action, and close out corrective action documentation upon completion of corrective action.

2.5.4.10 Concur with nonconformance report (NCR) dispositions, and maintain a system for tracking and analyzing NCRs.

2.5.4.11 Direct stop-work orders until poor quality conditions have been corrected.

2.5.5 The PJM is responsible and accountable for managing individual CTOs. The PJMs report to the DPMs and have the authority to direct all segments associated with remedial action projects, including all technical, construction, and administrative activities related to a specific CTO. Responsibilities of the PJM include the following:

2.5.5.1 Maintain regular contact with the PM, DPM, and senior management and provide status reports.

2.5.5.2 Direct all technical and administrative aspects associated with individual CTOs.

2.5.5.3 Evaluate CTO-specific plans and procedures, such as work plans, PQCPs, sampling and analysis plans, environmental protection plans, waste management plans, and health and safety plans. Ensure that all procedures, project plan elements, and specifications can be implemented on schedule and within budget and are in compliance with Occupational Safety and Health Administration (OSHA) policies and all company procedures.

2.5.5.4 Evaluate CTO schedule and budget to recommend and justify change orders and ensure that the Task Initiation Process (TIP) is completed.

2.5.5.5 Develop and/or modify a critical path method or similar method to track CTO materials and resources and to identify key project milestones.

2.5.5.6 Prepare specifications for subcontractors and equipment procurement.

2.5.5.7 Direct subcontractor and equipment procurement.

2.5.5.8 Recommend change orders to the PM, DPM, and Senior Management.

2.5.5.9 Interface with the RS and RE on relevant issues and methods of resolution.

2.5.5.10 Interface with the Program Health and Safety Officer (CIH) and Site Health and Safety Specialist (SHSS) to ensure compliance with approved health and safety plans.

2.5.5.11 Recommend a team of professionals to accomplish each CTO activity.

2.5.5.12 Manage the activities of the professionals assigned to each CTO.

2.5.5.13 Monitor CTO costs and schedules.

2.5.5.14 Interface with the COTR, RPM, NTR, and/or Naval Activity Environmental Coordinator on logistics, site access, or other issues pertaining to the execution of a specific CTO.

2.5.5.15 Prepare CTO progress and financial reports as required.

2.5.5.16 Implement remedial actions.

2.5.5.17 Ensure compliance with all regulatory requirements.

2.5.6 The Program Health and Safety Officer (CIH) reports directly to the Foster Wheeler Environmental Corporate Environmental Compliance, Safety, and Quality (ESQ) Western Regional Manager. The Program Health and Safety Officer, who must be a Certified Industrial Hygienist (CIH), has authority to implement and oversee the Foster Wheeler Environmental Health and Safety Program. Authorities and responsibilities for the Program Health and Safety Officer include the following:

2.5.6.1 Issue stop-work orders due to lack of contractor or subcontractor compliance to site health and safety plans.

2.5.6.2 Assign a Site Health and Safety Specialist (SHSS) for a specific CTO.

2.5.6.3 Develop CTO-specific health and safety plans.

2.5.6.4 Ensure proper maintenance of medical and training records for on-site personnel.

2.5.6.5 Revise CTO health and safety plans as necessary to encompass new occupational health and safety regulations.

2.5.6.6 Interface with the PM, DPM, and Senior Management to develop health and safety procedures and requirements.

2.5.6.7 Conduct periodic audits and inspections of the field program and remain available for consultation with CTO team members.

2.5.6.8 Provide audit and inspection reports to the PM, DPM, RE, RS, PJM, and SHSS for corrective action(s), which are required to be implemented as soon as possible.

2.5.6.9 Interface with the RPM on an as-needed, advisory basis.

2.6 Line Management is comprised of those managers, engineers, superintendents, and scientists reporting to Senior Management and encompasses a variety of disciplines. Line managers are responsible for the quality of work performed by those individuals within their specific line of supervision. Examples of line managers include the PQCMs and QC Inspectors, SHSS, Staff Engineers, Site Superintendents, and Staff Scientists.

2.6.1 QC Inspectors may be used on large and complex CTOs. QC Inspectors report directly to the PQCM. QC Inspectors shall have experience with the work being inspected, tested, or operated. The QC Inspectors' authorities and responsibilities include the following:

2.6.1.1 Assist the PQCM in the performance of his or her duties when directed.

2.6.1.2 Authorize the issuance of NCRs and recommend stop-work orders to the PQCM when necessary.

2.6.1.3 Maintain a daily log of inspections, and provide necessary information required to complete the CQC daily report and other inspection records including deficiency reports.

2.6.1.4 Inspect and document the implementation of corrective action(s).

2.6.1.5 Perform field inspections of construction and operating activities.

2.6.1.6 Remain on the project site when directed by the PQCM.

2.6.2 The SHSS ensures that all elements of the approved CTO Site Health and Safety Plan (SHSP) are implemented and enforced on site. The SHSS reports directly to the Program Health and Safety Officer (CIH) and will assist and represent the CIH in implementing and enforcing

the SHSP in the field. The SHSS has full authority to issue stop-work orders or evacuation orders where work operations or noncompliance(s) may threaten the health or safety of site workers or the public. Duties and responsibilities for the SHSS include the following:

2.6.2.1 Ensure enforcement of the SHSP through daily site inspections.

2.6.2.2 Coordinate site health and safety requirements with the Site Superintendent and PJM.

2.6.2.3 Ensure maintenance of all health and safety monitoring and personal protective equipment and direct site monitoring activities.

2.6.2.4 Report all health and safety monitoring results to the Program Health and Safety Officer (CIH).

2.6.2.5 Coordinate daily field activities with the Site Superintendent.

2.6.2.6 Coordinate site safety and emergency response duties; verify site communications system with site personnel.

2.6.2.7 Implement periodic safety briefings with on-site personnel.

2.6.2.8 Procure and maintain safety equipment and supplies.

2.6.2.9 Perform inspection of safety equipment.

2.6.2.10 Coordinate with the CIH and NTR.

2.6.2.11 Maintain recordkeeping and reporting systems.

2.6.2.12 Initiate necessary revisions or changes to the SHSP.

2.6.2.13 Maintain site control procedures.

2.6.2.14 Maintain current certification for first aid and cardiopulmonary resuscitation (CPR).

2.6.3 The Site Superintendent (SS) reports directly to the PJM on a CTO and directs field labor and subcontractor activities, has authority to assign field labor tasks, and can perform technical and administrative functions as required. The SS has the following CTO responsibilities:

2.6.3.1 Coordinate all labor, including subcontractors.

2.6.3.2 Interface with the PJM on all on-site operations.

2.6.3.3 Supervise all on-site construction and related operations for remedial action projects.

2.6.3.4 Execute developed critical path method or similar tracking system.

2.6.3.5 Manage and administer material and logistic procedures.

2.6.3.6 Monitor and control project costs.

2.6.3.7 May perform duties of SHSS and/or PQCM as assigned by Senior Management on limited scope CTOs.

2.6.4 The Staff Scientists have the responsibility to maintain current working knowledge of scientific breakthroughs that might impact remedial action tasks. This knowledge can be obtained through enrollment in technical courses, attendance at professional society meetings, seminars, and conferences or by accessing various web sites on the Internet (i.e., EPA's web site TechDirect, or EPA's Environmental Technology Verification (ETV) e-mail service ETVoice). Information is then disseminated through Foster Wheeler Environmental via newsletters, electronic mail, presentations, or training in various offices. Depending on the technical focus of remedial action tasks, staff may also attend internal quarterly project reviews to evaluate task technical directives and emerging technologies. The Staff Scientists consult with the PM, DPM, RS, RE, and PJM on scientific issues relevant to environmental cleanup projects and specific remedial action tasks, and interface with the

RPM on an as-needed, advisory basis. Typical duties for Staff Scientists include the following:

2.6.4.1 Collect and interpret field data.

2.6.4.2 Review earth science data.

2.6.4.3 Determine and ensure contaminant and toxicity levels.

2.6.4.4 Provide field consultations as required.

2.6.4.5 Prepare technical documents to submit to the PJM and provide field support for remedial verification.

2.6.5 The Staff Engineers are responsible for preparing technical documents for submittal and providing field consultations as required. Typical duties for Staff Engineers include the following:

2.6.5.1 Assist the PJM to perform remedial action project tasks.

2.6.5.2 Assist the SS to interpret engineering data.

2.7 The COTR, NTRs, Navy Remedial Technical Manager (RTM), QAO, Navy Contracting Officer, Contract Specialists, and RPMs represent the main Foster Wheeler Environmental government contacts under the Remedial Action Contract program. Each plays a specific role in ensuring production of quality work, both on the contract as a whole, and on each individual CTO.

2.7.1 The COTR is technical manager for the entire contract and is responsible for providing technical administration, direction and clarifications, as needed, and is the primary technical point of contact on the contract. The COTR interfaces directly with the PM and other Foster Wheeler Environmental Program staff as necessary. The COTR also is responsible for coordinating technical decisions with the Contracting Officer, Contract Specialists, and assigned RPMs and NTRS.

2.7.2 The NTRs are assigned to assist the COTR by being a technical point of contact for assigned CTOs. The NTRs will assist by performing

inspections, by monitoring work, and by performing other technically related duties as assigned for the specific CTO.

2.7.3 The Navy Contracting officer and Contract Specialists interface with the COTR, NTRs, RPMs, and other assigned Navy staff on contract matters. In addition, they will be the point of contact for Foster Wheeler Environmental's PM, DPMs, CAM, PJMs, QCM, CIH, and other program staff for contract related matters and will maintain the following authorities and responsibilities:

2.7.3.1 May terminate the contract in the case of erroneous certification submitted by Foster Wheeler Environmental.

2.7.3.2 Oversee performance of the contract.

2.7.3.3 Issue contract work assignments through written CTOs.

2.7.3.4 Initiate the CTO process by furnishing Foster Wheeler Environmental with a written preliminary CTO and a written request for a CTO estimate. Receive and review the written order from Foster Wheeler Environmental to ensure acceptability to the government. Enter into discussions with Foster Wheeler Environmental as necessary to correct or revise the proposed CTO estimate.

2.7.3.5 Issue written change orders to Foster Wheeler Environmental as necessary.

2.7.3.6 Receive notification from Foster Wheeler Environmental regarding performance or time difficulties according to the terms of the CTO.

2.7.3.7 Review status reports issued by the NTR and Foster Wheeler Environmental.

2.7.3.8 Specify required reports within each CTO.

2.7.4 The RPMs maintain overall responsibility for all work performed at a specific facility. The RPMs interface with the PJMs, other Foster Wheeler Environmental staff, NTRs, and the COTR on CTO-related

issues at the facility. Responsibilities of the RPMs relating to work performed under Remedial Action Contract program include, but are not limited to, the following:

2.7.4.1 Manage and coordinate all CTO activities.

2.7.4.2 Review monthly status report resulting from meetings scheduled by the NTR with Foster Wheeler Environmental.

2.7.4.3 Review, comment, and recommend acceptance of submittals prepared by Foster Wheeler Environmental.

2.7.4.4 Review closeout reports submitted by Foster Wheeler Environmental.

2.7.5 RTMs ensure that the technologies, procedures, and methodologies used on CTOs are consistent with most recent industry standards for quality and innovations. RTMs also ensure that the contract CQC requirements are met and the Navy as well as regulatory agency policies and requirements are complied with throughout all CTOs. The RTMs specific responsibilities are as follows:

- Provide technical oversight on all CTO activities
- Review, comment, and recommend acceptance of submittals prepared by Foster Wheeler Environmental
- Attend CTO technical meetings and provide feedback to Foster Wheeler Environmental on technical matters
- Promote innovative technologies and approaches
- Ensure consistency in approaches and execution among all CTOs

2.7.6 The QAO provides governmental oversight of the quality assurance program. The QAO interfaces directly with the QCM and maintains the following authority and responsibilities:

- Provides quality-related directives through the Navy COTR.
- Provides technical and administrative oversight of Foster Wheeler Environmental surveillance audit activities

- Point of contact for all matters concerning QA and the Navy's Laboratory QA program
- Prepares governmental budget estimates for all QA functions included in Foster Wheeler Environmental contracts
- Coordinates training on matters pertaining to generation and maintenance of quality data
- Has authority to suspend project execution if QA requirements are not adequately followed

2.8 All subcontractors shall be required to comply with this CQC Program Plan to the extent applicable to their services.

2.8.1 For each CTO, Foster Wheeler Environmental shall provide a list of subcontractors, such as testing laboratories, architects, and consulting engineers to be employed by Foster Wheeler Environmental under this contract, and shall provide a description of the services these firms will provide regarding quality control.

2.8.2 Foster Wheeler Environmental will ensure the quality of subcontractor work through assessments and review activities. Assessments include one or more of the following: inspections, QC checks, surveillance, reviews, and audits as described in Section 6.0, Part B and Section 5.0, Part C of this CQC Program Plan.

3. QUALITY CONTROL PLAN DESCRIPTION

This part of the CQC Program Plan details the procedures, instructions, and reports to ensure compliance with the contract. The CQC Program Plan applies to all quality-affecting work performed by Foster Wheeler Environmental for the U.S. Navy under the Remedial Action Contract. The extent to which this CQC Program Plan is applied, either wholly or in part, will depend upon the nature and scope of the individual CTOs to be performed. PQCPs shall be added to the basic CQC Program Plan as needed to reflect specific tasking detailed in each CTO. Specific requirements will be addressed in the PQCP that will reference this document to the extent possible. The basic CQC Program Plan and PQCP shall include, as a minimum, the elements contained in Part 6.0 of Section C of the Basic Contract.

3.1 When this CQC Program Plan is used as the basis for a CTO-specific PQCP there are certain elements to consider. The PQCP will be developed through the addition of addenda to the basic plan. These addenda will reflect the specific tasks detailed in an individual CTO. Generally, all of the elements contained in Part A of the CQC Program Plan will apply, as all projects require management processes. Addenda to Part A will illustrate those specific elements contained within the CTO that are required in addition to the general requirements presented in Part A of this CQC Program Plan. Similarly, addenda to Parts B and C shall be developed to reflect CTO-specific requirements to be implemented for each CTO as they apply to the elements presented in Parts B and C of this CQC Program Plan.

3.2 PQCPs to this basic CQC Program Plan shall include the following as applicable:

3.2.1 Description of the task and definable features of work as specified by the CTO.

3.2.2 Description of project-specific QC records required by the CTO and instructions for their use.

3.2.3 Personnel matrix.

3.2.4 Inspection schedule based on the CTO schedule and following the order of the specification sections per individual CTO.

3.2.5 Testing Plan detailing required QC testing.

3.2.6 Any specific procedures to be implemented for a specific task.

3.2.7 Procedures for the control of material and test equipment, including calibration procedures and preventive maintenance procedures.

3.2.8 Procedures to identify, record, track, and complete rework items.

3.2.9 Initial Submittal Register.

PQCPs may be included as part of the Sampling and Analysis Program Plan (SAP) as described in Attachment 4.

4. PERSONNEL TRAINING AND QUALIFICATIONS

Foster Wheeler Environmental and subcontract personnel performing work subject to control under this CQC Program Plan shall be qualified to perform assigned work according to the requirements of this CQC Program Plan as well as to contract and CTO-specific requirements. Foster Wheeler Environmental management emphasizes education and training to achieve and maintain proficiency, as well as create an environment of individual responsibility and accountability for quality. Foster Wheeler Environmental management shall provide resources for required education, training, and re-training. This requirement applies to all personnel performing or managing activities affecting quality, including subcontract personnel. Specific requirements for indoctrination, subject matter training, qualification, certification, personnel training records (and their maintenance) shall also be implemented. The following basic requirements apply to personnel training and qualifications.

4.1 Senior Management shall determine the level of education, experience, and training required to ensure that individuals are adequately proficient to perform work within their respective organizations and for specific projects. All such determinations shall be in accordance with provisions of the Basic Contract and specific requirements contained within individual CTOs.

4.2 Senior Management shall ensure that the indoctrination and training is commensurate with the scope, nature, and complexity of activities for which training is required.

4.3 Personnel selected to perform or verify activities affecting quality shall possess the education, experience, and training necessary for the specified activity and contract requirements. Minimum qualifications for key personnel are in accordance with Section C.1.3 of the base contract.

4.4 Where required by statute or other applicable requirements, personnel shall be qualified and/or certified to conduct specific work.

4.5 Senior Management shall provide training activities such as continuing education, on-the-job training (OJT), and training seminars to ensure that personnel demonstrate and maintain proficiency in performing assigned work.

4.6 Each Foster Wheeler Environmental office shall establish training requirements and implement training procedures to ensure the adequacy of personnel proficiency for work to be performed under this contract. When job requirements change, Senior Management shall evaluate the need for re-training.

4.7 All education, training, and results shall be documented and controlled to provide evidence of successful completion.

4.8 Foster Wheeler Environmental shall employ personnel with the requisite skills to perform the requirements of Remedial Action Contract tasks.

5. MANAGEMENT ASSESSMENT/AUDITS

Foster Wheeler Environmental Senior Management shall regularly assess the adequacy of the framework and infrastructure of the QC system to ensure its effective implementation. Senior Management may not delegate the responsibility for assuring that an effective QC system has been established, implemented, and followed. All assessment activities (audits, inspections, and surveillances) shall be performed and comply with the requirements of the QC system. The following QC criteria describes the requirements and methods to perform assessments.

5.1 The requirements of this CQC Program Plan and QC requirements specific to CTOs provide the primary criteria for assessments.

5.2 All appropriate levels of management shall participate directly in management assessments. As deemed appropriate by Senior Management and the QC Program Manager, designated organizations or technical programs may be assessed.

5.3 Both organizational level and technical level managers shall perform informal self-assessments (surveillance) of their respective organizations to determine the effectiveness of the QC system, quality of products, technical work, and programmatic compliance and adequacy. Informal self-assessments are conducted on a routine basis by those responsible for specific work or projects.

5.4 Independent QC assessments (audits or inspections) shall be scheduled by Foster Wheeler Environmental's QC Program Manager or designee to provide an objective and unbiased assessment of the effectiveness of the QC system, quality of products, technical work, and programmatic QC compliance and adequacy. Independent QC assessments shall be performed either by qualified internal audit staff or by qualified independent reviewers using predetermined criteria and written checklists. Independent QC assessments shall be performed at least annually on long duration projects or at least once on projects of short duration lasting less than one year.

5.5 All assessments (audits, inspections, or surveillances) shall include a means for determining:

5.5.1 How effective the management control system is in achieving and assuring quality.

5.5.2 Whether adequate resources and personnel are provided to implement and assure quality in all activities.

5.5.3 The extent of QC system implementation and compliance.

5.6 Responsible management shall determine the necessary response actions as a result of independent assessments and self-assessments, and implement corrective actions to remedy problems. Following the completion of corrective action measures, management shall perform follow-up assessments (audits or inspections) as necessary to prevent a recurrence of the problem.

5.7 Project personnel shall provide reports to Foster Wheeler Environmental Senior Management and the QC Program Manager on the status of all corrective action(s) and follow-up results.

6. PROCUREMENT OF ITEMS AND SERVICES

This CQC Program Plan establishes a management system to ensure that procurement processes are documented and controlled, and that procured items and services conform to established requirements. This procurement management system applies only to items and services that have an impact on the quality of environmental processes and conditions, and engineered environmental systems. Additional specific requirements and instructions for the implementation of this system is contained in the Foster Wheeler Environmental Corporation Procurement Procedure, Project Procurement for Federal Government Subcontracting (Part 5). The basic procurement management system includes the following elements as appropriate for the specific item or service purchased:

6.1 Control of procurement documents (e.g., purchase requisitions, purchase orders, basic ordering agreements, service contracts).

6.2 Reference of applicable quality requirements in all project documents that cite equipment and service purchasing.

6.3 Procurement source evaluation and selection.

6.4 Determination of supplier quality through inspections, tests, certifications, source inspection, and other valid compliance methods.

6.5 A requirement for suppliers, whether contractors or subcontractors, to have a documented and implemented QC program consistent with requirements of this CQC Program Plan, when specified as a part of the purchase document.

6.6 Requirements for suppliers to incorporate appropriate quality requirements in their subtier procurement documents.

6.7 Provisions for assessing, monitoring, and controlling the performance of suppliers.

6.8 Interface requirements for internal procurement, project, and quality control managers.

6.9 Identifying requirements for qualified subcontractors such as testing laboratories, architects, and consulting engineers that will be employed for each CTO, as well as a description of the services these firms will provide regarding quality control.

7. DOCUMENT CONTROL AND RECORDS

Documents developed for use in activities affecting quality shall be prepared, reviewed, approved, issued, revised, and controlled according to the requirements specified in this section of the CQC Program Plan, PQCP, and related implementing plans and procedures. These documents typically include procedures and plans such as QC plans, work plans, sampling and analysis plans, field sampling plans, site health and safety plans, environmental protection plans, and instructions and drawings. The term "document control" used throughout this CQC Program Plan is defined as the act of ensuring that documents are reviewed for adequacy, approved for release by authorized personnel, and used at the location where the prescribed activity is performed.

7.1 Records used to document the quality of items, services, environmental processes, and engineered systems require similar controls. Document control and records management will be in accordance with approved procedures.

7.2 Foster Wheeler Environmental document control procedures follow, where applicable, the National Enforcement Investigation Center, Policy and Procedures Manual, 1991, (EPA-330/9-78-001-R), which contains additional information on types of document control, document control procedures, and the records management system.

7.3 The PM is responsible for establishing a records management system for each CTO to ensure clarity, completeness, retrievability, and conformance to contract requirements. Records of activities shall be transmitted to the Navy as requested and required by the contract. The originator of each record is responsible for the legibility, correctness, and completeness of the record. Records management includes controlling all documents affecting quality as well as report deliverables. These documents shall contain a unique document control number (DCN) to ensure traceability and accountability. Records are kept in a controlled area for the duration of the project and will be archived until files are requested by the U.S. Navy according to contract requirements. The PM is responsible for ensuring document security.

7.4 The following basic requirements shall be executed in addition to the implementing procedures:

7.4.1 Document controls include identification of documents to be controlled and their specified distribution; and identification of assignment of responsibility for preparing, reviewing, approving, and issuing documents.

7.4.2 The preparation, issuance, and revision(s) of documents that specify quality requirements or prescribe activities affecting quality shall be controlled to ensure that the correct, current, and approved documents are being used.

7.4.3 All reports, technical plans, design documents, and other technical deliverables are subject to Foster Wheeler Environmental's internal review and approval process. A record of review comments will be documented in one of the following four ways:

7.4.3.1 A memorandum from the reviewer to the author, with itemized comments, and a corresponding response memorandum from the author to the reviewer.

7.4.3.2 A marked-up copy of the document with the reviewer's comments and signature and the author's written response on the same copy.

7.4.3.3 A completed comment resolution sheet, consistency review checklist, and comment resolution sheet.

7.4.3.4 Appropriate approval boxes on forms, graphics, printouts, etc., that have been initialed and dated.

7.4.4 Only after the approved signatures have been obtained on a sign-off form can a document be copied and bound for delivery to the U.S. Navy. The original signoff form is kept with the original document.

7.4.5 Design review procedures used will be consistent with guidelines contained in the Foster Wheeler Environmental Engineering Procedures, Procedure ENG-5, Design Classification Levels and Project Engineering Reviews.

7.4.6 Drawings, specifications, and other design documents shall be distributed to all involved disciplines for review in order to ensure that the design criteria have been properly implemented. Comments and clarification will be

provided to the lead design engineer for review and revision of the design as appropriate.

7.5 Records to be controlled by this CQC Program Plan include only those which furnish documentary evidence of the quality of items, services, environmental processes, and engineered systems. The term record(s) used throughout this CQC Program Plan denotes QC records.

7.5.1 Records are specified, prepared and maintained by the management of the organizations that generate the records. When records are controlled by organizations other than those generating the records, the delegation of that authority shall be defined in implementing procedures or CTO-specific plans.

7.5.2 Administration of the records system consists of identification, generation, validation, indexing, distribution, classification, retention, and record correction requirements.

7.5.3 The records receipt control system involves receipt responsibilities, transmittal/receipt control, and record status.

7.5.4 Records storage requirements include preservation and safekeeping for a variety of temporary and permanent facilities.

7.5.4.1 The storage system incorporates provisions for retrieval of information by designated personnel in accordance with planned retrieval intervals based upon the record type and need.

7.5.5 Disposition of records requires authorization by the U.S. Navy, PM, or designated Senior Management.

7.6 Task-specific documents shall be issued as required by each individual CTO. The Submittal Register, Contractor Production Report, CQC Report, and Rework Items List are incorporated into this CQC Program Plan in Attachment 1. Required QC records may include, but are not limited to, the following documents:

7.6.1 The Submittal Register shall be kept current by Foster Wheeler Environmental at the job site and shall show the status of all submittals required under the contract. All submittals shall be reviewed for compliance with contract requirements, independent of the PQCM, prior to approval by

the PQCM. The actual length of time for submission is specified in each CTO.

7.6.2 The Contractor Production Report shall be submitted by Foster Wheeler Environmental to the NTR identifying prime and subcontractor workforce and their labor hours, location and description of work performed, weather conditions and temperatures, list of job safety actions taken and safety inspections conducted, equipment left on job site, equipment/materials received, and if applicable, submittal status, noncompliance notices received, errors and/or omissions in plans and specifications, visitors to the job site, and any other pertinent information. The Contractor Production Report shall be prepared and submitted daily to the PQCM who attaches it to the CQC Daily Report. The Contractor Production Report shall be signed by the Site Superintendent.

7.6.3 The CQC Daily Report shall be submitted by the PQCM to the NTR recording inspection and/or testing performed, identification and location of each definable feature of work and its current phase (preparatory, initial, followup) of completion, results of inspections/testing, location and description of deficiencies, deficiencies corrected as of the date of the report, rework items, and comments on the review of the corresponding Contractor Production Report. The report shall include a statement of certification. This required certification shall be signed and dated in ink by the authorized PQCM, including the Site Superintendent if that individual is the authorized PQCM. The CQC Daily Report shall be submitted every day work is performed, material delivered, direction pending, or a labor force present and for every 7 consecutive calendar days of no-work, and in the last day of the no-work period. Every calendar day throughout the life of the CTO shall be accounted for. The CQC Daily Report shall be provided to the NTR for review and signature by 10:00 a.m. on the working day following the day the work was performed or as agreed to by the NTR.

7.6.4 The Monthly Rework Items List shall be used by Foster Wheeler Environmental to track noncomplying work. The monthly rework items list containing noncomplying work shall be submitted to the NTR the last working day of the month. The PQCM shall update the list, stating

specifically what is noncomplying, the date the faulty work was originally discovered, and the date the work was corrected. The PQCM shall not allow task personnel to add to or build upon nonconforming work unless, in the opinion of the NTR, correction can be made without disturbing the continuing work.

7.6.5 As-built records shall be controlled by the PQCM to ensure drawings are kept current on a daily basis. The as-built records shall be marked to show any deviations from the contract drawings, including buried or concealed structures and utilities revealed during the course of site work. The PQCM or designated person assigned to inspect that particular portion of work shall initial each variation or revision. These records shall be available for review by the NTR at all times. The PQCM shall, upon completion of site work, certify the accuracy of the as-built record drawings, and submit them to the Contracting Officer or designated representative.

7.6.6 The Test Plan and Log will be completed to summarize the results of various QC tests performed in compliance with the specific provisions of individual CTOs. This report shall be updated after each test is conducted and then be attached to the last CQC Daily Report of each month.

7.6.7 The Completion Certification is a certificate signed by the PQCM, PJM, and QC Program Manager to indicate technical completion of each CTO prior to final U.S. Navy inspection and acceptance. This document certifies that all work has been completed, inspected, tested, and is in compliance with the contract. The completion certification will be forwarded to the Navy prior to administrative closeout.

7.6.8 Test Lab documents and summary reports shall be provided to the Contracting Officer via the RPM as required by the provisions of individual CTOs.

7.7 Additional records may be required on a CTO-specific basis.

7.8 Certain Special Inspection and Documentation requirements may be contained in the specification sections of individual CTOs. A record of these requirements is to be included in the Submittal Register and/or test plan and the results attached to the Site CQC Daily Report, and submitted to the Navy for record purposes on an "as

occurred" basis, unless otherwise indicated. Each report shall be signed by both the PQCM and designated personnel who witnessed the test or inspection, certifying compliance with the specific contract requirement.

7.9 A summary list of reports and plans that may be required for a CTO is presented in Table 1, Attachment 1, Summary List of Reports/Plans. The number of copies required for each category of report or plan is listed.

7.10 Procedures for reviewing all technical drawings, shop drawings, samples, product data, administrative and close-out submittals, and other submittals for contract compliance will be presented in the PQCP developed for individual CTOs.

8. COMPUTER HARDWARE AND SOFTWARE

This section addresses computer hardware, software, and firmware to be used for the Remedial Action Contract program. Hardware includes disk drives, electrical components, monitors, and other devices used to run the computer programs. Software refers to the computer programs that will be run. Firmware denotes software stored permanently in the form of instructions on computer chips. Specific requirements covering Foster Wheeler Environmental computer hardware, software, and Management Information System (MIS) shall be implemented in accordance with Foster Wheeler Environmental Corporate Administrative Procedures as applicable. The following basic requirements shall be executed in addition to the implementing procedures:

8.1 Computer programs covered by this CQC Program Plan include, but are not limited to design, design analysis, modeling of environmental processes and conditions, operations or process control, and databases or document control registers (when used as the controlled source of quality information).

8.1.1 Computer programs development shall be accomplished using an approved software development methodology. Such programs shall be validated, verified, and documented according to the intended use of the software.

8.2 Test requirements include verification tests, in-use tests, testing procedures, documentation of results, and control and maintenance of all test records.

8.3 Changes shall be controlled and assessed to determine the potential impact of the change on the performance of the software. Retesting shall be conducted when determined to be necessary by management and/or the software developers.

8.4 Foster Wheeler Environmental employs a custom system utilizing the Harper Shuman and CMS Systems to support the project management control system and MIS requirements specified in the contract.

9. WORK PROCESSES AND OPERATIONS

Work conducted by Foster Wheeler Environmental shall be planned, implemented, and assessed according to all applicable parts of this CQC Program Plan. The work processes and operations discussed in this section of the CQC Program Plan only relate to quality-affecting processes and operations. The EPA Data Quality Objectives (DQO) Process as well as a graded approach to environmental projects shall be used in conjunction with this section of the CQC Program Plan. The following are basic requirements for work processes and operations:

9.1 During the work planning process, Senior and Line Management identify quality requirements, contract expectations, and the project scope of work. This planning process occurs before the initiation of individual CTOs.

9.1.1 Planning is conducted according to a graded approach using the DQO Process and/or the nature, complexity, and scope of the work to be performed.

9.1.2 The DQO Process identifies the level of QA/QC needed and the importance or intended use of the results of the work.

9.2 For characterization of environmental processes and conditions, planning includes determination of the level, type, and quality of data required.

9.3 For engineered environmental systems, planning includes a determination of the appropriate design criteria and design bases. Planning considers any special controlled conditions required to ensure that objectives are satisfactorily achieved.

9.4 Work shall be performed according to approved contract requirements and/or documents (e.g., plans, procedures, drawings, specifications).

9.4.1 Work shall be implemented in a sequence consistent with the need for completion of prerequisite and final operations.

9.4.2 Standard Operating Procedures (SOPs) shall be developed and implemented for appropriate routine work operations. Specialized and/or critical operations use SOPs or project-specific documents to perform work operations.

9.4.3 Foster Wheeler Environmental Senior Management establishes policies and procedures for SOPs that address, but are not limited to identification of routine operations needing SOPs; preparation of SOPs including form, content, and applicability; and approval of SOPs. Technically qualified personnel shall approve all SOPs prior to use.

9.5 Assessments of work processes and operations are accomplished through self-assessments and independent assessments. Assessments are conducted according to the requirements of this CQC Program Plan.

10. CONTINUOUS QUALITY IMPROVEMENT

The continuous quality improvement process that Foster Wheeler Environmental employs embraces the basic concepts of Foster Wheeler Environmental Client Service Quality[SM] (CSQ), a continuous quality improvement process. CSQ's purpose is to provide Client Service Quality by continually improving organizational processes and promoting quality consciousness in day-to-day performance through decisions and actions resulting from employee involvement, sense of ownership, and pride in Foster Wheeler Environmental Corporation's business.

Foster Wheeler Environmental Senior Management conducts improvement activities to improve work processes and to detect problems that adversely affect quality. The improvement system uses various components of total quality management (TQM), and is aimed at improving all Foster Wheeler Environmental operations, including planning, implementation, and assessment of both technical and managerial operations.

On a CTO-specific basis, the improvement effort begins at CTO inception and goes through CTO closeout. The prime focus of the improvement system is on exceeding internal and external customer requirements and expectations. The system for quality improvement is an integral part of this CQC Program Plan, and includes the following basic structure:

10.1 Foster Wheeler Environmental management assigns a management steering council composed of senior managers.

10.2 The steering council organizes cross-functional process improvement teams, composed of representatives from all groups directly impacted by changes to a given work process. The cross-functional teams provide horizontal coordination within the various Foster Wheeler Environmental organizations.

10.3 In addition to process improvement teams, each organization can develop a quality council or quality teams to improve operations within their respective groups.

10.4 Through the steering council, process improvement teams, quality councils, or internal organizational teams, employees participate in the improvement process.

10.5 The steering council and teams are trained in the following subjects:

10.5.1 Team Building

10.5.2 Customer Focus and Satisfaction

10.5.3 Quality Improvement Techniques

10.5.4 Data and Statistics Usage

10.5.5 Plan-Do-Check-Act (PDCA) Cycle

10.5.6 Decision Making.

10.6 Improvement opportunities are identified by the steering council, process improvement teams, or individuals.

10.7 Quality improvement indicators will be developed, documented, and approved by Foster Wheeler Environmental management after improvement opportunities have been identified. Performance may be measured in terms of cost, cycle time, customer satisfaction, yield, deviations, rework, or some other indicator consistent with the processes to be improved.

10.8 Each process improvement task, however large or small, is documented in the form of a quality improvement plan, with the improvement indicators clearly addressed.

10.9 The quality improvement plan is implemented, with self-assessments performed at periodic intervals during implementation to evaluate progress toward the established goals.

10.10 The system concentrates on two areas. One is on the prevention of errors and nonconformances with the objective of reducing variation and improving quality. The second is on improving work processes whether they are producing errors and variation or not. Fundamental methodologies, such as process design (flow charts, tree diagrams, etc.), process capability studies, root causes analysis and corrective action, and statistical process controls are used for the following purposes:

10.10.1 To characterize work processes.

10.10.2 To continually reduce product and process variability.

10.10.3 To identify and minimize unstable or error-prone work processes.

10.10.4 To provide early feedback of data to determine the need for product or process changes.

10.11 Quality program assessments and reports identify improvement opportunities and develop and implement improvement plans.

10.12 The PDCA cycle is applied to all phases of improvement activities. This process of Planning, Doing, followed by Checking, then Acting on the results forms a circular feedback loop.

10.13 Nonconformance control and corrective action is tied to the improvement system as an integral part of identifying problems and providing corrective measures.

10.13.1 All conditions of poor quality shall be promptly identified, reported to levels of management with authority, including the Project QC Manager, to bring about improvement, and corrected as soon as practical.

10.13.1.1 Significant conditions of poor quality may require a stoppage of work to prevent complete failure of an item, system, product, or end result.

10.13.2 Items, activities, and processes that do not conform to specified requirements shall be controlled to prevent inadvertent use. These nonconformances are identified, documented, reported, evaluated, segregated when practical, and dispositioned by qualified management and the Project QC Manager.

10.13.3 Corrective action is a part of problem remediation. The corrective action process includes:

10.13.3.1 Understanding the problem, (e.g., symptom vs. systemic, product vs. process, isolated vs. repetitious).

10.13.3.2 Identification of the cause(s) of nonconformances and conditions adverse to quality.

10.13.3.3 Development of a corrective action plan aimed at providing immediate action, and long-term action to prevent a recurrence

of the problem. (Note: The corrective action plan may be a part of a quality improvement plan, or a stand alone plan.)

10.13.3.4 Identifying those personnel responsible for implementing the corrective action plan.

10.13.3.5 Providing integral completion dates as well as a final date for completion of the full corrective action plan.

10.13.3.6 Verification that the corrective action plan has effectively eliminated and prevented a recurrence of the problem.

10.14 All personnel are responsible for reporting problems, implementing corrective measures, and assessing the success of their actions.

10.15 All Foster Wheeler Environmental personnel are also responsible for participating in improvement activities.

PART B:

Design, Construction, and Operation of Engineered Environmental Systems

PART B: DESIGN, CONSTRUCTION, AND OPERATION OF ENGINEERED ENVIRONMENTAL SYSTEMS

Part B contains quality control elements that apply to design, construction, and operation of engineered environmental systems, and includes contamination control devices and systems, waste treatment processes, and site remediation technologies and their components. This section of the CQC Program Plan is applicable to engineered systems used to protect both human health and safety, and the environment from contamination. These elements include the specific activities needed to plan, implement, and assess engineered environmental systems to ensure that systems perform as intended. Part B requirements of this CQC Program Plan are used in conjunction with Part A for the design, construction, and operation of engineered environmental systems. Environmental data operations in support of the design, construction, and operation of engineered environmental systems are conducted under the requirements of Part C. The basic requirements of this section include planning, design, construction/fabrication, operation, inspection/acceptance testing, and quality assessment and response.

1. PLANNING

1.1 All Foster Wheeler Environmental projects involving the design, construction, and operation of remedial/removal actions and other engineered environmental systems are planned and documented according to the elements of this section of the CQC Program Plan. Planning activities are conducted such that the level, type, and quality of inputs to design, construction, and operation are defined and documented.

1.2 Project planning is coordinated among organizations participating in the activities and includes the identification of the following elements as a minimum:

1.2.1 Project/task scope and objectives, and a listing of the primary activities involved.

1.2.2 Specific engineering system components to be designed, fabricated, constructed, and operated.

1.2.3 Technical, performance, and quality standards criteria or objectives.

1.2.4 Personnel, equipment, and other required resources.

1.2.5 Program technical reviews, peer reviews, surveillance, technical or quality assurance audits, and other assessment processes.

1.2.6 Required project and quality assurance/quality control records.

1.2.7 Planning activities documented to the extent necessary to assure that participants in the engineering systems design, construction, and operation are informed of all requirements of the project in a timely manner.

1.2.7.1 Documentation of project and activity planning shall include the appropriate use of work plans, sampling and analysis plans, CQC Program Plan, Project CQC Plan, site health and safety plans, environmental protection plans, design criteria, schedules, organization charts, and other such document types appropriate to the circumstances.

2. DESIGN OF ENGINEERED SYSTEMS

2.1 This section is provided to present Foster Wheeler Environmental's normal procedures for design and engineered systems. All Foster Wheeler Environmental projects involving the design of engineered environmental systems are designed using sound engineering/scientific principles and appropriate standards. Engineering and design activities include the technical and management process leading to and including issuance and revision of design documents that define the technical requirements for specific CTOs. The process shall ensure the control of design inputs, processes, outputs, changes, interfaces (coordination), and records to provide for the following:

2.1.1 Correct translation of design inputs into design outputs.

2.1.2 Effective coordination and interfaces of Foster Wheeler Environmental personnel and subcontractors participating in the design process.

2.1.3 Acceptance and verification of design outputs.

2.1.4 Control and systematic performance of design and engineering assignments.

2.2 Design documents such as specifications, calculations, and drawings shall be consistent with established design criteria. The remedial design shall comply with the contract requirements as well as appropriate regulatory requirements, national standards, and Navy standards applicable to the project or specific CTO.

2.2.1 Specifications and standards referenced in the Basic and CTO Contract, including addenda, amendments, and errata will govern the design of engineered systems. If differences between contract specifications and individual CTO specifications exist, the basic contract specifications will govern unless otherwise agreed by the parties.

2.2.2 Design adequacy shall be verified by persons other than those who designed the process or item. Complex designs shall be verified at critical stages of the development process to effect any changes.

2.2.3 Computer software used for design and associated design calculations shall be verified, validated, and documented according to this standard.

2.2.4 The design process shall ensure that all necessary design documents, criteria, drawings, guides, instructions, specifications, and data sheets for the effective construction and operation of the engineered system are documented, reviewed, and approved by authorized personnel delineated in project procedures, and distributed to those project personnel performing the work.

2.2.5 Design documents shall specify technical and quality acceptance criteria and detail the inspection and test requirements to verify acceptable construction and operation.

2.2.6 Design changes, including field changes, shall be processed in accordance with contract procedures and be prepared, documented, reviewed, and approved with control measures applied to the original design.

2.2.7 Complex systems shall be examined and as-built drawings developed to depict actual configurations.

2.2.8 All design documents shall be reviewed and approved by a registered Professional Engineer where applicable.

2.2.9 All submittals shall be reviewed for compliance with contract requirements, independent of the Project QC Manager, prior to certification/approval by the Project QC Manager or the QC Program Manager.

2.2.10 When Foster Wheeler Environmental is required by an individual CTO to submit a design or certification for formwork, falsework, shoring, or erection procedures, the appropriate CQC Daily Report(s) must indicate each time such work is inspected and approved by a registered Structural or Civil Engineer or Geotechnical Engineer for conformance to the design or certification. A special statement on inspection and approval of these items, rather than a general statement on inspection is required in the CQC report(s).

2.3 Task specific procedures will be used for each assigned CTO.

3. CONSTRUCTION/FABRICATION OF ENGINEERED SYSTEMS

3.1 The construction, fabrication, manufacture, or erection of engineered systems shall be performed under suitably controlled conditions according to the drawings, specifications, and requirements of the approved design. The implementation of the design and engineered system criteria, plans, and approved specifications shall be in accordance with approved procedures according to specific requirements contained in the design, individual CTO, or other applicable planning documents.

3.1.1 Procedures shall be established and implemented to assure that only qualified and accepted services or items are used in the implementation of the design.

3.1.2 The status of construction completion and readiness of equipment and/or systems for turnover and operation shall be verified.

3.1.3 Identification shall be maintained on the items, or in documents traceable to the items, or in a manner assuring that identification is established and maintained.

3.1.4 Handling, storage, cleaning, packaging, shipping, and preserving equipment, components, and parts shall be controlled during construction/fabrication to prevent damage, loss, and deterioration.

4. OPERATION OF ENGINEERED SYSTEMS

4.1 Engineered systems shall be operated according to management-approved design and applicable operating instructions and guides. Work shall be performed by qualified personnel in the area of their assigned responsibilities under required project supervision. When necessary, project personnel shall meet applicable certification requirements before site work is initiated. Status indicators shall be chosen to indicate the operating status of system and components when such actions would adversely affect results, statutory/regulatory compliance, or compliance with individual CTO requirements. Such situations include the loss of data, which are difficult to reproduce, noncompliance with approved environmental protection plans, or the release of pollution in excess of established limits.

4.1.1 Procedures shall be established and implemented to assure that only qualified and accepted services or items are used in the operation of engineered systems.

4.1.2 All items shall be identified in a manner to assure that identification is accurately established and maintained.

4.1.2.1 The handling, storing, cleaning, packaging, shipping, and preserving equipment, components, and parts shall be controlled during operation to prevent damage, loss, and deterioration.

4.1.3 Periodic preventive and corrective maintenance of engineered systems shall be performed according to operating guidance and/or design specifications to ensure satisfactory performance of the system within established operating parameters.

4.1.3.1 Procedures to assure the availability of critical spare parts shall be established and maintained according to operating guidance and/or design specifications. These procedures will ensure satisfactory performance of systems when inoperability of associated engineered systems would result in situations deleterious to the project or environment.

4.1.4 Additional information concerning indoctrination, training, qualifications, and responsibilities of project personnel involved with the operation of engineered systems shall be included as applicable.

5. INSPECTION AND ACCEPTANCE TESTING

5.1 Procedures shall be established and implemented to perform construction and operational inspections and acceptance testing of engineered systems and their components according to the intended use of the items as specified in approved design specifications or other planning documents. When these procedures involve environmental data operations, they shall be conducted according to a CTO-specific sampling and analysis plan developed using the requirements of Part C of this CQC Program Plan. These procedures shall provide independent inspection personnel, in accordance with the design specifications and plan requirements. When acceptance criteria are not met, management shall document and resolve deficiencies and conduct re-inspection as required.

5.2 Approved inspection plans and checklists shall be established and implemented by the Project QC Managers utilizing the inspection and testing procedure and Inspection Plan checklists contained in Attachment 3 as a basis to ensure that inspection and testing will:

5.2.1 Provide adequate confidence that field work was satisfactorily performed.

5.2.2 Provide for an appropriate level of independence in the testing program.

5.2.3 Resolve deficiencies and conduct reinspections as required when acceptance criteria are not met.

5.2.4 Ensure that measuring and test equipment are of the proper type, range, and accuracy. That must also be properly calibrated, maintained, and used according to design specifications and other planning documents.

5.2.5 Ensure unsatisfactory equipment be recalibrated and certified to within tolerances before using for acceptance testing.

5.3 In addition to the general instructions pertaining to inspection procedures provided in Section 5.2 of the CQC Program Plan, specific requirements shall be implemented as follows:

5.3.1 Preparatory inspection shall be performed before beginning work and before beginning each segment of work. Preparatory inspection shall include a review of each paragraph of the applicable specification sections, a review of the contract drawings, a verification that all appropriate drawings and submittals for materials and equipment have been submitted and approved, a review of the test plan to ensure that provisions have been made to provide for required QC testing, an examination of the work area to ensure preliminary work has been completed, an examination of all required materials and equipment and sample work to ensure compliance with approved drawings and data, a review of the safety plan and activity hazard analysis, and a discussion of construction methods.

5.3.2 Initial inspection shall be performed as soon as a representative segment of the particular item of work has been accomplished. Initial inspection shall include performance of scheduled tests, examination of the quality of workmanship, conflict resolution, review of the safety plan and activity hazard analysis, a review for omissions or dimensional errors, approval or rejection of the initial segment of the work., and to ensure all required testing has been performed.

5.3.3 Follow-up inspections shall be performed daily and more frequently as necessary, and shall include repeated testing and examinations to ensure continued compliance with the contract and CTO requirements and to ensure that any rework items are being corrected.

5.3.4 Special inspection and documentation requirements may be contained in the specification sections of individual CTOs. A record of each special inspection and documentation showing the results of these shall be submitted on an as-occurred basis unless otherwise indicated.

5.3.5 When Foster Wheeler Environmental is required by a specification section in an individual CTO to submit a design or certification for formwork, falsework, or erection procedures, the appropriate daily CQC Daily Report(s) must indicate each time such work is inspected and approved by a registered Structural or Civil Engineer for conformance to the design or certification. A

special statement on inspection and approval of these items, rather than a general statement on inspection, is required in the CQC report(s).

5.3.6 Foster Wheeler Environmental shall arrange and perform all factory inspections specifically required in the technical sections of the specifications of all individual CTOs. These inspections shall be reported on the CQC Daily Report and any special inspection and documentation forms.

5.3.7 The Project QC Manager shall maintain a rework items list of work that does not comply with the CTO, stating specifically what is noncomplying, the date the faulty work was originally discovered, and the date the work was corrected. The Project QC Manager shall not allow Foster Wheeler Environmental to add to or build upon nonconforming work unless, in the opinion of the NTR, correction can be made without disturbing the continuing work. The Project QC Manager shall attach a copy of the rework items list of noncomplying items to the last CQC report of the month.

5.3.8 Prior to final U.S. Navy inspection and acceptance, Foster Wheeler Environmental shall deliver a certification, signed by the Project QC Manager, DOM, and QC Program Manager, to the Navy that "the work has been completed, inspected, and tested and is in compliance with the contract."

5.3.9 The service portion of the Basic Contract regarding inspection of service is subject to Federal Acquisition Regulation 52.246-5.

5.4 In addition to the general instructions pertaining to testing procedures provided in Section 5.2 of the CQC Program Plan, specific requirements shall be implemented.

5.4.1 A schedule of inspections shall be prepared for each CTO and provided to the NTR. The inspection schedule shall be in accordance with the specific requirements of individual CTOs.

6. QUALITY ASSESSMENT AND REVIEWS

6.1 Work performed during the design, construction, or operation of engineered systems shall be assessed regularly to ensure that planning requirements such as work plans, CQC Program Plan, design criteria, and design requirements such as drawings, specifications, and data sheets are being implemented as prescribed. Assessments shall include the following:

6.1.1 Inspections and tests.

6.1.2 Reviews and specific reports required by individual CTOs.

6.1.3 Audits and surveillance activities.

6.2 All assessments shall be performed at a frequency appropriate to the circumstances and as required by the contract or specific CTO.

6.2.1 Self-assessments (surveillances) shall be informal and be conducted on a routine basis by CTO personnel.

6.2.2 Independent QC assessments shall be planned, scheduled, and performed as required by the contract or CTO.

6.2.3 Independent QC assessment results shall be documented and reported to and reviewed by appropriate Foster Wheeler Environmental Senior Management. These reports will be forwarded to the Navy when complete.

6.3 Conditions requiring corrective action shall be identified promptly, reported to proper Senior Management specified in the CQC Program Plan or CTO requirements, and addressed as soon as practical.

6.3.1 The cause of significant nonconformances shall be determined and appropriate response actions taken by Foster Wheeler Environmental Senior Management to prevent their recurrence.

6.3.2 Follow-up action shall be taken to validate and verify implementation and the effectiveness of the response action.

PART C:

Characterization of Environmental Processes and Conditions

PART C: CHARACTERIZATION OF ENVIRONMENTAL PROCESSES AND CONDITIONS

Part C of the CQC Program Plan contains the Foster Wheeler Environmental Quality Control system elements for environmental operations. These elements include the specific activities needed to plan, implement, and assess environmental operations to assure that the results satisfy the needs of the data user. The data collection process includes the collection and analysis of samples and data, the collection of process or physical parameters data from engineering systems operations, the monitoring of environmental processes, and the compilation and analysis of environmental data from existing data bases. Part C requirements of this CQC Program Plan are used in conjunction with Part A requirements.

1. PLANNING AND SCOPING

1.1 All Foster Wheeler Environmental projects involving the acquisition, generation, and use of environmental data shall be planned and documented. The requirements for analytical data are presented in the Foster Wheeler Environmental Sampling and Analysis Program Plan (Attachment 4) and will be incorporated only if required by the CTO in a CTO-specific Sampling and Analysis Plan as appropriate.

1.2 Project planning shall be coordinated among participating organizations and includes:

1.2.1 Definition of program/task scope and objectives, and primary requirements and activities involved in the work. When appropriate, this includes the definition of the precise problem and the associated action to be taken.

1.2.2 Identification of the specific environmental data to be collected and analyzed.

1.2.3 Identification of applicable technical, regulatory, or program-specific quality standards, criteria, or objectives and identification of procedures for data quality verification.

1.2.4 Identification of personnel, equipment (including field and laboratory testing equipment, along with performance and calibration requirements).

1.2.5 Identification of controlled conditions required for the collection and analysis of environmental samples and related data.

1.2.6 Determination of assessment tools (i.e., program technical reviews, peer reviews, surveillances, inspections, and technical audits) as needed and/or specified by Foster Wheeler Environmental Senior Management and/or CQC Program Plan.

1.2.7 Identification of methods or procedures for field and laboratory sampling, testing and analysis activities, as well as the appropriate mechanism for making change to sampling and analysis plans as per individual CTO.

1.2.8 Definition of required records.

1.3 The level, type, and quality of environmental data needed for their intended use shall be defined and documented using the EPA DQO Process described in Section 9.0, Part A of this CQC Program Plan.

1.4 Planning activities shall be documented to ensure that participants are informed of and understand the requirements of the project.

1.4.1 All documents shall be reviewed according to project-specific requirements, and approved by appropriate Senior Management.

1.5 Training activities to meet specific requirements shall be contained within individual CTOs.

2. DESIGN OF DATA COLLECTION OPERATIONS

Processes for characterizing environmental conditions are defined, documented, verified, and controlled through the design processes discussed in this section. The data collection process includes and applies to the design of field sampling events, sample handling and custody, field and laboratory analytical operations, data validation and verification methods, techniques for assessing limitations on data use, and data reporting requirements. The design process also applies to data compilation for modeling or additional environmental studies.

The extent of quantification of sampling and analysis is reflected in the intended use of the data. Variables that determine or affect the quality of results and data are identified according to the DQO Process, and appropriately controlled using the graded approach.

2.1 The design of data collection operations requires all relevant activities be identified.

2.2 Applicable SOPs concerning data collection processes will be provided per individual CTO. Considerations pertaining to data collection operations include, but are not limited to the following:

2.2.1 Health and safety considerations.

2.2.2 Sample type and sampling location requirements.

2.2.2.1 Sample handling and custody requirements.

2.2.2.2 Personnel requirements and qualifications.

2.2.2.3 Instrumentation, and materials and test equipment (M&TE) calibration requirements.

2.2.3 Selection of analytical methods.

2.2.3.1 Analytical facilities performing work in connection with specific sampling and chemical analysis of contaminated media shall be approved by the Navy Facilities Engineering Service Center (NFESC) IR Quality Assurance Program or any EFD/EFA approved accreditation program.

2.2.3.2 Laboratory personnel requirements and qualifications.

2.2.3.3 Laboratory instrumentation and M&TE calibration requirements.

2.2.4 Samples for calibration and evaluation of analytical methods.

2.2.5 Strategy for readiness reviews and training prior to data collection.

2.2.6 Traceability of data.

2.2.7 Data transfer, reduction, validation and verification requirements.

2.2.7.1 Data interpretation and analysis.

2.2.7.2 Correct application of statistical methods.

2.3 Performance standards and specifications shall be established, and the relevant activities controlled.

2.4 The Sampling and Analysis Plan shall be developed referencing work plans, SOPs, and other related information in accordance with the Foster Wheeler Environmental Sampling and Analysis Program Plan (Attachment 4).

2.4.1 Oversight, verification methods, independent assessments, and quality control requirements shall be included.

2.4.2 Design or procedural changes, including field changes, shall be reviewed and approved by those responsible for the original documents.

2.5 Plans and documents shall identify the QA/QC requirements and responsibilities of each organization participating in the project.

2.6 When multiple Foster Wheeler Environmental organizations and/or subcontractors participate in a single project, the approved Sampling and Analysis plans and other documentation shall be binding on all participating groups.

2.7 Reports to management regarding the status of quality-affecting work, interim results, and results of assessment activities shall be provided to participating project management.

3. IMPLEMENTATION OF PLANNED OPERATIONS

All environmental operations, including data collection, shall be implemented according to approved plans, implementing procedures (e.g., procedures, work instructions, drawings, standard practices), and other applicable documentation.

3.1 All activities affecting quality shall be prescribed by and performed in accordance with approved implementing procedures.

3.1.1 These implementing procedures shall include or reference appropriate quantitative or qualitative acceptance criteria for determining that prescribed activities have been satisfactorily accomplished.

3.1.2 All implementing procedures shall meet the document control requirements identified in Part A Section 7 of this CQC Program Plan, Document Control and Records.

3.1.3 Final acceptance shall be performed by personnel independent of the operations involved, including affected management.

3.1.4 When acceptance criteria are not met, deficiencies must be identified, documented, and resolved, then re-inspected to original acceptance criteria.

3.2 All Foster Wheeler Environmental personnel performing work activities shall comply with the approved implementing procedures, and all other pertinent documents.

3.3 Identification of accepted items or services shall be maintained on the item itself or in documentation traceable to the items or services.

3.4 Tools, gauges, instruments, and other sampling, measuring, and test equipment used for activities that affect quality shall be calibrated at specified periods in accordance with the manufacturer's instructions to maintain accuracy as required.

3.5 Handling, storage, cleaning, packaging, and preservation of field and laboratory samples shall be performed according to sampling and analysis plans, SOPs, or other CTO-specific documents. Sample custody shall be documented and tracked to ensure integrity and validity of the samples.

3.6 Data or information transmittal, storage, processing, assessment, and validation shall be performed in accordance with CTO-specific requirements.

4. ASSESSMENT OF DATA USABILITY

Data obtained from environmental operations shall be qualified according to the EPA DQO assessment criteria.

4.1 The basic requirements shall include an evaluation of data in terms of precision, accuracy, representativeness, completeness, and comparability (PARCC).

4.1.1 Data shall be qualified according to approved processes that are specified during the planning, scoping, and design of the data collection.

4.1.2 Any limitations on data use shall be identified quantitatively and fully documented.

4.1.3 Project reports containing data or reporting the results of environmental data shall be reviewed independently (including a quality assurance/quality control review) of the originator by qualified peers to confirm that the data or results are presented correctly. Such reports shall be approved by appropriate levels of management.

4.2 Analytical data assessment is discussed in the Foster Wheeler Environmental Corporation Sampling and Analysis Program Plan (Attachment 4).

5. QUALITY ASSESSMENT AND REVIEWS

Activities performed during environmental data operations that affect quality shall be regularly assessed to ensure that the requirements are implemented as prescribed.

5.1 The basic requirements for assessment and reviews include the following:

5.1.1 Assessments include one or more of the following: inspections, QC checks, surveillances, reviews, and audits. The QC assessments are performed as formal independent assessments.

5.1.2 Self-assessments will be informal. Independent QC assessments will be formal and shall be planned, scheduled, and performed.

5.1.3 Formal QC assessment results shall be documented, reported to, and reviewed by responsible management with a copy of the completed report being forwarded to the Navy.

5.1.4 Conditions requiring corrective action shall be identified and addressed promptly. The cause(s) shall be determined, and appropriate response action(s) taken by management to prevent a recurrence of the deficient conditions.

5.1.5 Follow-up action shall be taken to validate and verify the implementation and effectiveness of corrective actions.

5.2 Quality assessment requirements for inspection, testing, and review activities shall be implemented in accordance with provisions of the Basic Contract and individual CTOs awarded under this contract.

ATTACHMENT 1

Sample Contractor Quality Control Forms and Letters

- Program CQC Manager Appointment Letter and Resume
- Contractor Quality Control Report
- Contractor Production Report
- Monthly Rework Items List
- Submittal Register Form
- Summary List of Reports/Plans
- Field Change Request
- Deficiency Notice

FOSTER WHEELER ENVIRONMENTAL CORPORATION

March 25, 1999

Ms. Mary Schneider
Foster Wheeler Environmental Corporation
611 Anton Boulevard, Suite 800
Costa Mesa, California 92626

Subject: Quality Control Program Manager Appointment

Reference: Contract N68711-98-D-5713, United States Navy Southwest Division (SWDIV) Environmental Remediation Contract FWLN-ESQ-99-012

Dear Ms. Schneider:

In accordance with the terms of Foster Wheeler Environmental Corporation's (Foster Wheeler Environmental) contract N68711-98-D-5713, this letter notifies you of your appointment as the Quality Control (QC) Program Manager on the United States Navy SWDIV Remedial Action Contract (RAC). This appointment is effective pending SWDIV approval of your credentials as a key personnel change on the contract. As the designated QC Program Manager, you have the authorities and responsibilities for implementing the QC Program as identified in Part A, Section 2.5.4 of Foster Wheeler Environmental's Contractor Quality Control Program Plan and Section C, Part 6.7.1 of the basic contract. You have the authority and responsibility for suspending work when conditions adverse to quality are identified and for directing the correction of all non-conforming work.

This letter is effective as of April 1, 1999 and until modified by the Corporate Director of Quality Programs, with concurrence of the Foster Wheeler Environmental RAC Program Manager and SWDIV.

Sincerely,

Atwood F. Davis

Atwood F. Davis, CPC, CQA
Corporate Director of Quality Programs

cc.: N. Hart, FWENC Program Manager

2300 LINCOLN HIGHWAY EAST, 1 OXFORD VALLEY, STE. 200, LANGHORNE, PA 19047
TEL: 215-702-4000 FAX: 215-702-4045

MARY K. SCHNEIDER
Program Quality Control Manager
Foster Wheeler Environmental Corporation

Education:	University of California, Los Angeles Bachelor of Science, Chemistry, 1982
Additional Training:	ISO 9000 Lead Auditor Training – 5/98 Managing Environmental Quality Assurance Course – 3/98 Data Quality Objectives/ Data Quality Assessment Workshops – 2/97 Quality Assurance in Environmental Field Screening, Sampling and Analysis Workshop – 5/95 Technical and Business Writing – 6/96 8 Hour Hazards and Protection Refresher – 11/98 40 Hours Hazardous Waste Operations

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Technical Expertise

- Over 12 years experience in the environmental services industry applying QA and QC theories, principles and practices to analytical laboratory operations, site investigation and remediation
- In-depth knowledge of EPA, Navy, State and local regulatory requirements
- Experience in management and supervision of chemists involved in sample analysis, field sampling, and project support in data quality assessment
- Served as Program Chemist and Point of Contact to the SWDIV Quality Assurance Officer for SWDIV RAC I program
- Understands the strengths and weaknesses of US EPA analytical methodologies
- Expertise in conducting audits of analytical laboratories and field sampling activities
- Hands-on laboratory experience in environmental sample analyses
- Experience in the development of Field Sampling Plans and Quality Assurance Project Plans for CERCLA, RCRA, and local agency projects
- Understands various remedial technologies and sampling and analysis requirements
- Experience in review, validation and assessment of data quality
- Experience in development of Standard Operating Procedures for sampling for remediation projects
- Experience in database management

Professional Experience

Program Chemist

Oct. 1998 to Present, Foster Wheeler Environmental Corporation, Costa Mesa, CA
Joined Foster Wheeler as Program Chemist for the Navy SWDIV RAC III. Responsible for analytical data quality assurance program including development and implementation of procedures to meet technical and contractual requirements in the areas of sampling, analysis and

data management. Develops technical specifications and participates in the selection of analytical laboratories supporting the RAC program.

Involved in the development of the NEDTS database, and established procedures for maintenance of the database.

Field Analytical Services Manager
Nov. 1994 to Sep. 1998, OHM/IT Group, Irvine, CA
As a program chemist for the Navy SWDIV RAC I, was responsible for development and implementation of sampling and analysis programs, soliciting and selecting analytical laboratories, sampling design, and selection of appropriate analytical methods. Interfaced with laboratories to meet the project data quality objectives. Interfaced with client and regulatory agencies, and was involved in cost estimating of projects.

Developed Sampling and Analysis Plan (SAP) template providing for easier set up and cost savings in preparing project-specific plans. Reviewed all sampling and analysis plans.

Participated in the Data Quality Council Meeting with the Navy Quality Assurance Officer (QAO) and other prime contractor representatives in implementation of regulatory agency requirements on all SWDIV projects.

Performed audits of field sampling activities and subcontracting analytical laboratories. Accompanied the Navy SWDIV QAO on all field audits.

Managed chemists, technicians and data managers working on various remediation projects.

Project Chemist/Team Leader
Dec. 1992 to Nov. 1994, Jacobs Engineering Group, Pasadena, CA
Responsible for quality control and quality assurance (QC/QA) related to the sampling and analysis portion of site investigation projects. Duties included: selection of appropriate analytical methods, setting field sample management programs, auditing field sampling activities, data validation and evaluation, auditing subcontract laboratories, and writing reports. As a team leader, scheduled work of project members within the chemistry/data management group.

Laboratory Supervisor
Oct. 1989 to Oct. 1992, PRA Environmental Laboratory, Walnut, CA
Responsible for all aspects of lab operations, analyst supervision, data review, instrument purchase, training and method implementation. Served as laboratory liaison with clients and regulatory agencies.

Senior Chemist/Group Leader
Jan. 1988 to Oct. 1989, BC Analytical, Glendale, CA
Responsible for review and approval of data for the analysis of soil, water and vapor samples to ensure compliance with client and regulatory agency guidelines. Scheduled and trained seven chemists, while maintaining instruments for high productivity.

Air Quality Chemist
Nov. 1986 to Feb. 1988, SCAQMD, El Monte, CA
Responsible for analysis of toxic organics in vapor samples using GC with various detectors, and HPLC. Additional responsibilities included instrument maintenance and troubleshooting, installation of new instrumentation and developing new analytical methodology for the District.

Chemist
Feb. 1984 to Nov. 1986, Avery International Research Center, Pasadena, CA
Characterized and de-formulated in-house and competitor adhesives and polymers using HPLC, SEC, Thermal Analysis, Multidimensional GC, IR and wet chemical analyses. Developed methods for more accurate compound characterization and QA procedures in production. Evaluate and incorporate data systems into routine operations.

Chemist
Aug. 1982 to Feb. 1984, Packaging Corp. of America, Los Angeles, CA
Analyzed finished and in-process cosmetic and pharmaceutical products using GC, IR, HPLC, UV-Vis spectroscopy and wet chemical methods.

CONTRACTOR QUALITY CONTROL REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE

PHASE	Y-YES: N-NO, SEE REMARKS. BLANK-NOT APPLICABLE		IDENTIFY DEFINABLE FEATURES OF WORK, LOCATION, AND LIST PERSONNEL PRESENT
PREPARATORY	THE PLANS AND SPECS HAVE BEEN REVIEWED		
	THE SUBMITTALS HAVE BEEN APPROVED		
	MATERIALS COMPLY WITH APPROVED SUBMITTALS		
	MATERIALS ARE STORED PROPERLY		
	PRELIMINARY WORK WAS DONE CORRECTLY		
	TESTING PLAN HAS BEEN REVIEWED		
	WORK METHOD AND SCHEDULE DISCUSSED		
INITIAL	PRELIMINARY WORK WAS DONE CORRECTLY		TESTING PERFORMED AND WHO PERFORMED TEST
	SAMPLE HAS BEEN PREPARED/APPROVED		
	WORKMANSHIP IS SATISFACTORY		
	TEST RESULTS ARE ACCEPTABLE		
	WORK IS IN COMPLIANCE WITH THE CONTRACT		
FOLLOW-UP	WORK COMPLIES WITH CONTRACT AS APPROVED IN INITIAL PHASE		TESTING PERFORMED AND WHO PERFORMED TEST

REWORK ITEMS IDENTIFIED TODAY (NOT CORRECTED BY CLOSE OF BUSINESS)	REWORK ITEMS CORRECTED TODAY (FROM REWORK ITEMS LIST)

REMARKS

On behalf of the contractor, I certify that this report is complete and correct and the equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report.

AUTHORIZED QC MANAGER AT SITE — DATE

GOVERNMENT QUALITY ASSURANCE REPORT

DATE

QUALITY ASSURANCE REPRESENTATIVE'S REMARKS AND/OR EXCEPTIONS TO THE REPORT

GOVERNMENT QA REPRESENTATIVE — DATE

CONTRACTOR PRODUCTION REPORT

Page ____ of ____

DATE:

CONTRACT NO	Project Title:	REPORT NO
N68711-98-D-5713	Project Location: DO #:	

Contractor: FWENC

Superintendent:

AM WEATHER CONDITIONS	PM WEATHER CONDITIONS	MAX. TEMP	MIN. TEMP.
		°	°

WORK PERFORMED TODAY

WORK LOCATION AND DESCRIPTION	EMPLOYER	NO.	TRADE	HRS

JOB SAFETY				
	Was a Job Safety Meeting held this date?	Yes ☐	No ☐	Total Work Hours On Job Site This Date:
	Were there any lost time accidents this date?	Yes ☐	No ☐	Cumulative Total of Previous Work Hours:
	Was Trenching / Scaffolding / Electrical Work Done?	Yes ☐	No ☐	
	Was Hazardous Material Waste released into the environment?	Yes ☐	No ☐	Total Hours From Start of Construction:

List Safety Actions Taken Today / Safety Inspection Conducted:

EQUIPMENT / RENTAL DESCRIPTION	VENDOR	P.O. #	CHARGE #	UNIT RATE	HRS	INCURED COST	

MATERIALS / SUPPLIES RECEIVED	VENDOR	P.O. #	CHARGE #	UNIT RATE	QTY REC'D	ACCUM QTY	P.O. QTY

NEW ONGOING COSTS	VENDOR	P.O. #	CHARGE #	First or Last Day	UNIT RATE		

SUB. / SERVICES DESCRIPTION	VENDOR	P.O. #	CHARGE #	F/P or L/S (type)	COST INCUR	% COMPLETE	ACCUM % COMPLETE

LAB SAMPLES	VENDOR	P.O. #	CHARGE #	UNIT RATE	# OF SAMP.	INCURED COST	

COMMENTS

FWENC Superintendent Date

Note: This form includes all the information as presented on form NAVFAC 4296/1 (7/96)

CONTINUATION IF REQUIRED:

EQUIPMENT / RENTAL DESCRIPTION	VENDOR	P.O. #	CHARGE #	UNIT RATE	HRS	INCURED COST	
MATERIALS / SUPPLIES RECEIVED	VENDOR	P.O. #	CHARGE #	UNIT RATE	QTY REC'D	ACCUM QTY	P.O. QTY
NEW ONGOING COSTS	VENDOR	P.O. #	CHARGE #	First or Last Day	UNIT RATE		
SUB. / SERVICES DESCRIPTION	VENDOR	P.O. #	CHARGE #	F/P or L/S (type)	COST INCUR	% COMPLETE	ACCUM % COMPLETE
LAB SAMPLES	VENDOR	P.O. #	CHARGE #	UNIT RATE	# OF SAMP.	INCURED COST	

COMMENTS

FWENC Superintendent Date

Note: This form includes all the information as presented on form NAVFAC 4296/1 (7/96)

Foster Wheeler Environmental Corp.

CTO #: _____

Site Superintendent: _____

Quantity: **WBS Code:** 1990.

UOM (Circle One): CY Tons LF SF EA

Date	Units	Comments

Quantity: **WBS Code:** 1990.

UOM (Circle One): CY Tons LF SF EA

Date	Units	Comments

Quantity: **WBS Code:** 1990.

UOM (Circle One): CY Tons LF SF EA

Date	Units	Comments

Page ____ of ____

_____
Contract Task Order Number

MONTHLY REWORK ITEMS LIST
DATE: _____

NO.	IDENTIFICATION OF ITEM REQUIRING REWORK	DATE IDENTIFIED	DATE CORRECTED	REMARKS

_____
Signature of Project QC Manager and Date

SUBMITTAL REGISTER (Part A)

Contract Number:	Project Title:
CTO No. ____	Location:

	Specification Section Number	SD No and Type of Submittal Material or Product	Specification Paragraph Number	Classification/ Approval by CO*	Govt. or A/E Reviewer	Transmittal Control No.	Planned Submittal Date
	(A)	(B)	(C)	(D)	(E)	(F)	(G)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

* Approved by:
G: Contracting Officer
Blank: CQC Program Manager

SUBMITTAL REGISTER (Part B)

Location:							Contractor:	
Contractor Action			Approving Authority Action				Contracting Officer/ Contractor	
Action Code	Date of Action	Date FWD to Approving Authority Date recd. from Contractor	Date FWD to other Reviewer	Date Received from other Reviewer	Action Code	Date of Action	Mailed to Contractor/ Received from Approving Authority	Remarks
(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)
								1
								2
								3
								4
								5
								6
								7
								8
								9
								10
								11
								12
								13
								14
								15
								16
								17
								18

Action Code: NR: Not Reviewed AN: Approved as Noted
A: Approved RR: Disapproved; Revise and Resubmit (Others may be prescribed by Transmittal Form)

Table 1. Summary list of reports/plans.

Category	Number of Copies
a. CQC Daily Reports	Original + 1 (submitted daily)
b. Contractor Production Reports	Original + 1 (attached to CQC report daily)
c. Special Inspection and Documentation	Original + 1 (attached to applicable CQC report)
d. Rework Items List	1 (last working day of month), Original (maintained up-to-date)
e. Test Results	Original + 1 (attached to applicable CQC report)
f. Summary Test Report (if required)	Original + 1 (attached monthly with CQC report)
g. CQC Program Plan (Basic Plan)	3 (submitted within 30 days of award of basic contract)
h. Addenda to CQC Program Plan (Supplemental to Basic CQC Program Plan)	7 (submitted within 15 days of CTO award)
i. Testing Plan (Updated Testing Plan and Log)	1 (attached to CQC Report last day of month)
j. Health & Safety Plan	1 (submitted within 30 days of award of the basic contract), Original (maintained up-to-date)
k. Submittal Register Form	7 (submitted within 15 to 45 days of award of CTO), Original (maintained up-to-date)
l. As-Builts	1 sepia + 1 full size set
m. Completion Certification	Original (submit in accordance with CTO at conclusion of technical work)
n. Gov't approval of Test Lab documents	3 (submit to COTR via RPM Representative)
o. QC Meeting Minutes	1 (submitted within 3 days of meeting)
p. QC Certifications	1 (with each submittal)

FOSTER WHEELER ENVIRONMENTAL CORPORATION

NAVY RAC PROJECT

CONTRACT NO. _____

FIELD CHANGE REQUEST (FCR)

CONTRACT TASK ORDER NAME	CTO #	CHANGE REQUEST NO. FCR-
TO NAVY NTR/RPM/COTR	LOCATION	DATE

RE: ___ Drawing No. _____ Title _____

___ Spec Section _____ Title _____

___ Other _____

1. DESCRIPTION (Items involved, submit sketch, if applicable):

2. REASON FOR CHANGE

3. RECOMMENDED DISPOSITION (Submit sketch, if applicable):

_____ Minor Change _____ Major Change (Impacts Cost, Schedule or Technical)

3a. Will this change result in a contract cost or time change? _____ YES _____ NO

3b. Estimate of contract cost or time charge (if any) _____

PREPARER (Signature)	DATE	PREPARER'S TITLE	SITE SUPERINTENDENT (Signature)	DATE

4. DISPOSITION

___ Not approved (give reason).

___ Considered minor change - approved per Recommended Disposition - Documents will not formally be revised, field to maintain as-built records.

___ Considered major change - Navy approval required via contract modification process.

1) FOSTER WHEELER ENVIRONMENTAL REGIONAL ENGINEER (Signature) (IF ENGINEERING RELATED)	DATE	2) FOSTER WHEELER ENVIRONMENTAL PROJECT MANAGER (Signature)	DATE
3) CIH (Signature) (IF HEALTH AND SAFETY RELATED) ____ Comments (attached) ____ No Comments	DATE	4) REGIONAL SCIENTIST (Signature) (IF SCIENCE RELATED ____ Comments (attached) ____ No Comments	DATE
5) QC PROGRAM MANAGER (Signature)) ____ Comments (attached) ____ No Comments	DATE		

Project Manager distributes to:

CAM	QCM	FCR Preparer
Regional Engineer Regional Scientist	Site Superintendent	CIH

REV: 3-13-96

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_____
PROJECT

DEFICIENCY NOTICE

RESPONSIBLE ORGANIZATION _____ D.N. No. _____
DEFICIENT CONDITION _____ DATE _____
LOCATION _____

I. DESCRIBE DEFICIENCY: _____

QC Notification Required Prior to Initiating Corrective Action: Yes_____ No_____ Hold Tag No._____
D.N. Prepared by: _____ Approved by: _____
PROJECT QC MANAGER

II. CORRECTIVE ACTION: _____

ORGANIZATION SIGNATURE DATE

III. REINSPECTION
Results:
_____ Accept
_____ Reject - Reissue Under: D.N. No. _____ NCR No. _____

INSPECTOR DATE

PROJECT QC MANAGER DATE

IV. APPROVALS

Responsible Organization: _____ QC Program Manager: _____
Site Superintendent: _____ Project Manager: _____
Program Manager: _____

ATTACHMENT 2

Terms and Definitions

TERMS AND DEFINITIONS

Activity	An all-inclusive term describing a specific set of operations or work to be performed (e.g., research and development, field sampling, analytical operations, equipment fabrication).
Assessment	An all inclusive term used to denote any of the following: audit inspections, performance evaluation, management systems review, peer review, technical inspection, or surveillance.
Audit Inspection	A planned and documented inspection of an item or process to determine the adequacy of and compliance with established procedures, instructions, drawings, or plans.
Contractor	Any organization or individual that contracts to furnish services or items or perform work at a certain time or rate. Foster Wheeler Environmental is the contractor on the RAC.
Data Quality Objectives	DQOs are quantitative and qualitative statements that specify the quality of data required to support the decision making process. The DQO process must be initiated during project planning to produce work plans resulting in data that have a quantifiable degree of certainty.
Engineered Environmental Systems	An all-inclusive term used to describe pollution control devices and systems, waste treatment processes, and site remediation technologies and their components that may be utilized to remove pollutants or contaminants from the environment. Examples include wet scrubbers (air), soil washing (soil), granulated activated carbon unit (water), and filtration (air, water). Usually, this term will apply to hardware-based systems; however, it will also apply to methods or techniques used for pollutant reduction or containment of contamination to prevent further movement of the contaminants, such as capping, solidification or vitrification, and biological treatment.
Environmental Data	Any measurements or information that describe environmental processes or conditions, or the performance of engineered environmental systems.
Environmental Processes	Man-made or natural processes that produce discharges to or impact the ambient environment.

Graded Approach	The process of basing the application of managerial controls applied to an item or activity according to the intended use of the results and the degree of confidence needed in the quality of the results. (See Data Quality Objectives also)
Independent QC Assessment	A formal QC inspection performed by the QC Program Manager or by a qualified individual that is not a part of the organization directly performing the work being assessed.
Management	Those individuals directly responsible and accountable for planning, implementing, and assessing work. Senior management refers to managers who are responsible and accountable for mission accomplishment and overall operations. Support management refers to managers responsible and accountable for operating services and functions in support of line operations.
Procedure	A documented set of steps or actions that systematically specifies or describes how an activity is to be performed.
Process	An orderly system of actions that achieves a desired end or result.
Project Quality Control Plan	A formal document describing in comprehensive detail the necessary quality assurance, quality control, and other technical activities that must be implemented to ensure that the results of the work performed on a specific CTO will satisfy the stated performance criteria.
Quality	The sum of features and properties/characteristics of a process, item, or service that bears on its ability to met or exceed the stated needs of the user.
Quality Assurance (QA)	An integrated system of management activities involving planning, implementation, assessment, reporting, and quality improvement to ensure that a process, item or service is the type and quality needed and expected by the customer. QA is performed by the Navy on the RAC.
Quality Control (QC)	The overall system of technical activities that measures and controls the quality of a process, item, or service so that they meet the stated needs of the user. QC is performed by Foster Wheeler Environmental on the RAC.

Quality Control Program Plan	A structured and documented management system describing the policies, objectives, principles, organizational structure, functional responsibilities, accountability and implementation plan of an organization for ensuring quality in its work processes, products (items), and services. The QC program provides the framework for planning, implementing, and assessing work performed by the organization and for carrying out required QA and QC.
Quality Improvement	A management program for improving the quality of operations. Such management programs generally entail a formal mechanism for encouraging worker recommendations with timely management evaluation and feedback or implementation. Foster Wheeler Environmental uses its Client Service Quality^{SM} program for quality improvement.
Self-Assessment	Informal assessments of work conducted by individuals, groups, or organizations immediately responsible for performing the work. Self-assessment reports are not mandatory.
Standard Operating Procedure (SOP) (Field Technical Guidelines)	A written document that details the method of an operation, analysis, or action with thoroughly prescribed techniques and procedures and that is officially approved as the method for performing certain routine or repetitive tasks.
Subcontractor	Any individual or organization furnishing items or services to Foster Wheeler Environmental according to a procurement document or financial assistance agreement. This is an all-inclusive term used in place of any of the following: vendor, seller, supplier, subcontractor, fabricator, or consultant.
Surveillance	The informal act of self-monitoring or observing a process or activity to verify conformance to specified requirements. This term may be interchangeable with self assessment.
Technical Inspection	Examination or measurement of attributes of an item or activity to verify conformance to specifications.
Validation	An activity that demonstrates that a process, item,, data set, or services that satisfies the-requirements defined by the user. The act of evaluating and documenting whether processes, items, services, or documents meet specified requirements.

ATTACHMENT 3

Inspection and Testing Procedure and Checklists

CATEGORY: Quality Control	TITLE: Inspection and Testing	NO.: TS-1 DATE: 4/26/99
PREPARED BY: J. Lisic	APPROVED BY: S.A. Viskup	REVISION: FINAL

1. INSPECTION AND TESTING

The Project QC Manager (PQCM) is responsible for overseeing the performance of required inspections and tests at the Contract Task Order (CTO) site, including the preparation of applicable inspection plans and completion of the required documentation. The QC Program Manager will review the qualifications of inspection and testing personnel so that only qualified personnel are used.

1.1 INDOCTRINATION AND TRAINING

1.1.1 Inspection and testing personnel are to be knowledgeable of the specifications, codes and/or procedures to be applied to the specific work in their area or designated as their responsibility and they are to be qualified through educational training or field experience on work assignments.

1.1.2 The QC Program Manager, or his designee, shall review the qualifications of inspection and testing personnel prior to work assignments and determine where indoctrination and training is required. Individuals are assigned to work with qualified personnel until adequate competence is attained.

1.1.3 Personnel responsible for directing the work shall be knowledgeable of the codes and/or procedures to be applied to the specific work in their area or designed as their responsibility. Such personnel shall be appropriately indoctrinated as to the requirements set forth and the related quality requirements.

1.2 IN-PROCESS INSPECTIONS AND TESTS

1.2.1 The PQCM or designee shall review the plans and specifications for the CTO and provide inspection and test coverage as required. Inspection and test results are to be recorded by the inspectors on inspection reports for services performed by Foster Wheeler Environmental personnel. Appropriate inspection reports shall also be prepared at frequencies established by CTO requirements in the surveillance of subcontracted work. These reports shall include any quality deviations observed.

1.2.2 Subcontractors are responsible for first-level QC and for conformity to the plans and specifications as required by the respective subcontracts. Foster Wheeler Environmental staff will monitor the subcontractor's work activities with respect to quality and will review the subcontractors' inspection procedures.

1.2.3 For inspections and tests to be performed by Foster Wheeler Environmental personnel, inspection plans shall be prepared by the PQCM or designee and shall be used by inspection and test personnel to provide an itemized basis for the performance of inspection and materials testing functions, based on prevailing technical specifications and related requirements.

1.2.4 A schedule of inspection plans shall be prepared prior to the start of site work by the PQCM or a designee and shall be maintained to include a listing of titles as indicated by the CTO scope.

1.2.5 Inspection plans shall be prepared as early as possible making use of information available at the time. All inspection plans shall be reviewed by the QC Program Manager prior to their being put into use and updated, where necessary, in order to include any requirements which may have developed since the original preparation. A historical file of revisions and changes to inspection plans shall be maintained.

1.2.6 Inspection plans shall be identified and dated and shall contain authorized signature(s) of approval. Revisions to inspection plans shall be reviewed and approved by the same parties that approved the original issue. Typical inspection plans are included in Attachment A of TS-1.

1.2.7 Where included in the scope of work, services of inspection and testing laboratories may be subcontracted for functions such as concrete testing, soils testing, nondestructive examinations, and for analytical services. In such cases, subcontract personnel assigned to the site and provision of offsite testing services are coordinated by the PQCM or a designee. Subcontractors for inspection and testing services are preapproved by the Navy from qualified inspection and testing laboratories.

1.2.8 Test reports shall be reviewed, signed off, and certified by the PQCM to verify that test requirements have been satisfied.

ATTACHMENT A OF TS-1 - TYPICAL INSPECTION PLANS

No.	Inspection Plan No.	Title
1	1	Earthwork
2	4	Sheet Piling
3	5	Concrete Construction
4	6	Underground Piping
5	11	Mechanical/Electrical Equipment
6	15	Cable and Wiring
7	16	Cable Terminations
8	18	Instrumentation/Control Systems
9	19	Piping Erection
10	22	Coatings
11	25	Storage and Maintenance
12	26	Pressure/Vacuum Tests
13	28	Grouting Inspection
14	33	Cadwelds
15	34	Concrete Core Drilling
16	35	Batch Plant Inspection
17	37	Asphalt Paving

ATTACHMENT A

FW	Foster Wheeler Environmental Corporation	
APPROVAL 8/17/87	INSPECTION PLAN NO. 1 EARTHWORK INSPECTION	REVISION 1 DATE 9/4/90 BY MRH

1.1 Earthwork is defined as preparation of the site for construction, access roads and railroad earthwork, excavation for structures and equipment foundations, pipelines and ducts, excavation of unsuitable material, backfill around completed structures, pipelines and ducts and disposition of excavated material not required in the completed construction. This work will be performed in conformance with the appropriate Specifications prepared for the project.

1.2 Properties of earth material which shall be obtained and recorded shall include but not be limited to the following tests:

a) Classification

b) Physical properties

c) Compaction tests

1.3 These tests shall be performed by a competent soils laboratory that will conduct laboratory and field tests, develop compaction curves, and establish parameters for the earth material as required to meet the project specifications. The services of soil technicians are generally required full time when major earthwork activity is in progress. When earthwork operations become periodic, soil technicians shall be assigned as required.

1.4 Reports of soil tests shall be submitted to the Chief Field Engineer promptly after completion, along with suggestions and/or recommendations for correcting work failing to meet specification requirements. The reports shall include a description of the test location, soil classification, moisture content, percent of compaction, and recommendation for corrective action, if required.

1.5 Where backfill specifications require the material to have a particular gradation because of permeability requirements, samples of stockpiled material shall be obtained and the material shall not be released for use until satisfactory conformance with gradation requirements can be demonstrated. Results of these tests shall be handled as described above.

1.6 As required, grade checkers and layout crews shall be assigned to work under the direction of the Chief Field Engineer to assure that the "as built" dimensions of the grading, excavation or backfill conform to the neat lines shown on the Drawings or required by the Specifications.

1.7 A typical Inspection Checklist for Earthwork Inspection is attached hereto.

Foster Wheeler
Environmental Corporation

NUMBER 1

DATE

INSPECTION CHECKLIST

PAGE 1 OF 3

PROJECT

ACTIVITY EARTHWORK INSPECTION

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
	Borrow, Stockpile Areas					
1.	Removal of Unsuitable					
	Materials					
2.	Maintenance of					
	Area Drainage					
3.	Moisture Content,					
	Gradation and					
	Other Requirements As					
	Specified					
	Prior To Placement,					
	Fill Area					
4.	Removal of Unsuitable					
	Materials					
5.	Surface:					
a.	Scarified To Specified					
	Depth, _____ Inches					
b.	Moisture Conditioned					
c.	Properly Compacted					
6.	Adjacent Concrete					
	At Required Strength					
7.	Adjacent Water-Proofing					
	Protected					

INSPECTOR

Foster Wheeler
Environmental Corporation

NUMBER 1

DATE

PAGE 2 OF 3

INSPECTION CHECKLIST CONTINUATION SHEET

ACTIVITY EARTHWORK INSPECTION

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
	During Placement					
8.	Maximum Lift Heights					
	Not Exceeded:					
a.	Mechanically Tamped					
	Fill					
b.	Hand Tamped Fill.					
9.	Removal of Unsuitable					
	Materials					
10.	Required Material					
	Used. Type _____					
11.	Gradation of Material					
12.	Interface Slopes					
13.	Fill Joints					
14.	Fill Sequences					
15.	Compaction of Lifts					
16.	Moisture Content,					
	_____ &					
17.	Weather Conditions					
	During Placement					
	Compaction Equipment					
18.	Speed During					
	Compaction Operation					

Foster Wheeler
Environmental Corporation

NUMBER 1

DATE

PAGE 3 OF 3

INSPECTION CHECKLIST
CONTINUATION SHEET

EARTHWORK INSPECTION

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
19.	Vibration Cycle					
	For Vibrating Equipment					
20.	Prescribed Number of					
	Passes					

1.1 This procedure includes a description of typical activities for inspection of sheet piling for permanent structures and facilities as prescribed by project specifications pertaining to permanent structures and facilities. This procedure does not include or imply any responsibility for sheet piling and accessories incorporated in any temporary and/or construction facilities.

1.2 The inspection of sheet piling and integral bracing for permanent structures and facilities shall cover the following, as applicable for specific projects:

1. Condition of piling material before driving, including lengths, section, locks condition and general condition of used material.

2. Conformity to drawings and specifications of materials for and prefabrication and installation of wales, struts, braces, connections and supports.

3. Template size and type, where required.

4. Rig/hammer data.

5. Sheets set vertically.

6. Driving sequence and penetration.

7. Sheets driven on line.

8. Monitoring for obstructions and tip damage while driving sheets.

9. Sheets spliced with proper steel plate size and location.

10. Sequence of bracing installation, excavation, dewatering.

11. Bolting procedure/torque requirements.

12. Monitoring of welding operations for conformity to Specifications and Drawings, including weld locations, size and quality.

13. Condition of sheeting, locks and welds after driving.

1.3 Documentation of conformity to requirements for Sheet Piling shall be reported on appropriate Inspection Report Forms. A typical Inspection Checklist for Sheet Piling is attached hereto.

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST

NUMBER 4

DATE

PAGE 1 OF 2

PROJECT

ACTIVITY SHEET PILING

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
1.	Condition of piling					
	material before					
	driving:					
a.	Lengths					
b.	Section					
c.	Locks Condition					
d.	General condition					
	of used material					
2.	Materials for wales,					
	struts, braces,					
	connections and					
	supports.					
3.	Template size and					
	type.					
4.	Rig/Hammer data.					
5.	Sheets Set Vertically.					
6.	Driving sequence					
	and penetration.					
7.	Sheets driven on line.					
8.	Obstructions and tip					
	damage within limits.					

INSPECTOR

SUPERVISOR INITIALS DATE

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 4

DATE

PAGE 2 OF 2

SHEET PILING

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
9.	Sheets Splicing,					
	Details and					
	Location.					
10.	Sequence of bracing					
	installation,					
	excavation and					
	dewatering.					
11.	Bolting procedure, incl. torque.					
12.	Welding operations:					
a.	Locations					
b.	Size					
c.	Quality					
13.	After Driving,					
	Condition of:					
a.	Sheeting					
b.	Locks					
c.	Welds					

1.1 Concrete construction is defined as all work related to the supply of raw materials, mix composition, form work, reinforcing steel, enbedded items, mixing, delivery, placement, protection, finishing and curing.

1.2 Where required by the Specification, including referenced Codes and/or Standards, inspections and tests such as the following shall be performed to verify conformity with established requirements:

1. Certified mill test reports of physical and chemical properties of the cement.

2. Screen analyses and physical properties of aggregates.

3. Record of mixing water suitability test at the beginning of work and as otherwise required.

4. Mix design data.

5. Batch tickets indicating composition of the mix, time of mixing, mixer revolution count, time of delivery and lift placement number.

1.2 (Cont'd)

6. Slump test results.

7. Concrete cylinder compression test results.

8. Unit weight and air content test results.

9. Curing temperature records during periods of cold or hot weather concrete operations.

10. Concrete Placement Release Card, indicating release for placement signed by both the Inspector and Construction Supervisor; a sample copy is attached hereto.

11. Acceptable finishing, curing, weather protection and forms removal.

12. Record of batch plant equipment calibration test results and certifications, where required.

13. Inspection of batch plant and storage areas.

14. Inspection status of mixing trucks.

1.3 Where required by the Specification, materials documentation shall be obtained for reinforcing steel delivered and additional sampling and testing shall be performed as required.

1.4 Inspection shall be performed to verify that reinforcing steel of size, spacing and location called for on the Drawings has been installed prior to release of the concrete placement and that the reinforcing steel is free of objectionable contamination or excess rust.

1.5 Inspection shall be performed, as appropriate, to verify location and installation of embedments, expansion joints and water stops.

1.6 Typical inspection checklists are attached hereto for the following phases of concrete construction: Concrete supply, Concrete Delivery, Preplacement, Placement, Post-placement.

Foster Wheeler
Environmental Corporation

NUMBER 5

DATE

INSPECTION CHECKLIST

PAGE 1 OF 5

PROJECT

ACTIVITY CONCRETE CONSTRUCTION-CONCRETE SUPPLY

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
1.	Incoming Shipments					
	of Cement.					
	*(Forms 1315-40,41,42					
	&24 as applicable)					
2.	Storage of Cement.					
	*(Forms 1315-40,41					
	as applicable)					
3.	Incoming shipments					
	of aggregate.*(Forms					
	1315-44,43,1,1A &2 as					
	applicable)					
4.	Storage of Aggregates.					
	*(Forms 1315-45 as					
	applicable)					
5.	Water and ice. *(Forms					
	1315-46,47 & 10 as					
	applicable)					
	*Forms available at					
	Home Office					

INSPECTOR

Foster Wheeler
Environmental Corporation

NUMBER 5

DATE

PAGE 2 OF 5

INSPECTION CHECKLIST CONTINUATION SHEET

ACTIVITY CONCRETE CONSTRUCTION-CONCRETE SUPPLY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
6.	Admixtures.*(Forms 1315-48,49 & 50 as applicable)					
7.	Batching & mixing equipment qualifications current8. Scales calibrations current. *Forms 1315-9 & 14 as applicable					
9.	Concrete delivery trucks marked as required.					
	*Forms available at Home Office.					

Foster Wheeler
Environmental Corporation

NUMBER 5

DATE

PAGE 3 OF 5

INSPECTION CHECKLIST
CONTINUATION SHEET

CONCRETE CONSTRUCTION-CONCRETE SUPPLY

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
10.	Truck and central mix uniformity at required intervals *(Form 1315-25 as applicable)					
11.	Concrete delivery trucks clean. *(Form 1315-26 as applicable)					
12.	Correlation between scale dial reading and remote readout.					
13.	Batch plant log maintained					
14.	Delivery tickets as specified.					
15.	Design mix in use approved as specified *Forms available at Home Office					

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 5

DATE

ACTIVITY CONCRETE CONSTRUCTION-CONCRETE SUPPLY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
16.	Concrete order release forms rec'd.					
	Periodical Checks During Batching Operations:					
17.	Scale remote readout or indicator zero prior to weighing of batches.					
18.	Batch selector operation.					
19.	Moisture meter reading in relation to aggregate moisture.					
20.	Weights of materials within specified limits.					
21.	Confirmation of batch weights on recorder.					

Foster Wheeler
Environmental Corporation

NUMBER 5

INSPECTION CHECKLIST
CONTINUATION SHEET

DATE

ACTIVITY CONCRETE CONSTRUCTION-CONCRETE SUPPLY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
22.	Batch times correct on truck tickets.					
23.	Proper types and amounts of admixtures used.					
24.	Mix classification correct for each batch.					
25.	Drum revolution counters set to zero prior to drum charging					

Foster Wheeler
Environmental Corporation

NUMBER 5

DATE

INSPECTION CHECKLIST

PROJECT

ACTIVITY CONCRETE CONSTRUCTION-CONCRETE DELIVERY

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
1.	~~Truck/mix as ordered for placement.~~					
2.	~~*Drum Revolutions.~~					
3.	~~*Time after addition of water until final unloading.~~					
4.	~~*Mixing Speed.~~					
5.	~~*Slump.~~					
6.	~~*Air.~~					
7.	~~*Water Added.~~					
8.	~~*Appearance of mix.~~					
	~~*Record on Forms similar to 1315-32 & 52, available at Home Office~~					

INSPECTOR

SUPERVISOR INITIALS DATE

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 5

DATE

CONCRETE CONSTRUCTION-CONCRETE DELIVERY

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
9.	Test Samples taken					
	at required intervals;					
	properly cured and					
	protected.					

Foster Wheeler
Environmental Corporation

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DATE

INSPECTION CHECKLIST

PAGE 1 OF 3

PROJECT

ACTIVITY CONCRETE CONSTRUCTION-PREPLACEMENT

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
1.	Soil or subsurface					--
	tests completed					
	and accepted.					
2.	Condition of sub-					
	surface for clean-					
	liness, removal of					
	loose material &					
	free water.					
3.	Joint surface of					
	previously placed					
	concrete prepared					
	per specification.					
4.	Location & con-					
	figuration of forms.					
5.	Installation &					
	integrity of water-					
	stops and membrane					
	waterproofing.					

INSPECTOR

SUPERVISOR INITIALS DATE

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Environmental Corporation

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DATE

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INSPECTION CHECKLIST
CONTINUATION SHEET

ACTIVITY CONCRETE CONSTRUCTION-PREPLACEMENT

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
6.	Condition of surface of form material.					
7.	Form ties, anchors, bracing and supports.					
8.	Reinforcing steel, orientation & installation.					
9.	Embedded items, identification, line & grade, properly secured.					
10.	Location & dimension of joints and blockouts.					
11.	Form coatings.					
12.	Cleanliness of pour area.					
13.	Bonding materials as specified.					
14.	Chamfers, fillets and edges as specified.					

Foster Wheeler
Environmental Corporation

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INSPECTION CHECKLIST
CONTINUATION SHEET

CONCRETE CONSTRUCTION-PREPLACEMENT

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
15.	Reinforcing steel welded					
	or tackwelded only as					
	permitted by specification.					
16.	Reinforcing steel clean and					
	free of loose scale & rust.					
17.	Concrete placement release					
	documentation completed.					

Foster Wheeler
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INSPECTION CHECKLIST

PROJECT

ACTIVITY CONCRETE CONSTRUCTION-PLACEMENT

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
1.	Concrete placement					
	release documentation					
	completed.					
2.	Concrete equipment,					
	methods of placing					
	and backup equipment					
	per procedure.					
3.	Vibrators of type and					
	speeds as specified.					
4.	Equipment for					
	transporting &					
	placing concrete in					
	clean condition.					
5.	Conformity to					
	abnormal weather					
	conditions					
	requirements.					

INSPECTOR

SUPERVISOR INITIALS DATE

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 5

DATE

PAGE 2 OF 4

ACTIVITY CONCRETE CONSTRUCTION-PLACEMENT

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
~~6.~~	~~Joints covered with bonding mortar where required.~~					
~~7.~~	~~Excessive water not present in joint area.~~					
~~8.~~	~~Required rate of placement maintained.~~					
~~9.~~	~~Concrete layers placed as specified.~~					

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 5

DATE

PAGE 3 OF 4

CONCRETE CONSTRUCTION-PLACEMENT

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
10.	Concrete vibrated as					
	specified:					
	compaction,					
	orientation,					
	non-segregation,					
	layer penetration,					
	minimal contact with					
	reinforcing steel and					
	forms.					
11.	Use of concrete					
	chutes per					
	specification &					
	procedure.					
12.	Unconfined height of					
	drop of concrete as					
	limited by the					
	specification.					

Foster Wheeler
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INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 5

DATE

ACTIVITY CONCRETE CONSTRUCTION-PLACEMENT

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
13.	Embedded items and reinforcing steel not dislocated.					
14.	Surface of concrete as placed properly screeded and prepared for finishing.					

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_____

(Project Title)

CONCRETE PLACEMENT
RELEASE CARD

Description or
Lift No. _____

Location-Sta. _____ Elev. _____

Concrete Mix No. _____

Slump _____

Special Inst. _____

Quantity Est _____ Act _____ Waste _____

Drawing No. & Rev		Construction Supervisors	Inspector
C-H			
M			
Elec			
Other			
Fndn or Joint Prep			
Form Quality			
Cleanup			
Reinforcing			
Line & Grade			
Embedded Items			
Mechanical			
Electrical			
Other			
Released For Placement			

Time Started _____ Finished _____ Date _____

Foster Wheeler
Environmental Corporation

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DATE

INSPECTION CHECKLIST

PAGE 1 OF 2

PROJECT

ACTIVITY CONCRETE CONSTRUCTION POST-PLACEMENT

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
1.	Finishes as required					
	by drawings and					
	specifications.					
2.	Shoring and forms					
	left in place for					
	specified periods.					
3.	Formed surfaces of					
	concrete repaired and					
	finished to specified					
	requirements.					
4.	Any indication of					
	voids and					
	contamination					
	resolved and any					
	necessary repairs					
	made per procedure.					
5.	Approved curing					
	method utilized.					

INSPECTOR

SUPERVISOR INITIALS DATE

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Environmental Corporation

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INSPECTION CHECKLIST
CONTINUATION SHEET

DATE

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CONCRETE CONSTRUCTION POST-PLACEMENT

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
6.	If wet cured,					
	concrete kept wet for					
	specified time.					
7.	If membrane curing					
	compound used,					
	product suitable for					
	use on specific					
	concrete surface.					
8.	Membrane curing					
	compound properly					
	applied on correct					
	surfaces (excluding					
	const. joint areas,					
	etc. where specified).					
9.	Temperature					
	maintained as					
	specified during the					
	curing period.					

1.1 The scope of this procedure includes underground piping systems such as circulating water, yard drainage, fire protection and service water systems.

1.2 Circulating water pipe is generally either steel or steel jointed reinforced concrete lock joint pressure pipe.

1.2.1 The following conditions shall be verified when pipe laying is in progress:

1. Work area is reasonable free of ground water.

2. Pipe bedding is in conformance with the drawings and specifications and fully supports the section being laid.

3. Pieces are being laid in the sequence and of the class called for in the laying schedule.

4. The rubber gasket is installed on the spigot end and is soaped with a specified lubricant.

5. Determination by use of a feeler gauge, that the gasket is properly in place as the pipe joint nears its made up position.

6. Pipe laying remains on line and grade.

1.2.2 After pipe laying has advanced several joints, grouting of the joints may proceed in conformance with the Specifications.

1.3 Yard drainage precast reinforced concrete pipe shall conform with sizes specified on the Drawings. The following conditions shall be verified:

1. Pipe laying area is reasonably free of ground water.

2. Satisfactory bedding for the pipe has been provided.

3. Line and grade are established.

4. Joints have been grouted to satisfactory standards.

1.4 Extra heavy cast iron pipe, when used for drain lines under paved areas, shall be embedded in concrete where required by the Specifications. The same documentation procedures shall be used as for yard drainage except that joints will be leaded.

1.5 Fire protection, service water and miscellaneous system piping is generally specified as mechanical joint cement lined cast iron or butt welded coated and wrapped steel pipe of a schedule suitable for the pressures involved. The following conditions shall be verified:

1. Pipe trench reasonably free of ground water.

2. Suitable bedding for the pipe.

3. Suitable weld preparation on pipe ends for butt weld pipe.

4. Evidence that welders performing welds are qualified where butt weld pipe is used.

5. Welding performed in accordance with the Welding Procedure Specification.

6. Report of coating integrity as a result of electric holiday detection test for coated and wrapped pipe.

7. Report of satisfactory completion of hydrostatic test prior to backfill.

8. Compliance with grounding and corrosion requirements.

1.6 An Inspection Report shall be used to document these items except for pipe coating integrity, welding inspection, grounding & corrosion requirements and hydrostatic test results which shall be reported separately. A typical Inspection Checklist for Underground Piping is attached hereto.

Foster Wheeler
Environmental Corporation

NUMBER 6

DATE

INSPECTION CHECKLIST

PAGE 1 OF 3

PROJECT

ACTIVITY UNDERGROUND PIPING

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
1.	Work area is					
	reasonably free of					
	ground water.					
2.	Pipe bedding as					
	specified.					
3.	Sequence and class of					
	pieces per laying					
	schedule.					
4.	Rubber gasket					
	installed and					
	lubricated as					
	specified.					
5.	Gaskets properly in					
	place.					
6.	Pipe laying is					
	maintained on line					
	and grade.					

INSPECTOR

SUPERVISOR INITIALS DATE

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Environmental Corporation

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INSPECTION CHECKLIST
CONTINUATION SHEET

DATE

PAGE 2 OF 3

UNDERGROUND PIPING

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
7.	Grouting of joints in					
	conformance with					
	specifications.					
8.	Piping embedded in					
	concrete encasement,					
	where required.					
9.	Leaded joints applied					
	per specifications,					
	where required.					
10.	Mechanical joints as					
	specified, where					
	required.					
	For Butt-Welded Steel					
	Pipe:					
11.	Suitable weld					
	preparation on pipe					
	ends.					

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Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 6

DATE

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UNDERGROUND PIPING

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
12.	Welders are qualified					
	and are using proper					
	procedures					
	Note: The following					
	inspections shall be					
	reported separately:					
	. Pipe Coating					
	. Welding Inspection					
	. Hydrostatic Tests					
	. Grounding &					
	Corrosion					

1.1 Equipment erection includes two categories, rotating and non-rotating. Inspection to be made of equipment erection shall cover the following:

1. Check of line, grade and orientation.

2. Check of foundation to verify that anchor bolts are ready, and that foundation is prepared as specified.

3. Reviewing, verifying and monitoring of rigging and handling.

4. Check of shimming of equipment prior to grouting.

5. Grouting of equipment, if required.

1.2 In addition, for rotating equipment, the following items shall be included:

1. Check of components for free rotation.

2. Check that lubrication is suitable for existing storage conditions.

3. Review of coupling alignment readings after alignment is complete.

4. Review of a program of periodic rotation of equipment, where required.

5. Check of the energizing of heaters to control condensation, if required.

6. Review of a program of meggering motor windings, if required.

1.3 A typical Inspection Checklist for Mechanical and Electrical Equipment is attached hereto.

1.4 Coupling alignment data shall be recorded on separate forms such as the Rotating Equipment Data Sheet, attached hereto.

1.5 Periodic maintenance inspections shall be recorded on separate forms such as the Periodic Inspection Checklist, attached hereto.

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Environmental Corporation

NUMBER 11

DATE

INSPECTION CHECKLIST

PAGE 1 OF 3

PROJECT

ACTIVITY MECHANICAL AND ELECTRICAL EQUIPMENT

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
1.	Line and grade as					
	checked by survey					
	party.					
2.	Orientation of					
	equipment as shown on					
	drawings.					
3.	Anchor bolts					
	location, elevation					
	and condition.					
4.	Foundation surface					
	prepared as required.					
5.	Rigging and handling					
	procedures in effect					
	as established by					
	project policy.					
6.	Shims installed as					
	specified, location &					
	grade.					

INSPECTOR

DATE

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Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 11

DATE

PAGE 2 OF 3

ACTIVITY MECHANICAL AND ELECTRICAL EQUIPMENT

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
7.	General review for release for grouting.					
8.	Grouting inspection (report details separately)					
	For Rotating Equipment:					
9.	Check of components for free rotation.					
10.	Lubrication as specified and suitable for existing storage conditions.					
11.	After alignment of components, coupling alignment readings tolerences.					
12.	Program for periodic rotation of equipment.					

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 11

DATE

PAGE 3 OF 3

MECHANICAL AND ELECTRICAL EQUIPMENT

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
13.	Heaters prepared to					
	control condensation.					
14.	Megger readings for					
	motor windings.					
15.	Belt tension.					
16.	Coupling guard.					

ROTATING EQUIP. DATA SHEET

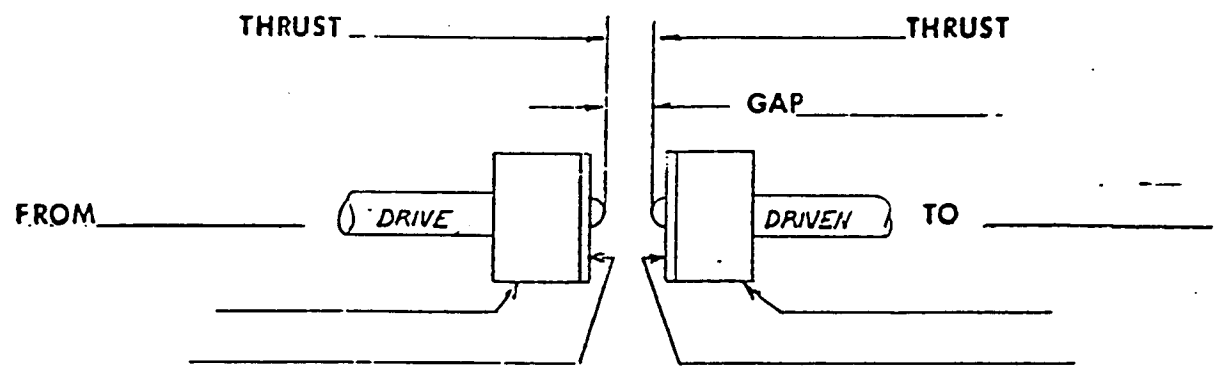
— COUPLING ALIGNMENT

1 NAME OF EQUIP. _____ EQUIP. NO. _____

2 START-UP SYS. NO. _____ NAME _____

3 NAME + TYPE OF COUPLING _____

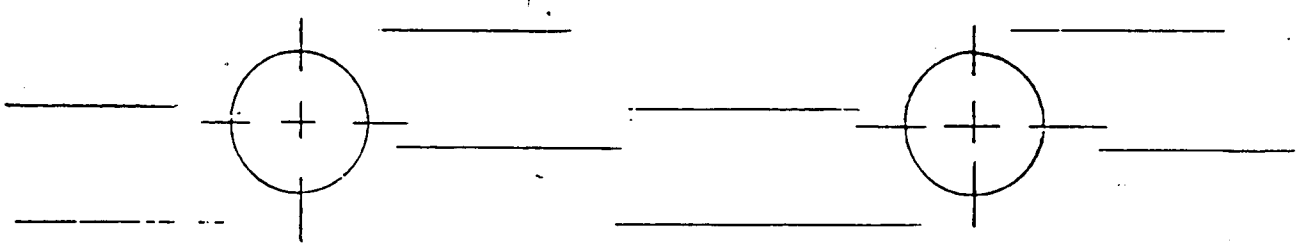
MANUFACTURERS RECOMMENDED GAP _____



COUPLING HALVES ROTATED TOGETHER
INDICATOR MOUNTED ON _____ INDICATED NO. _____

UNIT COLD ALIGNMENT SETTING

DRIVER SET _____ HI _____ LOW _____ AND _____ OFF ℄ TO _____



PARALLELISM CONCENTRICITY

COMMENTS _____

COMPLETED BY _____ DATE _____

VERIFIED BY _____ TITLE _____ COMP _____

VERIFIED BY TITLE COMP

Foster Wheeler
Environmental Corporation

PROJECT

MECHANICAL AND ELECTRICAL EQUIPMENT

PERIODIC INSPECTION CHECKLIST

Rev _____

Date _____

EQUIPMENT NOMENCLATURE	IDENTIFICATION NO.	PURCHASE ORDER NO.

LOCATION AND ELEVATION	BUILDING
MANUFACTURES DRAWING NO.	**INSTALLATION DRAWING NO.**

	QC INSPECTOR	DATE	ACCEPT-ABLE	NOT ACCEPT-ABLE	NOT APPLI-CABLE
Heaters Applied/Working					
Shaft/Rotation					
Meggering					
Lubrication					
Cleanliness of Area					
Covers/Intact					
Batteries Trickle Charge					

Remarks _____

Inspector _____ Date _____

	Foster Wheeler Environmental Corporation		PAGE 1 of 1 DATE 8/17/87
	TITLE INSPECTION PLAN NO. 15 CABLE AND WIRING		REV NO. DATE BY
LEGEND R – Indicates Rev	PREPARED BY JRI	APPROVED BY JRI	APPROVED

1.1 This procedure includes items of work associated with electrical cable and wiring installations.

1.2 Inspections to be made of electrical cable and wiring installations shall be in accordance with prevailing project specifications and project contractual requirements. A typical Inspection Checklist for Cable and Wiring installations is attached hereto.

Foster Wheeler
Environmental Corporation

NUMBER 15

DATE

INSPECTION CHECKLIST

PAGE 1 OF 2

PROJECT

ACTIVITY CABLE AND WIRING

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
1.	Designated routing in					
	raceways.					
2.	Loading limits in trays.					
3.	Cable size & type, incl.					
	reel designation and					
	number of conductors.					
4.	Pulling equipment &					
	methods.					
5.	Tensioning within					
	allowable limits;					
	maximum pulling lengths					
	not exceeded.					
6.	Proper lubricants used.					
7.	Cleanliness of raceways.					
8.	Orderly lay in trays;					
	cable separation where					
	specified.					
9.	Bend combinations					
	limitations.					

INSPECTOR

USER INITIALS DATE

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 15

DATE

PAGE 2 OF 2

CABLE AND WIRING

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
10.	Cable ties for trays,					
	specing and materials as					
	specified.					
11.	Installed cable not					
	visibly damaged.					
12.	Cable markers, incl.					
	color coding where					
	applicable.					
13.	Ring-out of circuits for					
	correctness and					
	continuity.					
14.	Hi-Pot Tests.					
15.	Sheath grounds.					
16.	Fire stops, where					
	required.					
17.	Tray covers installed.					
18.	Ends of conduits sealed,					
	where specified.					
19.	Cable pull log					
	maintained, where					
	applicable.					

	Foster Wheeler Environmental Corporation		PAGE 1 of 1 DATE 8/17/87
	TITLE INSPECTION PLAN NO. 16 CABLE TERMINATIONS		REV NO. DATE BY
LEGEND R – Indicates Rev	PREPARED BY JRI	APPROVED BY JRI	APPROVED

1.1 This procedure includes items of work associated with electrical cable terminations.

1.2 Inspections to be made of electrical cable terminations shall be in accordance with prevailing project specifications and project contractual requirements. A typical Inspection Checklist for Cable Terminations is attached hereto.

Foster Wheeler
Environmental Corporation

NUMBER 16

DATE

INSPECTION CHECKLIST

PAGE 1 OF 2

PROJECT

ACTIVITY CABLE TERMINATIONS

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
1.	Lugging & crimping tools					
	as specified.					
2.	Wire stripping tools as					
	specified.					
3.	Connectors fastened					
	properly to cables.					
4.	Correct size of lugs or					
	connectors.					
5.	Lugs or connectors free					
	of damage.					
6.	Torque values &					
	technique as specified.					
7.	Routing as specified.					
8.	Minimum bend radius not					
	exceeded.					
9.	Separation and grouping					
	of cables.					
10.	Supports & ties as					
	specified.					

INSPECTOR

SUPERVISOR INITIALS DATE

Foster Wheeler
Environmental Corporation

NUMBER 16

DATE

PAGE 2 OF 2

INSPECTION CHECKLIST CONTINUATION SHEET

ACTIVITY CABLE TERMINATIONS

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
11.	Identification provided at specific locations.					
12.	Color coding as required.					
13.	Spare conductors marked.					
14.	Spare conductors protected from damage.					
15.	Grounding of conductors as specified.					
16.	Cable connections at specified terminal points.					
17.	Connections to terminal points fastened as specified.					
18.	Approved tape & technique.					
19.	Corrosion inhibiter where required.					
20.	General review for damage to connectors, cable and equipment.					

1.1 The scope of this procedure for instrumentation and control systems includes electrical and mechanical control and instrumentation equipment and supports therefor, as well as mechanical tubing and piping associated with these systems. Inspection of control cable and of main piping systems is not included as a part of this procedure.

1.2 The inspections to be made of the Instrumentation and Control Systems shall cover the following:

A. Instrumentation and Control Tubing:

1. Size of tubing.
2. Type of tubing.
3. Routing of tubing.
4. Type of supports, including trays where required.
5. Adequacy of supports and attachments, including welding.
6. Spacing of supports.
7. Minimum spacing between tubing.
8. Slope of sensing lines.
9. Proper mounting of valves.
10. Adequate clearance for access to valves.

1.2 (Cont'd)

11. Provisions for removal of sections of tubing, where required.

12. Installation of protective covers, where specified.

13. Verification that fitting installation conforms to manufacturer's instructions concerning aspects such as pre-swaging, square cuts at joint, cleanness of contact surfaces, lubrication, snug-up, number of turns and gauging of samples where required.

B. Instruments and Controls:

1. Location and type of supports and racks.

2. Adequacy of supports and attachments, including bolting and welding.

3. Minimum distance for separation of items.

4. Verification that item identification corresponds to drawings and specification requirements.

1.2 (Cont'd)

5. Proper tagging of items.

6. Verification from Electrical Inspection Group that all electrical connections have been made and accepted.

7. Installation of all local valves and auxiliaries.

8. Witness all tests, including disconnection or blanking off of tubing during tests to prevent damage to instruments and controls.

1.3 A typical Inspection Checklist for Instrumentation and Control Systems is attached hereto.

Foster Wheeler
Environmental Corporation

NUMBER 18

DATE

INSPECTION CHECKLIST

PAGE 1 OF 3

PROJECT

INSTRUMENTATION AND CONTROL SYSTEMS

ACTIVITY

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
	Tubing					
1.	Sizes.					
2.	Types.					
3.	Routing.					
4.	Type of supports.					
5.	Adequacy of supports &					
	attachments, including					
	welding.					
6.	Spacing of supports.					
7.	Minimum spacing between					
	tubing.					
8.	Slope of tubing, where					
	shown or specified.					
9.	Valves, type & mounting					
10.	Access clearance to					
	valves.					
11.	Tubing removal details,					
	where specified.					
12.	Protective covers					
	installation, where					
	required.					

INSPECTOR

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 18

DATE

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INSTRUMENTATION AND CONTROL SYSTEMS

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
	Fittings Installation					
	Details per					
	manufacturer's					
	instructions:					
13.	Pre-swaging.					
14.	Square cuts at joint.					
15.	Cleanness of contact					
	surfaces.					
16.	Lubrication.					
17.	Snug-up.					
18.	Number of turns.					
19.	Gauging of samples.					
	Instruments and Controls					
20.	Location and type of					
	supports and racks.					
21.	Adequacy of supports &					
	attachments, including					
	bolting & welding.					
22.	Location and separation					
	of items.					

Foster Wheeler
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INSPECTION CHECKLIST
CONTINUATION SHEET

DATE

INSTRUMENTATION AND CONTROL SYSTEMS

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
23.	Identification & tagging of items.					
24.	Local valves & auxiliaries.					
25.	Witness of tests, including isolation of instruments as required.					

	Foster Wheeler Environmental Corporation		PAGE 1 of 1 DATE 8/17/87
	TITLE INSPECTION PLAN NO. 19 PIPING ERECTION		REV NO. DATE BY
LEGEND R – Indicates Rev	PREPARED BY JRI	APPROVED BY JRI	APPROVED

1.1 The scope of this Procedure includes all plant piping, both shop and field fabricated, except that specifically included with the boiler and turbine erection.

1.2 Surveillance of the following items shall be performed, as a minimum:

1. Use of designated welding procedures and welders' qualifications in accordance with applicable sections of the ASME Boiler and Pressure Vessel Code and other applicable codes.

2. Erection and fit-up in conformance with piping code and/or Ebasco piping specifications.

3. Witness of fit-up, welding of various passes, and nondestructive testing of the individual welds.

4. Verification of hanger installations for conformity to Specifications and applicable Codes.

5. Check of spring hangers hot and cold settings, of removal of hanger stops and monitoring and documentation of cold spring joints.

6. Hydrostatic testing.

1.3 A typical Inspection Checklist for Piping Erection is attached hereto.

Foster Wheeler
Environmental Corporation

NUMBER 19

DATE

INSPECTION CHECKLIST

PAGE 1 OF 4

PROJECT

ACTIVITY PIPING ERECTION

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
	Hangers, Supports, and					
	Restraints					
	Inprocess Surveillance:					
1.	Pipe Support					
	Installationn.					
2.	Joint Preparation					
	Cleanliness.					
3.	Fitup Gap Within					
	Tolerances.					
4.	Location and					
	Configuration per					
	current design drawing					
	Final Inspection:					
5.	Pipe Support Location					
6.	Pipe Support					
	Identification.					
7.	Correct size/thickness					
	of material.					

INSPECTOR

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 19

DATE

PAGE 2 OF 4

ACTIVITY PIPING ERECTION

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
8.	All Welds Completed and					
	Acceptable.					
9.	Mechanical Hydraulic					
	Snubbers Acceptably					
	Installed.					
10.	Bolted Connections					
	Correct.					
11.	Specified Clearances					
	Exist.					
12.	Threaded Connections					
	Correct.					
13.	Pipe Supports Undamaged.					
14.	Cold Load Pre-Set Pins					
	Installed.					
15.	Travel Indicator					
	Location Correct.					
16.	Hot Load Position Marked					
	on Travel Indicator					
	Scale.					
17.	Shock supressor Piston					
	Rod Extension correct.					

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 19

DATE

ACTIVITY PIPING ERECTION

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
18.	Grouting/Dry Packing is Acceptable.					
19.	Final load adjustment.					
20.	Restraint clearances set.					
21.	Spring/shock suppressor travel indicators set.					
22.	Load bearing connections secured.					
23.	All temporary supports removed.					
24.	Support components undamaged.					
25.	Supports correctly adjusted.					
26.	Mechanical connections properly secured.					
	PIPING COMPONENTS					
27.	Piping and associated components installed per drawings and in proper locations.					

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 19

DATE

PAGE 4 OF 4

PIPING ERECTION

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
28.	Identification of valves					
	& spools maintained					
	during construction					
	phase.					
29.	Fit-up of Joints.					
30.	Cold pulling, where					
	specified.					
31.	Cleanliness of inner &					
	outer pipe surfaces.					
32.	Gasketing & bolting					
	materials as specified.					
33.	Bolts torqued as					
	required.					
34.	Orientation of valves					
	and specialties.					
35.	Procedural treatment of					
	valve packing and bonnet					
	gaskets.					
	(Welding and Hydrostatic					
	Tests Inspections to be					
	Recorded on Separate					
	Checklists)					

1.1 The scope of this procedure for inspection and testing of coatings includes applications to structures and equipment, involving painting of items, coating of piping and coating of structural surfaces.

1.2 Control of coatings application shall include inspection of the following, as a minimum:

1. Maintenance of proper storage temperature for coatings.

2. Coating materials and colors as specified, including approved manufacturer.

3. Use of approved thinner materials.

4. Special surface preparations such as previous concrete finishing requirements and/or sandblasting.

5. Clean and dry surfaces prior to coating applications, free from grit, dust, weld splatter, concrete splatter, form release agents and curing compounds.

6. Review for excess mill scale or concrete voids.

7. Application of fillers to surface voids, pores or cracks where required.

8. Touchup of abraded or bare spots on previously primed surfaces with suitable coating materials.

9. Application at temperatures not below minimum ambient, within allowable surface temperatures and within and required relative humidity range.

10. Proper method of application, including suitable equipment.

11. Thickness of each coat for uniformity by use of wet gauge, dry gauge and/or "Holiday Detector," as applicable.

12. Specified number of coats, including tinting if applicable.

13. Workmanship, including observation for significant runs sags and variations in color, texture and finish.

14. Protection of adjacent equipment and surfaces.

15. Where specified, freedom from pinholes and skips, verified by use of a "Holiday Detector".

16. Drying time requirements between coats.

17. Special monitoring of locations of relatively difficult accessability.

1.3 A typical Inspection Checklist for Coatings is attached hereto.

Foster Wheeler
Environmental Corporation

NUMBER 22

DATE

INSPECTION CHECKLIST

PROJECT

ACTIVITY COATINGS

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
1.	Maintenance of proper					
	storage temperature for					
	coatings.					
2.	Coating materials and					
	colors as specified,					
	including approved					
	manufacturer.					
3.	Use of approved thinner					
	materials.					
4.	Special surface					
	preparations such as					
	previous concrete					
	finishing requirements					
	and/or sandblasting.					
5.	Clean and dry surfaces					
	prior to coating					
	applications, free from					
	grit, dust, weld					
	splatter, concrete					
	splatter, form release					
	agents and curing					
	compounds.					

INSPECTOR

SUPERVISOR INITIALS DATE

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 22

DATE

COATINGS

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
6.	Review for excess mill scale or concrete voids.					
7.	Application of fillers to surface voids, pores or cracks, where required.					
8.	Touchup of abraded or bare spots on previously primed surfaces with suitable coating materials.					
9.	Application at temperatures not below minimum ambient, within allowable surface temperatures and within any required relative humidity range.					
10.	Proper method of application, including suitable equipment.					

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

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DATE

PAGE 3 OF 3

COATINGS

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
11.	Thickness of each coat					
	for uniformity by use of					
	wet guage, dry gauge					
	and/or "Holiday					
	Detector," as applicable.					
12.	Specified number of					
	coats, including tinting					
	if applicable.					
13.	Workmanship, including					
	observation for					
	significant runs, sags					
	and variations in color,					
	texture and finish.					
14.	Protection of adjacent					
	equipment and surfaces.					
15.	Where specified, freedom					
	from pinholes and skips,					
	verified by use of a					
	"Holiday Detector".					
16.	Drying time requirements					
	between coats.					
17.	Special monitoring of					
	locations of relatively					
	difficult accessability.					

1.1 This procedure includes inspection/surveillance of items in storage, including maintenance operations.

1.2 Inspection Plans developed at each site shall include the following requirements for inspection and/or surveillance:

1.2.1 Storage of items in proper environmental conditions such as outdoor, indoor ventilation controlled or indoor heated ventilation and/or humidity controlled as required by design and/or manufacturer's requirements.

1.2.2 Access to storage areas controlled as required.

1.2.3 Cleanliness and good housekeeping practices.

1.2.4 Adequate fire protection facilities.

1.2.5 Maintenance of covers and/or screens for weather protection and rodent protection, including use of flame-resistant materials and provision of air circulation to minimize condensation.

1.2.6 Storage of items so as to permit ready access for inspection and maintenance.

1.2.7 Storage of items on suitable dunnage above ground or floor and with adequate bearing for items supported.

1.2.8 Provision of proper storage facilities for hazardous chemicals, paints, solvents, etc.

1.2.9 Adequate marking of items or their containers.

1.2.10 Provision of proper caps, plugs or other closures for piping and equipment and maintenance thereof.

1.2.11 Proper application, maintenance and removal of any temporary coatings or tape applied during the construction phase.

1.2.12 Monitoring of items pressurized with innert gas at such frequency to verify that gas pressure is maintained within specified limits during storage.

1.2.13 Energization of electrical equipment, including space heaters, where required or the provision of other applicable source of heating.

1.2.14 Periodic rotation of shafts of electrical and mechanical equipment as stipulated.

1.2.15 Performance of periodic insulation resistance tests for rotating electrical equipment as required, both in storage and at the installed location prior to operation.

1.2.16 Provision and maintenance of specified lubricants for equipment from the time of delivery until turnover for operation.

1.3 A typical Inspection Checklist for Storage and Maintenance Inspection is

Foster Wheeler
Environmental Corporation

NUMBER 25

DATE

INSPECTION CHECKLIST

PAGE 1 OF 4

PROJECT

ACTIVITY STORAGE AND MAINTENANCE INSPECTION

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
1.	Storage of items in proper environmental conditiond as recommended by manufacturers.					
2.	Access to storage areas controlled as required.					
3.	Cleanliness and good housekeeping practices.					
4.	Adequate fire protection facilities.					
5.	Maintenance of covers and/or screens for weather protection and rodent protection.					
6.	Use of flame-resistant materials for covers.					
7.	Provision of air circulation under covers					

INSPECTOR

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 25

DATE

PAGE 2 OF 4

STORAGE AND MAINTENANCE INSPECTION

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
8.	Storage of items so as					
	to permit ready access					
	for inspection and					
	maintenance.					
9.	Storage of items on					
	suitable dunnage above					
	ground or floor and with					
	adequate bearing for					
	items supported.					
10.	Provision of proper					
	storage facilities for					
	hazardous chemicals,					
	paints, solvents, etc.					
11.	Adequate marking of					
	items or their					
	containers.					
12.	Provision of proper					
	caps, plugs or other					
	clousures for piping and					
	equipment and					
	maintenance thereof.					

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

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DATE

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STORAGE AND MAINTENANCE INSPECTION

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
13.	Proper application, maintenance and removal of any temporary coatings or tape applied during the construction phase.					
14.	Monitoring of items pressurized with innert gas at such frequency to verify that gas pressure is maintained within specified limits during storage.					
15.	Energization of electrical equipment, including space heaters, where required or the provision of other applicable source of heating.					

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

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DATE

ACTIVITY STORAGE AND MAINTENANCE INSPECTION

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
~~16.~~	~~Periodic rotation of~~					
	~~shafts of electrical and~~					
	~~mechanical equipment as~~					
	~~stipulated.~~					
~~17.~~	~~Performance of periodic~~					
	~~insulation resistance~~					
	~~tests for rotating~~					
	electrical equipment as					
	required, both in					
	storage and at the					
	installed location prior					
	to operation.					
18.	Provision and					
	maintenance of specified					
	lubricants for equipment					
	from the time of					
	delivery until turnover					
	for operation.					

	Foster Wheeler Environmental Corporation		PAGE ~~1 of 1~~ DATE 8/17/87
	TITLE INSPECTION PLAN NO. ~~26~~ PRESSURE AND VACUUM TESTS		REV NO. DATE BY APPROVED
LEGEND R – Indicates Rev	PREPARED BY JRI	APPROVED BY JRI	

1.1 This procedure includes items of work associated with the witnessing of pressure and vacuum tests.

1.2 Pressure and vacuum tests shall be conducted in accordance with prevailing project specifications. A typical Inspection Checklist for the witnessing of pressure and vacuum tests is attached hereto.

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST

NUMBER 26

DATE

PAGE 1 OF 4

PROJECT

ACTIVITY PRESSURE AND VACUUM TESTS

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
	PRESSURE TESTING					
1.	Additional Supports					
2.	Pinning or blocking of					
	spring-loaded hangers					
3.	Restraints for expansion					
	joints.					
4.	Blanks or valves for					
	isolation of items.					
5.	Testing method.					
6.	Joints exposure and					
	access.					
7.	Establish limitations of					
	leakage of seals, seats,					
	gaskets.					
8.	Stabilization of metal					
	temperature and test					
	medium temperature.					
9.	Calibrated gauges					
	location.					
10.	Calibrated gauges dials.					

INSPECTOR

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 26

DATE

PAGE 2 OF 4

ACTIVITY PRESSURE AND VACUUM TESTS

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
11.	Gauges pressure pulse					
	dampers not plugged.					
12.	Test fluid or gas.					
13.	Purge of air pockets					
14.	Cleanness of temporary					
	hoses.					
15.	Position of drains on					
	heat exchangers not					
	subject to test.					
16.	Acceptance of "test					
	package".					
17.	Integrity of system					
	joints.					
18.	System temperature					
	during test.					
19.	Means to prevent					
	overpressuring of system.					
20.	Heat exchangers tube					
	sheet leakage.					

Foster Wheeler
Environmental Corporation

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NUMBER _____

INSPECTION CHECKLIST
CONTINUATION SHEET

DATE _____

PAGE 3 OF 4

PRESSURE AND VACUUM TESTS

ACTIVITY _____

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
21.	Venting prior to					
	drainage.					
22.	Application of					
	increments of test					
	pressure.					
23.	Ambient air					
	temperature _____ °F.					
24.	Test presure:					
	Required _____ psig.					
25.	Test time:					
	Required _____					
	Start _____ am/pm					
	Complete _____ am/pm					
26.	Proper place of disposal					
	for testing fluids or					
	gases.					
	Vacuum Box Testing					
1.	Vacuum box equipment					
2.	Provision of vacuum					
	gauge.					

Foster Wheeler
Environmental Corporation

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NUMBER _____

INSPECTION CHECKLIST
CONTINUATION SHEET

DATE _____
4 4

PAGE _____ OF _____

PRESSURE AND VACUUM TESTS

ACTIVITY _____

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
3.	Bubble solution					
4.	Condition of test					
	surfaces.					
5.	Application of bubble					
	solution.					
6.	Evacuation of vacuum box.					
7.	Observance of test area					
	under vacuum: _____					
	minutes.					
8.	Overlapping of test areas					
9.	Weld repairs: Required					
	Yes / / No / /					
10.	NDE of repaired area.					

	Foster Wheeler Environmental Corporation		PAGE 1 of 1 DATE 8/17/87
	TITLE INSPECTION PLAN NO. 28 GROUTING INSPECTION		REV NO. DATE BY
LEGEND R – Indicates Rev	PREPARED BY JRI	APPROVED BY JRI	APPROVED

1.1 This procedure includes items of work associated with grouting applications.

1.2 Inspections to be made of grouting operations shall be in accordance with prevailing project specifications and project contractual requirements. A typical Inspection Checklist for grouting applications is attached hereto.

Foster Wheeler
Environmental Corporation

NUMBER 28

DATE

INSPECTION CHECKLIST

PAGE 1 OF 3

PROJECT

ACTIVITY

AREA ~~GROUTING INSPECTION~~

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
1.	Selection of specified					
	grouting method.					
2.	Preparation of surfaces					
	to be grouted.					
3.	Cleanness of placement					
	area.					
4.	Formwork.					
5.	Metal parts free of					
	corrosion.					
6.	Wetting of masonry					
	surfaces.					
7.	Air vents.					
8.	Availability of					
	procedure for placement					
	method.					
9.	Release from designated					
	disciplines.					
10.	Source of fine aggregate.					
11.	Source of cement.					
12.	Condition of cement.					
13.	Quality of mixing water.					

INSPECTOR

Foster Wheeler
Environmental Corporation

NUMBER 28

INSPECTION CHECKLIST
CONTINUATION SHEET

DATE

PAGE 2 OF 3

GROUTING INSPECTION

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
14.	Admixtures.					
15.	Proportioning of mix.					
16.	Workability of grout mix.					
17.	Use of designated mixing					
	equipment, maintained					
	clean.					
18.	Mixing time for grout					
	mix, free of cement					
	and/or sand balls.					
19.	Source and condition of					
	proprietary grout mixes.					
20.	Placement or packing of					
	grout.					
21.	Grouting of bolt sleeves					
	or pockets.					
22.	Provision for holding a					
	head of grout.					
23.	Flow of grout mix					
	through air vents.					

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Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 28

DATE 3 3

PAGE ____ OF ____

GROUTING INSPECTION

ACTIVITY _____

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
24.	Time when mixed _____					
	Time at completion of					
	use _____					
	Elapsed time _____					
	Allowable time _____					
25.	Removal of excessive					
	moisture, grout surface.					
26.	Edge surface					
	configuration.					
27.	Curing method, time,					
	temperature.					
28.	Slump tests.					
29.	Sample mix for length					
	change tests.					
30.	Samples for compressive					
	strength tests.					

	Foster Wheeler Environmental Corporation		PAGE 1 of 1 DATE 8/17/87
	TITLE INSPECTION PLAN NO. 33 CADWELDS		REV NO. DATE BY APPROVED
LEGEND R – Indicates Rev	PREPARED BY JRI	APPROVED BY JRI	

1.1 This procedure includes items of work associated with the work associated with Cadwelding operations.

1.2 Inspections to be made of Cadwelding operations shall be in accordance with prevailing project specifications and project contractual requirements. Typical inspection forms for Cadwelding operations are as follows and copies of the forms are attached hereto.

1.2.1 Cadweld Inspection Report.

1.2.2 Report of the Tensile Tests-Cadweld Splices.

1.2.3 Cadwelder's Weld Status Log.

Foster Wheeler
Environmental Corporation

Cadweld Inspection Report

Report No. _____

Part I S = Satisfactory U = Unsatisfactory

PRE-CADWELD SURVEILLANCE CHECKLIST	S/U	N/A	INT.	DATE
Activity				
Bar Ends Clean				
Bar Ends and Equipment Heated to Remove Moisture				
Permanent Reference Marks				
Splice Sleeves are Free of Foriegn Materials and/ or Heavy Rust on the Inside of Sleeves				
All Graphite Parts Clean				
During Periods of Precipitation Shelters are Provided				
Vent Pins				

HANDLING AND STORAGE	S/U	N/A	INT.	DATE
Activity				
Handled in a Manner That Will Preclude Misuse or Damage				
Cadweld Sleeves Wrapped up to the Time of Use				
Cadweld Powder Stored in Dry Area/Punctured or Torn Bags Discarded				

Part II

FINAL CADWELD INSPECTION PER PARAGRAPH 6.2.3

Weld I.D. No.	Final Inspect. S/U	Placement No.	Slv. Lot	Powder Lot	Bar Size

of attached comment sheets _____

Q.C. Inspector/date _____

Q.C. Supervisor/date _____

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Environmental Corporation

REPORT OF TENSILE TESTS- CADWELD SPLICES

I. TO BE COMPLETED BY INSPECTOR REQUESTING TEST

Cadweld Operator and Sequential Number _____

Date Cadweld Splice Completed _____

Position of Splice: VERTICAL HORIZONTAL OTHER _____

Size of Rebar Spliced _____ Type of Splice: SISTER PRODUCTION QUALIFICATION

Filler Material Cartridge No. _____

Inspector Signature _____ Date _____

II. TO BE COMPLETED BY TESTING LABORATORY

Lab Report Number _____

TOTAL LOAD, LBS. TENSILE	TENSILE STRENGTH, PSI *	TYPE OF FAILURE

Lab Technician Signature _____ Date _____

Tester I.D. No. _____ Calibration Due Date _____

Remarks _____

III. TO BE COMPLETED BY EBASCO Q.C.

Does test results comply with applicable specifications? YES _____

NO _____

Remarks _____

SIGNATURE _____ DATE _____
EBASCO Q.C. REP.

* Minimum tensile strength - 125% of minimum yield strength = 75,000 lbs.

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Environmental Corporation

CADWELDER'S WELD STATUS LOG

CADWELDER'S NAME _____

WELDER .I.D. No. _____

POSITION QUALIFIED

HORIZONTAL

VERTICAL

DATE OF QUALIFICATION _____

DATE OF REQUALIFICATION _____
(If Applicable)

LARGEST BAR WELDED

QUALIFICATION AND REQUALIFICATION CADWELD I.D. NUMBERS				
DATE OF CADWELDING	No. OF CADWELDS	LAST TWO REJECTS	TEST NUMBER AND TYPE	COMMENTS

ADD ADDITIONAL COMMENTS ON THE REVERSE SIDE OF THIS FORM

	Foster Wheeler Environmental Corporation		PAGE 1 of 1 DATE 8/17/87
	TITLE INSPECTION PLAN NO. 34 CONCRETE CORE DRILLING		REV NO. DATE BY
LEGEND R – Indicates Rev	PREPARED BY JRI	APPROVED BY JRI	APPROVED

1.1 This procedure includes items of work associated with concrete core drilling.

1.2 Inspections to be made of concrete core drilling operations shall be in accordance with prevailing project specifications and project contractual requirements. Typical inspection checklist for concrete core drilling operations is attached hereto.

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Environmental Corporation

NUMBER 34

DATE

INSPECTION CHECKLIST

PAGE 1 OF 1

PROJECT

ACTIVITY CONCRETE CORE DRILLING

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
~~1.~~	~~Engineer - designated~~					
	~~location, size, number~~					
	~~of cores, hole depth.~~					
~~2.~~	~~Engineer review of any~~					
	~~indication of~~					
	~~interferences.~~					
~~3.~~	~~Cores are photographed,~~					
	~~where req'd.~~					
~~4.~~	~~Cores are visually~~					
	~~inspected.~~					
~~5.~~	~~Cores are uniquely~~					
	~~identified.~~					
6.	Core holes are covered.					
7.	Compressive strength					
	results, where					
	applicable.					
8.	Core holes clean.					
9.	Surfaces coated with					
	epoxy.					
10.	Concrete/Grout properly					
	placed.					

INSPECTOR

	Foster Wheeler Environmental Corporation	PAGE 1 of 1 DATE 8/17/87
	TITLE INSPECTION PLAN NO. 35 BATCH PLANT INSPECTION	REV NO. DATE BY
LEGEND R – Indicates Rev	PREPARED BY JRI / APPROVED BY JRI	APPROVED

1.1 This procedure includes items of work associated with concrete batch plant operations.

1.2 Inspections to be made of batch plant operations shall be in accordance with prevailing project specifications and project contractual requirements. A typical Inspection Checklist for batch plant operations is attached hereto.

Foster Wheeler
Environmental Corporation

NUMBER 35

DATE

INSPECTION CHECKLIST

PAGE 1 OF 4

PROJECT

ACTIVITY BATCH PLANT INSPECTION

AREA

SPEC./DWG. REFERENCE

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
	~~BATCH PLANT~~					
~~1.~~	~~Concrete materials~~					
	~~qualified for use prior~~					
	~~to concrete production.~~					
~~2.~~	~~Materials obtained or~~					
	being obtained from					
	qualified stockpiles or					
	silo.					
3.	Sufficient qualified					
	material free from					
	segregation and					
	contamination on hand to					
	support the scheduled					
	placement.					
4.	Sufficient approved					
	trucks in proper					
	operating condition on					
	hand to support the					
	schedule placement.					

INSPECTOR

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 35

DATE

PAGE 2 OF 4

BATCH PLANT INSPECTION

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
5.	Scales and volumetric					
	devices on current					
	calibration.					
6.	Batching control cards					
	properly prepared to					
	correspond to the mix					
	design requirements.					
7.	Qualified coarse					
	aggregate stockpile kept					
	moist by continuous					
	sprinkling, where					
	required.					
8.	Admixture solution in					
	the bulk storage tank					
	mixed properly.					
9.	Batch tickets indicate					
	total amount of water in					
	batch, including					
	moisture in fine and					
	coarse aggregate.					

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

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NUMBER _____

DATE _____
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PAGE _____ OF _____

BATCH PLANT INSPECTION

ACTIVITY _____

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
10.	No appreciable					
	accumulation of hardened					
	concrete.					
11.	Blades free of excessive					
	wear.					
12.	Interior drum condition					
	satisfactory.					
13.	Charging & discharge					
	openings free from					
	excessive accum. of					
	cement or concrete.					
14.	Hopper & chute surfaces					
	clean and smooth.					
15.	Unit carries rating					
	plate of Truck Mixer					
	Manufacturers Bureau.					
16.	Plate shows recommended					
	operating speed for					
	mixing					

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST
CONTINUATION SHEET

NUMBER 35

DATE

PAGE 4 OF 4

BATCH PLANT INSPECTION

ACTIVITY

NO.	ITEM	SPEC. PAR. REF.	ACC	REJ	N/A	COMMENTS (CAUSE FOR REJ., NCR, ETC)
17.	Plate shows recommended					
	operating speed for					
	agitating					
18	.Equipped with counter					
	in working condition to					
	indicate revs. of drum.					
19.	Gage glass or water					
	meter clean and legible.					
20.	Water injection system					
	in working order with					
	nozzles unobstructed &					
	not leaking into mixer.					
21.	Water measurement					
	accurate within +/-% of					
	mixing water cap +/- 1					
	gal. whichever is					
	greater.					

Foster Wheeler
Environmental Corporation

TENSION TEST REPORT

REPORT

DATE

BLDG., AREA _____

ATTACHMENT I.D. # _____

TENSION TESTER I.D. # _____

ANCHOR # _____

CALIBRATION DUE DATE _____

EXPANSION ANCHOR REPORT # _____

TENSION APPLIED _____ LB. REFERENCE ATTACHMENT "A"

PASS _____ FAIL _____

MODE OF FAILURE:

CONCRETE SHEAR CONE FAILURE _____

EXCESSIVE SLIP _____ ANCHOR PULLOUT _____

ANCHOR DEFORMATION, DISTORTION _____

CORRECTIVE ACTION (IF FAILURE):

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Foster Wheeler
Environmental Corporation

WEEKLY EQUIPMENT INSPECTION REPORT

REPORT NO. _____

DATE _____

LOCATION WHERE BEING USED: _____
BUILDING ELEVATION

a.	ROTARY/PERCUSSION TYPE DRILL	ACCEPT ☐	REJECT ☐
b.	SOLID CORE CARBIDE BIT	ACCEPT ☐	REJECT ☐
c.	DRILL BIT - SAME SIZE AS THE ANCHOR	ACCEPT ☐	REJECT ☐
d.	TORQUE WRENCH CALIBRATED	ACCEPT ☐	REJECT ☐

DATE OF CALIBRATION _____

TORQUE WRENCH I.D. NO. _____

CALIBRATION DUE DATE _____

e. OTHER EQUIPMENT ACCEPT ☐ REJECT ☐ N/A ☐

COMMENTS :

INSPECTOR _____
SIGNATURE

_____
DATE

	Foster Wheeler Environmental Corporation		PAGE 1 of 1 DATE 8/17/87
	TITLE INSPECTION PLAN NO. 37 ASPHALT PAVING		REV NO. DATE BY
LEGEND R – Indicates Rev	PREPARED BY JRI	APPROVED BY JRI	APPROVED

1.1 This procedure includes items of work associated with asphalt paving.

1.2 Inspections to be made of asphalt paving shall be in accordance with prevailing project specifications and project contractual requirements. A typical Inspection Checklist for asphalt paving is attached hereto.

Foster Wheeler
Environmental Corporation

INSPECTION CHECKLIST

ASPHALT PAVING

1) Location _____ Plant Location _____

Mix Design _____ Max. Temp _____ Min. Temp. _____

2) Number of trucks _____ Capacity _____

3) Paving Equip: _____ _____ _____ _____
Type Model Serial No.

4) Roller: _____ _____ _____ _____
Type Model Serial No. Type of Ballast Accept

5) Prime Coat: _____ _____ _____
Date Placed Curing Acceptable Rate of Application

_____ _____ _____ _____
Penetration Material Type Temp. Release for Paving

6) Binder Course: _____ _____ _____
Date Placed Curing Acceptable Compacted Full Width

_____ _____ _____
Release for Tackcoat Checked with Rolling Straight Edge Mix Design

7) Tack Coat: _____ _____ _____
Date Placed Type of Material Temp. & Application Rate

_____ _____
Curing Acceptable Release For Wearing Course

8) Wearing Course: _____ _____ _____
Date Placed Mix Design Rolled Fulled Width

_____ _____
Joint Lapped 6" if both lanes laid Surface checked with Rolling Straight edge

9) Weather: _____ _____
Amb. Temp. at start Amb. temp. at finish

10) Base meets density requirements _____
(Q.C. Soils)

11) Line & Grade Conforms to Drawings & Sketches _____
(Survey)

Comments _____

_____

_____ _____ _____
Date Time Inspector

ATTACHMENT 4

Foster Wheeler Environmental Corporation
Sampling and Analysis Program Plan

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Building 127, Room 112
San Diego, CA 92132-5187

CONTRACT NO. N68711-98-D-5713

FINAL

SAMPLING AND ANALYSIS PROGRAM PLAN

April 26, 1999

NAVAL FACILITIES ENGINEERING COMMAND
SOUTHWEST DIVISION
ENVIRONMENTAL REMEDIAL ACTION CONTRACT

DCN: FWSD-RAC-99-0107

FOSTER WHEELER ENVIRONMENTAL CORPORATION

1230 Columbia Street, Suite 640
San Diego, CA 92101

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ACRONYMS AND ABBREVIATIONS

COC	chain-of-custody
CTO	Contract Task Order
DQO	data quality objectives
EDD	electronic data deliverable
EPA	U.S. Environmental Protection Agency
FSP	Field Sampling Plan
GC/MS	gas chromatograph/mass spectrometer
NEDTS	Navy Environmental Data Transfer Standard
NFESC	Naval Facilities Engineering Service Center
QAO	Quality Assurance Officer
QAPP	Quality Assurance Project Plan
QC	quality control
RAC	Remedial Action Contract
RPM	Remedial Project Manager
RTM	Remedial Technical Manager
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
SWDIV	Southwest Division

1. INTRODUCTION

This Sampling and Analysis Program Plan is presented as an Attachment to the Quality Control Program Plan in support of the Environmental Remedial Action Contract (RAC) for Naval Facilities Engineering Command: Southwest Division awarded to Foster Wheeler Environmental Corporation (Foster Wheeler Environmental). The contract number is N68711-98-D-5713.

This plan describes the required procedures and practices to provide consistent and defensible data for the program. Minimum requirements for preparation, review and approval of the Sampling and Analysis Plan (SAP) for a Contract Task Order (CTO), selection and capabilities of subcontract laboratories, field implementation of SAP, data management procedure, and personnel training are presented in this plan.

This plan complies with the intent of the following references:

- NFESC, Navy Installation Restoration Laboratory Quality Assurance Guide, February 1996
- SWDIV Policy Memorandum #12, Navy Laboratory Quality Assurance Program, April 1996
- SWDIV Policy Memorandum #13, Data Validation, March 1996
- EPA Requirements For Quality Assurance Project Plans for Environmental Data Operations, EPA QA/R-5, October 1997
- Preparation of an EPA Region 9 Sample Plan, November 1992
- Navy Environmental Data Transfer Standard (NEDTS), version 2.01, July 1995
- EPA Guidance for the Data Quality Objectives Process, EPA QA/G-4, Final, September 1994

1.1 SCOPE

The scope of this plan is applicable to all RAC projects requiring sample collection and generation of analytical data. All personnel of the RAC program involved in the sampling and analysis program for each CTO will be responsible for implementation of this plan.

1.2 POLICY STATEMENT

It is the policy of Foster Wheeler Environmental to provide a Sampling and Analysis Program to the Navy that will ensure that all information produced is usable, valid, and of known quality. Foster Wheeler Environmental Corporation's QC goals will be achieved through proper planning, organization, review, communication of objectives, auditing, reporting, and corrective action.

2. SAMPLING AND ANALYSIS PLAN

A SAP describing type, quality, and quantity of environmental data for the intended use of the project will be prepared for each CTO. The SAP will be prepared in accordance with EPA documents mentioned in Section 1. The SAP will contain two parts: Field Sampling Plan (FSP) and Quality Assurance Project Plan (QAPP). The purpose of the FSP is to document the field sampling procedures and data gathering methods that will be used to support the project. The QAPP describes the quality assurance objectives and quality control requirements of the project.

For consistency, a generic template of both an FSP and QAPP has been prepared for the program. These template documents have been submitted to the SWDIV Quality Assurance Officer (QAO) for review and approval. A CTO-specific SAP will be prepared for each CTO using these templates and modified as necessary with additional site-specific information. These templates for the FSP and QAPP are presented as an example in Enclosures 1 and 2 of this document.

2.1 FIELD SAMPLING PLAN

Typically, the FSP describes sample locations, sampling, and sample handling procedures. Each FSP shall contain the following major sections. If information pertaining to a section is described in another document, the heading will be entered and a statement referencing the document name and section number shall be included. The format and minimum information covered in each section of an FSP is as follows:

- Title and approval page (Program QC Manager and SWDIV QAO Approvals)
- Table of Contents

- List of Figures and Tables
- Acronyms and Abbreviations

a) Section 1.0 Introduction
   - State the objective of the sampling proposal
   - Why is the sampling being proposed?
   - How will the data be used?
   - State general analytical information needed from the site

- Section 2.0 Background
   - Concise history of contamination at the site
   - Activities that resulted in contamination
   - Location and extent of contamination
   - Past and on-going investigations
   - Site information and data relevant to the proposed sampling
   - Summary of significant analytical results from past information including unusual analytical parameters or special methods

- Section 3.0 Maps
   - All sampling points
   - Known and potential contamination sources
   - The location of the site in a state.

- Section 4.0 Rationale for Sample Locations, Numbers of Samples, and Analytical Parameters
   - Sampling Strategy
     a) Describe how the sample plan will meet the objectives
     b) General description of sample location and matrices
     c) Rationale for each sampling point
     d) Sample point selection method

- Analytical Parameter
  a) Discuss the rationale for the analytical parameters
  b) Justify request for low quantitation limits
  c) Identify site indicator compounds and other parameters of most interest
  d) Discuss relevant action level
  e) Justify fast turnaround time requests
  f) Discuss rationale for using mobile laboratory
  g) Discuss how screening data will be used
  h) Percent of screening samples to be split with fixed laboratory

- Section 5.0 Request for Analyses
  - Summarize all laboratory analyses to be performed
  - Describe all chemical measurements made in the field including pH and conductivity
  - List all analytical parameters on a sample-by-sample basis
  - List container types, volumes, preservatives, and special handling and holding times
  - List all quality control (QC) samples
  - List sampling schedule

- Section 6.0 Field Methods and Sampling Procedures
  - Sample Collection
    a) Describe how sampling points will be selected
    b) Describe how sampling points will be documented and marked
  - Sample collection procedure
  - Disposal of contaminated material
  - Equipment decontamination
  - Sample containers
  - Sample preservation
  - Sample packaging and shipment
  - Sample documentation (example field forms are presented in Enclosure 3)
  - Quality control samples

- Section 7.0 References
- Any Appropriate Attachments

2.2 QUALITY ASSURANCE PROJECT PLAN

In general, the QAPP describes project data quality objectives, quality control requirements, and quality assurance oversight. Each QAPP shall contain the following major sections. If information pertaining to a section is described in another document, the heading will be entered and a statement referencing the document and section number shall be included. The format and minimum information covered in each section of a QAPP is as follows:

- Title and approval page (Program QC Manager and SWDIV QAO Approvals)
- Table of Contents
- List of Figures and Tables
- Section 1.0: Introduction
- Section 2.0: Project Organization
  - ♦ Identify the individuals participating in the project and discuss their roles and responsibilities
- Section 3.0: Quality Assurance Objectives
  - ♦ Describe seven-step project data quality objectives
  - ♦ Describe project analytical data quality objectives
    - a) QC criteria (Precision, Accuracy, Representativeness, Completeness, and Comparability)
    - b) List project-required reporting limits
    - c) List quality control acceptance criteria
- Section 4.0: Sample Collection
  - ♦ Sample location, collection procedures, container requirements, and packaging and shipping information are presented in the FSP and will not be repeated.

- Section 5.0: Sample Custody and Documentation
  - Field log book, custody seal, chain-of-custody, laboratory custody, and document correction information are presented in the FSP and will not be repeated.
- Section 6.0: Analytical Quality Control Procedures
  - Describe laboratory qualification
  - List calibration criteria and corrective action procedure for each method
  - State required laboratory quality control samples
  - Describe laboratory data review process requirement
  - Describe data deliverable requirements
- Section 7.0: Data Quality Management
  - Describe management of both electronic and hard copy data deliverables
  - Discuss data validation requirement
  - Discuss how data will be evaluated for usability
- Section 8.0: Quality Assurance Oversight
  - Discuss audit of field and laboratory
  - Discuss corrective action procedure
  - Discuss revision and amendment of the QAPP
- Section 9.0: References
- Any Appropriate Attachments

2.3 SAP PREPARATION, REVIEW, AND APPROVAL

The CTO Project Manager, the SWDIV Remedial Project Manager (RPM), and the SWDIV Remedial Technical Manager (RTM) will determine the data quality objectives of the project prior to preparation of the SAP. Representatives of applicable regulatory agencies can be involved in this process.

Based on the defined scope of work and data quality objectives (DQO), the CTO Project Manager or designee will prepare both the FSP and QAPP. Documents shall be internally reviewed in accordance with review procedures discussed in Section A-7 of the Quality

Control Program Plan. The document (in draft form) will be submitted to the SWDIV RPM and the SWDIV QAO, at a minimum, for review and approval. The SWDIV QAO signature must be obtained prior to regulatory agency submittal and field sampling activities.

The approved SAP (i.e., FSP and QAPP) contained within the work plan will be distributed to appropriate field personnel and field samplers at a minimum, and the subcontract laboratory for proper implementation. When circumstances arise that affect the original project DQOs, such as a significant change in work scope, the QAPP document will be revised or amended. The modification process will be based on EPA guidelines and direction from the Navy and QA Officer.

3. ANALYTICAL LABORATORY

3.1 SELECTION OF ANALYTICAL LABORATORY

Prior to field sampling activities, a subcontract analytical laboratory will be selected for the project. The selected laboratory for any CTO under this contract must have applicable state certification for all analytical methods. In addition, the selected laboratory must have or will have successfully completed the Naval Facilities Engineering Service Center (NFESC) laboratory evaluation program prior to field sampling activities and must maintain the status throughout the project period of performance.

Selection of the laboratory shall be based on the above requirements, CTO-specific technical requirements, and ability to meet project turn-around-time requirements. A project-specific statement of work and approved QAPP sections as applicable will be provided to all competing laboratories prior to selection of the laboratory. Any changes from these requirements must have consent from the Foster Wheeler Environmental Program Chemist.

3.2 LABORATORY QUALITY CONTROL PROCEDURES

The laboratories shall meet all requirements stated in the *Navy Installation Restoration Laboratory Quality Assurance Guide* (February 1996). The laboratory must have written Standard Operating Procedures (SOPs) defining the instrumentation, instrumentation maintenance, tuning, calibration, method detection limits, QC acceptance criteria, blank

requirements, and stepwise procedures for each analytical method. The SOPs must be available to the analysts in the laboratory. The SOPs must meet or exceed the requirements of the methods cited in the QAPP. The laboratory must maintain logs of all activities that affect the quality of the laboratory results.

Any analyses or portion thereof subcontracted by the primary laboratory to another laboratory or performed at a different facility operated by the primary laboratory must have the prior approval of the Foster Wheeler Environmental Program Chemist or designee. Each subcontracted laboratory shall be subject to the same requirements as the primary laboratory.

The laboratory must maintain instruments as required by the methods specified for the analyses. Sufficient redundancy in equipment must be available to handle downtime situations. Method substitution because of instrumental failure will not be permitted without the approval of the Foster Wheeler Environmental Program Chemist or designee.

Laboratory oversight by Foster Wheeler Environmental will be through the review of the preliminary report and hard copy data packages unless an audit is warranted. Laboratory visits may be conducted for large CTOs. At a minimum, a kick-off meeting with the Foster Wheeler Environmental Program Chemist and the laboratory (via telephone or a visit) will be conducted on all CTOs.

4. FIELD IMPLEMENTATION AND AUDIT

A copy of the final approved SAP will be placed in the on-site project file and kept at the field office. A field sampler shall read and understand these documents prior to sampling. Any deviation from the plans must be approved by the Project Manager, Program QC Manager, or designees with consent from a SWDIV RPM. Any changes will be documented in the field log book and will be processed via the FCR process.

A field sampler will be properly trained and shall perform in accordance with the SOPs. A bound project field logbook with consecutively numbered pages will be assigned to a CTO project.

At a minimum, field sampling information shall be recorded on a chain-of-custody (COC) form and in the project field logbook. A COC shall be completed for any samples

submitted to a laboratory, including on-site mobile laboratory. Both documents, COC, and the project field logbook will be completed in the field at the time of sample collection.

All entries will be recorded legibly in indelible black ink. Changes or corrections on any documentation will be made by crossing out the item with a single line, initialing the correction by the person performing the correction and dating the correction. The original item, although erroneous, must remain legible. The correction will be written above the crossed-out item, clearly and legibly with indelible ink.

The Program QC Manager, Foster Wheeler Environmental Program Chemist, and SWDIV QAO can schedule audits of field activities to evaluate the execution of sample collection. Sampling operations will be reviewed and compared with requirements of the FSP, QAPP, and applicable SOPs.

5. DATA MANAGEMENT

Data management consists of analytical data (i.e., hard copy and electronic deliverables), survey data, and field information (i.e., free product thickness, groundwater level).

5.1 ANALYTICAL DATA DELIVERABLES

Laboratories will submit analytical data in both hard copy and electronic format.

5.1.1 Hard Copy Data Package

For hard copy data packages, two types of data packages will be requested. They will consist of information sufficient to perform U.S. Environmental Protection Agency (EPA) level III and IV equivalent data validation. The report pages shall be numbered. At a minimum, the following information will be included in the data package.

- Table of Contents referencing individual sections
- Original COC forms
- Case narrative documentation
- Sample receipt form
- Cross-reference table

- Sample results forms
- Sample raw data (EPA level IV only)
- Surrogate summaries (surrogates results may appear on the sample result forms)
- QC summaries
- Tune data (gas chromatograph/mass spectrometer [GC/MS] only)
- Initial calibration
- Daily calibration checks, including related continuing calibration verification
- Resolution and check standards (GC/MS and pesticides analyses)
- QC raw data (EPA level IV only)
- Interference check standards A and B
- Detection limit check standard
- Post-digestion spike results
- Method of standard additions
- ICAP serial dilutions
- Instrument run log
- Sample preparation log

5.1.2 Electronic Data Deliverable

The laboratory performing analyses for this contract shall submit the data in electronic format. The electronic data deliverable (EDD) will be in ASCII format consistent with the SWDIV NEDTS file format version 2.01, July 1995. The laboratory will certify that the EDD and the hard copy reports are identical. A document describing requirements of the EDD will be prepared by Foster Wheeler Environmental and submitted to SWDIV.

The Foster Wheeler Environmental data management team will compile applicable NEDTS information including sample location, laboratory analytical data, and survey information,

for the project database. The completed project database will be submitted to SWDIV in the approved NEDTS format.

5.2 COMPLETENESS CHECK OF DATA PACKAGE

Data packages delivered by the laboratory will go through cursory review by the Project Manager or designee (i.e., Program Chemist) for completeness of the data packages. At a minimum, the following will be determined:

- Correctness of chain-of-custody procedures
- Adherence to method or QAPP holding times
- Method detection limits and reporting limits
- Spiking levels, frequency, and recovery
- Accuracy of analytical operations based on the laboratory control samples

5.3 DATA VALIDATION

In accordance with the SWDIV *Code 18 Policy Memorandum #13* (April 1996), data validation will be performed by an independent data validation subcontractor on samples. The validation will be in accordance with the *EPA Laboratory Data Validation Functional Guidelines for Evaluating Organic and Inorganic Analyses* (EPA, 1994) and QC criteria specified for the project.

Data validation subcontractors will submit validation reports including worksheets to Foster Wheeler Environmental Program Chemist. The report will be reviewed and assessed. Data validation findings will be included in the project database as well as discussed in the final report.

6. PERSONNEL QUALIFICATIONS AND TRAINING

This section discusses personnel qualifications and training as it relates to the sampling and analysis program. It is intended to complement the general corporate policies covering qualifications and training.

6.1 PERSONNEL QUALIFICATIONS

The success of the sampling and analysis program ultimately depends upon the skills and job knowledge of the personnel assigned to the project. Therefore, qualifications (including education and experience) and appropriate training are important components in ensuring that personnel can execute assigned tasks. It is Foster Wheeler Environmental's corporate policy that all personnel assigned to projects have appropriate qualifications and technical knowledge, adequate supervision, and sufficient training to successfully complete their job assignments. For chemistry issues, it is the responsibility of the Program Chemist to ensure that all personnel are appropriately qualified.

6.2 TRAINING

The purpose of training is to acquaint or update the project personnel on the specific project QA/QC requirements, regulatory requirements, special technical skills and the client requirements for the project. Training on specific QC procedures will be conducted prior to work to ensure compliance with the project plans. Three types of training will be used: 1) on-the-job training; 2) short-term training; and 3) cross training.

6.2.1 On-the-Job Training

On-the-job training will be a significant type of training used in this program for the sampler and chemist. It consists of observing the task, performing the task with supervision, and finally performing the task with supervision followed by peer review.

After observing the task, the employee is given hands-on experience by performing the task under the watchful supervision of an experienced staff member. This phase of on-the-job training will be conducted until the employee is judged capable to perform the task correctly without assistance by the supervisor.

6.2.2 Short-term Training

Two general types of short-term training include formal training courses and seminars. Formal training courses typically include preplanned lectures or lessons with student exercises. These may be live presentations, videos, or self-instructional formats of audio tapes/slides or correspondence courses. Usually, the goal of this type of training is to disseminate basic information and is therefore most appropriate for personnel inexperienced with the particular task. Seminars are typically more informal and usually

cover a specific field or discipline. Therefore, seminars are more appropriate for experienced employees. Initially, short-term training will be required of all personnel for certain specific areas (e.g., Department of Transportation/Hazardous Materials, health and safety, and quality assurance).

6.2.3 Cross-Training

Cross-training introduces employees to all team functions outside the realm of their routine assignment and typically incorporates on-the-job training. It will be used as a major training mechanism for field samplers to reduce job costs, ensure responsiveness during peak workload periods, and provide for program continuity during employee absences. Cross-training also provides employees a clearer understanding of the total program by exposure to additional program elements and tasks.

7. REFERENCES

U.S. Navy/Naval Facilities Engineering Service Center (NFESC). 1996. *Navy Installation Restoration Laboratory Quality Assurance Guide*. Naval Facilities Engineering Service Center, Port Hueneme, California. February 1996.

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ENCLOSURE 1

EXAMPLE FIELD SAMPLING PLAN

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Building 127, Room 112
San Diego, CA 92132-5187
CONTRACT NO. N68711-98-D-5713

{VERSION}

FIELD SAMPLING PLAN

SAMPLE

_____, 1998

_____ BASE
{CITY, CALIFORNIA}
CONTRACT TASK ORDER NO. 00__
DCN: N68711-98-D-5713

FOSTER WHEELER ENVIRONMENTAL CORPORATION
1230 Columbia Street, Suite 640
San Diego, CA 92101

_____
Mary Schneider
Program Chemist

_____
Narciso Ancog
SWDIV, Quality Assurance Officer

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SAMPLE

ACRONYMS AND ABBREVIATIONS

BTEX	benzene, toluene, ethylbenzene, and total xylenes
CA LUFT	California leaking underground fuel tank
COC	chain-of-custody
CTO	Contract Task Order
DCN	Document Control Number
DO	Delivery Order
DQO	data quality objectives
EPA	U.S. Environmental Protection Agency
FSP	field sampling plan
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
ml	milliliter
MS/MSD	matrix spike/matrix spike duplicate
mV	millivolts
Foster Wheeler Environmental	Foster Wheeler Environmental Corporation
QAPP	quality assurance project plan
QC	quality control
Redox	reduction oxidation
SOW	Statement of Work
SPLP	synthetic precipitation leaching procedure
SWDIV	Southwest Division Naval Facilities Engineering Command
TOC	total organic carbon
TPH	total petroleum hydrocarbon
VOA	volatile organic analysis
°C	degrees Celsius

SAMPLE

1. INTRODUCTION

This field sampling plan (FSP) was prepared by Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) for XXXXX at the XXXXX. The plan was prepared in accordance with the project Statement of Work (SOW) issued by the Department of the Navy, Southwest Division Naval Facilities Engineering Command (SWDIV) under Remedial Action Contract No. N68711-98-D-5713, Contract Task Order (CTO) No. XXXX, dated XXXXXXX. This FSP and the quality assurance project plan (QAPP) complete the project-specific sampling and analysis plan required for this project.

The purpose of the FSP is to provide field sampling procedures and data gathering methods that will be used to support XXXXXXX. The FSP will be used by field personnel as a reference during sampling.

The purpose of the QAPP is to describe the quality assurance objectives and quality control (QC) requirements for this project. Data quality objectives (DQOs) are described in the QAPP.

SAMPLE

The regulatory agencies performing oversight of this site are the XXXXXXXXXXX

1.1 OBJECTIVE

The objective of this project is XXXXXXXXXXXXXX

1.2 CLEANUP GOALS

XXXXXXXXXXXXXXXX

2. BACKGROUND AND SITE DESCRIPTION

This section provides a summary of site-specific background information relevant to sampling. A more detailed discussion of site location, history, and previous investigations is presented in XXXXXXXX.

Insert site location, any description and background relevant to sampling. Reference any location maps.

3. FIGURES

Figures showing the project and site locations and locations of proposed soil borings are presented in the work plan and are indicated in the figures below:

Figure 1-1, Name of the drawing

Figure 2-1, Name of the drawing

Figure 2-2, Name of the drawing

Figure 3-1, Name of the drawing

Figure 3-2, Name of the drawing

4. SAMPLING STRATEGY

This section discusses collection and analysis of soil and water samples to meet the project objectives.

SAMPLE

4.1 SOIL SAMPLING STRATEGY

Soil samples will be collected from both sites during the drilling phase of the data collection activities and will be analyzed to evaluate the nature and extent of natural biodegradaton.

4.1.1 Soil Sampling at Site XXXX

At Site XXXX, three vertical borings will be advanced to a depth of 20 feet using a hollow-stem auger (or other drilling method appropriate for site conditions) and continuously cored using a 5-foot splitspoon sampler. Soil samples will be collected at 5-foot intervals to the total boring depth of 20 feet. The locations of the vertical borings are shown in Figure 2-2 of the work plan.

All soil samples will be analyzed for the following:

- TPH-extractable
- BTEX
- Total organic carbon (TOC)
- Moisture content.

Two soil samples with the highest TPH concentration from each soil boring will be analyzed for the leachable component of TPH-extractable and benzene, toluene, ethylbenzene, and total xylene (BTEX) using the synthetic precipitation leaching procedure (SPLP) by U.S. Environmental Protection Agency (EPA) Method 1312 prior to the analyses for TPH-extractable and BTEX.

Analytical methods, sample containers, preservatives, and holding times are described in greater detail in Section 5 of this FSP.

4.1.2 Soil Sampling at Site YYY

4.2 WASTE CHARACTERIZATION SAMPLING STRATEGY

Waste generated during field activities will include soil cuttings and decontamination water. Soil cuttings and decontamination water will be temporarily stored onsite in 55-gallon drums or other approved containers. The drums will be labeled and placed in a secure area. Samples will not be collected from the drums for waste characterization unless required by the disposal facility. Analytical results obtained for the project will be used for waste profiling.

SAMPLE

5. REQUEST FOR ANALYSIS

This section describes analytical methods, sample containers, preservatives, and field and laboratory quality control (QC) samples.

5.1 ANALYTICAL METHODS

The following analytical methods will be used in this project:

- TPH-extractable by California leaking underground fuel tank (CA LUFT) manual Method 8015 Modified

Detailed information on methods, calibration criteria, project-required reporting limits, and QC acceptance criteria are presented in the QAPP.

5.2 SAMPLE CONTAINERS, PRESERVATIVES, AND HOLDING TIME

Tables 5-1 and 5-2 list the sample containers, preservatives, and holding time requirements for soil and aqueous samples, respectively.

Table 5-1. Soil Sample Container Requirements, Preservatives, and Holding Times Analyte and by Analytical Method

Analytes	Analytical Method	Container	Preservative	Holding Time
TPH-extractable	CA LUFT M8015	One 8-ounce glass jar or brass sleeve for all analyses	Cool to 4±2°C	28 days
BTEX	EPA 8020			14 days
SPLP extraction	EPA 1312			14 days

Explanation:
BTEX - benzene, toluene, ethylbenzene, and total xylenes
°C - degrees Celsius
EPA - U.S. Environmental Protection Agency
CA LUFT - California leaking underground fuel tank
TPH - total petroleum hydrocarbons

SAMPLE

Table 5-2. Aqueous Sample Container Requirements, Preservatives, and Holding Times Analyte and by Analytical Method

Analytes	Analytical Method	Container	Preservative	Holding Time
TPH-diesel	CA LUFT M8015	1-liter amber glass bottle	Cool to 4±2°C	14 days
BTEX	EPA 8020	3 x 40-ml VOA vial	HCl, pH <2 Cool to 4±2°C	14 days
Methane	RSK 175	4x40-ml VOA vials	none	14 days

Explanation:
BTEX - benzene, toluene, ethylbenzene, and total xylenes
°C - degrees Celsius
EPA - U.S. Environmental Protection Agency
CA LUFT - California leaking underground fuel tank
ml - milliliter
TPH - total petroleum hydrocarbons
VOA - volatile organic analysis

5.3 FIELD QUALITY CONTROL SAMPLES

Field QC samples will be collected and analyzed during the project to assess the consistency and performance of the sampling program. Field QC samples for this project could include (Insert type of field QC samples).

5.3.1 Field Duplicates

Field duplicates consist of two samples (an original and a duplicate) of the same matrix collected at the same time and location to the extent possible and using the same sampling techniques. The purpose of field duplicate samples is to evaluate the precision of the overall sample collection and analysis process. Field duplicates will be collected at a frequency of 1 per 10 samples and will be analyzed for the same analytes as the original samples. Field duplicates receive unique sample numbers; therefore, the identity of the duplicate samples are blind to the analytical laboratory. Exact locations of duplicate samples and their identifications will be recorded in the field logbook.

SAMPLE

5.3.2 Equipment Rinsate Samples

Equipment rinsate samples will be collected only if nondisposable sample equipment is used. Equipment rinsate samples evaluate the effectiveness of the decontamination procedure and potential cross-contamination during sampling events. Rinsate samples consist of reagent-grade water collected from the final rinse of the decontamination process. Rinsate samples will be collected from the sample equipment, placed in appropriate precleaned containers supplied by the analytical laboratory, and analyzed for the same analytes as the field samples. This project will use disposable sampling equipment where possible, therefore eliminating the need for equipment rinsate samples.

6. FIELD METHODS AND SAMPLING PROCEDURES

6.1 INTRODUCTION

The following sections present soil and aqueous sampling procedures.

6.1.1 Insert appropriate sampling procedure

6.1.2 Soil Sampling Procedure

After drilling to the appropriate depth, the pilot bit will be removed. The inside of the hollow-stem will be cleaned out and samples will be collected for chemical analysis. Three brass sleeves will be used inside the splitspoon sampler. Upon retrieval, the splitspoon sampler will be opened and each of the brass sleeves will be removed and the ends of each sleeve will be covered with a Teflon® swatch and then a plastic cap. The middle sleeve will be used for chemical analysis. Geophysical tests will be performed on the bottom sleeve, and the top sleeve will be held in reserve. The sleeves will be labeled and placed in a cooler with bagged ice. Detailed information on sample labeling is described in Section 6.4. All samples will be stored, packaged, and submitted to the laboratory as specified in Section 6.5 and will be analyzed for the parameters listed in Table 5-1. The sample number, date, time, and description of the sample will be recorded on the COC form and in the field logbook. All entries will be written in indelible black ink.

SAMPLE

6.1.3 Groundwater Sampling Procedure

After drilling, a temporary well will be installed to collect groundwater samples. Samples will be collected using a precleaned stainless steel or Teflon® bailer. Samples will be transferred from the bailers to sample containers using a disposable polyethylene bottom emptying device. Care will be taken to avoid agitating the sample to minimize loss of volatile organic compounds (VOCs). Samples will be collected in pre-preserved, precleaned sample containers as required. Samples will be labeled immediately and stored in a cooled ice chest. Table 5-2 lists the laboratory analyses, Table 6-1 lists groundwater field parameters, and Table 6-2 lists the field tests.

Table 6-1. Groundwater Quality Field Parameters

Parameter	Criteria
Conductivity	±5 %
pH	±1%
Dissolved oxygen (mg/L)	±10 %
Redox (mV)	±10 %

Explanation:
mg/L - milligrams per liter
mV - millivolts

SAMPLE

Table 6-2. Field Tests

Analyte	Method	Holding Time
Dissolved oxygen	Field Monitoring	Immediately
Conductivity	Field Monitoring	Immediately
Redox potential	Field Monitoring	Immediately
Ferrous iron	Hach Kit	Immediately
Salinity	Calculation	Not applicable

Explanation:
Redox - oxidation reduction

Groundwater samples for laboratory analyses will be collected in the following order:

1. BTEX
2. TPH-extractables

Sample volumes listed in Table 5-2 will provide sufficient sample volume for the listed analyses. Samples selected for MS/MSD will be collected in triplicate.

All groundwater sample containers will be kept on ice prior to filling and will be returned to ice after sample collection.

6.2 DECONTAMINATION PROCEDURES

Decontamination of nondisposable sampling equipment will be performed to prevent the introduction of extraneous material into samples and to prevent cross-contamination between samples. All sampling equipment will be decontaminated by steam cleaning or by washing with a nonphosphate detergent such as Liquinox™ or equivalent. Decontamination water will be collected in 55-gallon drums.

The following steps will be followed for decontamination of nondisposable sample equipment:

1. Rinse with potable water: This step will decrease the gross contamination and reduce the frequency at which the nonphosphate detergent and water solution need to be changed. Using a 5-gallon bucket about 75 percent full of water and a long-handled brush is suggested for this step. Frequent changing of this water will increase its effectiveness.
2. Wash with nonphosphate detergent and water solution: This step will remove all visible contamination from the equipment. Using a 5-gallon bucket, approximately 75 percent full of solution and a long-handled brush is suggested for this step. Dilute nonphosphate detergent as directed by the manufacturer.
3. Rinse with potable water: This step will rinse all the detergent solution away from equipment. Using a 5-gallon bucket approximately 75 percent full of water and a long-handled brush is suggested for this step. Periodic changing of this water is required.
4. Rinse with deionized water: This step will rinse any detergent solution and potable water residues. Rinsing is most effective by applying the deionized water from a stainless steel Hudson-type sprayer or Nalgene™ squeeze bottle while holding equipment over a 5-gallon bucket.
5. Rinse with reagent grade water: This step will rinse any analytical contaminants in deionized water. Rinsing is most effective by applying water from a stainless steel Hudson-type sprayer or Nalgene™ squeeze bottle while holding equipment over a 5-gallon bucket.

SAMPLE

6.3 SAMPLE NUMBER (MODIFY AS APPROPRIATE)

All samples submitted to an analytical laboratory will be uniquely numbered according to the following format:

XXXXX - YYY

Where, XXXXX is the five digit FWENC project number and YYY is a sequential number for this project. The project number is XXXXX. The sample number will be recorded in the field logbook and on the COC form at the time of sample collection. A complete description of the sample and sampling circumstances will be recorded in the field logbook and referenced to the unique sample identification number.

6.4 SAMPLE LABELING

Sample labels will be filled out with indelible black ink and will be affixed to each sample container. Each sample label will be covered with clear tape. Sample containers will be placed in resealable plastic bags to protect the sample from moisture during transportation to the laboratory. Each sample container will be labeled with the following, at minimum:

1. Sample identification number
2. Sample collection date (month/day/year)
3. Time of collection (24-hour clock)
4. Project number (e.g., 19187)
5. Sampler's initials
6. Analyses to be performed
7. Preservation (if any)

SAMPLE

6.5 SAMPLE PACKAGING AND SHIPMENT

Immediately after sample collection, custody seals and sample labels will be affixed to each sample container. Each sample will be covered in clear tape and placed in a resealable plastic bag to keep the sample container and label dry. All glass sample containers will be protected with bubble wrap if transported by a commercial carrier.

Each cooler will be shipped with a temperature blank. A temperature blank is a sample container filled with tap water and stored in the cooler during sample collection and transportation. The temperature of the temperature blank will be recorded by the laboratory immediately upon receipt of the samples.

Sample cooler drain spouts will be taped from the inside and outside of the cooler to prevent any leakage.

Samples to be shipped by commercial carrier will be packed in a sample cooler lined with a plastic bag. Ice, sealed in plastic bags, will be added to the cooler in sufficient quantity to keep the samples cooled to 4±2 °C for the duration of the shipment to the laboratory. Saturday deliveries must be coordinated with the laboratory and the airbill and cooler must be marked appropriately.

The COC form will be completed and signed by the laboratory-assigned courier. The cooler will then be released to courier for transportation to the laboratory.

If a commercial carrier is used, the COC form will include the airbill number in the "transfers accepted by" column and will be sealed in a resealable bag. The COC form will then be taped to the inside of the sample cooler lid. The cooler will be taped shut with strapping tape, and two custody seals will be taped across the cooler lid: one seal in the front and one seal in the back. Clear tape will be applied to the custody seals to prevent accidental breakage during shipping. The samples will then be shipped to the analytical laboratory. A copy of the courier airbill will be retained for documentation.

SAMPLE

6.6 FIELD DOCUMENTATION

At a minimum, sampling information will be recorded on a COC form and in the field logbook. Both documents will be completed in the field at the time of sample collection. All entries will be legible and will be recorded in indelible black ink.

Changes or corrections on any project documentation will be made by crossing out the item with a single line, initialing (by the person performing the correction), and dating the correction. The original item, although erroneous, must remain legible beneath the cross-out. The new information should be written above the crossed-out item. Corrections must be written clearly and legibly with indelible ink.

6.6.1 Chain-of-Custody

The following will be recorded on the COC form:

1. Project name
2. Project location
3. Project number (Foster Wheeler Environmental)
4. Project contact (Foster Wheeler Environmental)
5. Client representative (SWDIV)

6. Project manager (Foster Wheeler Environmental)
7. Sample numbers
8. Date (of sample collection)
9. Time (of sample collection to the nearest minute, 24-hour clock)
10. Sample type (composite or grab)
11. Sample description (location and matrix)
12. Number of sample containers
13. Analysis required
14. Remarks
    - MS/MSD samples
    - Photoionization detector readings
    - Observations specific to sample
15. Item numbers (to be relinquished)
16. Transfer signature (to relinquish samples)
    - The sampler will be the first person to relinquish sample possession
17. Courier/laboratory representative signature (for commercial carrier, record airbill number here)
18. Date/time (of custody transfer)
19. Additional remarks
    - Transportation method
    - Laboratory name
    - Turnaround time requirement
    - Compositing instruction (if needed)
20. Sampler signature

SAMPLE

6.6.2 Field Logbooks

A bound field logbook with consecutively numbered pages will be assigned to each site in this project. All entries will be recorded in indelible black ink. Corrections will be made by crossing out erroneous data with a single line and dating and initialing the entry. At the end

of each workday, the logbook pages will be signed by the responsible sampler and any unused portions of logbook pages will be crossed out, signed, and dated.

If it is necessary to transfer the logbook to another person, the person relinquishing the logbook will sign and date the last page used and the person receiving the logbook will sign and date the next page to be used.

At a minimum, the logbook will contain the following information:

1. Project name and location
2. Date and time
3. Personnel in attendance
4. General weather information
5. Work performed
6. Field observations
7. Sampling performed, including specifics such as location, type of sample, type of analyses, and sample identification
8. Field analyses performed, including results, instrument checks, problems, and calibration records for field instruments
9. Descriptions of deviations from the FSP
10. Problems encountered and corrective action taken
11. Identification of field QC samples
12. QC activities
13. Verbal or written instructions
14. Any other events that may affect the samples

SAMPLE

6.6.3 Document Corrections

Changes or corrections on any project documentation will be made by crossing out the item with a single line, initialing (by the person performing the correction), and dating the correction. The original item, although erroneous, must remain legible beneath the cross-out. The new information should be written above the crossed-out item. Corrections must be written clearly and legibly with indelible ink.

7. REFERENCES

U.S. Environmental Protection Agency. 1994. *Test Methods for Evaluating Solid Waste, Physical Chemical Methods*, SW-846, third edition and its final updates. September 1994.

SAMPLE

ENCLOSURE 2

EXAMPLE QUALITY ASSURANCE PROJECT PLAN

Southwest Division
Naval Facilities Engineering Command
Contracts Department
1220 Pacific Highway, Building 127, Room 112
San Diego, CA 92132-5187
CONTRACT NO. N68711-98-D-5713

{VERSION}

QUALITY ASSURANCE PROJECT PLAN

_____, 1999

_____ BASE

{CITY, CALIFORNIA}

CONTRACT TASK ORDER NO. 00__

DCN: FWSD-RAC-99-0107

SAMPLE

FOSTER WHEELER ENVIRONMENTAL CORPORATION

1230 Columbia Street, Suite 640
San Diego, CA 92101

_____
Mary Schneider
Program Chemist

_____
Narciso Ancog
SWDIV, Quality Assurance Officer

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ATTACHMENT 2 SAMPLE CUSTODY SEAL

SAMPLE

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SAMPLE

ACRONYMS AND ABBREVIATIONS

BTEX	benzene, toluene, ethylbenzene, and total xylenes
CCV	continuing calibration verification
COC	chain-of-custody
CQC	contractor quality control
DCN	Document Control Number
DHS	Department of Health Services
DQO	data quality objectives
EDD	electronic data deliverable
ELAP	Environmental Laboratory Accreditation Program
EPA	U.S. Environmental Protection Agency
FSP	field sampling plan
GC/MS	gas chromatograph/mass spectrometer
ICAL	initial calibration
ICAP	inductively coupled argon plasma
LCS	laboratory control sample
LUFT	leaking underground fuel tank
mg/kg	milligram per kilogram
mg/L	milligrams per liter
MS/MSD	matrix spike/matrix spike duplicate
NFESC	Naval Facilities Engineering Service Center
Foster Wheeler Environmental	Foster Wheeler Environmental Corporation
PARCC	precision, accuracy, representativeness, completeness, and comparability
PE	performance evaluation
QA	quality assurance
QA/QC	quality assurance/quality control
QAO	quality assurance officer
QAPP	quality assurance project plan
QC	quality control
RL	reporting limits
RPD	relative percent difference
SOP	standard operating procedure
SPLP	synthetic precipitation leaching procedure
SWDIV	Southwest Division Naval Facilities Engineering Command
TPH	total petroleum hydrocarbons
µg/l	micrograms per liter
%R	percent recovery

SAMPLE

1. INTRODUCTION

This quality assurance project plan (QAPP), in support of remedial system design at Sites XXXXX at the Marine Corps Base, as prepared by Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) under Contract Task Order (CTO) No. XXXX of Southwest Division Naval Facilities Engineering Command (SWDIV) Contract No. N68711-98-D-5713. The Foster Wheeler Environmental project No. is XXXXX.

This QAPP and the field sampling plan (FSP) complete the project-specific sampling and analysis plan required for this project.

1.1 OBJECTIVE

This QAPP was prepared to ensure that the data collected during the pilot test activities are precise, accurate, representative, complete, and comparable to meet their intended use. This document describes quality assurance (QA) objectives and quality control (QC) requirements for this project. Quality control requirements associated with the sampling activities are presented in FSP. Summary information on site location and project background, including previous site assessments, are presented in the FSP. Information presented in the FSP will not be repeated here.

SAMPLE

The regulatory agency performing oversight of this site is the XXXXXXXX.

1.2 BACKGROUND

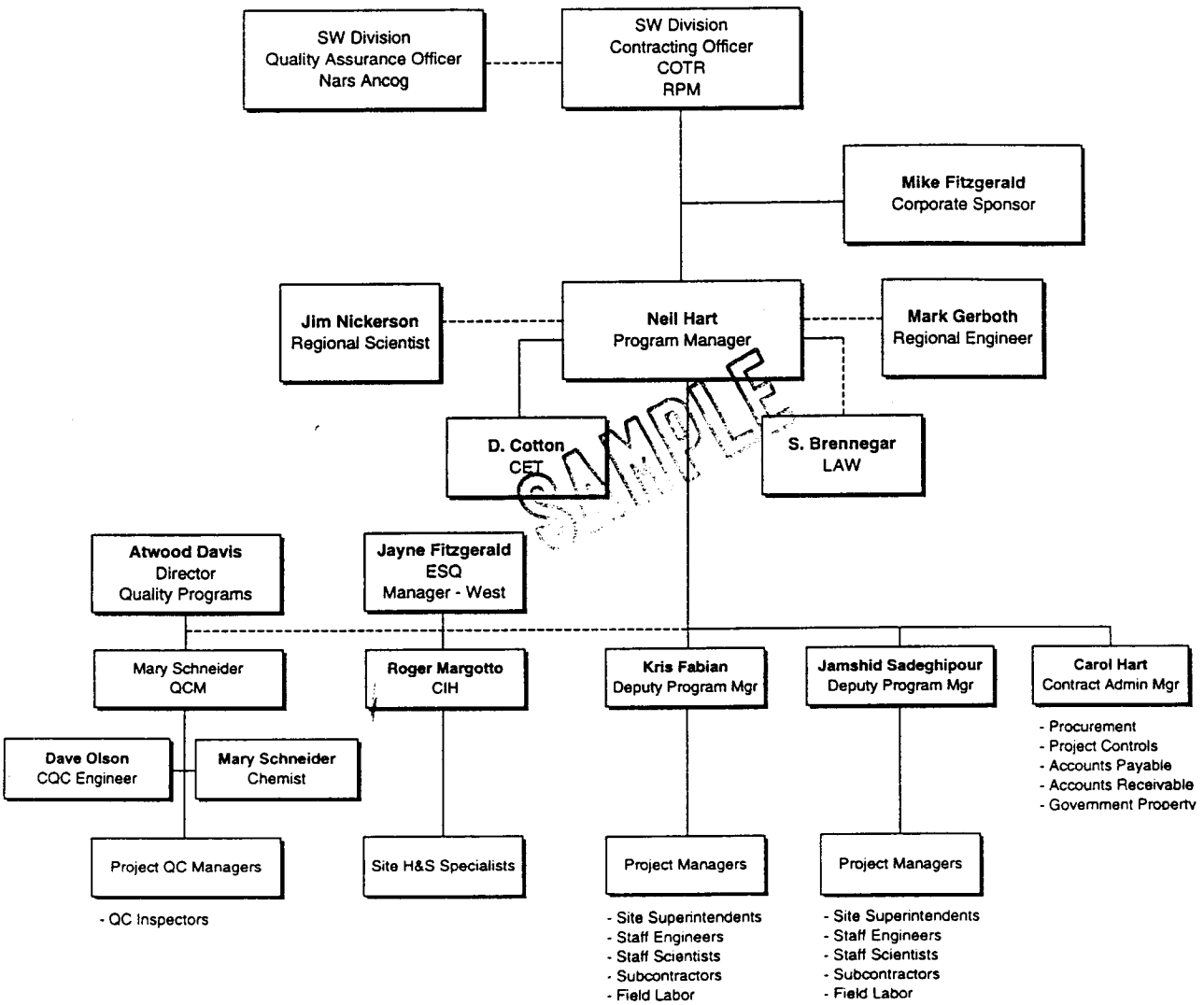
Site locations and background, including site descriptions and previous investigation findings, are presented in Section 2 of FSP and will not be repeated here.

2. PROJECT ORGANIZATION

The project organization for this removal action consists of representatives from the Navy and the Foster Wheeler Environmental Team. The project organization is shown in Figure 2-1. The project team consists of the following members:

- Remedial Project Manager, SWDIV

Figure 2-1. Project Organization Chart



- QA Officer, SWDIV
- Project Manager, Foster Wheeler Environmental
- Program QC Manager, Foster Wheeler Environmental
- Health and Safety Manager, Foster Wheeler Environmental
- Site Safety Officer, Foster Wheeler Environmental
- Site Superintendent, Foster Wheeler Environmental
- Project Chemist, Foster Wheeler Environmental
- Field Chemist/Technologist, Foster Wheeler Environmental.

The responsibilities of the team members associated with the sampling activities are presented in Table 2-1.

SAMPLE

Table 2-1. Personnel and Responsibilities for Sampling Activities

Key Position	Responsibility
SWDIV Quality Assurance Officer (QAO)	• Provides governmental oversight of the Foster Wheeler Environmental QA Program • Provides quality-related directives through Contracting Officer's Technical Representative • Provides technical and administrative oversight of Foster Wheeler Environmental surveillance audit activities • Point of contact for all matters concerning QA and the Navy's Laboratory QA Program • Prepares governmental budget estimates for all QA functions included in Foster Wheeler Environmental contracts • Coordinates training on matters pertaining to generation and maintenance of quality of data • Authority to suspend project execution if QA requirements are not adequately followed
Project Chemist	• Develops sampling and analysis plan and QA project plan • Selects qualified subcontract laboratories • Implements chemical data QC procedures and performs auditing of field performance • Reviews laboratory data prior to use • Coordinates data validation of laboratory data • Reviews data validation report • Prepares report and assists with report preparation
Field Chemist/ Technologist	• Performs all sampling in accordance with approved FSP and QAPP • Ensures that field QA samples are collected as specified in the FSP • Completes sampling notes, forms, and sampling logs • Coordinates laboratory and field sampling activities • Implements corrective actions as required

Explanation:
FSP - field sampling plan
QA - quality assurance
QAO -quality assurance officer
QAPP - quality assurance project plan
SWDIV - Southwest Division Naval Facilities Engineering Command

SAMPLE

3. QUALITY ASSURANCE OBJECTIVES

The overall quality objectives of this QAPP are to outline procedures for the collection and assessment of data that are within acceptable ranges of precision, accuracy, representativeness, completeness, and comparability (PARCC) to meet the project data quality objectives (DQOs). The data quality associated with environmental data is a function of the sampling plan rationale and the procedures used to collect the samples, as well as the analytical methods and instrumentation used. However, uncertainty can not be eliminated entirely from environmental data.

3.1 DATA QUALITY OBJECTIVES

The DQO process is a series of planning steps based on scientific methods that are designed to ensure that the type, quantity, and quality of environmental data used for decision making are appropriate for the intended application. The DQO process, as defined by the U.S. Environmental Protection Agency (EPA), consists of seven steps that are designed to provide a systematic approach to resolving issues that pertain to the site investigation and remediation (EPA, 1994a).

SAMPLE

3.1.1 Stating the Problem

XXXXXXXXXXXXXX

3.1.2 Identifying the Decisions

XXXXXXXXXXXXXX

3.1.3 Identifying Inputs to the Decisions

XXXXXXXXXXXXXX

3.1.4 Defining the Boundaries

XXXXXXXXXXXXXX

3.1.5 Developing a Decision Rule

XXXXXXXXXXXXXX

3.1.6 Specifying Limits on Decision Error

XXXXXXXXXXXXX

3.1.7 Optimizing the Design for Obtaining Data

XXXXXXXXXXXXX

3.2 ANALYTICAL DATA QUALITY OBJECTIVES

Analytical data will be obtained using standard methods in a certified laboratory. Analytical DQOs will be assessed through measures of PARCC parameters. These quality control criteria are defined in this section. In addition, analytical methods used, project required reporting limits, and QC criteria are also described.

SAMPLE

3.2.1 Quality Control Criteria

Definition of QC criteria are presented in this section:

- **Precision:** A measure of the reproducibility of a set of replicate results or the agreement among repeat observations made under the same conditions. Analytical precision is the measurement of the variability associated with duplicate or replicate analyses. For this project, a laboratory control sample (LCS) will be used to determine the precision of the analytical method. Total precision is the measurement of the variability associated with the entire sampling and analysis process. It is determined by analysis of duplicate field samples and measures variability introduced by both the laboratory and field operations. Field duplicate and matrix spike duplicate samples will be used to assess field and analytical precision, and the precision measurement will be determined using the relative percent difference (RPD) between the duplicate sample results. The formula for calculating the RPD is:

  RPD = 100 x 2 x (result - duplicate result) / (result + duplicate result)

- **Accuracy:** The nearness of a result or the mean of a set of results to the true or accepted value. Analytical accuracy is measured by comparing the percent recovery of analytes spiked into an LCS against a control limit. Surrogate compound recoveries are also used to assess accuracy and method performance for each sample analyzed. The formula for calculating accuracy uses the following equation to determine percent recovery of specific analytes:

%R = 100 x (spiked sample result - unspiked sample result)/amount of spike added

- **Representativeness:** The degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter most concerned with the proper design of the sampling program.

- **Completeness:** The percentage of measurements made that are judged to be valid measurements. The completeness goal is to generate a sufficient amount of valid data to meet project needs. Completeness is calculated and reported for each method, matrix, and analyte combination. The number of valid results divided by the number of possible individual analyte results, expressed as a percentage, determines the completeness of the data set. For completeness requirements, valid results are all results not qualified with an "R" flag. The requirement of completeness is 95 percent for aqueous samples and 90 percent for soil samples, and is determined using the following equation:

  Percent completeness = 100 x (number of valid analyte results/number of possible results)

- **Comparability:** A qualitative parameter expressing the confidence with which one data set can be compared with another. Sample data should be comparable with other measurements for similar samples and sample conditions. The objective for the quality assurance/quality control (QA/QC) program is to produce data with the greatest possible degree of comparability. The number of matrices that are sampled and the range of field conditions encountered are considered in determining comparability. Comparability is achieved by using standard methods for sampling and analysis, reporting data in standard units, normalizing results to standard conditions, and using standard and comprehensive reporting formats.

SAMPLE

3.2.2 Analytical Methods

The following methods will be used during this project:

- Total petroleum hydrocarbons by California leaking underground fuel tank (CA LUFT) manual Method 8015 Modified

- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8021

- Synthetic precipitation leaching procedure (SPLP) by EPA Method 1312

3.2.2.1 Project-Required Reporting Limits

Reporting limits established for this project are identified in Table 3-1.

3.2.2.2 Project Quality Control Limits

Precision and accuracy QC limits for each method and matrix are identified in Table 3-2.

SAMPLE

Table 3-1. Project-Required Reporting Limits

Parameter/ Method	Analyte	Water RL	Water Unit	Soil RL	Soil Unit
TPH-extractable by CA LUFT Method 8015M	Diesel	500	mg/L	10.0	mg/kg
BTEX EPA Method 8021	Benzene	2.0	µg/L	0.002	mg/kg
	Toluene	2.0	µg/L	0.002	mg/kg
	Ethylbenzene	2.0	µg/L	0.002	mg/kg
	Xylenes	2.0	µg/L	0.002	mg/kg

Explanation:
BTEX - benzene, toluene, ethylbenzene, and xylenes
EPA - U.S. Environmental Protection Agency
CA LUFT - California leaking underground fuel tank
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
n/a - not applicable
RL- reporting limits
TPH - total petroleum hydrocarbons
µg/L - micrograms per liter

SAMPLE

Table 3-2. Quality Control Acceptance Criteria for Precision and Accuracy

Analyte/Method	QC Parameter	Accuracy Water (%R)	Precision Water (%RPD)	Accuracy Soil (%R)	Precision Soil (%RPD)
TPH-extractable - California LUFT 8015M	LCS	75-125	≤ 30	75-125	≤ 50
	MS/MSD				
		26-152		25-162	
Surrogates(choose 2)		57-132		47-142	
Octosane		75-125		65-135	
Ortho-Terphenyl		40-140		30-150	
Fluorobenzene					
Tricontane					
BTEX - EPA Method 8021	LCS				
Benzene		80-120	< 20	80-120	< 30
Toluene	MS/MSD	80-120	< 20	80-120	< 30
Ethylbenzene		80-120	< 20	80-120	< 30
Xylenes		80-120	< 20	80-120	< 30
Surrogates(choose 2)					
Bromochlorobenzene		80-120	46-136	80-120	36-146
Bromofluorobenzene		80-120	48-138	80-120	38-138
Difluorobenzene		80-120	48-138	80-120	38-138
Fluorobenzene		80-120	44-165	80-120	34-175
1,1,1-Trifluorobenzene		80-120	44-165	80-120	34-175

Explanation:
- BTEX - benzene, toluene, ethylbenzene, and total xylenes
- CA LUFT - California Leaking Underground Fuel Tank
- EPA - U.S. Environmental Protection Agency
- LCS - laboratory control standard
- MS/MSD - matrix spike/matrix spike duplicate
- n/a - not applicable
- %R - percent recovery
- TPH - total petroleum hydrocarbons
- %RPD - percent relative percent difference

SAMPLE

4. SAMPLE COLLECTION

4.1 SAMPLING LOCATIONS

Sample locations and the number of samples to be collected are described in Section 4 of the FSP and are not repeated here.

4.2 SAMPLE COLLECTION

Sample collection procedures are described in Section 6 of the FSP and are not repeated here.

4.3 SAMPLE CONTAINERS, PRESERVATIVES, AND HOLDING TIMES

Sample containers, preservatives, and holding times are described in Section 5 of the FSP, specifically Tables 5-1 and 5-2, and are not repeated here.

4.4 SAMPLE PACKAGING AND SHIPMENT

Sample packaging and shipment procedures are described in Section 6.5 of the FSP and are not repeated here.

5. SAMPLE CUSTODY AND DOCUMENTATION

The integrity and traceability of samples from the time they are collected through the time data are reported are essential in any sampling and analysis program. The handling of the samples and transfer of custody must be well documented given the evidentiary nature of the data. A sample is considered to be in one's custody if it meets any of the following criteria:

SAMPLE

1. In actual possession or in view of the person who collected the sample
2. Locked in a secure area
3. Placed in an area restricted to authorized personnel

5.1 FIELD SAMPLE CUSTODY AND DOCUMENTATION

In order to maintain the integrity and traceability of samples, all information pertinent to field sampling will be recorded in a field logbook. All samples will be properly labeled and custody sealed prior to transporting to the laboratory and will be accompanied by completed chain-of-custody (COC) documentation. All documentation will be recorded in black indelible ink.

5.1.1 Field Logbook

Detailed information on the field logbook is presented in the Section 6.6.2 of the FSP and is not repeated here.

5.1.2 Sample Labeling

Sample labels are necessary to prevent misidentification of samples. Labels will be filled out and affixed to sample containers at the time of sample collection. Detailed information on sample labeling is presented in the Section 6.4 of the FSP.

5.1.3 Custody Seals

Sample custody seals are used to detect unauthorized tampering of samples from the time of sample collection to the time of analysis. The seals will be signed and dated by the sampler. Seals will be affixed to containers before the samples leave the custody of sampling personnel. The seals will be placed on the sample containers and shipping containers in such a way that they must be broken in order to open the containers.

5.1.4 Chain-of-Custody Records

To establish the documentation necessary to trace sample possession from the time of collection, a COC record will be completely filled out and accompany every sample. At a minimum, information presented in Section 6.6.1 of the FSP must be included on the COC record. Samples will be delivered to the laboratory for analysis as soon as practicable.

SAMPLE

5.2 LABORATORY SAMPLE CUSTODY AND DOCUMENTATION

The samples will be delivered to the person in the laboratory authorized to receive samples (referred to as the sample custodian). Upon receipt of a sample, the custodian will inspect the condition of the sample (including temperature of the cooler) and the custody seal, reconcile the information on the sample label against that on the COC record, assign a laboratory number, log the sample in the laboratory logbook, and store it in a secured sample storage room.

The Foster Wheeler Environmental Project Chemist will be informed immediately of any inconsistencies between the COC form and the sample containers received. Any deviations from accepted sample handling procedures will be documented and the Foster Wheeler Environmental Project Chemist will be informed.

5.3 CORRECTIONS TO CUSTODY DOCUMENTATION

Changes or corrections on any project documentation will be made by crossing out the item with a single line and initialing (by the person performing the correction) and dating the

correction. The original item, although erroneous, must remain legible beneath the cross-out. The new information will be written above the crossed-out item. Corrections must be written clearly and legibly with indelible ink.

6. ANALYTICAL QUALITY CONTROL PROCEDURES

This section describes analytical QC procedures, including laboratory qualification and QA program and QC associated with analytical methods.

6.1 LABORATORY QUALIFICATION

The analytical laboratories selected to analyze samples for this project will be certified by the California Department of Health Services (DHS) through the Environmental Laboratory Accreditation Program (ELAP) for all the analytical methods required for the project. In addition, the laboratory must successfully complete the Naval Facilities Engineering Service Center (NFESC) Laboratory Evaluation Program prior to sampling activities and maintain that status throughout the project.

SAMPLE

Laboratories selected for the project must be capable of providing the required turnaround times, project QC, and data deliverables required by this QAPP and the FSP.

6.2 LABORATORY QUALITY CONTROL PROCEDURES

The analytical laboratory must have written standard operating procedures (SOPs) defining the instrumentation, instrumentation maintenance, tuning, calibration, method detection limits, QC acceptance criteria, blank requirements and stepwise procedures for each analytical method. The SOPs must be available to the analysts in the laboratory. The SOPs must meet or exceed the requirements of the methods cited in Section 3.2.2 of this QAPP. The laboratory must maintain logs of all activities that have an impact on the quality of the laboratory results.

Any portion of the method that is subcontracted by the laboratory to another laboratory or sent to another facility of the same network of laboratories must have the prior approval of the Foster Wheeler Environmental Project Chemist.

The laboratory must maintain the instruments required by the methods specified for the analyses. Sufficient redundancy in equipment must be available in the laboratory to handle downtime situations.

Method substitution because of instrumental failure will not be permitted without specific approval from the Foster Wheeler Environmental Project Chemist.

Table 6-1 presents a summary of the QC requirements for each method.

6.3 LABORATORY QUALITY CONTROL SAMPLES

6.3.1 Calibration

All instruments and equipment must be calibrated in accordance with the specified methods unless different instructions are included in this document.

Initial calibrations are performed when the method is first used and again whenever the continuing calibrations fail to meet their respective acceptance criteria. In addition, if the instrument undergoes significant maintenance, the initial calibration must be repeated.

Continuing calibrations are used to verify that the instrument performance has remained within the limits set at the time of the initial calibration. The frequency of continuing calibrations is method dependent.

SAMPLE

6.3.2 Instrument Blanks

Instrument blanks are run to assure that analytes from previous runs are out of the system and do not contaminate succeeding runs. Instrument blanks must be run following calibration runs, before sample analyses are performed, and after samples containing high concentrations of potentially interfering materials.

Target analytes must not appear in the instrument blanks at concentrations greater than the required quantitation limits. If the laboratory consistently observes contaminants in the instrument blanks, the laboratory must investigate the source of the contamination and eliminate it, if possible.

Table 6-1. Summary of Calibration Criteria and Corrective Action Procedures

Method	Applicable Parameter	QC Function	Frequency	Acceptance Criteria	Corrective Action
CA LUFT Method 8015M	Total Extractable Petroleum Hydrocarbons	5-point initial calibration for all analytes	Initial calibration prior to sample analysis; minimum once every 6 months	%RSD < 20%	Correct problem then repeat initial calibration
		Initial calibration verification	Daily, before sample analysis	All concentration levels within ±15% of expected value	Correct problem then repeat initial calibration
		Continuing calibration verification	After every 10 samples and at the end of the analysis sequence	All concentration levels within ±15% of initial calibration	Correct problem then repeat initial calibration verification and reanalyze all samples since last successful calibration verification
		Demonstrate ability to generate acceptance of accuracy and precision using four replicate analyses of a QC check sample	Once per analyst	QC acceptance criteria, Table B3-2	Recalculate results; locate and fix problem with system and then rerun demonstration for all analytes that did not meet criteria
		Method blank	One per analytical batch	No TPH detected ≥ RL	Correct problem then reprepare and analyze method blank and all samples processed with the contaminated blank
		LCS for all analytes	One LCS per analytical batch	QC acceptance criteria, Table B3-2	Correct problem then reprepare and analyze the LCS and all samples in the affected Foster Wheeler Environmental analytical batch

SAMPLE

Table 6-1. Summary of Calibration Criteria and Corrective Action Procedures (Continued)

Method	Applicable Parameter	QC Check	Minimum Frequency	Acceptance Criteria	Corrective Action
CA LUFT Method 8015M	Total Extractable Petroleum Hydrocarbons	Surrogate spike	Every sample, spiked sample, standard, and method blank	QC acceptance criteria, Table B3-2	Correct problem then reextract and analyze sample
		MS/MSD	One MS/MSD per every 20 Foster Wheeler Environmental project samples per matrix	QC acceptance criteria, Table B3-2	None
		MDL study	Once per 12-month period	Detection limits established shall be < than the reporting limits in Table B3-1	None
		Results reported between MDL and RL	None	None	None
		MDL study	Once per 12-month period	Once per 12-month period	None
		Results reported between MDL and RL	None	None	None

Explanation:
%RSD - percent relative standard deviation
CA LUFT - California leaking underground fuel tank
EPA - U.S. Environmental Protection Agency
%RSD - percent relative standard deviation
LCS - laboratory control sample
MDL - method detection limit
MS/MSD - matrix spike/matrix spike duplicate
QC - quality control
RL - reporting limit
TPH - total petroleum hydrocarbons
%RSD - percent relative standard deviation

SAMPLE

6.3.3 Method Blanks

Method blanks are prepared in the same manner as the samples, using the same reagents and glassware used for samples. The purpose of the method blank is to assure that the equipment

and reagents used in preparing the samples are free of contaminants that could interfere with the analysis.

The method blank must exhibit no analytes at concentrations greater than the required quantitation limits. If contaminants are found that either contribute to the apparent concentration of a particular target analyte or interfere with the analysis, the analysis sequence must be stopped, the source of contamination identified and corrected, and the analysis repeated. Contamination in the method blank above reporting limits will require that the entire associated batch of extracts or digestates be reprepared. Hence, it is very important to make sure that no such contamination is present.

6.3.4 Laboratory Control Samples

LCSs are purchased samples containing known concentrations of specific target analytes. LCSs can also be prepared by spiking known amounts of target analytes into a well-characterized blank matrix. The matrix will be laboratory reagent water for water samples and clean sand for soil samples.

SAMPLE

The LCS is prepared and run with the associated samples, using the same reagents. All analytes in the LCS must meet recovery criteria. If the criteria are not met, the entire batch of samples must be reprepared, together with a new LCS, and reanalyzed.

6.3.5 Matrix Spike and Matrix Spike Duplicate (MS/MSD)

The matrix spike/matrix spike duplicate (MS/MSD) serves to determine whether matrix effects are affecting recoveries. For inorganic analyses, only a single matrix spike is performed per batch. An MS/MSD is prepared by spiking a known amount of solution to two portions of a sample being run in a batch. The recoveries are compared against each other and against the know amount of the spike. From this data, both accuracy and precision can be determined.

6.3.6 Duplicates

Two types of duplicates, field and laboratory duplicate, will be performed. Field duplicate are two samples that are duplicates of each other. The purpose of field duplicates is to measure the consistency of field sampling. The field duplicate is treated the same as the other field samples and identification is withheld from the laboratory.

The laboratory duplicate is created by the laboratory, where two aliquots are intentionally taken from the same sample and analyzed in parallel. This analysis serves to measure the precision of laboratory operations. Duplicate analyses will be applied only for inorganic analyses.

6.4 PREVENTIVE MAINTENANCE

All instruments must be maintained in accordance with the manufacturer's recommended procedures. The laboratory must define in its QA plan the frequency and type of maintenance for each instrument. The laboratory must also record all maintenance activities in an instrument logbook.

In addition to preventive maintenance, the laboratory must keep on hand a sufficient supply of replacement parts for those parts known to require frequent changes due to wear and tear or due to contamination.

Whenever preventive or corrective maintenance is applied to an instrument, the laboratory must demonstrate the instrument's return to operating conditions and must recalibrate the instrument prior to resumption of sample analyses.

SAMPLE

6.5 DATA REVIEW

All data reported by the laboratory must be reviewed in accordance with the SOP. At a minimum, the written guidelines must meet the data review guidelines stated in the Navy's Installation Restoration Laboratory Quality Assurance Guide (Navy, 1996)

6.6 DELIVERABLES

The following sections describe the deliverable documents that will be submitted to Foster Wheeler Environmental by the analytical laboratory.

6.6.1 Hard Copy Deliverables

Two copies of the hard copy data will be submitted to Foster Wheeler Environmental by the laboratory. The report pages will be numbered. The report will contain a table of contents referencing individual sections in the data package, original COC forms, a copy of all corrective action report, and a case narrative documenting the resolution of all corrective actions and noncompliant events. All Foster Wheeler Environmental samples will be clearly

referenced to the associated QC samples. In order to perform validation, two types of data package will be required. They will be referred to as EPA Level III and IV packages.

For this project, Foster Wheeler Environmental will request that 90 percent of the data be submitted in an EPA Level III equivalent data package and 10 percent submitted in an EPA Level IV equivalent data package. All data packages will be assembled in the following sequence:

- Cover page (with laboratory service identification number, Foster Wheeler Environmental project name, and Foster Wheeler Environmental project number)
- Original COC form
- Sample receipt form (including cooler temperature)
- Cross-reference table
- Case narrative
- Organic raw data sequence (by test):
  - Sample result forms, including method blanks
  - Sample raw data after each result form (EPA Level IV only)
  - Surrogate summaries (surrogates results may appear on the sample result forms)
  - QC summaries
  - Tune data (gas chromatograph/mass spectrometer [GC/MS] only)
  - Initial calibration (ICAL)
  - Daily calibration checks, including related continuing calibration verification (CCV)
  - Resolution check standards (GC/MS and pesticides)
  - QC raw data (EPA Level IV only)
  - Instrument run log
  - Sample preparation log
- Inorganic raw data sequence (by metal):
  - Sample results forms, including method blanks
  - Sample raw data (EPA Level IV only)
  - QC summaries
  - ICAL

SAMPLE

- Daily calibration checks, including all related CCVs
- Calibration blanks, including all related continuing calibration blanks
- Interference check standards A and B for inductively coupled argon plasma [ICAP] only)
- Detection limit check standard (graphite furnace atomic absorption only)
- QC raw data (EPA Level IV only)
- Postdigestion spike results
- Analytical spike results
- Method of standard additions
- ICAP serial dilutions
- Instrument run log
- Sample preparation log.

SAMPLE

6.6.2 Electronic Deliverables

The electronic data deliverable (EDD) will be in ASCII format. The analytical laboratory will follow the requirement stated in the *Laboratory Interface Document for the Analytical Laboratory Electronic Data Deliverable* (Foster Wheeler Environmental, XXXX).

The laboratory will certify that the EDD and the hard copy reports are identical. Both the EDD and the hard copy will present results to two or three significant figures. For inorganic results, two significant figures will be used for results <10 and three significant figures will be used for results >10. For organic results, one significant figure will be used for results <10 and two significant figures will be used for results >10. The EDD for each sample delivery group is due at the same time as the hard copy, 14 days after the last sample of the sample delivery group has been delivered to the laboratory.

7. DATA QUALITY MANAGEMENT

7.1 DATA MANAGEMENT

The following sections describe the requirements for the management of hard copy data and electronic data.

7.1.1 Hard Copy

All relevant raw data and documentation, including (but not limited to) logbooks, data sheets, electronic files, final reports, etc., will be maintained by the laboratory for at least 7 years. Foster Wheeler Environmental will be notified 30 days before disposal of any relevant laboratory records.

Foster Wheeler Environmental will maintain copies of all COC forms until receipt of the laboratory report. Laboratory reports will be logged in upon receipt and filed in chronological order. The second copy of the report will be sent for third-party data validation.

7.1.2 Electronic Data

Field information (date and time collected, sample identification, etc.) will be entered directly into the main database from the COC form or uploaded from electronic files generated in the field.

SAMPLE

Upon receipt by the Foster Wheeler Environmental Management Information System Data Manager, electronic data will be uploaded into a temporary Access database. The uploaded data will be printed and proofread relative to the hard copy submitted by the laboratory. The reader will also check for irregularities in analyte identities, concentrations, and units. The uploaded data will also be processed to compare the fields against a list of required values. If any errors are returned by the program, the file will be manually edited or regenerated by the laboratory. If no errors are returned, the data will be uploaded into the main database. The laboratory database will be merged with the field database, and reports will be generated from the merged database.

7.2 DATA VALIDATION

All samples with the exception of waste characterization samples will be validated. Data will be validated at 90 percent EPA Level III and 10 percent EPA Level IV. Data validation will be performed by an independent data validation company. The validation will be in accordance with the *EPA Laboratory Data Validation Functional Guidelines for Evaluating Organic and Inorganic Analyses* (EPA, 1994b) and the QC criteria specified in this document. Data not meeting method specification will be flagged as estimated ("J") or rejected ("R").

The data validation company must have the following qualifications:

1. A minimum of 5 years of experience in the environmental data validation business.
2. Prior experience on Navy Remedial Action Contract or Comprehensive Long-Term Environmental Action projects.
3. Navy data validation experience.
4. Active peer review program.

Personnel must have the following qualifications:

1. Data Reviewer:
   - Bachelor of Science degree or higher in chemistry or related field
   - 5 years of combined experience with approximately 2 years in data validation and 3 years conducting laboratory analysis in an environmental laboratory using the EPA-approved methods being validated.
2. Peer Reviewer:
   - Bachelor of Science degree or higher in chemistry or related field
   - 5 years of combined experience with approximately 2 years in data validation and 3 years conducting laboratory analysis in an environmental laboratory using the EPA-approved methods being validated.

SAMPLE

7.3 DATA EVALUATION

After data validation, data will be further evaluated by the Foster Wheeler Environmental Project Chemist. In the process of evaluating the data, the Project Chemist will determine which of the advisory data qualifiers provided by the independent data validator will be retained or deleted. The evaluation of data will be based on the results of the QC samples, the level of contamination of samples indicated by the blanks analysis, and the overall indication of interference due to contamination. The following data qualifiers will be used in the report:

J - result is estimated
U - analyte is not detected at or above the stated reporting limit
R - data is rejected
UJ - analyte is not detected, but there is an uncertainty about the reporting limits.

The flagging will be used to alert data users to uncertainties associated with the data. The evaluation flags will be entered into a special field in the electronic database. Thus, when data processing is complete, the data for each analyte will have the flag designated by the laboratory and the flag designated by the evaluator, as appropriate.

8. QUALITY ASSURANCE OVERSIGHT

QA oversight for this project will include system audits of field activities and of the laboratory subcontracted by the Navy to perform the analysis.

8.1 FIELD AUDITS

The Foster Wheeler Environmental and SWDIV QA Officers may schedule audits of field activities at any time to evaluate the execution of sample collection, identification, and control in the field. The audit will also include observations of COC procedures, field documentation, instrument calibrations, and field measurements.

SAMPLE

Field documents and COC forms will be reviewed to ensure that all entries are printed or written in indelible ink, dated, and signed.

Sampling operations will be reviewed and compared to the FSP, the QAPP, and other applicable SOPs. The auditor will verify that the proper sample containers are used, the preservatives are added or are already present in the container, and the documentation of the sampling operation is adequate.

Field measurements will be reviewed by random spot-checking to determine that the instrument is within calibration, that the calibration is done at the appropriate frequency, and that the sensitivity range of the instrument is appropriate for the project.

8.2 LABORATORY AUDITS

Laboratories selected to perform the analyses are required to have successful completion of NFESC laboratory evaluation process throughout the project. This process consists of laboratory QA plan review, performance evaluation (PE) samples, data package review, and on-site audit. Because of this requirement, Foster Wheeler Environmental will not perform an on-site audit or visit unless it is deemed necessary.

Laboratory oversight by Foster Wheeler Environmental will be through the review of the preliminary report and hardcopy data packages. The information that may be obtained from the data packages consists of the following:

- Correctness of chain-of-custody procedures
- Adherence to method or QAPP holding times
- Method detection limits and reporting limits
- Spiking levels, frequency, and recovery
- Accuracy of analytical operations through the LCS.

8.3 CORRECTIVE ACTION PROCEDURES

The laboratory will have a QA/QC and corrective action program that addresses all out-of-control situations. Following completion of analyses, laboratory personnel will verify compliance with the minimum QC requirements of the project and the laboratory QA/QC plan. If any of the parameters fall outside the control limits, corrective action will be implemented.

SAMPLE

Initial corrective action is to verify that no obvious calculation errors have occurred. If appropriate, reanalysis will be performed. If the reanalysis confirms the initial out-of-control limits result, the chemist will notify the laboratory supervisor, who will initiate the corrective action process. Corrective actions may include, but are not limited to, the following:

1. Verifying dilution factors
2. Examining sample for nonhomogeneity
3. Verifying sample preparation
4. Checking standard preparation logbook
5. Verifying instrument performance
6. Checking reagent water purity
7. Monitoring chemist's method performance for procedure verification.

Notification and prompt involvement of the Foster Wheeler Environmental Project Chemist in the corrective action process are absolutely necessary in determining an appropriate

resolution. Corrective action records will document all steps taken in the corrective action process, beginning with a description of the problem and ending with a final resolution. A copy of the corrective action report will be sent to the Foster Wheeler Environmental Project Chemist immediately and will be maintained in the project files at Foster Wheeler Environmental.

All corrective action reports will be maintained by the laboratory in a project file and delivered to Foster Wheeler Environmental as part of the hard copy deliverable.

8.4 QAPP REVISION OR AMENDMENT

When circumstances arise that impact the original project DQOs, such as a significant change in work scope, the QAPP document will be revised or amended. The modification process will be based on EPA guidelines and direction from the Navy and the QA Officer.

SAMPLE

9. REFERENCES

U.S. Environmental Protection Agency. 1994a. Guidance for the Data Quality Objectives Process, EPA QA/G-4, QAMS.

U.S. Environmental Protection Agency. 1994b. EPA Laboratory Data Validation Functional Guidelines for Evaluating Organic and Inorganic Analyses.

ATTACHMENT 1
SAMPLE CHAIN-OF-CUSTODY FORM

Foster Wheeler Environmental Corporation

Date: 10/1/98

Chain of Custody Record

SAMPLING AND ANALYSIS PLAN

FIG6-6.SRF

Chain of Custody Record
Request for Analysis

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Page _____ of _____ Lab. Ref. No. _____

Project Name:
Project Address:
FW Project No.:

Sampler(s): *(printed name)*
Sampler(s): *(signature)*
Special Instructions:

Sampling Date:
Shipping Date:
Shipping Ref.:

Hazard ID:
- ☐ Nonhazardous
- ☐ **Hazardous:**
  - ☐ Reactive
  - ☐ Toxic
  - ☐ Flammable
  - ☐ Irritant
  - ☐ Infectious
  - ☐ Radioactive

Sample Disposal Instructions:
- ☐ Lab disposal
- ☐ Return to EEC
- ☐ Hold for pickup (will call)

Analysis Laboratory:
Laboratory Contact: P.O. No.:
Reports to be Sent to:
Address/Phone No.:

ANALYSES REQUEST (circle appropriate method number)

SAMPLE IDENTIFICATION	TIME COLLECTED	NO. OF CONTAINERS, SIZE & TYPE	PRESERVATIVE	MATRIX: Soil	MATRIX: Water	SAMPLE TYPE: Comp'posite	SAMPLE TYPE: Grab	EXTRACTION: Method Standard	EXTRACTION: TCLP (1311) ____ Other ____	CLP Data Pkg.; Other ____	Halogenated Volatiles 8010, 601, 502.1, CLP	Aromatic Volatiles 8020, 602, 502.2, 503.1, CLP	BETX Only 8020, 602, CLP	GC/MS Vol. 8240, 8260, 624, 524.1, 524.2, CLP	GC/MS BNA (semi-vol.) 8250, 8270, 625, 525, CLP	Pesticides & PCBs 8080, 608, 505, 508, CLP	PCBs Only 8080, 608, 508A, CLP	HPLC PNA/PAHs 8310, 610	Dioxins 8290, CLP	Ordnance / Explosives HPLC 8330 mod. GC/ECD	TPH-HCID AK, OR, WA, 418.1	TPH-G AK, OR, WA, 8015 mod	TPH-D AK, OR, WA, 8015 mod	Lead 6010, 7420, 7421	Priority Poll. Metals (13) 6010 & 7000 Series CLP	TCL Metals (23) 6010 & 7000 Series, CLP	Cyanide 351.1, 335.2, 335.3, 9010, 9012, CLP	TCLP 1311 (metals, VOAs, SVOAs, Pest., Herb.)	Inorganic Anions (Cl, F, NO_3, NO_2, PO_4, SO_4)	% Moisture				REMARKS

Turnaround Time:	Sample Receipt:	Relinquished by: *(signature)*	Relinquished by: *(signature)*	Relinquished by: *(signature)*	Relinquished by: *(signature)*
☐ Standard	Total # Containers Recvd:				
☐ 1 Week	COC Seals Present?	Date: Time:	Date: Time:	Date: Time:	Date: Time:
☐ 4 Work Day	COC Seals Intact?	Received by: *(signature)*	Received by: *(signature)*	Received by: *(signature)*	Received by: *(signature)*
☐ 3 Work Day	Received Cold?				
☐ 2 Work Day	Received Intact?	Date: Time:	Date: Time:	Date: Time:	Date: Time:
☐ 24 Hour	Received Via:				

ATTACHMENT 2
SAMPLE CUSTODY SEAL

Client _____

Collection Date _____ Time _____

Sample Location _____

Sample I.D. _____

Analysis	Lab No.

Preserved with: None, Cool, HNO_3, HCL, H_2SO_4, NaOH, Other _____

SAMPLE

CUSTODY SEAL

Date _____

Signature _____

Foster Wheeler Environmental Corporation Date: 10/1/98 FIG6-7.SRF	Sample Container Label and Custody Seal	SAMPLING AND ANALYSIS PLAN

ENCLOSURE 3

EXAMPLE FIELD DOCUMENTATION FORMS

SAMPLE COLLECTION INFORMATION

Installation I.D.	CTO No.	Site I.D.	Zone I.D.
Sampling Company		Sampling Date	

Location I.D.	Depth Interval (Ft)		Matrix Type	Sampling Method	Sampling Time (24 Hour)	Sample Number	Sample Type	Waste Container Number
	Begin	End						

SAMPLE

Matrix Type

AA	Ambient Air	PS	Piping Surface
AR	Air	RZ	Root Zone Soil
BW	Brackish Water	SB	Subsurface Soil
BS	Brackish Sediment	SG	Soil Gas
CR	Concrete Rubble	SL	Soil
EF	Emissions Flux	SN	Sand
GW	Groundwater	SS	Surface Soil
MS	Marine Sediment	SU	Sludge
MT	Marine Tissue	SW	Surface Water
MW	Marine Water	TI	Tissue
NS	Near Surface Soil	WD	Wood Debris
PR	Product	WR	Water

Sampling Method

A	Animal Trap
B	Bailer/Coliwasa
C	Continuous
D	Drill Cuttings
G	Grab Sampling
H	Hand Auger
L	Tube Liner
P	Pump (Liquid)
S	Split Spoon
T	Shelby Tube
V	Vacuum (Gas)
W	Wipe Sampling

Sample Type

ER	Equipment Rinsate
EW	Environmental Sample
FB	Field Blank
FD	Field Duplicate
FM	Field Measurement
FR	Field Replicate
SR	Standard Reference Material
TB	Trip Blank

Recorded By:	Checked By:	Date:

9/20/94

Monitoring/Sampling Location Summary

Installation I.D.	CTO No.	Site I.D.	Zone I.D.
List Reference Where Location was Established (e.g. Log Book #102, Survey Notes 6/10/92)		Establishing Company	
		Established Date	

Location I.D.	Location Cross-Reference	Location Type	Gradient	Northing	Easting	Elevation

SAMPLE

Location Types

BF	Building/Foundation	LE	Freshwater, Lentic	SP	Spring/Seep
BH	Borehole	LG	Lagoon/DetentionBasin	SU	Sump
CH	Channel/Ditch	MH	Manhole	TK	Tank
DR	Drum/Container	MW	Monitoring Well	TP	Test Pit
EX	Excavation	PL	Pipeline	VP	Valve Pit
GS	Ground Surface	OC	Quality Control		

Gradient Relationships

B	Background
C	Cross-Gradient
D	Down-Gradient
N	Not Determined
O	On-Site
U	Up-Gradient

Recorded By	Checked By	Date

NAVFORMS

WATER SAMPLING LOG

Owner/Location: _____

Well No.: _____ Job Number: _____

Date Well Purged: _____ Date Well Sampled: _____

Well Data

Diameter of Well Casing: _____

Measuring Point (MP): Top of Casing, Rim of Monument, Other: _____

Total Depth of Well Below MP: _____

Depth to Water Below MP: _____

Length of Water Column in Well: _____

Gallons per Foot: _____ Gallons in Well: _____

Three Times Casing Volume: _____ Gallons Purged from Well: _____

Purge Method: _____

SAMPLE

Water Sample Data

Sample Number: _____ Time Sample Collected: _____

Temperature (C): _____ Specific Conductivity (μmhos/cm): _____

pH: _____ DO (mg/L): _____ Turbidity (NTUs): _____

Redox (milliv): _____ Alkalinity (mg/L): _____

Sampling Method: _____

Sampling Personnel: _____

Remarks (Fuel/Odor): _____

Purge Vol. (gallons)	Time (min)	pH (pH units)	Redox (milliv)	Temp. (C)	DO (mg/L)	Turbidity (NTU)	Spec. Cond. (μmhos)

Well Casing Volumes

GAL/FOOT 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65

1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

WELL DEVELOPMENT LOG

Owner/Location: _____

Well No.: _____ Job Number: _____

Date Well Purged: _____ Date Well Sampled: _____

Well Data

Diameter of Well Casing: _____

Measuring Point (MP): Top of Casing, Rim of Monument, Other: _____

Total Depth of Well Below MP: _____

Depth to Water Below MP: _____

Length of Water Column in Well: _____

Gallons per Foot: _____ Gallons in Well: _____

Three Times Casing Volume: _____ Gallons Purged from Well: _____

Purge Method: _____

SAMPLE

Water Sample Data

Sample Number: _____ Time Sample Collected: _____

Temperature (C): _____ Specific Conductivity (umhos/cm): _____

pH: _____ DO (mg/L): _____ Turbidity (NTUs): _____

Sample Color/Characteristics: _____

Sampling Method: _____

Sampling Personnel: _____

Remarks (Fuel/Odor): _____

Gallons Out	Time	pH	Temperature	DO	Turbidity	Spec. Cond.

Well Casing Volumes

GAL/FOOT 1-1/4" = 0.077 2" = 0.16 3" = 0.37 4" = 0.65
1-1/2" = 0.10 2-1/2" = 0.24 3-1/2" = 0.50 6" = 1.46

Flush Mount Monitoring Well Installation Report

Site: _____

Project Name: _____

_____

Drilling Company: _____

Driller: _____

Installation Date: _____

Groundwater: _____

Type of Well: _____

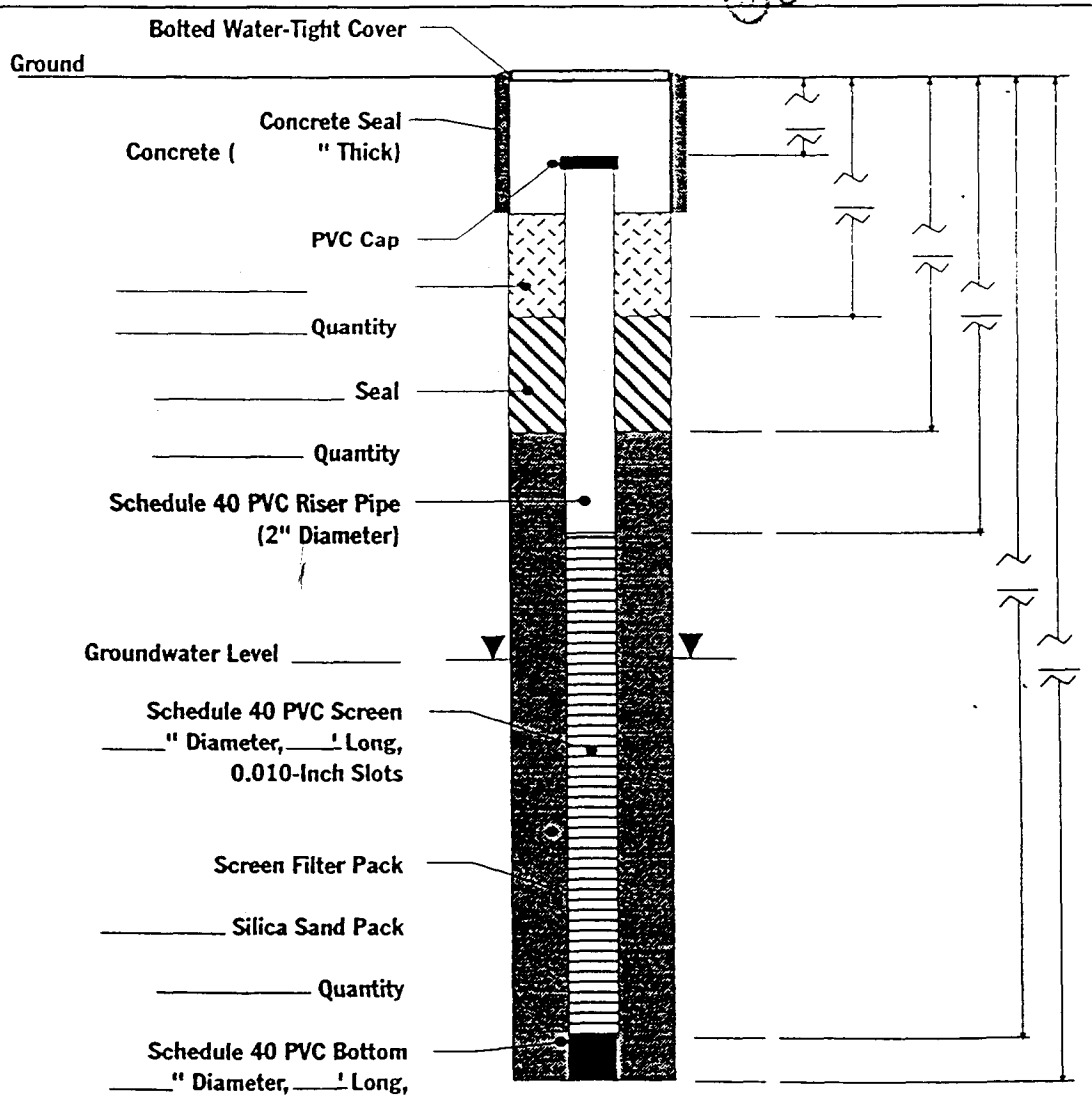
Well Location: _____

Geologist: _____

Surface Elevation: _____

Top of Casing: _____

SAMPLE



RESOURCE PROTECTION WELL REPORT

START CARD NO. _____

PROJECT NAME: _____
WELL IDENTIFICATION NO. _____
DRILLING METHOD: _____
DRILLER: _____
FIRM: _____
SIGNATURE: _____
CONSULTING FIRM: _____
REPRESENTATIVE: _____

COUNTY: _____
LOCATION: ___ ¼ ___ ¼ Sec ___ Twn ___ R ___
STREET ADDRESS OF WELL: _____
_____
WATER LEVEL ELEVATION: _____
GROUND SURFACE ELEVATION: _____
INSTALLED: _____
DEVELOPED: _____

AS-BUILT	WELL DATA	FORMATION DESCRIPTION
	SAMPLE	

SCALE: 1" = _____ PAGE _____ OF _____

ECY 050-12 (Rev. 11/89)

NAVY/CQC/GRPH	Example–Typical Well Closure Report Form	Date: 3/29/96

Project Name: _____	Client: _____	sheet ____ of ____
Boring Number: _____	Site Manager: _____	Date/Time Started: _____
Logged By: _____	Drilling Contractor: _____	Date/Time Completed: _____
OFS Number: _____	Drilling Method: _____	Total Depth: _____
Location: _____	Sampling System: _____	Water Depth: _____

DEPTH (ft)	Sample #				Moisture/ Water Prod.	Size Fractions %							USCS Symbol	Graphic Log	Description
						Cobbles/ Boulders	Crs. Gravel	Fine Gravel	Crs. Sand	Med. Sand	Fine Sand	Silt/Clay			

SAMPLE

ADM200 FIELD BORING LOG — FOSTER WHEELER ENVIRONMENTAL CORPORATION

Chain of Custody Record

Request for Analysis

Foster Wheeler Environmental Corporation

Page _____ of _____ Lab. Ref. No. _____

Project Name: _____

Project Address: _____

FW Project No.: _____

Sampling Date: _____

Shipping Date: _____

Shipping Ref.: _____

Hazard ID:
- ☐ Nonhazardous
- ☐ Hazardous:
  - ☐ Reactive
  - ☐ Toxic
  - ☐ Flammable
  - ☐ Irritant
  - ☐ Infectious
  - ☐ Radioactive

Sample Disposal Instructions:
- ☐ Lab disposal
- ☐ Return to EEC
- ☐ Hold for pickup (will call)

Sampler(s): *(printed name)*

Sampler(s): *(signature)*

Special Instructions:

Analysis Laboratory _____

Laboratory Contact _____ P.O. No. _____

Reports to be Sent to: _____

Address/Phone No.: _____

ANALYSES REQUEST (circle appropriate method number)

SAMPLE IDENTIFICATION	TIME COLLECTED	NO. OF CONTAINERS, SIZE & TYPE	PRESERVATIVE	MATRIX: Soil	MATRIX: Water	SAMPLE TYPE: Composite	SAMPLE TYPE: Grab	EXTRACTION: Method Standard	EXTRACTION: TCLP (1311) ____ Other ____	CLP Data Pkg.: Other ____	Halogenated Volatiles 8010, 601, 502.1, CLP	Aromatic Volatiles 8020, 602, 502.2, 503.1, CLP	BETX Only 8020, 602, CLP	GC/MS Vol. 8240, 8260, 624, 524.1, 524.2, CLP	GC/MS BNA (semi-vol.) 8250, 8270, 625, 525, CLP	Pesticides & PCBs 8080, 608, 505, 508, CLP	PCBs Only 8080, 608, 508A, CLP	HPLC PNA/PAHs 8310, 610	Dioxins 8290, CLP	Ordnance / Explosives HPLC 8330 mod, GC/ECD	TPH-HCID AK, OR, WA, 418.1	TPH-G AK, OR, WA, 8015 mod	TPH-D AK, OR, WA, 8015 mod	Lead 6010, 7420, 7421	Priority Poll. Metals (13) 6010 & 7000 Series CLP	TCL Metals (23) 6010 & 7000 Series, CLP	Cyanide 351.1, 335.2, 335.3, 9010, 9012, CLP	TCLP 1311 (metals, VOAs, SVOAs, Pest., Herb.)	Inorganic Anions (Cl, F, NO_3, NO_2, PO_4, SO_4)	% Moisture				REMARKS

SAMPLE

Turnaround Time:
- ☐ Standard
- ☐ 1 Week
- ☐ 4 Work Day
- ☐ 3 Work Day
- ☐ 2 Work Day
- ☐ 24 Hour

Sample Receipt:
- Total # Containers Recvd.: _____
- COC Seals Present? _____
- COC Seals Intact? _____
- Received Cold? _____
- Received Intact? _____
- Received Via: _____

Relinquished by: *(signature)*	Relinquished by: *(signature)*	Relinquished by: *(signature)*	Relinquished by: *(signature)*
Date: Time:	Date: Time:	Date: Time:	Date: Time:
Received by: *(signature)*	Received by: *(signature)*	Received by: *(signature)*	Received by: *(signature)*
Date: Time:	Date: Time:	Date: Time:	Date: Time:

NAVY/CQC/GRPH

Example–Chain-of-Custody Form

Date: 3/29/96

ATTACHMENT 5

Foster Wheeler Environmental Corporation
QC Guidelines

- QC-1 Review, Approval, and Submission of Submittals
- QC-2 Preparation of Test Plan and Log
- QC-3 Identification and Control of Discrepancies
- QC-4 Preparation of Field Change Requests and Design Change Notices
- QC-5 Internal Controlled Documents

CATEGORY: Quality Control	TITLE: Review, Approval, and Submission of Submittals	NO.: QC-1 DATE: 4/26/99
PREPARED BY: S.J. Walden	APPROVED BY: S.A. Viskup	REVISION: FINAL

CONTENTS

1. PURPOSE 2
2. SCOPE 2
3. DEFINITIONS 2
4. RESPONSIBILITIES 5
5. GUIDELINES 5
   5.1 GENERAL 5
   5.2 PREPARATION OF THE SUBMITTAL REGISTER 6
   5.3 SUBMITTALS 7
6. ATTACHMENTS OF QC-1 11

ATTACHMENT A - Submittal Register Form
ATTACHMENT B - Certification Statements
ATTACHMENT C - Submittal Quantity
ATTACHMENT D - Submittal Transmittal Form
ATTACHMENT E - Submittal Format
ATTACHMENT F - List of SD Numbers and Descriptions

1. PURPOSE

The purpose of this guideline is to describe the process for planning, administering, approving, and managing submittals required by a Contract Task Order (CTO).

2. SCOPE

This guideline describes the requirements and responsibilities for preparation, review, approval, and transmission of required submittals to the Government on the SWDIV Remedial Action Contract. Submittals may include but are not limited to shop drawings, product data, samples, administrative and closeout documents, certifications, and other miscellaneous data as specified in the CTO.

3. DEFINITIONS

Administrative Submittals - Submittals of data to ensure that the administrative requirements of the CTO are adequately met, but not to ensure directly that the work is in accordance with the design concept and in compliance with the contract documents.

Approval Authority - The person or organization authorized to approve a submittal.

Contractor - The Foster Wheeler Environmental team members performing work for the Government in support of the RAC, including all work performed by subcontractors.

Certification Stamp - Foster Wheeler Environmental shall stamp each sheet of each submittal with the Foster Wheeler Environmental Certificate Stamp (see Attachment B of QC-1), except that data submitted in bound volume or on one sheet printed on two sides may be stamped on the front of the first sheet only.

Definable Feature of Work - A definable feature of work is a task which is separate and distinct from other tasks and requires separate control requirements. As a minimum, if approved by the Government, each division (section) of the specification is a definable feature of work. There may be more than one definable feature of work in each division of the specification.

Government - Representatives of the Navy's Engineering Field Activity (EFA), SWDIV, overseeing and administering the RAC program (i.e., Contracting Officer, ROICC, etc.).

Product Data - Preprinted material such as illustrations, standard schedules, performance charts, instructions, brochures, diagrams, manufacturers' descriptive literature, catalog data, and other data to illustrate a portion of the work, but not prepared exclusively for the contract.

Project Manager (PJM) - The Foster Wheeler Environmental individual assigned to manage a CTO. The Project Manager has the authority to direct all technical, construction, and administrative activities related to a specific CTO.

Project QC Manager (PQCM) - The designated Foster Wheeler Environmental individual responsible for overseeing implementation of the CTO-specific QC program on site including verification of completed work, review and issuance of required documentation

and submittals, and other duties as may be assigned by the Foster Wheeler Environmental QC Program Manager. The Project QC Manager reports to the Foster Wheeler Environmental QC Program Manager.

Quality Control Program Manager (QCM) - The designated Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) individual having authority to develop, approve, and implement the program Contractor Quality Control (CQC) Program Plan and CTO-specific Project QC Plans. He or she is responsible for overseeing implementation of the QC program and supervising the Project QC Managers in ensuring work is performed in accordance with applicable requirements. He or she has the authority to act in behalf of the Program Manager on site-related issues affecting the quality of the work performed. The QC Program Manager reports to the Foster Wheeler Environmental Director of Quality Programs.

Samples - Physical examples of products, materials, equipment, assemblies, or workmanship, physically identical to a portion of the work, illustrating a portion of the work or establishing standards for evaluating the appearance of the finished work or both.

Submittal Register - Prepared forms used to track submission, review, and approval of items submitted in accordance with the base contract and CTO specification submittal requirements.

Transmittal Form - Standard form prescribed by the Government to be used in transmitting submittals and other information to the Navy.

4. RESPONSIBILITIES

Government - Meet with Contractor's project personnel during the Coordination and Mutual Understanding Meeting to discuss the QC program for the CTO and requirements for submittals. Review and approve the Submittal Register, as appropriate, including those submittals in which the Government is the approval authority.

Project QC Manager - Develop initial Submittal Register as directed by the QC Program Manager. Upon approval of the Submittal Register by the Government, ensure all submittals have been made and approved in accordance with the Submittal Register.

QC Program Manager - Ensure that the preliminary Submittal Register has been developed prior to the Coordination and Mutual Understanding Meeting. Meet with the Project QC Manager, as required, during the project to ensure that all submittals are being submitted, reviewed, and approved by the approval authority in accordance with the approved Submittal Register.

5. GUIDELINES

5.1 GENERAL

The Foster Wheeler Environmental QC organization is responsible for reviewing and certifying that submittals for CTOs are in compliance with contract requirements. The approving authority on these submittals is the Foster Wheeler Environmental QC Program Manager as delegated to the Project QC Manager, except where the Government is designated as the approving authority.

Submittals shall be required for and be completed for each feature of work listed in the List of Definable Features of Work and the approved Submittal Register. The definable features of work and the completed Submittal Register are contained in the Project QC Plan prepared for the CTO. All submittals shall be tracked on the approved Submittal Register. The updated Submittal Register shall be maintained at the project site until final acceptance of work by the Government.

5.2 PREPARATION OF THE SUBMITTAL REGISTER

5.2.1 Initial Submittal Register

The assigned Project QC Manager for the CTO shall meet with the QC Program Manager to develop the initial Submittal Register in accordance with the following steps:

1. Review the CTO statement of work and applicable specifications for definable features of work. Develop a list of all definable features of work for incorporation in the Definable Features of Work section of the CTO Project QC Plan.

2. Obtain blank copies of the Submittal Register form (Attachment A of QC-1) approved for use on the contract. Complete sections (A) through (D) and (G) of the Submittal Register form using the List of Definable Features of Work and the CTO specification.

3. Review the completed Initial Submittal Register with the QC Program Manager for concurrence.

4. Discuss the initial Submittal Register with the Government during the Coordination and Mutual Understanding Meeting. Incorporate the initial Submittal Register in the CTO Project QC Plan prior to submission of the plan for approval.

5.2.2 Approved Submittal Register

The Project QC Manager shall update the approved Submittal Register, as submittal actions occur, complete sections (E), (F), and (H) through (P), and shall maintain the Submittal Register at the project site until final acceptance of work by the Government.

5.3 SUBMITTALS

The Project QC Manager shall maintain current and complete records of onsite and offsite QC program operations and activities. The preparation and processing of submittals shall be coordinated with the performance of work so that work will not be delayed by the submittal process. The period of review for each resubmittal is the same as for the initial submittal.

5.3.1 Processing Submittals when the QC Program Manager is the Approving Authority

1. The Project Manager or Site Superintendent shall review each site submittal to determine if field measurements, materials, and field construction criteria are complete and check and coordinate each submittal with requirements of the work and contract documents. When completed, the submittals will be given to the Project QC Manager for review as the approving authority.

2. The Project QC Manager shall review all site submittals and verify field measurements, materials, and field construction criteria against work requirements and contract documents. At the conclusion of the review, the Project QC Manager shall indicate on the submittal that the submittal was "Not reviewed," "Approved," "Approved as noted," "Revise and resubmit," or "Disapproved." Return all submittals

marked "Revise and resubmit," or "Disapproved" to the Project Manager, Site Superintendent, or Subcontractor as appropriate for correction.

3. Approved submittals shall be stamped with the Contractor's certification stamp (Attachment B of QC-1) on every sheet or on the first sheet if the submittal is a bound volume. The Project QC Manager and/or QC Program Manager shall sign and date the certification statement in ink.

4. The Project QC Manager shall update the Submittal Register.

5. Retain a copy of the approved submittals at the project site, including the Contractor's copy of approved samples. Furnish copies of CTO submittals in the quantities and to the addresses specified in the CTO statement of work or as indicated in Attachment C of QC-1 to the Government using the approved "Transmittal Form" (Attachment D of QC-1).

5.3.2 Processing Submittals when the Government is the Approving Authority

1. The Project Manager or Site Superintendent shall review each site submittal to determine if field measurements, materials, and field construction criteria are complete, and check and coordinate each submittal with requirements of the work and contract documents. When complete, the submittal will be given to the Project QC Manager for review.

2. The Project QC Manager shall review all site submittals and verify field measurements, materials, and field construction criteria against work requirements and contract documents. At the conclusion of the review the Project QC Manager shall indicate on the submittal that the submittal was "Not reviewed," "Approved," Approved as noted," "Revise and resubmit," or "Disapproved." Return all submittals

marked "Revise and resubmit," "Disapproved," or "Not reviewed" to the Project Manager, Site Superintendent, or Subcontractor as appropriate for correction.

3. Submittals acceptable to the Project QC Manager shall be stamped with the Contractor's certification stamp (Attachment B of QC-1) recommending approval by the government. This stamp shall be affixed to every sheet or on the first sheet if the submittal is a bound volume. The Project QC Manager or the QC Program Manager shall sign the certification statement in ink.

4. The Project QC Manager shall update the Submittal Register prior to forwarding submittals to the Government.

5. Forward to the Government the quantity of submittals as indicated in Attachment C of QC-1 or as indicated in the CTO statement of work. Use the approved project "Transmittal Form," illustrated in Attachment D of QC-1.

5.3.3 Identification and Transmittal of Submittals

1. Use the approved transmittal form for the CTO to transmit each submittal, except sample installations and sample panels to the approval authority. The transmittal form shall identify the Contractor, indicate the date of submittal, and include information prescribed by the transmittal form. To record actions regarding sample panels and sample installations, use only the transmittal form as the submittal.

2. Identify submittals, except sample panel and sample installation, with the following information adhered to or noted on each separate component of each submittal. Mark each with:

   a. CTO title and location.

b. Contract number and CTO number.

c. The section and paragraph number of the section requiring the submittal.

d. The submittal description (SD) number of each component of the submittal (Attachment F of QC-1).

e. If a resubmission, an alphabetic suffix shall be added to the SD number to indicate it is a resubmission.

f. The name, address, and telephone number of the subcontractor, supplier, manufacturer, and any other second tier contractor associated with the submittal.

g. Product identification and location.

5.3.4 Format of Submittals

The format of product data, shop drawings, samples, and administrative submittals shall be as listed in Attachment E of QC-1.

5.3.5 Quantity of Submittals

Quantities of each submittal shall be as those specified in Attachment C of QC-1 or in the CTO statement of work.

6. ATTACHMENTS OF QC-1

ATTACHMENT A - Submittal Register Form
ATTACHMENT B - Certification Statements
ATTACHMENT C - Submittal Quantity
ATTACHMENT D - Submittal Transmittal Form
ATTACHMENT E - Submittal Format
ATTACHMENT F - List of SD Numbers and Descriptions

ATTACHMENT A
(Sheet 1 of 2)
QC-1, REV. FINAL

SUBMITTAL REGISTER (Part A)

Contract Number:	Project Title:
CTO No. ____	Location:

	Specification Section Number	SD No and Type of Submittal Material or Product	Specification Paragraph Number	Classification/ Approval by CO*	Govt. or A/E Reviewer	Transmittal Control No.	Planned Submittal Date
	(A)	(B)	(C)	(D)	(E)	(F)	(G)
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

SAMPLE

* Approved by:
G: Contracting Officer
Blank: CQC Program Manager

ATTACHMENT A
(Sheet 2 of 2)
QC-1, REV. FINAL

SUBMITTAL REGISTER (Part B)

Location:							Contractor:		
Contractor Action			Approving Authority Action				Contracting Officer/ Contractor		
Action Code	Date of Action	Date FWD to Approving Authority Date recd. from Contractor	Date FWD to other Reviewer	Date Received from other Reviewer	Action Code	Date of Action	Mailed to Contractor/ Received from Approving Authority	Remarks	
(H)	(I)	(J)	(K)	(L)	(M)	(N)	(O)	(P)	
									1
									2
									3
									4
									5
									6
									7
									8
									9
									10
									11
									12
									13
									14
									15
									16
									17
									18

SAMPLE

Action Code: NR: Not Reviewed AN: Approved as Noted
A: Approved RR: Disapproved; Revise and Resubmit (Others may be prescribed by Transmittal Form)

CERTIFICATION STATEMENTS FOR SWDIV REMEDIAL ACTION CONTRACT

(1) When the approving authority is the Contracting Officer or designated representative, the QC organization will certify submittals forwarded to the Contracting Officer or designated representative with the following statement:

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated into Contract Number _____, is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is submitted for Government approval."

Certified by Submittal Reviewer_____ Date _____
(signature when applicable)

Certified by QC Program Manager_____ Date _____
(signature)

(2) When the approving authority is the QC Program Manager, the QC Program Manager will use the following approval statement when returning submittals to the Contractor as "Approved" or "Approved as Noted."

"I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated into Contract Number _____, is in compliance with the contract drawings and specification, can be installed in the allocated spaces, and is approved for use."

Certified by Submittal Reviewer_____ Date _____
(signature when applicable)

Approved by QC Program Manager_____ Date _____
(signature)

ATTACHMENT C
QC-1, REV. FINAL

SUBMITTAL QUANTITY*

Submittal Type	Size	*Quantity When Approving Authority is* Foster Wheeler Environmental QC Program Manager	Government
(1) Product Data	NA	6 copies	7 copies
(2) Shop Drawings	Larger than 8½ x 14″	Always 1 reproducible 3 prints of each	
	For 8½ x 14″ or less	6 copies	7 copies
(3) Samples	General	Always 2 samples or sets	
	Sample Panel	1 sample	
	Sample Installation	As directed	
	Non-Solid	1 sample	
(4) Administrative	Larger than 8½ x 14″	Always 4 copies	
	8½ x 14″ or less	6 copies	7 copies

* Recommended quantity to be followed only if quantities are not specified in the CTO statement of work.

ATTACHMENT D
(Sheet 1 of 2)
QC-1, REV. FINAL

TRANSMITTAL FORM

FOSTER WHEELER

FOSTER WHEELER ENVIRONMENTAL CORPORATION

TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N68711-98-D-5713

Document Control No. _____

File Code: _____

TO: Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Mr. Richard Lovering, 57CS2.RL
1220 Pacific Highway
San Diego, CA 92132-5190

DATE: _____
CTO: _____
LOCATION: _____

FROM: _____
Neil Hart, Program Manager

DESCRIPTION: _____

TYPE: ___ Contract Deliverable ___ CTO Deliverable ___ Change Notice/Project Note/Other

VERSION: _____ REVISION #: _____
(e.g. Draft, Draft Final, Final, etc.)

ADMIN RECORD: Yes ___ No ___ Category ___ Confidential ___
(PM to Identify)

SCHEDULED DELIVERY DATE _____ ACTUAL DELIVERY DATE: _____

NUMBER OF COPIES SUBMITTED: _____

COPIES TO: (Include Name, Navy Mail Code, and Number of Copies)

NAVY:	FWENC:	OTHER: (Distributed by FWENC)

Date/Time Received

ATTACHMENT D
(Sheet 2 of 2)
QC-1, REV. FINAL

SAMPLE TRANSMITTAL LETTER

FOSTER WHEELER ENVIRONMENTAL CORPORATION
1230 COLUMBIA STREET, SUITE 640, SAN DIEGO, CA 92101
TEL: 619-234-8696 FAX: 619-234-8591

October 23, 1998
FWSD-RAC-98-0039
Cont. 6.1

Mr. Rick Lovering
Contracting Officer
SOUTHWESTNAVFACENGCOM (Code 57CS2.RL)
1220 Pacific Highway
San Diego, CA 92132-5190

SUBJECT: CONTRACT MANAGEMENT PLAN

Reference: Contract N68711-98-D-1113, Environmental Remedial Action Contract for Sites in Southern California, Arizona, New Mexico and Southern Nevada

SAMPLE

Dear Mr. Lovering,

Enclosed is our Contract Management Plan in accordance with Section C, paragraph 2.2 of the referenced contract. If any changes are desired as a result of your review, a final version of the document will be provided following incorporation of the revisions. Please note that many sections of this document are copyrighted and all of it is considered proprietary information, therefore, it is provided for internal use by the Navy only in connection with this contract.

If you have any questions or concerns, please contact me at (619)234-8696, extension 211.

Sincerely,

Neil Hart
Program Manager

Enclosure
Contract Management Plan

cc: L. Holloway (Code 03EN.LH)

G:\WP\1990\12368B.DOC • 11/10/98

SUBMITTAL FORMAT

1. Transmittal Form. Transmit each submittal, except sample installations and sample panels, to the office of the approving authority. Transmit submittals with a transmittal form prescribed by the Contracting Officer or designated representative. The transmittal form shall identify the Contractor, indicate the date of submittal, and include information prescribed by the transmittal form. Process transmittal forms to record actions regarding panels and sample installations.

2. Identifying Submittals. Identify submittals, except sample panel and sample installation, with the following information permanently adhered to or noted on each separate component of each submittal and noted on the transmittal form. Mark each copy of each submittal identically, with the following:

   a) Project title and location.

   b) Construction contract number and contract task order.

   c) The section and part number of the section by which the submittal is required.

   d) The submittal description (SD) number of each component of the submittal.

   e) If a resubmission, an alphabetic suffix on the submittal description, for example, SD-10A, to indicate the resubmission.

   f) The name, address, and telephone number of the subcontractor, supplier, manufacturer, and any other second tier Contractor associated with the submittal.

   g) Product identification and location in project.

3. Format for Product Data

   a) Presentation. Present product data submittals for each section as a complete, bound volume. Include a table of contents listing page and catalog item numbers for product data.

b) Notation. Indicate, by prominent notation, each product which is being submitted; indicate the specification section number and paragraph number to which it pertains.

c) Product Supplement. Supplement product data with material prepared for the project to satisfy submittal requirements for which product data does not exist. Identify this material as developed specifically for the project.

4. Format for Shop Drawings

a) Size. Shop drawings shall be not less than 8• by 11 inches nor more than 30 by 42 inches.

b) Placement. Present 8• by 11 inch shop drawings as part of the bound volume for the submittals required by the section. Present larger drawings in the sets.

c) Information. Include on each drawing the drawing title, number, date, and revision numbers and dates, in addition to the information required in Paragraph 2 entitled "Identifying Submittals."

d) Dimensions. Dimension drawings, except diagrams and schematic drawings; prepare drawings demonstrating interface with other trades to scale. Identify materials and products for work shown.

5. Format of Samples

a) Size. Furnish samples in the sizes below, unless otherwise specified or unless the manufacturer has prepackaged samples of approximately the same size as specified:

(1) Sample of equipment or device: Full size.

(2) Sample of materials less than 2 by 3 inches: Built-up to 8• by 11 inches.

(3) Sample of materials exceeding 8• by 11 inches: Cut down to 8• by 11 inches and adequate to indicate color, texture, and material variations.

(4) Sample of linear devices or materials, such as conduit and handrails: 10-inch length or length to be supplied, if less than 10 inches.

(5) Sample of non-solid materials (e.g., sand, paint, etc.): One pint, unless specified otherwise in technical sections.

(6) Sample panel: 4 feet by 4 feet.

(7) Sample installation: 100 square feet.

b) Range of Variation. Samples showing range of variation: Where unavoidable variations must be expected, submit sets of samples of not less than three units showing the extremes and middle of the range.

c) Reusable Samples: Incorporate returned samples into the work only if so specified or indicated. Incorporated samples shall be in undamaged condition at the time of use.

d) Recording of Sample Installation: Note and preserve the notation of the area constituting the sample installation but remove the notation at the final cleanup of the project.

e) Color, Texture, or Pattern: When specified in naming a particular manufacturer and style, include one sample of that manufacturer and style for comparison.

6. Format of Administrative Submittals

a) Reference Document. When the submittal includes a document which is to be used in the project or become a part of the project record, other than as a submittal, do not apply the Contractor's approval stamp to the document, but to a separate sheet accompanying the document.

b) Operation and Maintenance Manual Data: Submit in accordance with the Contract Task Order.

LIST OF SD NUMBERS AND DESCRIPTIONS

SD-01, Data

Submittals which provide calculations, descriptions, or other documentation regarding the work.

SD-02, Manufacturer's Catalog Data

Data composed of catalog cuts, brochures, circulars, specifications and product data, and printed information in sufficient detail and scope to verify compliance with requirements of the contract documents. A type of product data.

SD-03, Manufacturer's Standard Color Charts

Preprinted illustrations displaying choices of color and finish for a material or product. A type of product data.

SD-04, Drawings

Submittals which graphically show relationship of various components of the work, schematic diagrams of systems, detail of fabrications, layout of particular elements, connections, and other relational aspects of the work. A type of shop drawing.

SD-05, Design Data

Design calculations, mix designs, analyses, or other data, written in nature and pertaining to a part of the work. A type of shop drawing.

SD-06, Instructions

Preprinted material describing installation of a product, system, or material, including special notices and Material Safety Data Sheets, if any, concerning impedances, hazards, and safety precautions. A type of product data.

SD-07, Schedules

A tabular list of data or tabular list including location, features, or other pertinent information regarding products, materials, equipment, or components to be used in the work. A type of shop drawing.

SD-08, Statements

A document, required of the Contractor, or through the Contractor by way of a supplier, installer, manufacturer, or other lower tier contractor, the purpose of which is to further the quality or orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel, qualifications, or other verification of quality. A type of shop drawing.

SD-09, Reports

Reports of inspection and laboratory test, including analysis and interpretation of test results. Each report shall be properly identified. Test methods used and compliance with recognized test standards shall be described.

SD-10, Test Reports

A report signed by an authorized official of a testing laboratory that a material, product, or system identical to the material, product, or system to be provided has been tested in accordance with requirements specified by naming the test method and material. The test report must state the test was performed in accordance with the test requirements; state the test results; and indicate whether the material, product, or system has passed or failed the test. Testing must have been within 3 years of the date of award of this contract. A type of product data.

SD-11, Factory Test Reports

A written report which includes the findings of a test required to be performed by the Contractor on an actual portion of the work or prototype prepared for this project before it is shipped to the job site. The report must be signed by an authorized official of a testing laboratory and must state the test was performed in accordance with the test requirements; state the test results; and indicate whether the material, product, or system has passed or failed the test. A type of shop drawing.

SD-12, Field Test Reports

A written report which includes the findings of a test made at the job site, in the vicinity of the job site, or on a sample taken from the job site, on a portion of the work, during or after installation. The report must be signed by an authorized official of a testing laboratory or agency and must state the test was performed in accordance with the test requirements; state the test results; and indicate whether the material, product, or system has passed or failed the test. A type of shop drawing.

SD-13, Certificates

Statements signed by responsible officials of a manufacturer of a product, system, or material attesting that the product, system, or material meet specified requirements. The statements must be dated after the award of this contract, name the project, and list the specific requirements which it is intended to address. A type of shop drawing.

SD-14, 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. A type of sample.

SD-15, Color Selection Samples

Samples of the available choice of colors, textures, and finishes of a product or material, presented over substrates identical in texture to that proposed for the work. A type of sample.

SD-16, Sample Panels

An assembly constructed at the project site in a location acceptable to the Contracting Officer and using materials and methods to be employed in the work; completely finished; maintained during construction; and removed at the conclusion of the work or when authorized by the Contracting Officer. A type of sample.

SD-17, Sample Installations

A portion of an assembly or material constructed where directed and, if approved, retained as a part of the work. A type of sample.

SD-18, Records

Documentation to ensure compliance with an administrative requirement or to establish an administrative mechanism. A type of administrative submittal.

SD-19, Operation and Maintenance Manuals

Data intended to be incorporated in an Operations and Maintenance Manual. A type of administrative submittal.

CATEGORY: Quality Control	TITLE: Preparation of Test Plan and Log	NO.: QC-2 DATE: 4/26/99
PREPARED BY: S.J. Walden	APPROVED BY: S.A. Viskup	REVISION: FINAL

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ATTACHMENT A - Sample Test Plan and Log

1. PURPOSE

The purpose of this guideline is to describe the process for planning and administering Contract Task Order (CTO) tests.

2. SCOPE

This guideline establishes a tracking system for testing of items and services at CTO work sites to verify compliance with applicable documented instructions, procedures, specifications, design drawings, codes, and regulatory requirements.

3. DEFINITIONS

Contractor - The Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) team members performing work for the Navy in support of the Remedial Action Contract, including all work performed by subcontractors.

Government - Representatives of the SWDIV, overseeing and administering the Remedial Action Contract program (i.e., Contracting Officer, ROICC, etc.).

Project Manager (PJM) - The Foster Wheeler Environmental individual assigned to manage a CTO. The PJM has the authority to direct all technical, construction, and administrative activities related to a specific CTO.

Project QC Manager (PQCM) - The designated Foster Wheeler Environmental individual assigned to a specific CTO on site responsible for overseeing implementation of the QC program including verification of completed work, review and issuance of required documentation and submittals, and other duties as may be assigned by the Foster Wheeler Environmental QC Program Manager. The Project QC Manager reports to the Foster Wheeler Environmental QC Program Manager on QC issues.

Quality Control Program Manager (QCM) - The designated Foster Wheeler Environmental individual having authority to develop, approve, and implement the Contractor Quality Control (CQC) Program Plan and CTO Project QC Plan. He or she is responsible for overseeing implementation of the QC program and supervising the Project QC Managers in ensuring work is performed in accordance with applicable requirements. He or she has the authority to act in behalf of the Program Manager on site-related issues affecting the quality of the work performed. The QCM reports to the Foster Wheeler Environmental Director of Corporate Quality Programs.

Test - An element of verification for the determination of the capability of an item to meet specified requirements by subjecting the item to a set of physical, chemical, environmental, or operating conditions.

4. RESPONSIBILITIES

The Project QC Manager shall have overall responsibility for the implementation of this guideline. He or she shall coordinate planning activities for generating the test plan and log with the PJM and QC Program Manager.

5. GUIDELINES

5.1 GENERAL

A test plan to include Quality Control instructions shall be prepared for each CTO as part of the CTO-specific Project QC Plan. Written QC instructions shall be prepared by the Project QC Manager or designee, based on the quality requirements contained in CTO-related documents such as the statement of work, specifications, codes, and standards pertaining to items and services being performed by the Contractor. Checklists shall provide objective evidence of the quality of the item, service, and/or tests performed and shall provide a method to verify that activities have been completed in accordance with specified requirements.

Prior to implementation of testing, the Test Plan with applicable QC instructions shall be submitted by the Project QC Manager to the Site Superintendent and PJM for review to ensure requirements have been established.

Forms shall be, where possible, standard forms included in the CTO Project QC Plan. Deviations may be made by the Project QC Manager, if required, with the approval of the QC Program Manager.

5.2 PLANNING

A review of the CTO specifications, drawings, and associated documents shall be made prior to completion of the CTO Project QC Plan to ensure that requirements for applicable testing activities have been incorporated in the plan and that they can be accomplished as specified.

Quality Control instructions shall be prepared as part of the CTO Project QC Plan and will be reviewed and approved prior to use and revised when necessary. Planning and documentation of tests shall include a definition of the operation to be performed, a systematic sequential progression of operations, the responsibilities of testing personnel, the measures to be employed, and the certification required to perform the task.

5.2.1 Schedule of Site Quality Control Tests

A schedule shall be prepared by the Project QC Manager or designee, which shall include appropriate target dates for the testing. The plan and all QC instructions shall be kept current and revised as necessary to ensure that all tests are performed in accordance with current requirements.

5.2.2 Criteria for Quality Control Instructions

Quality Control instructions shall include provisions for at least the following, as applicable:

a) Ensuring that all test prerequisites have been met.

b) Use of trained personnel to witness tests.

c) Identification of item and characteristics to be tested.

d) Checking the condition of item to be tested.

e) Precautions to be observed.

f) Performance of tests under proper environmental conditions.

g) Sequential steps to be followed.

h) Testing instruments required.

i) Test equipment required.

j) Identification of test equipment and date of required calibration as necessary for interpretation of test results.

k) Frequency of tests (if applicable).

l) Data report form (if applicable).

m) Acceptance and rejection criteria.

n) Specific document reference, where required.

o) Mandatory test hold points, when required.

p) A description of the method of testing.

q) Verification of completion and certification of tests, including documentation of review and acceptance or rejection by QC personnel performing the tests.

r) A record of the results of the test.

s) Identification of location where testing is being performed.

t) Significant dates and times.

u) Identification of conditions that were not anticipated.

v) Indication of acceptable/unacceptable performance.

w) Signature of tester (only if actual test performed by QC personnel).

When mandatory test hold points are indicated on documents or procedures, tests may proceed beyond a hold point only with the written approval of the Project QC Manager or his designee.

Replaced, reworked, modified, or repaired items shall be tested in accordance with the original requirements, as a minimum. Any additional requirements shall be followed when required.

5.2.3 Test Control and Verification During Site Work

Test control shall be performed during the installation of items to verify that all testing requirements are met in accordance with prescribed procedures. These activities shall be performed by the Project QC Manager in a systematic manner in accordance with applicable documents.

Test activities shall include, as appropriate, but are not limited to, the following:

a) Tests in progress.

b) Verification that completed items are in conformance with specified requirements.

c) Preoperational testing.

d) Functional tests.

5.2.4 Post-Site Work Verification

Tested items shall be inspected and corresponding documentation reviewed to verify compliance to requirements such as the following:

a) Final acceptability status of in-process test activities.

b) All corrective action has been satisfactorily completed.

c) Any temporary conditions, which must remain on an interim basis, are clearly identified so that restoration can be ascertained prior to placing the items in service.

d) Performance of any required final testing, including equipment tests and system tests.

5.3 DATA ANALYSIS AND EVALUATION

The Project QC Manager shall collect test data and shall evaluate such data against acceptance criteria and performance standards. Data evaluation should provide prompt preliminary review to determine the validity of the test results and the appropriateness of continuing the test.

Test data shall be analyzed and evaluated to verify requirements such as the following:

a) Completeness of results.

b) Achievement of test objectives.

c) Operational proficiency of items, where pertinent.

d) Identification of any necessary changes to the installation or test procedures.

Results of the data analysis and evaluation shall be documented by the Project QC Manager.

Records such as completed procedures, reports, personnel qualification, tests, equipment calibration, and test deviations or exception shall be collected and maintained in accordance with procedures and instructions contained in the CTO plans.

5.4 TEST STATUS LOG

The approved test plan also is the status log (see Attachment A of QC-2). The Project QC Manager shall maintain and update this log. The log shall indicate the status of required and completed tests, and the person responsible for completing the tests. Also, the log shall contain the date the test was conducted; the date the test results were forwarded to the Government; any remarks; and, if a test was performed by a testing laboratory, that the laboratory was approved.

All required documentation shall be controlled in accordance with the CTO Project QC Plan. The plan and log shall be continually updated to reflect current conditions. A copy of the updated test plan and log shall be attached to the last daily contractor quality control report of each month and submitted to the Government.

Nonconforming items shall be clearly identified, marked, and processed in accordance with Navy RAC Program Guideline QC-3.

6. ATTACHMENT OF QC-2

ATTACHMENT A - Sample Test Plan and Log

Hazardous Waste Storage Tank Upgrade
Whidbey Island NAS
Whidbey Island, Washington

Contract Number:
N44255-93-D-4050

Delivery Order No.0055

TEST PLAN AND LOG

Contractor:
Foster Wheeler Environmental Corporation

Spec. Section	Paragraph No.	Test Procedure	Test Name	Test Frequency	Test Responsibility Tested by/Date Completed	Remarks
		ASTM D698-91	Laboratory Compaction Using Standard Compaction	One Test/2000cy		Backfill
		ASTM D2216-92	Laboratory Determination of Water Content of Soil Oven Dried	One Test/2000cy		Backfill
		ASTM D2922-92	Density of Soil in Place by Nuclear Methods	One Test/100		Backfill
		ASTM D3017-88	Water Content of Soil by Nuclear Methods	One Test /Nuclear Density		Backfill
		ASTM C39-93a	Compression Test of Concrete Cylinder	Make 3 Cylinders per 100 cy of Concrete Placed		Test One Cyl.-7 Days Test One Cyl.-28 Days
		ASTM C143-90a	Concrete Slump Test	One Test /50 cy Placed		If Slump Looks Different Check More Frequently
		ASTM C231-91b	Air Content of Concrete by Pressure Method	Same as Slump		
			Leak Detection-Tank Liners			In accord with Spec's- (1)

SAMPLE

CATEGORY: Quality Control	TITLE: Identification and Control of Discrepancies	NO.: QC-3 DATE: 4/26/99
PREPARED BY: S.J. Walden	APPROVED BY: S.A. Viskup	REVISION: FINAL

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ATTACHMENT B - Nonconformance Report
ATTACHMENT C - Deficiency Notice Log
ATTACHMENT D - Hold Tag
ATTACHMENT E - Nonconformance Report Log
ATTACHMENT F - Nonconformance Conditional Release
ATTACHMENT G - Rework Items List

1. PURPOSE

The purpose of this guideline is to describe the process for identifying, tracking, and controlling discrepant conditions not complying with the Contract Task Order (CTO) and/or basic contract.

2. SCOPE

This guideline defines responsibilities and methods to be used for the identification and control of discrepant conditions, items, material, equipment, and components requiring rework.

3. DEFINITIONS

Discrepancy - A condition, procedure, item, material, practice, service, part, or component at variance with established CTO requirements.

Deficiency - A discrepancy that does not require an engineering evaluation and can be corrected by standard methods during the normal course of construction or remediation so that the finished work meets established CTO requirements. Deficiency Notices shall be issued to document deficiencies.

Nonconformance - A discrepancy which renders the quality of an item or activity unacceptable or indeterminate. Nonconformances require an evaluation and may require that work be stopped until the nonconformance can be evaluated and corrected. Nonconformance reports shall be issued to document nonconformances.

4. RESPONSIBILITIES

4.1 The Project QC Manager shall have overall responsibility for the implementation of this guideline.

4.2 The Site Superintendent shall be responsible for identification and control of discrepancies in accordance with this guideline.

4.3 All CTO personnel shall be responsible for identifying and reporting discrepancies.

5. GUIDELINES

5.1 EVALUATION OF DISCREPANCIES

5.1.1 Any member of the CTO team may report a potential discrepancy to the Project QC Manager. The Project QC Manager or designee shall require that either a Deficiency Notice (Attachment A of QC-3), or a Nonconformance Report (Attachment B of QC-3) be completed by the individual reporting a discrepancy.

5.1.2 The Project QC Manager shall review and evaluate the Deficiency Notice or the Nonconformance Report to decide if the discrepancy warrants a Deficiency Notice or a Nonconformance Report, or if the condition reported is not in violation of the CTO contract or specification and does not warrant either report.

5.1.3 If the Project QC Manager determines the reported condition does not warrant a report, he or she shall record the decision on the corresponding inspection checklist form and the Deficiency Notice or Nonconformance Report shall not be issued. If no inspection checklist was written, the decision shall be recorded on the Deficiency Notice or Nonconformance Report. In either case, the Deficiency Notice or Nonconformance Report shall be maintained in the CTO file.

5.2 PROCESSING OF DEFICIENCY NOTICES

5.2.1 The Project QC Manager shall review the description in Section I of the Deficiency Notice (Attachment A) to ensure that it clearly defines the existing condition. Consecutive numbers starting with the prefix DN shall be assigned using the Deficiency Notice Log (Attachment C of QC-3).

5.2.2 If applicable, the Project QC Manager shall check the appropriate box on the Deficiency Notice to indicate that Quality Control notification is required prior to initiating corrective action. The Project QC Manager shall then sign the Deficiency Notice.

5.2.3 The Project QC Manager shall then send the notice to the organization responsible for corrective action. A copy of the Deficiency Notice shall also be sent to the QC Program Manager, Site Superintendent, Project Manager (PJM), and Program Manager.

5.2.4 Deficient material shall be segregated, where possible, and shall be tagged with a "Hold Tag" (Attachment D of QC-3).

5.2.5 The organization responsible for corrective action, PJM, and the Site Superintendent shall review the Deficiency Notice and, together with the Project QC Manager, shall determine what corrective action is needed.

5.2.6 After corrective action or rework is complete, the responsible organization shall complete Section II of the original Deficiency Notice and return the Deficiency Notice to the Project QC Manager.

5.2.7 The Project QC Manager shall review the corrective action or rework for adequacy. He or she shall also verify by reinspection that the deficiency has been corrected in an acceptable manner. Section III of the Deficiency Notice shall be completed accordingly.

5.2.7.1 If the review determines that the deficiency has not been corrected in an acceptable manner, the Deficiency Notice shall be reissued to the responsible organization, PJM, Program Manager, and the Site Superintendent for determining what additional corrective action is needed. The Deficiency Notice Log shall be updated accordingly.

5.2.7.2 If the review determines the corrective action to be acceptable, Part IV of the Deficiency Notice shall be completed, the Deficiency Notice shall be closed, the Deficiency Notice Log updated, and Hold Tags removed as applicable.

5.2.7.3 Closed Deficiency Notices shall be filed in the CTO file and copies sent to the responsible organization, PJM, Program Manager, and Site Superintendent.

5.2.8 The Project QC Manager shall periodically review the Deficiency Notice Log to ensure timely responses and closure of Deficiency Notices. In cases where acceptable resolution of Deficiency Notices is not accomplished in a timely manner, a memorandum requesting action shall be issued to the Site Superintendent, PJM, and the responsible

organization. A copy of the memorandum shall be retained in the CTO file with the Deficiency Notice it concerns.

5.3 PROCESSING OF NONCONFORMANCE REPORTS

5.3.1 When it is determined that the condition is in fact a nonconformance, the draft Nonconformance Report shall be forwarded to the QC Program Manager, PJM, Engineering Design Manager (if design related), Program Health and Safety Officer (if health and safety related), and Program Manager immediately for review.

5.3.2 If the parties in 5.3.1 above agree that the condition requires a Nonconformance Report, a consecutive number starting with the prefix NC shall be assigned to the Nonconformance Report. Nonconformance Reports shall be entered in the Nonconformance Report Log (Attachment E of QC-3) by the Project QC Manager or his designee.

5.3.3 The Project QC Manager shall process the Nonconformance Report and obtain an approved disposition in consultation with the QC Program Manager, PJM, Program Manager, and Regional Engineer and Program Health and Safety Officer (if appropriate).

5.3.4 The Project QC Manager or his designee, after conferring with the Site Superintendent and PJM, shall issue a **stop work order** on the further processing or installation of the nonconforming item, pending a decision on its disposition, if continuance of the work would impair capacity of the item to function as originally planned. In such cases, a "Hold Tag" shall be placed on the item. The "Hold Tag" should be of a distinctive color, e.g., red. Only the Project QC Manager or his designee shall remove "Hold Tags" from the item.

5.3.5 In order to verify proper implementation of the approved disposition, reinspection of reworked items by the Project QC Manager shall be in accordance with the inspection

procedure which originally detected the condition, or an applicable procedure for that activity as indicated in the approved disposition.

5.3.5.1 The Project QC Manager shall review the corrective action. If the corrective action is not acceptable, he or she shall notify the responsible organization that additional action is required.

5.3.5.2 If the Project QC Manager determines that the corrective action is acceptable, he or she shall reinspect the nonconforming item. When acceptable, the Project QC Manager shall forward the completed Nonconformance Report to the responsible organization, PJM, Program Manager, Regional Engineer, Program Health and Safety Officer (if applicable), QC Program Manager, and the Site Superintendent for approval. The completed Nonconformance Report shall then be sent to the CTO file with copies sent to all involved parties.

5.3.5.3 When the Nonconformance Report is closed, the Project QC Manager shall remove the "Hold Tags" and update the Nonconformance Report Log accordingly.

5.4 VOIDED NONCONFORMANCE REPORTS

5.4.1 Nonconformances which are voided after issue shall be marked or stamped "Void," initialed, and dated by the Project QC Manager. The Nonconformance Report Log shall note that the Nonconformance Report has been voided. The reason for the voiding shall be noted on the Nonconformance Report and/or transmittal notice. Copies of the voided Nonconformance Report shall be distributed to all (Section 5.3 above). A copy of the voided Nonconformance Report and the transmittal notice shall be maintained in the CTO file. Voided Nonconformance Report numbers shall not be reassigned.

5.4.2 Any corrections or annotations to the Nonconformance Report Log shall be initialed and dated by the Project QC Manager or his designee.

5.5 RELEASE OF DISCREPANT MATERIAL FOR LIMITED USE

5.5.1 The release of discrepant material for which a Deficiency Notice or Nonconformance Report has been generated shall be accomplished using the Nonconformance Conditional Release form (Attachment F of QC-3).

5.5.2 The organization requesting the release of nonconforming material shall complete Section I of the Nonconformance Conditional Release form.

5.5.3 The Nonconformance Conditional Release form shall then be forwarded to the Project QC Manager for review and approval.

5.5.4 When approved, the Project QC Manager or his designee shall take the following steps:

5.5.4.1 The Conditional Release box on the "Hold Tag" shall be checked and the tag shall be completed, with limitations of use clearly indicated. The Conditional Release shall be indicated in the appropriate log (Deficiency Notice or Nonconformance Report).

5.5.4.2 The Nonconformance Conditional Release form shall be attached to the corresponding Deficiency Notice or Nonconformance Report, as applicable.

5.5.4.3 Notification that material has been approved for conditional release shall be sent to the organization requesting the release, PJM, Program Manager, Regional Engineer, Program Health and Safety Officer (if applicable), QC Program Manager, and the Site

Superintendent by transmitting a copy of the approved Nonconformance Conditional Release form.

5.6 REWORK ITEMS LIST

5.6.1 The Project QC Manager shall compile and maintain a list of work that does not comply with the CTO. This list will be a consolidation of items listed on the Deficiency Notice Log and Nonconformance Report Log. The list shall identify what items need to be reworked, the date the item was originally discovered, and the date the item was corrected.

5.6.2 A copy of the Rework Items List shall be attached to the last daily Contractor Quality Control Report of each month and submitted to the Government.

5.6.3 Corrected items shall not be included on the next consecutive month's Rework Items List. Items requiring rework shall be listed on the next month's Rework Items List if not completed in the month identified.

5.7 RECORDS

Completed documentation generated in accordance with this guideline shall be transmitted to the CTO file controller.

6. ATTACHMENTS OF QC-3

ATTACHMENT A - Deficiency Notice
ATTACHMENT B - Nonconformance Report
ATTACHMENT C - Deficiency Notice Log
ATTACHMENT D - Hold Tag
ATTACHMENT E - Nonconformance Report Log
ATTACHMENT F - Nonconformance Conditional Release
ATTACHMENT G - Monthly Rework Items List

ATTACHMENT A
QC-3, REV. FINAL

_____
PROJECT

DEFICIENCY NOTICE

RESPONSIBLE ORGANIZATION _____ D.N. No. _____
DEFICIENT CONDITION _____ DATE _____
LOCATION _____

I. DESCRIBE DEFICIENCY: _____

QC Notification Required Prior to Initiating Corrective Action: Yes_____ No_____ Hold Tag No._____
D.N. Prepared by: _____ Approved by: _____
PROJECT QC MANAGER

II. CORRECTIVE ACTION: _____

ORGANIZATION SIGNATURE DATE

III. REINSPECTION
Results:
_____ Accept
_____ Reject - Reissue Under: D.N. No. _____ NCR No. _____

INSPECTOR DATE

PROJECT QC MANAGER DATE

IV. APPROVALS

Responsible Organization: _____ QC Program Manager: _____
Site Superintendent: _____ Project Manager: _____
Program Manager: _____

ATTACHMENT B
QC-3, REV. FINAL

NONCONFORMANCE REPORT

Client/Contract No.	NCR No.
Contract Task Order	Date
Responsible Contractor	
Specification No./Drawing	Applicable Daily Report

1. Description of Nonconforming Component (Use Separate Page if Necessary)		
Name & Signature	Title/Company	Date

2. Recommended Disposition & Corrective Action (Use Separate Page if Necessary)		
Name & Signature	Title/Company	Date

3a. Review of Recommended Disposition and Corrective Action Accepted _____ Rejected _____ Accepted with Comments _____		3b. Verification of Disposition and Corrective Action Required _____ Not Required _____
By (Signature)	Title	Date

4. Project QC Manager Acceptance _____ Yes _____ No	Signature	Date

5. Approvals:

1. Regional Engineer	2. Site Superintendent
3. Project Manager	4. Regional Scientist
5. Program Health and Safety Officer	6. QC Program Manager
7. Program Manager	Other

_____
Project

DEFICIENCY NOTICE LOG

D.N. NO.	DESCRIPTION OF DISCREPANCY	TAG NO.	ISSUE DATE	DATE CLOSED	REMARKS

ATTACHMENT D
QC-3, REV. FINAL

Foster Wheeler Environmental Corporation

HOLD

DO NOT REMOVE THIS

TAG WITHOUT

Q.C. AUTHORIZATION

Back

Foster Wheeler Environmental Corporation

HOLD

DN No. _____ NCR No. _____

ORIGINATING ORGANIZATION _____

ITEM DESCRIPTION _____

REASON FOR HOLD _____

_____ PROJECT QC MANAGER

CONDITIONAL RELEASE

RESTRICTIONS FOR USE _____

_____ PROJECT QC MANAGER _____ DATE

Front

PROJECT

NONCONFORMANCE REPORT LOG

NCR NO.	HOLD TAG NO.	DESCRIPTION OF CONDITIONS/ ITEM AFFECTED (POUR NO., ETC.)	LOCATION	DATE					REMARKS
				VALIDATION	DISPOSITION/ APPROVAL	RE-INSPECTION	CLOSURE	HOLD TAG REMOVAL	

ATTACHMENT F
QC-3, REV. FINAL

_____
PROJECT

NONCONFORMANCE CONDITIONAL RELEASE

SECTION I

Related D.N. No. _____

Item Description _____

Reason for Release and Intended Use _____

Requested by _____ _____
NAME AND TITLE DATE

SECTION II

Restrictions for use _____

Request for Release: ☐ Approved Remarks _____

☐ Not Approved _____

_____ _____
PROJECT QC MANAGER DATE

Request for Release: ☐ Approved Remarks _____

☐ Not Approved _____

_____ _____
PROJECT QC MANAGER DATE

SECTION III

Related Hold Tag Number(s) _____

Related D.N. Number _____

_____ _____
QC PROGRAM MANAGER DATE

ATTACHMENT G
QC-3, REV. FINAL

Page ____ of ____

_____
Contract Task Order Number

MONTHLY REWORK ITEMS LIST
DATE: _____

NO.	IDENTIFICATION OF ITEM REQUIRING REWORK	DATE IDENTIFIED	DATE CORRECTED	REMARKS

_____
Signature of Project QC Manager and Date

CATEGORY: Quality Control	TITLE: Preparation of Field Change Requests and Design Change Notices	NO.: QC-4 DATE: 4/26/99

PREPARED BY:	APPROVED BY:	REVISION:
S.J. Walden	S.A. Viskup	FINAL

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ATTACHMENT A - Field Change Request Form (FCR)
ATTACHMENT B - Design Change Notice Form (DCN)

1. PURPOSE

The purpose of this guideline is to describe the procedure to document and implement changes to an approved Contract Task Order (CTO) statement of work. A field change request form (FCR) is used to request and document changes to approved plans, specifications, and drawings that occur in the field, and to identify any cost, scope, or schedule changes that will be processed through either a Limitation of Cost (LOC) or Notification of Change (NOC) via the Project Manager (PJM) and the Contract Administration Manager (CAM). A Design Change Notice (DCN) is a home office-initiated change to plans, specifications, or drawings.

2. SCOPE

This guideline describes the process for the processing, review, recording, and implementation of FCRs and DCNs.

3. DEFINITIONS

Contract Administration Manager (CAM) - The Foster Wheeler Environmental individual who oversees contract compliance, procurement, subcontracts, project controls, and inventory activities. The CAM processes Limitation of Costs (LOCs) and Negotiation of Changes (NOCs) with the Government.

Contractor - The Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) team members performing work for the Government in support of the Remedial Action Contract, including all work performed by subcontractors.

Design Change Notice (DCN) - A home office engineering initiated change notice which describes a deviation from the CTO approved plans, specifications, or drawings. A DCN is prepared in response to a change that has an impact on construction design.

Field - A general title designating the site or location where the scope of work described in the CTO is carried out.

Field Change Request (FCR) - A field-initiated change request which describes a necessary deviation from the CTO approved plans, specifications, or drawings.

Government - Representatives of SWDIV, overseeing and administering the Remedial Action Contract program (i.e., Contracting Officer, ROICC, etc.).

Immediate Impact - "Immediate or significant impact" is an impact in a time frame in which the normal review, approval, and distribution of the proposed change will not reach the field in sufficient time to avoid adverse operational, cost, or schedule impacts.

Limitation of Costs (LOC) - Written notification to the Government that the CTO total costs will exceed the budget. No costs beyond the CTO budget should be incurred until the government approves such costs.

Major Change - A major change affects the original CTO scope of work in relation to design, materials, function, operation, or quality, and results in extra costs that would affect approved budget limits or have an adverse impact on the CTO schedule.

Minor Change - A minor change is a change which requires documentation but which does not affect the original CTO scope of work specified in the work plans in relation to function, operation, quality, and in the judgment of the PJM, does not affect approved budget limits or have an adverse impact on the CTO schedule.

Notification of Change (NOC) - Written notification to the Government that work beyond the Scope of the Contract is anticipated. No extra contractual work shall be performed until the extra work is approved by the Government.

Program Health and Safety Officer (CIH) - The designated Foster Wheeler Environmental individual having the authority to develop, approve, and implement the program Health and Safety Plan and CTO health and safety plans. He or she is responsible for overseeing the implementation of the health and safety program and supervising the site health and safety specialists in ensuring work is performed in accordance with applicable requirements.

Program Manager (PM) - The designated Foster Wheeler Environmental individual with overall responsibility for managing CTOs under the Navy RAC contract.

Project Manager (PJM) - The Foster Wheeler Environmental individual assigned to manage a CTO. The PJM has the authority to direct all segments of the CTO, including technical, construction, and administrative activities.

Project QC Manager - The designated Foster Wheeler Environmental individual on site responsible for overseeing implementation of the QC program including verification of completed work, review and issuance of required documentation and submittals, and other duties as may be assigned by the QC Program Manager.

Quality Control Program Manager (QCM) - The designated Foster Wheeler Environmental individual having the authority to develop, approve, and implement the Contractor Quality Control (CQC) Program Plan and each CTO Project QC Plan. He or she is responsible for overseeing implementation of the QC program and supervising the Project QC Managers in QC matters to ensure work is performed in accordance with applicable requirements.

Regional Engineer - The designated Foster Wheeler Environmental engineering manager responsible for overseeing engineering design activities on the Navy RAC program.

Regional Scientist - The designated Foster Wheeler Environmental Science Manager responsible for overseeing scientific aspects on the Navy RAC program.

Site Health and Safety Specialist (SHSS) - The designated Foster Wheeler Environmental individual on site responsible for overseeing implementation of the health and safety program.

Site Superintendent - The Site (Project) Superintendent directs on-site field labor and subcontractor activities, has authority to assign field labor tasks, and can perform technical and administrative functions as required.

4. RESPONSIBILITIES

Program Health and Safety Officer (CIH) - If the FCR or DCN involves health and safety issues, reviews the scope of the FCR or DCN and determines its impact upon the health and safety aspects of the CTO. Indicates approval by signing the appropriate box of the FCR (Attachment A) or DCN (Attachment B) without comments. If there are comments, returns the FCR or DCN to the PJM for revision.

Program Manager (PM) - Notifies the Navy if implementation of the FCR or DCN will result in a significant change in the CTO cost, scope of work, design, or results in significant project delays or work stoppage, and initiates an appropriate contract modification.

Project Manager (PJM) - Coordinates the FCR or DCN process. Reviews the scope of the FCR or DCN and determines its impact upon the management, scope, design, and budget aspects of the CTO. Indicates acceptance by signing the appropriate box of the FCR (Attachment A) or DCN (Attachment B) and forwards for approvals. If disapproved, returns the FCR or DCN to the preparer. If a cost, scope, or schedule change is considered major,

the PJM shall work with the CAM to develop and submit an appropriate notification (LOC or NOC) to the Government. This must be accomplished before incurring costs as a result of the change.

Project QC Manager - Prepares the FCR or DCN if the change involves a quality-related item or has quality-related impacts.

Quality Control Program Manager (QCM) - Reviews the scope of the FCR or DCN and determines its impact upon the quality-related aspects of the CTO. Indicates final approval by signing the appropriate box of the FCR (Attachment A) or DCN (Attachment B) and indicates "no comments." If there are "comments," returns the FCR or DCN with the comments attached to the PJM for revision. The QCM shall be the final reviewer in the approval process.

Regional Engineer/Regional Scientist - Reviews engineering design changes or science-related changes described by the FCR or DCN. Determines if the engineering or scientific change is considered a major change and requires a design change notification (DCN). Also prepares DCNs when required.

Site Health and Safety Specialist (SHSS) - Prepares the FCR or DCN if the change involves health and safety issues.

Site Superintendent - Prepares the FCR or DCN if the change involves a change in management, scope, design, or budget.

5. GUIDELINES

5.1 FIELD CHANGE REQUESTS

A FCR shall be used by the field (in most cases the Site Superintendent) to identify a proposed change against the CTO scope, plans, specifications, or drawings; to improve constructibility; to consider a field preference for ease of installation, startup, or operation; for material substitution, or to reflect changes in the QC or health and safety programs. The FCR form to be used is shown in Attachment A. Other versions of the FCR form should not be used without prior approval of the QCM. Proposed changes in field construction design should also use the Design Change Notice process (Section 5.2).

5.1.1 Minor Changes

If the FCR is deemed minor, the field can proceed at their risk prior to management review and concurrence as described in Section 5.1.3.1.

5.1.2 Major Changes

If the FCR is deemed major, action shall be taken as prescribed by management, and full review, evaluation, and approval is required prior to proceeding as described in Section 5.1.3.2.

5.1.3 Preparation

The Project QC Manager, SHSS, and/or the Site Superintendent may initiate a FCR individually or collectively by completing Sections 1 to 3 of the FCR form (Attachment A). The FCR is then submitted to the PJM who coordinates review of the FCR with the QCM, Regional Engineer, if engineering design related, Regional Scientist if science related, and CIH if health and safety related.

5.1.3.1 Minor Change

Where the FCR is checked "Minor Change," the field, after completing the FCR, may implement the change at their own risk. However, the Site Superintendent, at his/her discretion, will want to first obtain management concurrence that the change is indeed minor. In all cases, concurrence from management should be obtained within 24 hours after the FCR has been completed and submitted for review and should be documented in the CTO files.

5.1.3.2 Major Change

Where the FCR is checked "Major Change," the FCR must be brought to the immediate attention of the PM. If implementation of the FCR would result in a significant change in the CTO cost, scope of work, design, or result in significant project delays or work stoppage, the PM, in conjunction with the CAM, shall immediately notify the Government via a LOC or NOC, as appropriate. In addition, the Regional Engineer must determine if the change is engineering related. If the major change is engineering related, the Regional Engineer shall implement a DCN to be attached to the FCR to document the change (Section 5.2). If science related, the Regional Scientist shall also review the FCR to approve any science-related changes. Design changes shall not be implemented until the LOC or NOC is processed and approved by the Government.

5.1.4 Review

The PJM receives the FCR and coordinates the review process. The PJM and the QCM must be included in the review process. The Regional Engineer and/or Regional Scientist must also review the FCR if engineering design related or science related, respectively, and the CIH must be included in the review process if the FCR involves health and safety issues. All involved managers must complete, sign, and date Section 4 of the FCR to indicate their approval. The QCM shall review the FCR after all other reviews have been completed.

5.1.5 Implementation

Major changes to a CTO contained in a FCR shall not be implemented until the PM, in conjunction with the CAM, completes the LOC or NOC and obtains approval from the Government. Such approval shall be documented and retained in the CTO file.

The Site Superintendent shall implement the approved FCR in the field.

5.1.6 Records

Each FCR shall be sequentially numbered as follows:

FCR-XXXX-YYY,

where XXXX is the CTO number and YYY is the FCR number, beginning with 001.

Each FCR shall be controlled per Guideline QC-5 and copied to all management signatories, and the Site Superintendent, Project QC Manager, Site Health and Safety Specialist, and other personnel as deemed appropriate by the PJM. A copy of each FCR shall also be retained in the CTO file.

Controlled copies of the approved FCR should be posted or otherwise included in daily site briefings as appropriate to ensure that all site personnel are aware of the changes to the field program. If the FCR modifies an approved plan, then the Table of Contents of the plan shall be modified to indicate the FCR was approved and a copy of the FCR provided with the plan for reference.

5.2 DESIGN CHANGE NOTICES

A DCN shall be used to document a proposed design or specification-related change against the CTO specifications or drawings that impact construction design. The DCN form to be used is shown in Attachment B. Other versions of the DCN form should not be used without prior approval of the QCM.

5.2.1 Preparation

A DCN may be initiated by any member of the CTO team by completing a DCN form (Attachment B). The DCN is submitted to the PJM who coordinates the DCN review process.

5.2.2 Review

The PJM, Regional Engineer, Regional Scientist (if science-related), QCM, and the CIH (if health and safety related) shall review the DCN and determine if it will be implemented. If the DCN will be implemented, and if implementation of the DCN would result in a significant change in the CTO cost, scope of work, design, or result in significant project delays or work stoppage, the PJM shall immediately notify the PM. The PM, in conjunction with the CAM, shall then immediately notify the Government via a LOC or NOC. All involved managers must complete, sign, and date the DCN in the appropriate boxes at the bottom of the form to indicate their approval. If the DCN is not approved, it will be marked "disapproved" and retained in the CTO file.

5.2.3 Implementation of Approved DCNs

DCNs requiring the LOC or NOC process shall not be implemented until the PM, in conjunction with the CAM, obtains approval from the Government. Such approval shall be documented and retained in the CTO file. The Regional Engineer, Regional Scientist, PJM, QCM, and CIH (if health and safety related) shall work together to ensure that the design changes described by the DCN are implemented.

The Site Superintendent shall implement all approved field-related design changes.

5.2.4 Records

Each approved DCN shall be sequentially numbered as follows:

DCN-XXXX-YYY,

where XXXX is the CTO number and YYY is the DCN number, beginning with 001.

Each DCN shall be controlled per Guideline QC-5 and copied to all the management signatories, the Site Superintendent, Project QC Manager, Site Health and Safety Specialist, and other personnel as deemed appropriate by the PJM.

Controlled copies of the approved DCN should be posted or otherwise included in daily site briefings as appropriate to ensure that all site personnel are aware of the changes to the CTO program. If the DCN modifies an approved plan, then the Table of Contents of the plan shall be modified to indicate the DCN was approved.

6. ATTACHMENTS

ATTACHMENT A - Field Change Request Form (FCR)
ATTACHMENT B - Design Change Notice (DCN)

ATTACHMENT A
QC-4, REV. FINAL

FOSTER WHEELER ENVIRONMENTAL CORPORATION
NAVY RAC PROJECT
CONTRACT NO. _____

FIELD CHANGE REQUEST
(FCR)

CONTRACT TASK ORDER NAME	CTO #	CHANGE REQUEST NO. FCR-
TO NAVY NTR/RPM/COTR	LOCATION	DATE

RE: ___ Drawing No. _____ Title _____

___ Spec Section _____ Title _____

___ Other _____

1. DESCRIPTION (Items involved, submit sketch, if applicable):

2. REASON FOR CHANGE

3. RECOMMENDED DISPOSITION (Submit sketch, if applicable):

_____ Minor Change _____ Major Change (Impacts Cost, Schedule or Technical)

3a. Will this change result in a contract cost or time change? _____ YES _____ NO

3b. Estimate of contract cost or time charge (if any) _____

PREPARER (Signature)	DATE	PREPARER'S TITLE	SITE SUPERINTENDENT (Signature)	DATE

4. DISPOSITION

___ Not approved (give reason).
___ Considered minor change - approved per Recommended Disposition - Documents will not formally be revised, field to maintain as-built records.
___ Considered major change - Navy approval required via contract modification process.

1) FOSTER WHEELER ENVIRONMENTAL REGIONAL ENGINEER (Signature) (IF ENGINEERING RELATED)	DATE	2) FOSTER WHEELER ENVIRONMENTAL PROJECT MANAGER (Signature)	DATE
3) CIH (Signature) (IF HEALTH AND SAFETY RELATED) ____ Comments (attached) ____ No Comments	DATE	4) REGIONAL SCIENTIST (Signature) (IF SCIENCE RELATED ____ Comments (attached) ____ No Comments	DATE
5) QC PROGRAM MANAGER (Signature)) ____ Comments (attached) ____ No Comments	DATE		

Project Manager distributes to:

CAM	QCM	FCR Preparer
Regional Engineer Regional Scientist	Site Superintendent	CIH

REV: 3-13-96

ATTACHMENT B
QC-4, REV. FINAL

FOSTER WHEELER ENVIRONMENTAL CORPORATION
NAVY RAC PROJECT
CONTRACT NO. _____

DESIGN CHANGE NOTICE

CONTRACT TASK ORDER NAME	CTO #	DESIGN CHANGE REQUEST NO. DCN-
TO NAVY NTR/RPM/COTR	LOCATION	DATE

RE: ___ Drawing No. _____ Title _____

___ Spec Section _____ Title _____

___ Other _____

DESCRIPTION OF CHANGE

___ Engineering "HOLD" placed on all activities in area defined herein pending receipt of formally revised document(s) and/or DCN.
___ Released for construction on basis of modifications prescribed by this DCN.

REASON FOR CHANGE

___ Field Change Request (FCR No. _____)
___ Required Modifications to Drawings or Specifications
___ Other _____

EXHIBITS ATTACHED

___ Copies of marked-up area of drawing(s)
___ Field Change Request (FCR No. _____)
___ Other (Describe) _____

COMMENTS

ORIGINATOR _____ DATE _____

1) FOSTER WHEELER ENVIRONMENTAL REGIONAL ENGINEER (Signature)	DATE	2) FOSTER WHEELER ENVIRONMENTAL PROJECT MANAGER (Signature)	DATE
3) CIH (Signature) (IF HEALTH AND SAFETY RELATED) ____ Comments (attached) ____ No Comments	DATE	4) REGIONAL SCIENTIST (Signature) (IF SCIENCE RELATED) ____ Comments (attached) ____ No Comments	DATE
5) PROJECT QC MANAGER (Signature) ____ Comments (attached) ____ No Comments	DATE		

Delivery Order Manager distributes to:

CAM	QCM	DCN Originator
Regional Engineer Regional Scientist	Site Superintendent	CIH

REV: 3-13-96

CATEGORY: Quality Control	TITLE: Internal Controlled Documents	NO.: QC-5 DATE: 4/26/99
PREPARED BY: S.J. Walden	APPROVED BY: S.A. Viskup	REVISION: FINAL

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ATTACHMENT A - Navy RAC Program Distribution Cover/Routing Sheets
ATTACHMENT B - Controlled Document Log
ATTACHMENT C - Controlled Document Stamp

1. PURPOSE

The purpose of this guideline is to provide for the internal control and distribution of designated formal documents. Formal documents are defined in Section 3.0 of this attachment.

2. SCOPE

This Foster Wheeler Environmental Corporation (Foster Wheeler Environmental) guideline describes the procedure to internally control and distribute designated formal documents required under the Navy Remedial Action Contract (RAC). Designated formal documents typically include program plans and guidelines and Contract Task Order (CTO)-specific plans such as the Project QC Plan, Site Work Plan, Sampling and Analysis Plan, Site Health and Safety Plan, Environmental Protection Plan, and Environmental Conditions Report as well as CTO specifications and drawings. These documents, as well as any other designated documents, are herein referred to as formal documents.

3. DEFINITIONS

Contractor - The Foster Wheeler Environmental team members performing work for the Navy in support of the RAC, including all work performed by subcontractors.

Controlled Document - A formal document which has been selected to be internally controlled to ensure that the document was distributed and used at the appropriate location in the most current form.

External Distribution - Distribution to the Government and/or external agencies. Formal documents for external distribution shall not be distributed to external recipients as controlled documents.

Formal Document - Written plans, guidelines, specifications, and drawings which affect the quality of a process, work, or end product.

Government - Representatives of the Navy's Engineering Field Activity (EFA) SWDIV, overseeing and administering the Remedial Action Contract program (i.e., Contracting Officer, ROICC, etc.).

Internal Distribution - Distribution to the contractor.

4. RESPONSIBILITIES

Document Control Secretary - assists the QC Program Manager (QCM) to log, file, and distribute internal copies of the controlled document.

Document Controller - designated by the QCM to control the internal document distribution and archiving as described in this guideline.

Foster Wheeler Environmental Librarian - archives a copy of each internally controlled document for use and reference by program personnel.

Principal Author - is the lead technical person assigned to prepare the formal document.

Program Health and Safety Officer (CIH) - approves all health and safety-related formal documents.

Project Manager (PJM) - coordinates with the QCM to determine the internal controlled distribution of a formal document.

Quality Control Program Manager (QCM) - coordinates with the Program Manager to determine which formal documents are to be designated for internal controlled distribution.

5. GUIDELINES

5.1 GENERAL

Part A, Section 7.0 of the Foster Wheeler Environmental CQC Plan states that "documents developed for use in activities affecting quality shall be...controlled." This section defines the process to ensure that formal documents are controlled.

5.2 ISSUANCE OF CONTROLLED DOCUMENTS

Designated approved formal documents shall be controlled and distributed internally by the QCM. The internal distribution list shall be as directed by the PJM with concurrence of the QCM. External government recipients **shall not** receive controlled versions of the formal documents, but will be forwarded uncontrolled versions of the documents by the QCM.

1. The PJM shall provide the following to the QCM:

   - Completed Navy RAC Program Distribution Cover/Routing Sheet (Attachment A). This sheet is used to indicate the **internal distribution and is <u>NOT</u> sent to the Government**. At a minimum, the standard internal distribution for a controlled document should include the following:

     - PJM
     - CIH
     - QCM
     - Document Controller - this copy will be sent to the Document Controller to be archived for personnel reference.
     - CTO Site Copy - to be shared by the Site Supervisor, Site Health and Safety Specialist, and Project QC Manager for a given CTO
     - Other personnel as designated by the PJM

   - Completed transmittal letter and transmittal form, indicating **external** distribution of the original and the required number of copies.

- All required copies of the formal document for controlled internal distribution and uncontrolled external distribution.

2. The QCM shall designate a Document Controller to complete a Controlled Document Log (Attachment B) based on the internal distribution supplied by the PJM (item 1 above).

- Internal Distribution (Controlled copies)

- The Document Controller shall:

  - Obtain a document control number DCN for each internal recipient.

  - Stamp each internal controlled document on the title page with the document control stamp (Attachment C) and fill in the controlled document number and the name of the internal recipient on the stamp. The stamp will be applied in red ink to distinguish controlled documents from uncontrolled copies.

  - Submit stamped copies of the controlled document to the document control secretary for distribution.

  - Submit a copy of the controlled document to the Foster Wheeler Environmental archive to be retained for personnel reference.

  - Maintain the completed Controlled Document Log in the CTO files.

- Update the Controlled Document Log as necessary.

- Each internal recipient of the controlled document shall:

  - Incorporate all subsequent additions and/or revisions into his or her controlled document upon receipt.

  - Mark outdated versions of the controlled document "superseded" to prevent inadvertent use.

- External Distribution (Uncontrolled Copies)

  - With the exception of the required Document Control Number (DCN), formal documents sent to external recipients shall not be otherwise controlled. The external distribution shall be indicated on the transmittal letter (above).

5.3 COPIES OF CONTROLLED DOCUMENTS

Copies **shall not** be made of controlled documents. Copying controlled documents is prohibited as unauthorized copies will not be updated when revisions are made and thus may not represent the latest version of the document.

5.4 REVISION OF CONTROLLED DOCUMENTS

A formal document may be revised at any time. The following steps shall be implemented when revising a previously issued formal document:

1. The PJM shall assign a principal author to revise the formal document. Revisions to an existing formal document shall be issued only after satisfactory completion of the peer review process.

2. Revised formal documents shall be numbered sequentially (the final version of the original formal document is Revision 0; the first sequential revision would be Revision 1). Revisions to existing text beginning with Revision 1 shall be designated by a vertical line to the right hand margin opposite the change or in the outside margin of double-sided pages.

3. The revised formal document shall be controlled and distributed as described in Section 5.2. The Document Controller shall mark outdated internal file copies of the controlled document "superseded" to prevent inadvertent use but shall retain historical superseded copies in the archive. The Document Controller shall attach written instructions to the revised controlled document (internal distribution only) requiring recipients to destroy or mark "superseded" outdated copies of the controlled document in their possession.

5.5 CONTROLLED DOCUMENT ADDENDUM

An addendum to a formal document may be prepared in lieu of issuing a complete document. The addendum should describe a change that would otherwise require only a small revision to the document. The decision to revise a controlled document (Section 5.4 above) or to issue a controlled document addendum shall be made by the PJM and be approved by the QCM or designee prior to issuance of the addendum.

A controlled document addendum shall be transmitted by a Field Change Request (FCR) with an attached technical memorandum (see Guideline QC-4). The following steps shall be implemented when preparing the FCR and technical memorandum:

1. The PJM shall assign a principal author to prepare the FCR (Guideline QC-4) and technical memorandum. The technical memorandum and FCR shall contain:

   - the need for the addendum with reference to contract or CTO documents as appropriate
   - the technical scope of the addendum and effective date or time period the addendum is effective
   - the page, section, paragraph and line of the existing controlled document where the addendum is to be inserted
   - revised table of contents indicating the addition of the FCR
   - personnel or activities affected by the addendum.

2. The addendum shall be attached to the FCR and sent to the PJM with copies to the QCM or designee, and other technical leads as appropriate for peer review.

3. When the peer review is satisfactorily completed, the FCR with attached addendum shall be signed off and distributed as described in Guideline QC-4.

4. The Document Controller shall distribute the FCR with attached addendum to the personnel on the original internal and external distribution list with instructions to insert the addendum in the document at the location specified.

6. ATTACHMENTS OF QC-5

ATTACHMENT A - Navy RAC Program Internal Distribution Cover/Routing Sheet
ATTACHMENT B - Controlled Document Log
ATTACHMENT C - Controlled Document Stamp

ATTACHMENT A
QC-5, REV. FINAL

DISTRIBUTION SHEET

FOSTER WHEELER

FOSTER WHEELER ENVIRONMENTAL CORPORATION

TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N-68711-98-D-5713

Document Control No. FWSD-RAC-99-0195
File Code: 3.0

TO: Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Mr. Richard Lovering, 02R.RL
1220 Pacific Highway
San Diego, CA 92132-5190

DATE: 4/15/99
CTO: 0005
LOCATION: MCAS El Toro

FROM: **Neil Hart**, Program Manager

DESCRIPTION: Draft Site-Specific Health and Safety Plan, Geotechnical Evaluation of Borrow Sources For Landfill Covers, April 14, 1999

SAMPLE

TYPE: ☐ Contract/Deliverable ☒ CTO Deliverable ☐ Notification
☐ Other

VERSION: Draft (e.g. Draft, Draft Final, Final, etc.)

REVISION #: 0

ADMIN RECORD: Yes ☒ No ☐ Category ☐ Confidential ☐
(PM to Identify)

SCHEDULED DELIVERY DATE: 4/15/99 ACTUAL DELIVERY DATE: 4/15/99

NUMBER OF COPIES SUBMITTED: 1O/3C/3E

COPIES TO: (Include Name, Navy Mail Code, and Number of Copies)

NAVY:	FWENC:	OTHER: (Distributed by FWENC)
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D. Demars (5BMC.DD) 1C/1E	C. Hart	
L. Holloway (4EN.LH) 1C/1E	K. Fabian	
J.Corbet (071.JC)1C/1E	D. Olson	
	D. Dirkin	
	R. Margotto	

Date/Time Received

Rev. 3/24/99

ATTACHMENT B
QC-5, REV. FINAL

NAVY RAC SWDIV
INTERNAL CONTROLLED DOCUMENT LOG

Contract No: _____ CTO No.: _____ Transmittal Letter No.: _____

Document Title: _____

Revision No. _____ Revision Date: _____

Controlled Document Number	Assignee Name	Assignee Position

ATTACHMENT C
QC-5, REV. FINAL

CONTROLLED DOCUMENT STAMP

The document number _____, entitled _____, Revision _____, has been assigned to _____ on _____. This document is a controlled copy. If superseded by a revised copy, this document must be destroyed or clearly marked "superseded" to prevent inadvertent use.

FOSTER WHEELER

FOSTER WHEELER ENVIRONMENTAL CORPORATION

TRANSMITTAL/DELIVERABLE RECEIPT

Contract No. N-68711-98-D-5713

Document Control No. 99-0107

File Code: 6.3

TO: Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Mr. Richard Lovering, 02R.RL
1220 Pacific Highway
San Diego, CA 92132-5190

DATE: 4/26/99
CTO: PMO
LOCATION: SWDIV

FROM: **Neil Hart**, Program Manager

DESCRIPTION: Final Contractor Quality Control Program Plan
April 26, 1999

TYPE: ☒ Contract/Deliverable ☐ CTO Deliverable ☐ Notification ☐ Other

VERSION: Final (e.g. Draft, Draft Final, Final, etc.) REVISION #: 0

ADMIN RECORD: (PM to Identify) Yes ☐ No ☒ Category ☐ Confidential ☐

SCHEDULED DELIVERY DATE: _____ ACTUAL DELIVERY DATE: 5/10/99 ~~5/4/99~~

NUMBER OF COPIES SUBMITTED: 1O/1C/2E

COPIES TO: (Include Name, Navy Mail Code, and Number of Copies)

NAVY:	FWENC:	OTHER: (Distributed by FWENC)
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M. Pound (5722.MP)	D. Olson	
1C/1E	M. Schneider	
N. Ancog (5722.NA)		
1C/1E		
D. Silva (05GD.S) 1C/1E		

Date/Time Received

RECEIVED COTR 99 MAY 13 11 25

Rev. 3/24/99