FLUOR FERNALD CLOSURE PLAN
BASIS OF ESTIMATE

PBS-04
AQUIFER RESTORATION PROJECT

SEPTEMBER 2001

58000-PL-0002
REVISION 1

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      - 2.2) Quantification – Process Improvements

Section 7: EDSD - Sample and Data Management (Continued)

2.0 Manpower Plans
- 2.1 Sample and Data Management
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4.0 Risk Plan

Aquifer Restoration
Project Management

WBS DICTIONARY
CONTROL ACCOUNT/CHARGE NUMBER

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WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	33

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E	PBS 04 AQUIFER RESTORATION

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Subcontractors
ODCs
Materials

b. TECHNICAL CONTENT:

The Aquifer Restoration Project includes activities for: Fernald laboratory operations necessary to maintain an administrative infrastructure to support the receipt, process, preparation, and analysis of FEMP samples; execution of programs to ensure that environmental field and analytical data is legally defensible and meets regulatory compliance; overall establishment, execution, and maintenance of a controlled and consistent analytical data management process; operation and maintenance of well fields and facilities for aquifer remediation and treatment of sitewide wastewater; engineering, design and construction of systems and facilities that support aquifer restoration; monitoring and reporting programs to demonstrate regulatory compliance. These activities are further defined in the following lower level WBS elements:

1.1.E.A Management
1.1.E.B Analytical Lab Services
1.1.E.C Environmental Monitoring
1.1.E.D Sample & Data Management
1.1.E.E Treatment Operations
1.1.E.F Engineering Construction Projects
1.1.E.G ARWWP Monitoring and Reporting

Management of the projects include all requirements necessary to implement the remedial action as specified in the Operable Unit 5 ROD. The functions include Engineering, Environmental Compliance, Procurement, Safety & Health, Quality Assurance, Project Controls, Construction, Operations and Maintenance.

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11. ELEMENT TASK DESCRIPTION

Excluded from the Aquifer Project are Oversight & Program Integration Site-wide functions including Safety & Health, Project Controls, Emergency Services, Program Planning & Integration, Environmental Compliance, Operations Assurance, Quality Assurance, and Independent Assessment.

c. SCOPE OF WORK:

1.1.E.A Management

Aquifer Restoration Project (ARP) Management provides for general and non-specific project team management activities for the ARP project Director and the general and non-specific Aquifer Restoration Wastewater Project (ARWWP) team management activities

1.1.E.B Analytical Lab Services

The Analytical Lab Services element is responsible for Fernald laboratory operations necessary to maintain an administrative infrastructure to support the receipt, processing, preparation, and analysis of FEMP samples. This WBS all managerial, supervisory, and administrative day-to-day functions of the Analytical Laboratory Services (ALS) Project. This element also includes ALS procedure development and maintenance; facilities administration; and laboratory equipment and supplies which includes disposition activities associated with laboratory samples and waste; and compliance requirements which include activities for self-assessment, health and safety, nuclear criticality, quality assurance, training, environmental regulatory issues and the management of quality control for all services and activities at the on-site laboratories. This element also includes the subcontractor portion of the laboratory consolidation project. Refer also to the Analytical Laboratory Services Closure Plan for further details.

1.1.E.C Environmental Monitoring

The Environmental Monitoring (EM) Project's technical work scope ranges from full project management and execution of environmental programs (air monitoring, well maintenance, and IEMP reporting) to administrative management and training

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CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

of a core environmental staff providing sampling and monitoring services (primarily groundwater and soil) to the remedial action projects. EM maintains an extensive training program to ensure that environmental field and analytical data is legally defensible by following stringent protocols for collection and documentation for all field activities. EM's air monitoring program ensures that the network of particulate and radon monitors and the data generated is technically valid and accurate to demonstrate regulatory compliance with USEPA air standards. EM controls the Integrated Environmental Monitoring Plan (IEMP) and coordinates reporting of technical data in quarterly and annual summaries. EM performs project management of the site's monitoring well maintenance and abandonment program including technical direction to subcontractors executing field activities.

1.1.E.D Sample & Data Management

The WBS Element for Sample and Data Management (SDM) provides support for the overall establishment, execution, and maintenance of a controlled and consistent analytical data management process. More specifically, this WBS Element encompasses work that ensures the legal defensibility of FEMP remediation data; the electronic database storing and management of data; the project management of data including cradle-to-grave data tracking and the coordination of data flow between project users and analytical laboratories; the reporting and interpretation of data in support of projects; the acquisition of commercial laboratory services and the management and oversight of those commercial laboratories. Lastly, this WBS Element provides support for the implementation of work process improvements that will allow the data management process to be carried out more efficiently while maintaining data quality and defensibility.

1.1.E.E Treatment Operations

The WBS element for Treatment Operations encompasses all actions necessary for the operation, maintenance, and management of facilities and systems for the following:

- Advanced Waste Water Treatment Facility (AWWT)
- Interim Advanced Waste Water Treatment Facility (IAWWT)
- South Plume Interim Treatment Facility (SPIT)
- Storm Water Retention Basin (SWRB)

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11. ELEMENT TASK DESCRIPTION

- Biodenitrification Surge Lagoon (BSL)
- High Nitrate Tank
- AWWT Slurry Dewatering Facility (SDF)

- Process Control Laboratory
- Sewage Treatment Plant
- Wellfield Recovery System
- Re-Injection System
- Leachate Collection System
- Soils Remediation Run-On Control Systems
- IVLO Operations

These facilities and systems are required to remove uranium from extracted groundwater, storm water runoff, and sitewide wastewater. Uranium removal processes allow the FEMP to meet ALARA and BAT requirements for radionuclide and heavy metal discharge from the site per DOE orders 5480.11 and 5400.5. The Sludge Dewatering Facility enables slurry from AWWT operations and other misc. sources to be dewatered and packaged for disposal. Packaging costs for waste from Wastewater Treatment Operations are also included in this work scope.

1.1.E.F Engineering & Construction Projects

The WBS element for Engineering Construction Projects provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute

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CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

- OSDF EPLTS Valve House #7
- Future Lab Projects/Renovation

These activities are required to remediate all affected areas of the FEMP's Great Miami Aquifer groundwater plume. Also, to maintain treatment and analytical laboratory capabilities through completion of site remediation.

1.1.E.G ARWWP Monitoring & Reporting

The WBS element for ARWWP Monitoring and Reporting provides support for meeting the site's monitoring requirements for:
- The groundwater remedy performance monitoring specified in Section 3 of the Integrated Environmental Monitoring Plan (IEMP)
- The On-Site Disposal Facility's (OSDF) leak detection program specified in the Groundwater/Leak Detection and Leachate Monitoring Plan (GW/LD & LMP) for the OSDF and the Systems Plan for the OSDF.

This element also provides for data reporting to fulfill requirements of:
- The IEMP Section3 and portions of Section 4,
- National Pollutants Discharge and Elimination System (NPDES),
- Spill Prevention, Control and Countermeasures Plan (SPCC),
- Storm Water Pollution Prevention Plan (SWPPP),
- Ohio Department of Natural Resources Water Withdrawal, and;
- The Operations and Maintenance Master Plan (OMMP) for the Aquifer Restoration and Wastewater Project
- The OSDF GW/LD & LMP and the OSDF Systems Plan

This element also provides for required addenda to the Remedial Action Work Plan for Operable Unit 5 Aquifer Restoration and periodic revisions to: the IEMP (Section 3), the OMMP and the GW/LD & LMP.

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	34

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E.A	MANAGEMENT

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Material
ODCs

b. TECHNICAL CONTENT:

Aquifer Restoration Project (ARP) Management provides for general and non specific project team management activities for the ARP project Director and the general and non-specific Aquifer Restoration Wastewater Project (ARWWP) team management activities.

c. SCOPE OF WORK:

Overall management of ARP and the ARWWP activities includes the following:

- Provide management oversight of design and construction, including project reviews and final acceptance on structures or treatment facilities needed to carry out remedial/removal plans.

- Coordinate plant operation and maintenance, waste handling and common support services associated with ARWWP.

- Ensure timely award of subcontracts and purchases to accomplish ARWWP work scope and ensure that contracts meet government regulations and that their scope and terms support the objectives of the ARWWP remediation effort.

- Ensure that cost and schedule requirements are defined, planned and monitored against an integrated baseline so that performance can be measured consistent with overall commitments, budgets and available funding.

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	34

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E.A	MANAGEMENT

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

- Implementation of DOE Order 413.3.

- The following updating/reviews (relative to ARWWP work scope): Monthly Program Status Reviews, Cost Performance Report, Integrated Planning, Accountability, and Budgeting System (IPABS), ICE Team/OMB Budget audits, Budget validations, Budget planning for Restoration, Change Control Process.

- All secretarial support required for efficient operation of ARWWP activities.

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 1

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.A	MANAGEMENT

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	D. BRETTSCHNEIDER 648-5814	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
EAMG	AQUIFER RESTORATION PROJECT MANAGEMENT

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
ODCs
Material

b. TECHNICAL CONTENT:

Aquifer Restoration Project (ARP) Management provides for general and non specific project team management activities for the ARP Project Director and the general and non-specific Aquifer Restoration Wastewater Project (ARWWP) team management activities.

c. SCOPE OF WORK:

Overall management of ARP and the ARWWP activities includes the following:

- Provide management oversight of design and construction, including project reviews and final acceptance on structures or treatment facilities needed to carry out remedial/removal plans.

- Coordinate plant operation and maintenance, waste handling and common support services associated with ARWWP.

- Ensure timely award of subcontracts and purchases to accomplish ARWWP work scope and ensure that contracts meet government regulations and that their scope and terms support the objectives of the ARWWP remediation effort.

- Ensure that cost and schedule requirements are defined, planned and monitored against an integrated baseline so that performance can be measured consistent

Project Manager	Control Account Manager	Control Team Manager
for ATI	for ATI	

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.A	MANAGEMENT

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	D. BRETTSCHNEIDER 648-5814	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
EAMG	AQUIFER RESTORATION PROJECT MANAGEMENT

14. ELEMENT TASK DESCRIPTION

with overall commitments, budgets and available funding.

- Implementation of DOE Order 4700.1 to include the following submittals: Activity Data Sheet Management including current year funding, budget year funding, five year planning years funding, Yearly work plan submittal, Five year plan submittal, Road Map, Site specific plan, ESAAB/ESAR.

- The following updating/reviews (relative to ARWWP work scope): Monthly Program Status Reviews, Program Managers Progress Report (PMPR), Project Tracking System (PTS), ICE Team/OMB Budget audits, Budget validations, Budget planning for EW-20/Restoration, Change Control Process.

- All secretarial support required for efficient operation of ARWWP activities.

d. WORK SPECIFICALLY EXCLUDED:

Program Management activities not specific to ARWWP goals and objectives. Management costs associated with other ARP projects (Analytical Services, Sample and Data Management, and Environmental Montoring)

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 1

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.A	MANAGEMENT

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	DAVE BRETTSCHNEIDER	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EAMG1	AQUIFER RESTORATION PROJECT MANAGEMENT

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
ODCs
Materials

b. TECHNICAL CONTENT:

Aquifer Restoration Project (ARP) Management provides for general and non specific project team management activities for the ARP Project Director and the general and non-specific Aquifer Restoration Wastewater Project (ARWWP) team management activities.

c. SCOPE OF WORK:

Overall management of ARP and the ARWWP activities includes the following:

- Provide management oversight of design and construction, including project reviews and final acceptance on structures or treatment facilities needed to carry out remedial/removal plans.

- Coordinate plant operation and maintenance, waste handling and common support services associated with ARWWP.

- Ensure timely award of subcontracts and purchases to accomplish ARWWP work scope and ensure that contracts meet government regulations and that their scope and terms support the objectives of the ARWWP remediation effort.

- Ensure that cost and schedule requirements are defined, planned and monitored against an integrated baseline so that performance can be measured consistent

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.A	MANAGEMENT	
5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	DAVE BRETTSCHNEIDER	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00		12/01/00 - 12/27/09
12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)	
EAMG1	AQUIFER RESTORATION PROJECT MANAGEMENT	

14. ELEMENT TASK DESCRIPTION

with overall commitments, budgets and available funding.

- Implementation of DOE Order 4700.1 to include the following submittals: Activity Data Sheet Management including current year funding, budget year funding, five year planning years funding, Yearly work plan submittal, Five year plan submittal, Road Map, Site specific plan, ESAAB/ESAR.

- The following updating/reviews (relative to ARWWP work scope): Monthly Program Status Reviews, Program Managers Progress Report (PMPR), Project Tracking System (PTS), ICE Team/OMB Budget audits, Budget validations, Budget planning for EW-20/Restoration, Change Control Process.

- All secretarial support required for efficient operation of ARWWP activities.

d. WORK SPECIFICALLY EXCLUDED:

Program Management activities not specific to ARWWP goals and objectives. Management costs associated with other ARP projects (Analytical Services, Sample and Data Management, and Environmental Montoring)

SECTION 1

1.0 NARRATIVE

1. PROJECT TITLE: AQUIFER RESTORATION PROJECT	2. DATE: 09/10/01	3. PBS#: 04
4. WBS ELEMENT CODE: 1.1.E.A.	5. WBS ELEMENT TITLE: AQUIFER RESTORATION PROJECT MGMT.	
6. CAM NAME/ PHONE: MARC JEWETT	7. CAM SIGNATURE:	
8. ORIGINAL/ CHANGE SCOPE/ PER CP#:	9.CONTROL ACCOUNT: EAMG	

SECTION 1: EAMG - AQUIFER RESTORATION PROJECT MANAGEMENT

1.0 NARRATIVE

1.1 OVERVIEW

The Aquifer Management support activity provides for the management oversight of the Aquifer Restoration Project (ARP) and the Aquifer Restoration and Wastewater Project (ARWWP). This includes the labor and expenses needed for the effective management of the ARP and ARWWP.

This Control Account consists of only one Charge Number (EAMG1) and it has the following Tasks:

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1) Task #1 – ~~ARP/ARWWP~~ Project Management
2) Task #2 – ~~ARWWP~~ Engineering and Construction Management
3) Task #3 – ~~ARP~~ Project Control
4) Task #4 – ~~ARP~~ Safety Management
5) Task #5 – ~~ARP/ARWWP~~ Administrative Support

1.2 ASSUMPTIONS/EXCLUSIONS

1.2.1 Assumptions

- The Closure Contract Baseline begins on December 1, 2000, and details all scope as it relates to the contract through completion, December 30, 2009

- The rationale for FY01 manpower is based on the charge in and charge out practices that were in effect as of the start of the Fluor Fernald Contract in December 2000. The rationale defined in this document is effective as of October 1, 2001 and is based on Rev. 0 of the "Functional Responsibilities Matrix" issued in January of 2001

- All work is planned for a 40 hour work week, no overtime

- Work will be completed by Fluor Fernald, Inc. personnel or Teaming Partners

- No changes in DOE or regulatory policy from November 20, 2000.

1.2.2 Exclusions

- Labor for the Aquifer Restoration Project's Environmental Monitoring (EM), Sampling and Data Management, or Analytical Laboratory Services (ALS) departments
- Reprographic and printing services
- Maintenance and Service of copy and fax machines
- Quality Assurance and Quality Control
- Estimating Services
- Public Affairs services (including graphics)
- Engineering/Construction Document Control (ECDC)
- Procurement services
- Sub-project specific activities
- Direct report labor to the ARWWP Engineering/Construction group, the Hydrology group, or Operations and Maintenance.

1.2.3 Government-Furnished Equipment/Services

None

1.3 DRIVERS

- Operable Unit (OU) 5 Record of Decision (DOE 1996)
- OU5 Remedial Design Work Plan (DOE 1996)
- OU5 Remedial Action Work Plan for Aquifer Restoration (DOE 1997)
- Operations and Maintenance Master Plan for Aquifer Restoration and Wastewater Treatment – Revision 1 (DOE 1999)
- ARP/ARWWP Management oversight is required at some level throughout the duration of the ARP and ARWWP, December 30, 2009. Further many of the ARWWP activities continue post contract closure.

1.4 SCOPE OF WORK

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1) Task #1 - ~~ARP/ARWWP~~ Project Management

1.1) Scope of Work – ~~ARP/ARWWP~~ Project Management

Aquifer Restoration Project (ARP) Director is the Level 1 manager responsible for all aspects of the ARP. The ARP consists of:

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- Environmental Monitoring (EM)
- Analytical Laboratory Services (ALS)
- Sample and Data Management (S&DM)
- Aquifer Restoration/Waste Water Project (ARWWP)

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The ARP Director is responsible for the overall scope and safety of each of the above sub-projects, including the following responsibilities:

- Conducts safety walk-throughs
- Reviews all safety and health findings and concerns and directs the development of corrective actions. Ensures that corrective actions are implemented to mitigate recurrences
- Ensures that ARP team members comply with safety training requirements
- Conducts periodic safety and communications meetings with ARP Project Managers and staff
- Models the Safety First Culture for the project
- Interfacing with the Department of Energy (DOE).
- Perform Performance reviews of personnel
- Coordinate personnel issues with HR
- Input information on personnel for compensation program
- Weekly staff meetings facilitation
- Strategic planning activities
- Budgeting, baseline and project control review
- Reporting monthly technical performance indicators
- Supervisory oversight of Department activities
- Technical review and approval of documentation produced by ARP
- Interfacing with the OEPA, USEPA, and stakeholders.

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The managers of the above sub-project work scope report to the ARP Project Director, as well as ARP/ARWWP Administrator and ARP Project Control and Safety and Health Managers.

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~~The ARWWP Project Manager is responsible for the ARWWP scope of work and safety.~~ The ARWWP Project Manager is responsible for the ARWWP sub-project work scope elements (subset of the overall ARP):

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- ARWWP Operations
- ARWWP Engineering and Construction
- ARWWP Monitoring and Reporting (including Hydrogeology group)

The managers of the above work scope elements report to the ARWWP Project Manager.

The functions performed by the ARWWP Manager consists of:

- Deputy ARP PM
- Conducts safety walk-throughs
- Assigns ARWWP Safety Advocates to coordinate the Safety First Program and promote 100% participation by ARWWP team members
- Reviews all safety and health findings and concerns and directs the development of corrective actions. Ensures that corrective actions are implemented to mitigate recurrences. Issues lessons learned
- Ensures that ARWWP team members comply with safety training requirements
- Conducts periodic safety and communications meetings with ARWWP team coaches
- Models the Safety First Culture for the project
- Interfacing with the Department of Energy (DOE) OU5 Team Leader
- Perform Performance reviews of personnel
- Coordinate personnel issues with HR
- Input information on personnel for compensation program
- Weekly staff meetings facilitation
- Strategic planning activities
- Budgeting, baseline and project control review
- Reporting monthly technical performance indicators
- Evaluating item for purchase
- Supervisory oversight of section activities
- Interfacing with the OEPA, USEPA and stakeholders
- Review final engineering packages as needed
- Review IEMP – quarterly
- Technical review and approval of documentation produced by ARWWP
- Support Integration Task Team member.

1.2) Quantification – ~~ARP/ARWWP~~ Project Management

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~~The ARP Director requires 1 FTE through FY2002.~~ Starting in FY2003, ~~the~~ responsibilities of the ARP ~~and ARWWP~~ manager ~~positions will be combined. The ARWWP Manager requires 1 FTE through the completion of the project, December 30, 2009.~~ and his direct reports (Level II Project Managers) will be combined in order to allow for the reduction of one manager.

ODCs and Material cost are covered under Task #5.

2) Task #2 – ~~ARWWP~~ Engineering and Construction Management

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2.1) Scope of Work – ~~ARRWP~~ Engineering and Construction Management

This task consists of only the ARWWP Engineering and Construction manager. The task is contained within the ARP/ARWWP Management account due to the requirement to support the overall project, not just engineering and construction efforts.

The ARWWP Engineering/Construction Manager is responsible for:

- Safety - safe execution of construction and engineering
- Reviewing operations and maintenance processes to improve efficiency and cost effectiveness
- Ensuring compliance to engineering and construction procedures
- Engineering functional requirements, design basis and detailed design drawings and documents meet requirements
- Title III engineering management during construction
- Review and approve Start-up Plans, System Operability Test procedures and supervision of tests
- Review and concur with Standard Start-up Review Plans and coordinate resolution of issues
- Technical support to Operations
- Coordination of project-specific activities associated with procurement and management of construction contractors
- Manage the ARWWP Engineering and Construction group; including staff meetings, performance evaluations, monitoring task status, and assigning tasks
- Promotes a 24-hour zero tolerance attitude toward accidents and events
- Ensure that project activities are performed in accordance with site plans and procedures that have been developed to reflect the Integrated Safety Management System guidelines and core functions
- Conduct safety walk-throughs
- Review all engineering and construction safety and health findings and concerns and directs the development of corrective actions. Ensure corrective actions are

implemented to mitigate recurrences. Forward lessons learned

- Perform walk-down review of events that result in a occurrence report
- Request safety assessments
- Leads and coordinates all ARWWP engineering efforts
- Determines when designs are complete
- Performs self assessments of engineering and construction function
- Coordinate preparation and reviews of the ARWWP Project Execution Plan (PEP)
- Assist the ARWWP PM with strategic long-term planning
- Cost Account Manager for the Engineering and Construction Management and ARP/ARWWP Control Accounts
- Develop plans and documents as directed by the ARWWP PM
- Develop budget and schedules for the engineering and construction effort as well as the ARP/ARWWP Management account
- Represent the ARP on the Land Utilization Committee

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2.2) Quantification – ~~ARWWP~~ Engineering and Construction Management

The Engineering and Construction Manager requires 1 FTE through FY2007 to support ARWWP engineering and construction sub-projects and overall management of the ARWWP. Starting in FY2008 engineering and construction drops significantly, thus reducing the need for the position to 0.8 FTE in FY2008, 0.5 in FY2009 and FY2010.

ODCs and material cost are covered under Task #5.

3) Task #3 – ~~ARP~~ Project Control

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3.1) Scope of Work – ~~ARP~~ Project Control

The ARP controls personnel are responsible for tracking the cost, schedule and scope of work. The objective is to provide realistic plans for both the work and the expenditures, together with a system for measuring work performance. Project Controls information is drawn from the fully integrated FEMP baseline with schedule and budget components. Project Controls will also ensure that the project complies with the financial management requirements of the FEMP.

The ARP Project Controls Team is responsible for:

- ARP Project cost and schedule baseline development and maintenance
- Monthly performance and variance reporting
- Estimate-at-Completion funding analysis and reporting
- Change proposal and cost savings coordination
- Ensuring compliance to site Project Controls procedures
- Maintain Baseline cost and schedule files
- Monthly statusing of cost and schedule files
- Print cost reports and schedules for CAMs to document monthly status
- Update the cost file and site master schedule with CAM's input
- Validate input and cost/schedule integration
- Maintain actual cost of work performed (ACWP) on a monthly basis
- Collect and input monthly actual cost of work performed (ACWP) for subcontracts
- Review accruals at the end of each month and make corrections with accounting as necessary
- Load ACWP into cost file after accounting close of each month
- Monthly variance analysis
- Print reports for CAMs: cost reports that indicate which accounts have variances; 12 month spread of actuals; obligations tracking report; materials from stores
- Combine input from control account variances into a summary for the whole project
- Coordinate Blue sheet review and approval of the Summary Variance analysis
- Prepare data and support monthly Estimate at Complete (EAC) meetings
- Prepare data and support Funds Requirement reporting on a monthly basis
- Update milestone and variance analysis information in the DOE's Integrated Planning, Accountability, and Budgeting System (IPABS) on a quarterly basis
- Prepare data and support monthly DOE report and quarterly reviews
- Prepare data and support monthly Internal Project Review meetings
- Review and approve purchase requisitions and subcontract invoices
- Determine correct charge number for labor that has been charged to invalid charge numbers on a monthly basis
- Prepare labor correction forms and get approval signatures for labor that has been incorrectly charged
- Prepare data depicting over time trends
- Prepare, coordinate project and DOE approval, and incorporate Change Proposals (CPs) for project work scope that has changed on an as needed basis
- Manage project staffing requirements and administration support
- Support the Integration Task Team
- Review site wide procedures for impacts to ARP
- Maintenance of the WBS dictionary and Work Scopes
- Closure plan maintenance
- Safety work group activities
- Prepare individualized project reports as needed to support managers special requests.

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3.2) Quantification – ~~ARP~~ Project Control

Project Control functions will continue, at generally the same level through FY2002 and will then decrease as ARP/ARWWP workload drops:

Table 1

Resource Classification	Quantity	Needs Assessment
Project Control Manager	1	Remains constant through FY2010
Scheduler	1	Remains constant through FY2002 then drops to ½ FTE through FY2007 then drops to 0.
Cost Analyst	2	Remains constant through FY2002, then drops to 1 ½ FTE through FY2006, then drops to 1 FTE through FY2010

ODCs and material cost are defined in Task #5.

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4) Task #4 – ~~ARP~~ Safety Management

4.1) Scope of Work – ~~ARP~~ Safety Management

The ARP Safety and Health Representative is responsible for all Safety and Health activities within the ARP which includes:

- Provide safety and health support coordination and oversight to ARP, ARWWP, EM, ALS and Utilities Operations
- Ensure adequate ES&H coverage for work activities within the ARP
- Manage support and technical direction for ES&H personnel assigned to ARP
- Health and safety lead will perform administrative functions on a daily basis, which consist of resolving personnel issues, performance review, time sheet approval, coordinate/adjust work schedules to fit changing work hours and/or work days (such as holiday coverage or late night work) and assignment of daily jobs in support of project functions
- Provide support to Safety First Site Initiative; Promote Safety First in ARP, ARWWP, EM, ALS and Utilities. Assure safety work groups are established and maintain in projects of responsibility
- Attend Project, department, section, and contractor weekly staff and contractor progress meetings for adequate support and communication exchange

- Attend and participate in Safety First, DOE and President's monthly safety meetings
- Attend planning and subcontractor kickoff meetings to communicate safety expectations for their job responsibilities and accountability
- Review construction project design packages for safety input early in project life
- Assist with performance of safety self assessments in areas of responsibility
- Responsible for support of safe work planning and execution efforts, procedure development, problem resolution, critique, and unusual/emergency conditions, as the safety subject matter expert
- Participate in safety walkthroughs in ARP-ARWWP-EM-ALS and Utilities
- Review/approve AWP work packages for safety daily via computer. Participation in project procedure/task order/work permits/job safety analysis development
- Responsible for coverage at medical in the event that anyone from ARP-ARWWP-EM-ALS and Utilities that receive on the injury
- Assist on walkdowns for Penetration Permits and sign off on these permits
- Provide guidance and/or write Job Safety Analysis (JSA) whenever needed in operation or project execution, where there is no procedure to drive work activity that has potential for worker injury
- Walkdowns and signoff on EIP's and SEP's surrounding the site Lock Out/Tag Out program
- Answer safety issues on a daily basis that come in over the phone. Close or resolve questions surrounding the safety envelope of jobs in operations and construction
- Maintain training standard for a Safety Engineer in order to support my project:
    - Aerial Platform Lifts
    - Confined Space
    - Fall Protection
    - Fire Watch
    - Electrical Safety for Safety Engineers
    - Rigging Equipment and Practices
    - Scaffolding
    - Root Cause Analysis
- Maintain qualification for Safety Assessment Hazard Screening and Classification

- Obtain and maintain Training Qualification Program requirements. Attend continuing education training required to maintain professional certification(s)

- Review Work Permits, Maintenance Work Tickets, Maintenance Work Instructions and Task Orders and prescribe safety requirements and personal protective equipment to do work (time includes walk down time)

- Complete safety and IH requirements on Special Safety, Health and Fire Protection Requirements form for service vendors who come on site

- Work with design teams to implement safety requirements:

  - Review and assist in development of contractor's safety documents (safe work plans)
  - Write Health and Safety Section for Implementation Plans
  - Participate in source evaluation of subcontractor proposals on RFP
  - Review/revise Part 8 of Model Contract for upcoming projects
  - Participate in planning meetings for modification in work scope or new scope
  - Participate in planning meetings to "re-think" the current method and/or re-design the work
  - Respond to H&S questions from the contractor on issues from the safety section of the contract
  - Assist in resolving "medical" issues with employee and contractors
  - Provide safety walk downs and coverage in the field. Perform oversight of contractors/operations to ensure all requirements are being met and to ensure compliance with associated procedures and work plans
  - Respond to audits and surveillance's and provide corrective actions

- Assist project management in interpreting Health and Safety (H&S) requirements and implementing standards as required

- Provide technical support to project or programmatic organizations as requested (ISMS and VPP assessments, etc.)

- Review and approve all purchase request orders for materials, services, vendors, etc.)

- Provide coverage for IH and safety personnel who are absent from site (sick, personal, vacation, offsite functions)

- Perform investigations of injuries/incidents/loss of property (including interviews, walking down accident scene) and perform taproot analysis. Following up with the supervisors of injured employees, to ensure that they have properly documented the accident and their corrective actions. Follow up with injured employees to

ensure that they are recovered from their accidents. Follow up corrective actions to ensure that they have been completed

- Interface with site utilities and maintenance personnel to perform lock and tag activities as required. Review and approve Energy Isolation Plans
- Attend pre-outage planning meetings and post outage debriefings for maintenance steam and electrical outages
- Initial safety inspection of equipment arriving at the FEMP for use
- Safety reviews and approves photographs and videos for publication.

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4.2) Quantification – ~~ARP~~ Safety Management

The Safety and Health Representative requires 1 FTE through FY2006 to support ARP and ARWWP sub-projects. Starting in FY2007 this is reduced to ½ FTE through FY2010 due to the reduction of construction and support activities.

ODCs and material cost are covered under Task #5.

5) Task #5 – ~~ARP/ARWWP~~ Administrative Support

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5.1) Scope of Work – ~~ARP/ARWWP~~ Administrative Support

The Administrative Support Task provides for the Department Administrator, clerical, and Training Coordination functions as well as travel, ODCs and materials needed for the management account.

- All ARWWP project participants are to be trained, qualified, and certified (as applicable) to perform their tasks in accordance with the sitewide training requirements and the appropriate project-specific training. Training requirements for all ARWWP team members will be coordinated by an assigned ARWWP Training Coordinator who will comply with site procedures for notification, scheduling, and tracking training
- Filling, inventory and archiving
- Office Supplies
- Professional memberships fees
- Registration fees
- Periodicals fees

- Publications fees
- Travel
- Local mileage
- Word Processing

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5.2 Quantification – ~~ARP/ARWWP~~ Administrative Support

- Includes all non-sub-project specific travel and training costs for the ARWWP personnel and the ARP Director. (Each trips at $1,658 each for airfare, expenses, car rental, and hotel and $375/day for registration fees). See Table 2 for number of trips
- Meeting and conferences expenses at per Table 2
- Includes office supplies the ARP director and ARWWP per Table 2

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- Includes Safety clothing and equipment for all ARWWP departments with the exception of the ARWWP Operations group
- Includes professional Memberships reimbursement per site guidelines
- Includes gasoline for ARWWP vehicles and local mileage with the exception of the ARWWP Operations group
- One FTE Department Administrator through FY2010.

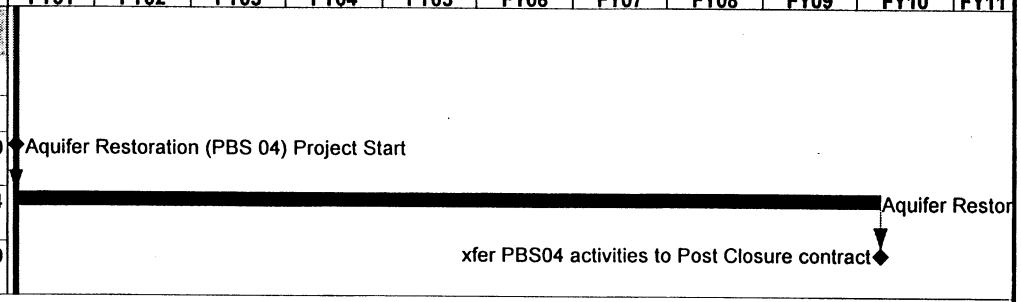
Table 2
ODCs Costs FY01-FY10 (1st Qtr.)

ODC/Travel, etc	FY2001-2003	FY2004-FY2006	FY2007-FY2009	FY2010
Seminars, Certification Training	12/year	6/year	6/year	0
Project Travel	3/year	3/year	2/year	0
Meetings and Conferences	$2,500/yr	$2,500/yr	$1,800/yr	0
Office Supplies	$8,400/yr	$7,500/yr	$5,000/yr	$1,000
Professional Memberships	$2,800/yr	$2,000/yr	$1,000/yr	0
Professional Periodicals	$500/yr	$500/yr	$500/yr	$100
Gasoline	$1,200/yr	$1,200/yr	$1,200/yr	$300
Local (site-to-site) Mileage	$50/yr	$50/yr	$50/yr	0
Safety Equipment	$1,400/yr	$1,000/yr	$500/yr	$100

SECTION 1

2.0 SCHEDULE

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
E PBS 04 - AQUIFER RESTORATION				
1.1.E.A MANAGEMENT				
EAMG1 Aquifer Restoration Project Management				
ECAMG1M001	Aquifer Restoration (PBS 04) Project Start	01DEC00		0
ECAMG10000	Aquifer Restoration Project Management	01DEC00	27DEC09	3,314
ECAMG1M005	xfer PBS04 activities to Post Closure contract		27DEC09	0



FLUOR FERNALD

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Start Date	01DEC00
Finish Date	27DEC09
Data Date	01DEC00
Run Date	05SEP01 15:08

BLCF - EC01

Sheet 1 of 1

AQUIFER RESTORATION

1.1.E.A MANAGEMENT

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved

SECTION 1

3.0 MANPOWER PLANS

Manpower Planning Sheet (CR2)

MPS # 1EA01 AQUIFER RESTORATION PROJECT MANAGEMEN

DRIVERS	START DATE	END DATE	TOT	FY 2001 Q1	FY 2001 Q2	FY 2001 Q3	FY 2001 Q4	FY 2002 Q1	FY 2002 Q2	FY 2002 Q3	FY 2002 Q4	FY 2003 Q1	FY 2003 Q2	FY 2003 Q3	FY 2003 Q4	FY 2004 Q1	FY 2004 Q2	FY 2004 Q3	FY 2004 Q4	FY 2005 Q1	FY 2005 Q2	FY 2005 Q3	FY 2005 Q4	FY 2006 Q1	FY 2006 Q2	FY 2006 Q3	FY 2006 Q4
201 D&D Summary	10/02/2000	03/30/2007		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
301 OSDF Summary Schedule	04/01/2004	12/23/2009																XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
411 AWWT Operations	10/02/2000	12/31/2009		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
502 WASTE PIT SHIP/DISPOSAL OPERATIONS	10/02/2000	08/01/2005		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XX				
601 Soils Excavation Project Summary	10/01/2003	12/31/2009														XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
710 Silos 1, 2, & 3 Summary Activity	10/02/2000	03/31/2008		XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Construction	Construction Mgr.		15.20	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Engineering & Design	Engineer Manager		18.50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Project Management	Project Mgr.		45.80	2.6	2.2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Project Controls	Project Controls Mgr.		37.20	1.2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Project Controls	Scheduler		18.00	1	1	1	1	1	1	1	1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Project Controls	Cost Analyst		53.00	2	2	2	2	2	2	2	2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Environmental Safety & H	Safety Engineer		30.50	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Environmental	Environmental Scientist Mgr.		4.00	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Department Administrator		37.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Administration	Clerks		6.10	1.4	0.7	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Engineering & Design	Engineer		6.40	1.3	1.3	1.3	1.3	0.3	0.3	0.3	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Sheet Totals:	271.70	13.50	12.20	13.30	13.30	9.30	9.30	9.30	9.30	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00

Manpower Planning Sheet (CR2)

MPS # 1EA01 AQUIFER RESTORATION PROJECT MANAGEMEN

DRIVERS	START DATE	END DATE	FY 2007 Q1	FY 2007 Q2	FY 2007 Q3	FY 2007 Q4	FY 2008 Q1	FY 2008 Q2	FY 2008 Q3	FY 2008 Q4	FY 2009 Q1	FY 2009 Q2	FY 2009 Q3	FY 2009 Q4	FY 2010 Q1	FY 2010 Q2	FY 2010 Q3	FY 2010 Q4	FY 2011 Q1	FY 2011 Q2	FY 2011 Q3	FY 2011 Q4
201 D&D Summary	10/02/2000	03/30/2007	xxx	xxx																		
301 OSDF Summary Schedule	04/01/2004	12/23/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
502 WASTE PIT SHIP/DISPOSAL OPERATION	10/02/2000	08/01/2005																				
601 Soils Excavation Project Summary	10/01/2003	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
710 Silos 1, 2, & 3 Summary Activity	10/02/2000	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
Construction	Construction Mgr.		0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0	0	0	0	0	0	0	0	0	0	0	0
Engineering & Design	Engineer Manager		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0
Project Management	Project Mgr.		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Project Controls	Project Controls Mgr.		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Project Controls	Scheduler		0.5	0.5	0.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Controls	Cost Analyst		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Environmental Safety & Health	Safety Engineer		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0
Environmental	Environmental Scientist Mgr.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Department Administrator		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Administration	Clerks		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Engineering & Design	Engineer		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Sheet Totals:	6.00	6.00	6.00	6.00	5.30	5.30	5.30	5.30	5.00	5.00	5.00	5.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SECTION 1

4.0 ESTIMATE

EAMG1

AQUIFER RESTORATION PROJECT MANAGEMENT

09/06/2001
1:13 PM

PBS: OHFN04
WBS: 1.1.E.A
CTRL ACCT: EAMG
CHARGE NO: EAMG1
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Aug-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: CLERKS **CLERKS** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	2,252.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	2,252.5	2,252.5	2,252.5	2,252.5	2,252.5	2,252.5	2,252.5	2,252.5	2,252.5	2,252.5
Yr Total Cost:	53,812	0	0	0	0	0	0	0	0	0
Cum Total Cost:	53,812	53,812	53,812	53,812	53,812	53,812	53,812	53,812	53,812	53,812

Resource: CNSMGR **CONSTRUCTION MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	726.0	873.5	873.5	873.5	873.5	873.5	873.5	524.1	0.0	0.0
Cum Hours:	726.0	1,599.5	2,473.0	3,346.5	4,220.0	5,093.5	5,967.0	6,491.1	6,491.1	6,491.1
Yr Total Cost:	45,019	57,014	60,389	63,950	67,740	72,373	78,458	49,618	0	0
Cum Total Cost:	45,019	102,033	162,422	226,372	294,112	366,485	444,944	494,561	494,561	494,561

Resource: CSTANL **COST ANALYST** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	2,904.0	3,494.0	2,620.5	2,620.5	2,620.5	2,620.5	1,747.0	1,747.0	1,747.0	421.0
Cum Hours:	2,904.0	6,398.0	9,018.5	11,639.0	14,259.5	16,880.0	18,627.0	20,374.0	22,121.0	22,542.0
Yr Total Cost:	112,966	143,063	113,649	120,350	127,484	136,203	98,437	103,753	115,299	28,642
Cum Total Cost:	112,966	256,029	369,678	490,028	617,513	753,716	852,152	955,906	1,071,205	1,099,846

Resource: DEPADM **DEPT ADMINISTRATOR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,452.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	421.0
Cum Hours:	1,452.0	3,199.0	4,946.0	6,693.0	8,440.0	10,187.0	11,934.0	13,681.0	15,428.0	15,849.0
Yr Total Cost:	46,043	58,310	61,762	65,404	69,281	74,019	80,242	84,576	93,988	23,348
Cum Total Cost:	46,043	104,353	166,115	231,519	300,800	374,818	455,061	539,637	633,625	656,973

INCLUDES ESCALATION COSTS

09/06/2001
1:13 PM

PBS: OHFN04
WBS: 1.1.E.A
CTRL ACCT: EAMG
CHARGE NO: EAMG1
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Aug-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: ENGINR **ENGINEER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,887.6	436.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	1,887.6	2,324.4	2,324.4	2,324.4	2,324.4	2,324.4	2,324.4	2,324.4	2,324.4	2,324.4
Yr Total Cost:	129,791	31,610	0	0	0	0	0	0	0	0
Cum Total Cost:	129,791	161,401	161,401	161,401	161,401	161,401	161,401	161,401	161,401	161,401

Resource: ENGMGR **ENGINEERING MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	726.0	873.5	873.5	873.5	873.5	873.5	873.5	873.5	873.5	210.5
Cum Hours:	726.0	1,599.5	2,473.0	3,346.5	4,220.0	5,093.5	5,967.0	6,840.5	7,714.0	7,924.5
Yr Total Cost:	43,415	54,982	58,237	61,670	65,326	69,794	75,662	79,749	88,623	22,015
Cum Total Cost:	43,415	98,397	156,633	218,304	283,630	353,424	429,086	508,835	597,458	619,473

Resource: ENSMGR **ENVIR SCIENTIST MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,452.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	1,452.0	1,452.0	1,452.0	1,452.0	1,452.0	1,452.0	1,452.0	1,452.0	1,452.0	1,452.0
Yr Total Cost:	76,578	0	0	0	0	0	0	0	0	0
Cum Total Cost:	76,578	76,578	76,578	76,578	76,578	76,578	76,578	76,578	76,578	76,578

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	34,029.0	15,221.0	15,329.0	12,989.0	12,989.0	12,989.0	8,753.0	8,753.0	8,753.0	1,587.0
Cum Units:	34,029.0	49,250.0	64,579.0	77,568.0	90,557.0	103,546.0	112,299.0	121,052.0	129,805.0	131,392.0
Yr Total Cost:	34,029	15,632	16,168	14,083	14,478	14,898	10,330	10,630	10,938	2,041
Cum Total Cost:	34,029	49,661	65,829	79,912	94,390	109,288	119,618	130,248	141,186	143,227

INCLUDES ESCALATION COSTS

09/06/2001
1:13 PM

PBS: OHFN04
WBS: 1.1.E.A
CTRL ACCT: EAMG
CHARGE NO: EAMG1
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Aug-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: ODC700 **ODC 700** **EOC:** ODC
Res Dept: **Overtime:** **Class:** ODC

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	34,607.0	11,496.0	11,496.0	6,996.0	6,996.0	6,996.0	6,300.0	6,300.0	6,300.0	0.0
Cum Units:	34,607.0	46,103.0	57,599.0	64,595.0	71,591.0	78,587.0	84,887.0	91,187.0	97,487.0	97,487.0
Yr Total Cost:	34,607	11,806	12,125	7,585	7,798	8,024	7,435	7,651	7,873	0
Cum Total Cost:	34,607	46,413	58,539	66,124	73,922	81,946	89,381	97,032	104,905	104,905

Resource: ODCTRVL **TRAVEL RESOURCE** **EOC:** ODC
Res Dept: 952 **Overtime:** **Class:** ODC

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	24,870.0	24,870.0	14,922.0	14,922.0	14,922.0	13,264.0	13,264.0	13,264.0	0.0
Cum Units:	0.0	24,870.0	49,740.0	64,662.0	79,584.0	94,506.0	107,770.0	121,034.0	134,298.0	134,298.0
Yr Total Cost:	0	25,541	26,231	16,179	16,632	17,115	15,654	16,108	16,575	0
Cum Total Cost:	0	25,541	51,773	67,952	84,584	101,699	117,353	133,462	150,037	150,037

Resource: PJCMGR **PROJECT CONTROLS MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,477.2	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	421.0
Cum Hours:	1,477.2	3,224.2	4,971.2	6,718.2	8,465.2	10,212.2	11,959.2	13,706.2	15,453.2	15,874.2
Yr Total Cost:	96,653	120,316	127,439	134,953	142,953	152,730	165,571	174,514	193,933	48,175
Cum Total Cost:	96,653	216,970	344,409	479,362	622,315	775,044	940,615	1,115,129	1,309,062	1,357,238

Resource: PJCSCH **SCHEDULERS** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,452.0	1,747.0	873.5	873.5	873.5	873.5	873.5	0.0	0.0	0.0
Cum Hours:	1,452.0	3,199.0	4,072.5	4,946.0	5,819.5	6,693.0	7,566.5	7,566.5	7,566.5	7,566.5
Yr Total Cost:	76,782	97,239	51,498	54,534	57,767	61,717	66,907	0	0	0
Cum Total Cost:	76,782	174,021	225,518	280,052	337,819	399,536	466,443	466,443	466,443	466,443

INCLUDES ESCALATION COSTS

09/06/2001
1:13 PM

PBS: OHFN04
WBS: 1.1.E.A
CTRL ACCT: EAMG
CHARGE NO: EAMG1
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Aug-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: PRJMGR **PROJECT MANAGER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	3,068.2	3,494.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	421.0
Cum Hours:	3,068.2	6,562.2	8,309.2	10,056.2	11,803.2	13,550.2	15,297.2	17,044.2	18,791.2	19,212.2
Yr Total Cost:	273,561	327,905	173,659	183,897	194,799	208,121	225,620	237,806	264,269	65,647
Cum Total Cost:	273,561	601,466	775,124	959,022	1,153,821	1,361,942	1,587,562	1,825,367	2,089,636	2,155,283

Resource: S&HENG **SAFETY ENGINEER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,452.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	873.5	873.5	873.5	210.5
Cum Hours:	1,452.0	3,199.0	4,946.0	6,693.0	8,440.0	10,187.0	11,060.5	11,934.0	12,807.5	13,018.0
Yr Total Cost:	72,179	91,410	96,821	102,530	108,608	116,035	62,896	66,293	73,670	18,300
Cum Total Cost:	72,179	163,589	260,410	362,939	471,547	587,582	650,478	716,770	790,440	808,741

Resource: SERVSUB **SUBS** **EOC:** SUBCONTRACTORS
Res Dept: **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	3,342.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	3,342.0	3,342.0	3,342.0	3,342.0	3,342.0	3,342.0	3,342.0	3,342.0	3,342.0	3,342.0
Yr Total Cost:	3,342	0	0	0	0	0	0	0	0	0
Cum Total Cost:	3,342	3,342	3,342	3,342	3,342	3,342	3,342	3,342	3,342	3,342

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	18,849.5	16,159.8	12,229.0	12,229.0	12,229.0	12,229.0	10,482.0	9,259.1	8,735.0	2,105.0
Cum Hours:	18,849.5	35,009.3	47,238.3	59,467.3	71,696.3	83,925.3	94,407.3	103,666.4	112,401.4	114,506.4
Yr Total Cost:	1,098,777	1,034,828	797,978	825,136	872,866	931,029	887,213	830,697	865,168	208,168
Cum Total Cost:	1,098,777	2,133,606	2,931,584	3,756,719	4,629,585	5,560,614	6,447,827	7,278,524	8,143,692	8,351,860

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

SECTION 1

5.0 RISK PLAN

Risk/Opportunity Identification and Analysis Form

Project:	Aquifer Restoration	PBS Number: 04			Total Baseline Dollars (Minimum Case):			$8,351,860		
Evaluator: Jack Hughes	Date: 3/28/01	WBS Number: 1.1.E.A								
CAM: Jack Hughes	Date: 3/28/01	Control Account Number: EAMG								
Project Task	Risk and/or Opportunity	Potential Impact	Internal Or External Driver	Impact Cost (Maximum Case)	Risk Impact Level	Risk Probability %	Risk Probability Level	Probable Cost (Likeliest Case)	Risk Critical Value	Risk Handling Strategy
Aquifer Restoration Mgt.	Site Closure extends due to other project pushing out the end 1 year	ARP oversight and management must extend for an additional year	Internal	$500,000	3	50	3	$250,000	4	Accept
			Total:	$500,000			Total:	$250,000		

Treatment Operations

WBS DICTIONARY
CONTROL ACCOUNT/CHARGE NUMBER

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	38

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E.E	TREATMENT OPERATIONS

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Subcontracts
Materials
ODCs

b. TECHNICAL CONTENT:

This element encompasses all actions necessary for the operating, maintenance, and management of facilities and systems for the following:

- Advanced Waste Water Treatment Facility (AWWT)
- Interim Advanced Waste Water Treatment Facility (IAWWT)
- South Plume Interim Treatment Facility (SPIT)
- Storm Water Retention Basin (SWRB)
- Biodenitrification Surge Lagoon (BSL)
- High Nitrate Tank
- AWWT Slurry Dewatering Facility

- Process Control Laboratory
- Sewage Treatment Plant
- Wellfield Recovery System
- Re-Injection System
- Leachate Collection System
- Soils Remediation Run-On Control Systems
- IVLO Operations
- Waste packaging costs from Wastewater Treatment Operations

c. SCOPE OF WORK:

Includes management, operations, and maintenance of the following:

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE OF CONTRACT 12/01/2000
3. IDENTIFICATION NUMBER DE-AC24-01OH20115	4. INDEX LINE NO. 38
5. WBS ELEMENT CODE 1.1.E.E	6. WBS ELEMENT TITLE TREATMENT OPERATIONS
7. APPROVED CP NO. NEW PER CP# FY01-0115-0004-00	8. DATE OF CHANGES 12/01/2000
9. SYSTEM DESIGN DESCRIPTION CERCLA/ACA	10. BUDGET AND REPORTING NUMBER EW05H3040

11. ELEMENT TASK DESCRIPTION

- Advanced Wastewater Treatment Facility (AWWT)
- Interim Advanced Waste Water Treatment Facility (IAWWT)
- South Plume Interim Treatment Facility (SPIT)
- Storm Water Retention Basin (SWRB)
- Biodenitrification Surge Lagoon (BSL)
- High Nitrate Tank
- Solids removal and dewatering equipment at the SWRB and Bio-Surge Lagoons
- Process Control Laboratory
- Sewage Treatment Plant
- Wellfield Recovery System
- Re-Injection System
- Leachate Collection System
- Soils Remediation Run-On Control Systems
- IVLO Operations

These facilities and systems are required to remove uranium from extracted groundwater, storm water runoff, and sitewide wastewater. Uranium removal processes allow the FEMP to meet ALARA and BAT requirements for radionuclide and heavy metal discharge from the site per DOE orders 5480.11 and 5400.5. The Sludge Dewatering Facility enables slurry from AWWT operations and other misc. sources to be dewatered and packaged for disposal. Packaging costs for waste from Wastewater Treatment Operations are also included in this work scope.

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 1

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.E	TREATMENT OPERATIONS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	E. HENRY/648-5962	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
EEWW	WELLFIELD & TREATMENT FACILITIES OPERATIONS & ARWWP WASTE

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Subcontractors
Materials
ODCs

b. TECHNICAL CONTENT:

This element encompasses all actions necessary for the operation, maintenance, and management of the following facilities, systems and activities:

- Advanced Waste Water Treatment Facility (AWWT)
- Interim Advanced Waste Water Treatment Facility (IAWWT)
- South Plume Interim Treatment Facility (SPIT)
- Storm Water Retention Basin (SWRB) including sludge dredges and ozone system
- AWWT Sludge Dewatering Facility (SDF)
- Process Control Laboratory
- Sewage Treatment Plant (STP)
- Wellfield Recovery System
- Re-Injection System
- Waste disposition from Water Treatment Operations
- Bio Surge Lagoon (BSL) including sludge dredges and ozone system
- Dissolved Oxygen (DO) Building
- Parshall Flume (PF)
- High Nitrate Tank (HNT)
- K65 Storm Runoff Basin
- SW and NW Detention Inlet Structures
- On-site Disposal Facility Leachate System
- Soil & Disposal Facility Project Certification Buffer Area Pumps
- Waste Containerization and Disposition

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE 12/01/2000	Page 1
3. WBS ELEMENT CODE 1.1.E.E	4. WBS ELEMENT TITLE/NAME TREATMENT OPERATIONS	
5. PERFORMING DIV/DEPARTMENT CODE 52	6. ORIGINATOR NAME/PHONE E. Henry/5962	7. WBS ELEMENT MANAGER MARC JEWETT
8. BUDGET AND REPORTING NUMBER EW05H3040	9. BUDGET TITLE AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE? NEW PER CP# FY01-0115-0004-00		11. ESTIMATED START / COMPLETION DATE 12/01/00 - 12/27/09
12. TASK IDENTIFICATION (WORK PACKAGE) EEWW1	13. TASK DESCRIPTION (ONE LINE) WELLFIELD OPERATIONS	

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Subcontracts
Materials
ODCs

b. TECHNICAL CONTENT:

This work scope encompasses all actions necessary for the operation, maintenance and management of the Wellfield Recovery and Injection System, including the Distribution Systems.

c. SCOPE OF WORK:

Includes management, operation and maintenance of the Wellfield Recovery system and the Re-Injection System. Also includes the option to replace injection wells when rehabilitation fails to restore well capability.

d. WORK SPECIFICALLY EXCLUDED:

Scope described in EEWW2 and EEWW3.

Those costs associated with support groups that are in centralized functional departments.

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE 12/01/2000	Page 1
3. WBS ELEMENT CODE 1.1.E.E	4. WBS ELEMENT TITLE/NAME TREATMENT OPERATIONS	
5. PERFORMING DIV/DEPARTMENT CODE 52	6. ORIGINATOR NAME/PHONE E. Henry/5962	7. WBS ELEMENT MANAGER MARC JEWETT
8. BUDGET AND REPORTING NUMBER EW05H3040	9. BUDGET TITLE AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE? NEW PER CP# FY01-0115-0004-00		11. ESTIMATED START / COMPLETION DATE 12/01/00 - 12/27/09
12. TASK IDENTIFICATION (WORK PACKAGE) EEWW2	13. TASK DESCRIPTION (ONE LINE) TREATMENT FACILITIES OPERATIONS	

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Subcontracts
Materials
ODCs

b. TECHNICAL CONTENT:

This workscope encompasses all actions necessary for the operations, maintenance and management of facilities and systems for the following:

- Advanced Waste Water Treatment Facility (AWWT)
- Interim Advanced Waste Water Treatment Facility (IAWWT)
- South Plume Interim Treatment Facility (SPIT)
- Storm Water Retention Basin (SWRB) including sludge dredges and ozone system
- AWWT Sludge Dewatering Facility (SDF)
- Process Control Laboratory
- Sewage Treatment Plant (STP)
- Bio Surge Lagoon (BSL) including sludge dredges and ozone system
- Dissolved Oxygen (DO) Building
- Parshall Flume (PF)
- High Nitrate Tank (HNT)
- K65 Storm Runoff Basin
- SW and NW Detention Inlet Structures
- On-site Disposal Facility Leachate System
- Soil & Disposal Facility Project Certification Buffer Area Pumps

c. SCOPE OF WORK:

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 1

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.E	TREATMENT OPERATIONS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	E. Henry/5962	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 -

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EEWW3	ARWWP WASTE DISPOSAL

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials

b. TECHNICAL CONTENT:

This workscope encompasses all actions necessary for the Aquifer Restoration & Wastwater Project (ARWWP) Operations waste disposal including container costs, waste characterization, and routing for final disposition.

c. SCOPE OF WORK:

Includes management, container costs and routing for final dispostion.

d. WORK SPECIFICALLY EXCLUDED:

Scope described in EEWW1 and EEWW2.

Those costs associated with support groups that are in centralized functional departments.

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

SECTION 2

1.0 NARRATIVE

1. PROJECT TITLE: AQUIFER RESTORATION PROJECT	2. DATE: 09/10/01	3. PBS#: 04
4. WBS ELEMENT CODE: 1.1.E.E.	5. WBS ELEMENT TITLE: TREATMENT OPERATIONS	
6. CAM NAME/ PHONE: DAVE BRETTSCHNEIDER	7. CAM SIGNATURE:	
8. ORIGINAL/ CHANGE SCOPE/ PER CP#:	9.CONTROL ACCOUNT: EEWW	

SECTION 2: EEWW – TREATMENT OPERATIONS

1.0 NARRATIVE

1.1 OVERVIEW

The activities in this section include administration, operation, and maintenance of the following facilities and systems which are broken into charge numbers as follows:

1.1.1 EEWW1 – Wellfield Operations

This charge number encompasses all activities associated with the operation, maintenance and management of the contaminated aquifer, re-injection of treated water and the associated distribution systems.

- Groundwater Extraction Wells and Conveyance Systems
- Injection Wells and Conveyance Systems

1.1.2 EEWW2 – Treatment Facility Operations

This charge number encompasses all activities associated with the operation, maintenance and management of the groundwater, stormwater, sanitary, and remediation waste water treatment facilities, and their respective conveyance systems.

- Advanced Wastewater Treatment Facility (AWWT)
- Slurry Dewatering Facility (SDF)
- Interim Advanced Wastewater Treatment Facility (IAWWT)
- South Plume Interim Treatment Facility (SPIT)
- Sewage Treatment Facility (STP)
- Storm Water Retention Basin (SWRB) Including Sludge Dredges and Ozone System
- Bio Surge Lagoon (BSL) Including Sludge Dredge and Ozone System
- Dissolved Oxygen Building (DO)
- Parshall Flume (PF)
- High Nitrate Tank (HNT)
- ~~K65 Storm Runoff Basin~~

R1-D-098

- Waste Pit Area Runoff Control System
- Southern Waste Units Retention Basins

- Southwest and Northwest Detention Inlet Structures (SW & NW)
- On-Site Disposal Facility (OSDF) Leachate System
- Soil and Disposal Facility Project Certification Buffer Area Pumps
- Southern Waste Unit Pumping Operation

R1-F04-008

1.1.3 EEWW3 – Waste Disposal

This charge number encompasses all activities associated with obtaining waste containers, characterization, packaging, transport and final disposition of waste materials associated with water treatment operations. Waste streams include filter cake from AWWT SDF, spent resin from the AWWT, IAWWT, and SPIT Ion Exchange Vessels, spent carbon from AWWT Phase II Carbon Vessels, Waste from Maintenance activities, and spent Multi Media filter materials.

1.2 ASSUMPTIONS/EXCLUSIONS

1.2.1 Assumptions

1.2.1.1 EEWW1 – Wellfield Operations Assumptions

R1-D-099

- No change in regulatory or DOE requirements as of November 20,2000 , with the exception that the Uranium average monthly discharge limit will change from 20 ppb to 30 ppb.
- The well drilling subcontractor can support scheduled Well rehabilitation work.
- Injection Wells continue as a viable portion of the accelerated Aquifer clean up.
- Groundwater certification occurs beyond this contract.
- No catastrophic failures of treatment or well field systems beyond what is considered normal maintenance activities, as described in the Scope of Work, Section 1.5.

1.2.1.2 EEWW2 – Treatment Facility Operations Assumptions

R1-D-099

- No change in regulatory or DOE requirements as of November 20, 2000, with the exception that the Uranium average monthly discharge limit will change from 20 ppb to 30 ppb.
- AWWT, SDF, SWRB, BSL, DO Building, PF, HNT, K65 Storm Runoff Basin, Detention Inlet Structures, Injection Wells, Extraction Wells and the OSDF Leachate System are operational through end of contract.
- IAWWT - Demolition scheduled for completion prior to December 2006. Assume EPA approval of 30ppb Uranium Discharge at the Parshall Flume and EPA approval of a revision to the Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Project which would change the mode of operation for Groundwater/Stormwater. This would allow an early shutdown of this facility by the end of FY~~01~~ 02. Operation of the Sludge Dredges, monitoring and sampling duties of the SWRB and the Valve House will be added to the AWWT Operator

R1-F04-008

R1-F04-008

responsibilities (assumes that the FATLC/Company contract will be changed to allow AWWT operators to assume this work assignment). ARWWP Operations will isolate process water inlet, outlet lines and will clean out the tanks/vessels.

- SPIT - Shutdown this treatment facility during the same time frame as IAWWT. Assumptions same as for IAWWT. The Valve House remains operational with no staffing.

- The General Sump, Refinery Sump and BDN Facility are readied for D&D by late August 2001.

- Sole source manufacturer continues to supply Ion Exchange Resin and the cost does not significantly increase by more than 30%.

- The STP will be changed over to an Extended Areation Facility by the end of FY03 due to decreased sanitary waste flows when the Administration Building is demolished. Operator staffing can be reduced to Monday thru Friday coverage on day shift only (assumes that the FATLC/Company contract will be changed to allow AWWT operators to assume operator rounds on the weekends and off-shifts).

R1-F04-008

- No major failures of the Leachate Transmission System that require substantial subcontractor costs to repair/replace.

- ARP must plan and implement building heat for AWWT by 2005 when the Boiler Plant shut downs.

- No human errors, procedure errors or system failures which lead to facility shutdown for investigation and corrective actions.

- No significant process treatment or well field changes that require major subcontractor costs to alter the system/systems.

- ~~ARWWP will operate and maintain the Soil and Disposal Facility Project Certification Buffer Area Pumps~~.

R1-D-145

- To implement soil cleanup of the former production area, the SD&F project will develop buffer areas between the "clean and dirty" sections to prevent storm water run-on re-contaminating sections that have been cleaned up. By interim PBS agreement, ARWWP Operations will maintain and operate the buffer area pumps.

R1-F04-008

- Completion of D&D along with WGS work by the end of FY2005 eliminates the majority of remaining work for the Industrial Vacuum Truck operators (TVLOs) and supporting staff. Remaining work would be in support of the AWWT and this would be assigned to the AWWT operators (assumes that the FATLC/Company contract will changed to allow the change in work assignment).

R1-F04-008

- Clean out of the General Sump and Infrastructure System will be completed in FY2001. This will allow a reduction in the number of IVLOs required beyond FY2001.

- The need for continuous washing of the Haul Road by ARWWP MVOs will discontinue in mid FY2002 when the Haul Road becomes part of the SD&FP contamination area.

- Southern Waste Unit Pumping Operation will discontinue at the end of FY01 when S&DFP completes remediation of this area.

1.2.1.3 EEWW3 - Waste Disposal Assumptions

- No change in regulatory or DOE requirements as of November 20, 2000.

- WPRAP Project will conclude waste shipments by August, FY05.

- Until August, FY05, all ARWWP Operations waste, except Maintenance waste, will be moved using roll off containers, directly to Waste Pit Number 3 and dumped.

- All ARWWP Operations Waste will have been sufficiently characterized to allow uninterrupted moves directly to the WPRAP Project and/or the OSDF.

- Maintenance waste will be staged for eventual placement in the OSDF.

- Process Control Laboratory waste will be staged for eventual placement in the OSDF.

- After August, FY05, all waste meeting the waste acceptance criteria for the OSDF will be staged for placement into the OSDF on a campaigned basis. Waste exceeding this criteria will be staged for handling and eventual shipment by the Soils Waste Management group as a part of the planned shipments in FY07 and FY09. AWWT waste will represent an insignificant quantity of the planned shipment of soils in FY07 and FY09.

R1-D-102

R1-D-103

- The quantity of waste generated by AWWT is insignificant in comparison to the WPRAP and Soils waste; therefore, costs for disposal at WPRAP or Soils will not be charged back to this project.

- OSDF continues waste placement until third quarter of FY09 into Cell 6.

- Waste generated from last quarter of FY09 thru and including the first quarter of FY10 will be placed into roll off boxes and stored at the AWWT and will be disposed of as part of the Operations waste generated beyond this contract.

1.2.2 Exclusions

1.2.2.1 EEWW1 – Wellfield Operations Exclusions

R1-D-104 D-807

- All ~~wells,~~ Extraction and Injection Wells, and Monitoring Wells not identified to be removed under Charge Account ECEM2, are removed and plugged ~~outside the scope of this~~ as part of the post closure contract.

- Support groups provide and maintain required specialized equipment through contract closure. (Example - crane used for removing Extraction Well pumps/motors).

- Energy costs are not included in this scope of work.

R1-D-678

- ~~DOE furnished services or equipment none.~~

1.2.2.2 EEWW2 – Treatment Facility Operations Exclusions

- Support Engineering will be baselined by Aquifer Restoration/Wastewater Project Construction/Engineering

- Removal of old and new outfall lines is beyond this contract.

- Centralized Maintenance will baseline labor costs for the Apprentice Program.

- Centralized Maintenance will baseline for grass cutting and weed control for the ARWWP facilities and systems.

- Analytical Laboratory Services will provide baseline for instrument repair, calibrations and instrument replacement along with chemicals and consumables for the AWWT Process Control Laboratory.

- Facility Services will plan for and provide housekeeping, laundry and satellite clothing.

- Centralized Maintenance will plan and provide repairs to Utility systems and the exterior of all ARWWP Buildings.

- Transportation will plan for and provide repairs/replacement for project vehicles and will provide snow removal and deliveries of supplies/materials.

- Utilities will provide and maintain all water, gas, electric, brine and air

- Facilities Engineering will provide design and technical support for maintenance and landlord activities.

- Centralized Maintenance will manage and staff the Automated Work Package (AWP), Computerized Maintenance Management System (CMMS) and Tabware Programs.

- Centralized Maintenance will plan for and provide DOP testing.

- Sample and Data Management will plan and provide data entry and data validation.

- Training will plan for and provide special training support as required.

R1-D-678

- ~~DOE furnished services or equipment none.~~

1.2.2.3 EEWW3 – Waste Disposal Exclusions

- Shipment and burial costs to NTS.
- DOE furnished services or equipment none.

1.2.3 Government-Furnished Equipment/Services

None

1.3 DRIVERS

- Due to commitments made to DOE and the Regulatory Agencies, it is given that the Aquifer Extraction Systems, the Aquifer Injection Systems and the Treatment Systems are all required to operate continuously.
- ARWWP Operations methods of operation is driven by the following directives:

  - Operations and Maintenance Master Plan for the Aquifer Restoration and Waste Water Project (2505-OM-001 Rev 1)
  - Systems Plan Collection and Management of Leachate for the On-Site Disposal Facility (20111-PL-001)
  - Operable Unit 5 ROD for Aquifer Clean Up Levels and Uranium Discharge Levels.
  - OEPA NPDES Discharge Permit
  - OAC, Waste Water Permits to Install
  - DOE Order 5480.19, Conduct of Operations.
  - Standard Operating Procedures

- Multicomplex D&D; General Sump and BDN D&D-Ready abandoned systems for D&D

- D&D-Treatment of Remediation Wastewater.
- OSDF Leachate System-Operation and Maintenance conveyance and treatment of leachate.
- OSDF Waste Placement-Support of Haul Road for dust abatement.
- Aquifer Project-Extraction, Injection Systems.
- WPRAP Project-Treatment facilities for treatment of remediation wastewater.
- SCEP Project-Treatment of contaminated stormwater.
- Soil Remediation-Treatment facilities for treatment of contaminated rainwater runoff.
- Silo's 1,2 and 3 Projects-Treatment of generated remediation wastewater.
- Remedial Design/Remedial Action (RD/RA) Work Plans (DOE 1996c and 1997c for Operable Unit 5.
- Baseline Remedial Strategy Report for Aquifer Restoration (DOE 1997a).

1.4 PROJECT PHYSICAL DESCRIPTION

Facilities and systems for the extraction collection, conveyance, treatment and discharge of all groundwater, stormwater, sanitary and remediation wastewater generated sitewide over the life of the FEMP's cleanup program. The major operating system components of Operable Unit 5 aquifer restoration and wastewater treatment required to accomplish the associated remedy commitments and goals are described in this section. The existing and currently proposed FEMP conveyance and treatment system components for managing the major wastewater streams are identified, as are treatment capacities. This section also describes key linkages between the components.

1.4.1 EEWW1 – Groundwater Component – Wellfield Operations

- The remediation of the Great Miami Aquifer will be achieved by completing area-specific groundwater restoration modules in accordance with the approved Remedial Design/Remedial Action (RD/RA) Work Plans (DOE 1996c and 1997c) for Operable Unit 5 and the Baseline Remedial Strategy Report for Aquifer Restoration (DOE 1997a). This section describes currently operating and proposed modules. The modules consist of extraction wells or a combination of extraction and injection wells as described in the following subsections. The modules are presented in two categories: current operating modules and future modules

- Current Groundwater Restoration Modules
  Groundwater restoration modules currently in operation are:

  - South Plume/South Plume Optimization
  - South Field Extraction System Phase I
  - Re-Injection Demonstration.

- South Plume Module
  Five extraction wells were installed in 1993 at the leading edge of the off-property South Plume as part of the South Plume removal action to gain an early start on groundwater restoration. The primary intent of the original five well systems was to prevent further off-property migration of contamination within the groundwater plume. Two additional extraction wells came online in July 1998 for the active restoration of the central portion of the off-property plume. These two new wells, known as the South Plume Optimization Module have now been incorporated into the South Plume Module for purposes of remedy performance tracking and reporting.

  Four of the five original wells are currently targeted to pump a summed total of 788 million gallons per year (mgy) (1500 gallons per minute [gpm]). The fifth, easternmost well has been abandoned in place at the current time per agreement with EPA and OEPA. Each of the four operating wells is equipped with a submersible pump and flow rate controls and has a maximum pumping capacity of about 500 gpm. The two new optimization wells (EW-6 and EW-7) are located on private property adjacent to the FEMP. Each well is equipped with a submersible pump and flow rate controls and is designed to have a maximum pumping rate of about 400 gpm. A common discharge header conveys the combined recovered groundwater from the six operating wells to the existing South Plume System discharge header.
  The combined flow from this module is routed to the South Field Valve House, where the flow is automatically diverted to treatment or routed to the Great Miami River, depending on available treatment capacity.

- South Field Module
  The South Field Extraction System Module consists of Phase I and Phase II. South Field Extraction System Phase I Module includes 10 extraction wells. In 1996, as part of an EPA-approved early start initiative, nine of the 10 extraction wells were installed on FEMP property in the vicinity of the south field/storm sewer outfall ditch. These wells are removing groundwater contamination in an on-property area where uranium contamination levels are highest.
  Each well is equipped with submersible pump and flow rate controls. Each well has a maximum capacity of about 300 gpm. Two discharge headers are provided to convey recovered groundwater from each well; one header will convey flow to treatment systems and the other header will convey flow to untreated discharge. Each well discharge has valving to direct its flow to one of the selected headers.

- Injection Demonstration Module
  Groundwater injection was determined to be a potentially viable strategy for enhancing aquifer restoration in the Baseline Remedial Strategy Report. To test this technology at the field scale, a five-well injection demonstration module was constructed. If successful, additional injection wells will be added to other aquifer restoration modules. The five injection wells were located along Willey Road on the southern boundary of the FEMP. Each well has an injection rate of approximately 200 gpm.

- Future Groundwater Restoration Modules
  Planned modules are (See schedule for locations and installation dates):

  - South Field Injection Module
  - South Field Extraction System Module, Phase II
  - Waste Storage Area Module
  - Plant 6 Area Module.

- Groundwater Collection and Conveyance
  An extensive system of collection and conveyance piping systems is required for the remediation of the Great Miami Aquifer. A major portion of that piping was installed as a part of Removal Action 3 (South Plume Removal Action) in the early 1990s. This included: 1) a major collection header and force main from the original five wells South Plume Recovery System back to the site SWRB valve house; 2) a continuing force main from the SWRB valve house across the site to the eastern edge of the site where the Parshall Flume is located; and 3) a gravity main from the eastern edge of the site to the Great Miami River. This piping forms the infrastructure for the other module specific piping systems.

- Perched Groundwater
  As specified in the Operable Unit 5 ROD, the remediation of perched groundwater will be accomplished by the excavation and dewatering of soil containing the contaminated water. These remediation activities will be completed by the Soils Characterization and Excavation Project (SCEP) and are therefore not within the scope of this document. The ARWWP will, however, receive water from the SCEP as a result of the excavation dewatering efforts and from storm water runoff collection.

1.4.2 EEWW2 – Treatment Facility Operations

- Storm Water Component

- Storm Water Collection and Conveyance
  The existing storm water collection system for the former production area drains contaminated stormwater run-off from north to south to the existing SWRB. It is

planned that soil remediation will generally occur from north to south as explained in the Sitewide Excavation Plan. It is anticipated that, for the most part, the existing storm water collection system will be used to transfer runoff from the active soil remediation areas to the SWRB.

- Remediation Wastewater Component

- Remediation Wastewater Collection and Conveyance
  The former production area wastewater collection and conveyance system will form the infrastructure of remedial wastewater collection and conveyance. All remedial wastewaters will be directed to either the existing Biodentrification Surge Lagoon (BSL) or the existing high nitrate tank (HNT).

  Each of the source projects will be responsible for: constructing new collection or conveyance systems, coordinating with ARWWP to utilize existing systems to transfer their wastewaters, or transporting flows by tanker truck or dumpster to these headworks.

- TREATMENT SYSTEMS

Treatment will be applied to recovered groundwater, storm water, remediation wastewater, and sanitary sewage to the extent necessary to limit the concentration and total mass of uranium discharged through the FEMP outfall to the Great Miami River (limits detailed in the Operable Unit 5 ROD) and to meet NPDES permit limits. To attain these mass- and concentration-based uranium discharge limits, DOE committed to expanding the existing AWWT facility by installing an additional groundwater treatment capacity of 946 mgy (1800 gpm) (788 mgy [1500 gpm] nominal throughput rate) to achieve a total groundwater treatment capacity (combined existing and new treatment capacity of at least 1051 mgy [2000 gpm]). The following information summarizes the wastewater treatment systems and their expected throughput rates.

- Advanced Wastewater Treatment (AWWT) Facility
  The original AWWT, consisting of Phases I and II, is located in the southwest corner of the former production area. The AWWT was expanded to incorporate an additional capacity dedicated to groundwater treatment. The two original AWWT systems and the expansion system are all operated from a central control room.

- The Phase I system consists of the following unit processes:

  - Flow equalization and pH adjustment with caustic (when required) in preparation for the downstream coagulation process

  - Coagulation with alum and polymer, followed by clarification for reduction of suspended solids, uranium, and some unspecified

assumed reduction in other radionuclides and heavy metals. Other coagulant chemicals may be tested as part of process optimization efforts.

- Filtration using multimedia filters to remove suspended solids from the clarifier overflow. The filters are cleaned by backwashing.

- pH adjustment with sulfuric acid if required (not used presently).

- Two trains of three ion exchange resin vessels (each train) to remove uranium. The wastewater flows through two ion exchange resin vessels in lead/lag series with the third vessel available to be placed into service when needed.

- Final pH adjustment (if required - not presently used), filtration, and discharge. Both the Phase I and Phase II treated streams are combined in the pH mixing/recycle tank, filtered using multi-tubular filters, and discharged.

The installation of multimedia filters in 1997 to replace previously used multi-tubular filters has allowed for an anticipated average annual treatment capacity of approximately 315 gallons per year (600 gpm). The operating capacity takes into account downtime for scheduled maintenance and unplanned interruptions of flow.

- <u>AWWT Phase II</u>
  The AWWT Phase II was installed for treatment of previous production wastewaters and site-contaminated remediation wastewater. The AWWT Phase II system is currently configured to allow concurrent treatment of site remediation wastewater, storm water, and groundwater. This system consists of the same unit treatment as the Phase I system, except that carbon filtration is included in the Phase II system to provide treatment of VOCs that may be present in the remediation wastewaters. Only one train of three ion exchange vessels is present in AWWT Phase II. The inflow to the Phase II system flows through two 80,000 gallon equalization tanks to accommodate fluctuating incoming flow streams.

  The installation of multimedia filters in 1997 to replace previously used multi-tubular filters is expected to allow for an average annual treatment capacity of approximately 158 million gallons per year (300 gpm). The operating capacity takes into account downtime for scheduled maintenance and unplanned interruptions of flow.

- <u>AWWT Expansion</u>

As prescribed in the Operable Unit 5 ROD, the existing capacity of the AWWT facility was expanded to the maximum achievable within the confines of Building 51, to enhance the FEMP's ability to treat groundwater. The unit processes of the AWWT expansion system include aeration, granular multimedia filtration, and ion exchange. The treated effluent from this facility is the source of water for aquifer re-injection. The aeration step is included to help remove iron, thereby reducing biofouling of the re-injection well screen. This treatment system is expected to process approximately 788 mgy (1500 gpm) on an annual average basis. The operating capacity takes into account downtime for scheduled maintenance and unplanned interruptions of flow.

- Interim Advanced Wastewater Treatment (IAWWT) System
  The IAWWT is located just north of the SWRB. Currently, either SWRB water or groundwater may be treated by the IAWWT system before it is discharged to the Great Miami River. The IAWWT system consists of two trailer-mounted treatment systems. Before the influent enters these two trailer systems, it is pumped through granular multimedia filters for suspended solids removal. Each trailer unit currently has two feed pumps and three ion exchange vessels in series (lead, lag, and one standby). The treated effluent is discharged through the FEMP outfall line to the Great Miami River.

  The IAWWT treatment system was sized as a 158 mgy (300 gpm) treatment system to treat uranium-contaminated storm water before the installation of the AWWT Phase I system. Since that time, the system has been used to treat mostly groundwater. However, the IAWWT is used to treat SWRB waters during periods of heavy rainfall. The IAWWT throughput is expected to be approximately 131 mgy (250 gpm). The operating capacity takes into account downtime for scheduled maintenance and unplanned interruptions of flow.

- South Plume Interim Treatment (SPIT)
  The SPIT system was installed to provide treatment of approximately 92 million gallons per year of groundwater. This is based on an anticipated throughput of 175 gallons per minute. The operating capacity takes into account downtime for scheduled maintenance and unplanned interruptions of flow.

  The system is housed in a building located just north of the SWRB. The system consists of granular multimedia filtration for particulate removal and ion exchange for uranium removal. The SPIT system uses three ion exchangers in series (lead, lag, and one standby). The treated groundwater is discharged through the FEMP outfall line to the Great Miami River. The SPIT system will remain dedicated to the treatment of groundwater at the above-stated capacity.

- Sewage Treatment Plant (STP)
  Sanitary sewage and laundry wastewater, prior to April 1998, was treated at the FEMP sewage treatment plant, located southeast of the former production area.

The plant was replaced by a new sewage treatment facility located near the AWWT Facility. The main components of the new sewage treatment plant are aeration, clarification, sludge thickener, and an ultraviolet disinfection system.

- ANCILLARY FACILITIES

A number of facilities exist that are supplementary to the operation of the various treatment systems. These include system headworks for equalizing the flows to these systems, groundwater flow routing facilities, wastewater collection and transfer facilities, sludge processing facilities, and discharge monitoring facilities. These facilities are described below.

- System Headworks

Headwork facilities exist for support of the various wastewater treatment facilities. In general, these facilities provide for flow equalization prior to discharging to the various treatment systems. Details of the headworks follow.

- Storm Water Retention Basin (SWRB

The SWRB, located south of the former production area, currently receives storm water runoff from the former production area, the southern waste units SWRBs, and the OSDF. The SWRB allows for flow equalization and settling of suspended solids. It has a retention capacity of approximately 10 million gallons. The basin consists of an east chamber and a west chamber. The basin consists of a primary bottom bentonite liner and an upper flexible synthetic membrane liner. An underdrain system beneath the synthetic liner is used to monitor and collect leakage through the synthetic liner. The discharge can be routed to the AWWT Phases I and II, IAWWT, or directly to the FEMP outfall line to the Great Miami River.

- Biodenitrification Surge Lagoon (BSL)

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The BSL is located in the southeast section of the waste storage area. It is an 8 million gallon, man-made lagoon that currently receives contaminated wastewater from controlled storm water runoff from the clearwell, waste pit area perimeter, OSDF leachate collection system, WPRAP SWM pond and Waste Pit 6. The storage volume available at the BSL allows the highly varying influent wastewater flow to be collected and discharged to treatment at a relatively consistent flow rate.

The lagoon has two synthetic membrane liners and a leachate collection system underneath each membrane liner. The bottom of the lagoon is lined with a 12-inch thick layer of bentonite. Wastewater is pumped from the lagoon to the AWWT Facility from a pump station located at the southeast corner of the lagoon.

- High Nitrate Tank (HNT)
  The HNT is located southeast of the BSL. It has a 500,000-gallon capacity that was previously used for storing high nitrate-concentration wastewater during past FEMP operations. Concrete secondary containment surrounds the HNT. Discharged wastewaters from the HNT are combined with discharged wastewater from the BSL. It is anticipated that the HNT will be used as a holding tank for wastewater from the Silos Project and may also be used for other flows in the future.

- Headworks Sludge Removal Systems
  A project has been completed to install three remotely operated solids removal systems (dredges) to address anticipated future quantities of sediment accumulation in these basins. One dredge will service the BSL. Because the SWRB consists of two chambers (east and west), two dredges will be used to avoid continuously moving a dredge from one chamber to the other.

  As required, the dredges will remove the sediment and discharge it into a mixing tank. The mixing tank contents will be slowly discharged into their respective headworks pump pits to be routed to the AWWT. The suspended solids will be settled out at the AWWT clarifiers and sent to the Slurry Dewatering Facility for dewatering in preparation for disposal.

- SWRB Valve House
  The SWRB valve house is located just north of the SWRB west chamber. The valve house contains an extensive array of valves to allow diversion of storm water flow from the SWRB and groundwater flow to the various treatment facilities. This facility also serves as the point of convergence for the effluent from the treatment systems prior to discharge through the FEMP outfall pipeline. The valves also allow for untreated water from the SWRB to be discharged directly to the Great Miami River to assist in preventing the SWRB from overflowing to the Storm Sewer Outfall Ditch and Paddys Run, due to heavy rainfall or other operational difficulties. Flow monitoring and sampling equipment are also provided in the valve house.
- South Field Valve House
  As part of the South Field Extraction System Phase I construction, a new south field valve house was constructed, upstream of the SWRB Valve House. The primary purpose of this valve house is to receive the combined South Plume Recovery System and South Plume Optimization System groundwater. It directs all or portions of the combined flow toward treatment and/or to untreated discharge prior to combining with other groundwater flows.
- AWWT Slurry Dewatering Facility (SDF)
  The AWWT Slurry Dewatering Facility is adjacent to the AWWT facility. The primary purpose of the SDF is the processing (dewatering) of waste slurries and sludges from the AWWT facilities. The dewatering of miscellaneous site waste sludges (i.e., those from the SWRB, BSL, STP, etc.) is also to be performed at this facility. This facility is also used to pre-treat the eluate produced in the

regeneration of ion exchange resins at the various treatment plants. The slurry dewatering facility has a design treatment capacity of 30,000 gallons per day of slurry. The process consists of slurry conditioning (pH adjustment, coagulation/flocculation, filter aid addition), thickening, and pressure filtration. The dewatered waste material is packaged for on- or off-site disposal.

- Resin Regeneration System
  The primary process used at the FEMP for removing uranium from wastewater is ion exchange. The resin used to perform the ion exchange can be regenerated, to restore its chloride ion exchange form. To provide for this regeneration, a brine (sodium chloride) regeneration system was installed and became operational in early 1998. Much of the system utilizes shared equipment with the SDF.

- Effluent Aeration Facility
  The effluent aeration facility adds dissolved oxygen to the groundwater/wastewater effluent as necessary to meet NPDES permit minimum requirements of 5 parts per million (ppm) of dissolved oxygen. All treatment system effluents discharged are conveyed to the effluent aeration facility. The effluent aeration facility consists of a 60,000-gallon stainless steel aeration tank with overflow to an adjacent manhole.

- Parshall Flume
  Downstream of the effluent aeration facility, the combined flows pass through a Parshall flume and an associated outfall monitoring station for FEMP discharge flow measurement and monitoring.

1.5 TECHNICAL SCOPE AND QUANTIFICATION

1.5.1 EEWW1 – Wellfield Operations

1) Task #1 – Operations and Maintenance

This work scope encompasses all activities necessary for the continuous operation, maintenance and management of the Wellfield Extraction, Re-injection, and the associated distribution systems. This activity will continue through end of contract.

- Daily operator rounds to monitor equipment performance and condition, to record data required for reporting purposes and to collect samples for determining aquifer uranium concentrations.
- Maintenance activities to maintain pumps, motors, flow meters, pressure regulators, logic controllers, valves, electrical components, piping, etc. This activity includes preventative maintenance, corrective maintenance and predictive maintenance work.

- Well Drilling subcontractor work to perform well rehabilitation to restore well performance in both extraction and injection wells.

- Maintenance/subcontractor work to rebuild extraction well pumps and motors.
- AWWT Process Control Laboratory labor, necessary to analyze process control samples required to monitor critical parameters.
- Management, Process Engineering and Administrative Support to keep these systems on-line at an acceptable rate to achieve the Aquifer Remediation schedule.
- Staffing requirements for operation of facilities; functional job descriptions and responsibilities, and conduct of operations are detailed in technical Manual M123, "Standing Orders for ARWWP Operations".
- The management policy to ensure that planned modes of operations and maintenance for the ARWWP meet regulatory requirements and satisfy remedy performance commitments for groundwater restoration and wastewater treatment is found in the "Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Project".
- Training and Qualification requirements for operators, managers and engineering functions are specified in TQP-065, "Aquifer Restoration/Wastewater Projects Operations Training and Qualification Program Description".
- Technical manuals along with process knowledge and gained experience form the basis for Standard Operating Procedures, which dictate standard performance requirements for each operating system.
- Maintenance work evolutions are controlled by site procedures and the Maintenance Work Order System.

2) Task #2 – Extraction Well Rehabilitation

Well rehabilitation is based upon performance testing conducted quarterly. For planning purposes, it is estimated that each Extraction Well will require rehabilitation every 2 years and the cost for the well drilling subcontractor for this effort will be $25,000/well. Based upon the Extraction/Injection wells schedule, the following Extraction Well rehabilitation work will be performed by a subcontractor included in the baseline:

Table WO-1
Number of Wells estimated for Rehab)

	South Plume	South Plume Optimization	South Field Phase I	South Field Phase II	Additional Wells
FY01	4				
FY02		2	11		
FY03	4				

FY04		2	11	3	
FY05	4	1			
FY06		2	11	3	2
FY07	4	1			2
FY08		2	11	3	4
FY09	4	1			2

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~~3) Task #3 - Injection Well Rehabilitation~~

~~Injection Well Rehabilitation is based upon actual well performance in that a well is shutdown and scheduled for rehabilitation, when water can no longer be injected into the aquifer. Based upon experience gained over the past 2 years for the existing 5 wells and based upon estimates for new wells to be installed, the following Injection Well rehabilitation work performed by a subcontractor will be included in the baseline:~~

~~Table WO-2~~
~~(Number of Wells scheduled for Rehab)~~

	~~No. 8~~	~~No. 9~~	~~No. 10~~	~~South Field Additional No. 11~~	~~No. 12~~	~~Phase I~~	~~Wells~~
~~FY02~~	~~4~~	~~4~~	~~4~~	~~1~~	~~2~~		
~~FY03~~	~~4~~	~~4~~	~~4~~	~~1~~	~~2~~	~~1~~	
~~FY04~~	~~4~~	~~4~~	~~4~~	~~1~~	~~2~~	~~2~~	~~1~~
~~FY05~~	~~4~~	~~4~~	~~4~~	~~1~~	~~2~~	~~2~~	~~2~~
~~FY06~~	~~4~~	~~4~~	~~4~~	~~1~~	~~2~~	~~2~~	~~2~~
~~FY07~~	~~4~~	~~4~~	~~4~~	~~1~~	~~2~~	~~2~~	~~3~~
~~FY08~~	~~4~~	~~4~~	~~4~~	~~1~~	~~2~~	~~2~~	~~3~~
~~FY09~~	~~4~~	~~4~~	~~4~~	~~1~~	~~2~~	~~2~~	~~3~~

~~The ARWWP Operations work scope for Injection Wells will include the option to replace injection wells when rehabilitation fails to restore well capability. Estimated cost for the well drilling subcontractor for each rehabilitation effort is $25,000/well.~~

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3) Task #3 – Injection Well Rehabilitation

Injection well rehabilitation is required for an injection well when water can no longer be injected into the aquifer, due to well plugging. When the yearly costs of rehabilitation (due to the number of rehabilitation efforts required per year) equals or exceeds the cost of well replacement, the well is replaced. Table WO-2 presents the number of rehabilitation efforts (rehabs) and injection well replacements estimated for FY02 through FY09.

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Table WO-2
(Number of IW Rehabs & Replacements)

FY	REPLACE IW-8,9,10	REHAB IW-8,9,10	REPLACE IW-11,12	REHAB IW-11,12	REPLACE NEW WELLS	REHAB NEW WELLS
02	3			6	2*	
03		3	2		2*	
04		6		2	1*	2
05		9		4	1*	6
06	3			6	1*	11
07		3	2		1* + 2	9
08		6		2	1* + 2	9
09		9		4	1	13

* Original installation of new wells in FY02 thru FY08 is within EFEC control account. Operating Year 1 begins the year after original installation. Operating Year 5 is same year as replacement.

BASIS FOR TABLE WO-2

1. This basis assumes operation of the existing 5 South Field IWs through FY09 and installation/operation of 9 new IWs in FY02 through FY09. The actual number of IWs in operation each year will be determined by periodic hydrogeological analysis; however, this basis represents a reasonable assumption of projected well rehab quantities for budget estimating purposes.

2. All new/replacement IWs are 16" with artificial filterpack installation. Better rehab performance has been realized for existing 16" IW-11 &12 with artificial filterpack than for those with natural filterpack.

3. The number of estimated rehabs are based on IW-11 & 12 operational history.
   Note: Development of an improved well design and/or improved rehab method may reduce actual realized rehab requirements; however, this basis assumes the following:

   Per IW: 0 rehabs in Operating Year 1
   1 rehab in " Year 2
   2 rehabs in " Year 3
   3 rehabs in " Year 4

4. Replace each IW after in Operating Year 5:
   $100,000 (new well) = $25,000 x 4 Rehabs

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5. Replacement wells will not be installed at the same exact location since the immediate surrounding aquifer formation will be plugged. Therefore, replacement wells will be located in the vicinity of the well being replaced and additional piping will be provided. However, the existing well infrastructure (i.e., concrete pad, flow meters, valving, etc.) will be used as a platform for the replacement well.

6. Replace existing South Field IWs :
   a. IW - 8, 9, & 10 in FY02 (Already at maximum yearly rehab rate)
   b. IW - 11 & 12 in FY03 (Operating Year 5)

7. For budget estimating purposes, all replacement IWs are installed and begin operation at start of FY (with exception of FY10). The new wells are originally installed under Control Account EEEC in the FY prior to operation.

4) Task #4 – Materials and Subcontracts

Materials for this charge number include spare parts, materials and supplies for maintenance activities, chemicals for well screen maintenance, miscellaneous consumables, freight and sales tax. The following table lists actual material costs for FY00 and is typical of the costs experienced and expected in the future. Subcontract costs include service agreements to provide pump well performances tests quarterly, pump/motor rebuilds, outside technical support, and well rehabilitation work by the well drilling contractor. Future costs will not include electrical energy costs which is being baselined by Infrastructure Services. Estimates for subcontract costs follow.

Table WO-3
Wellfield Materials

Item	Estimated Annual Cost
Maintenance Material and Supplies	$ 41,813.00
Safety Clothing and Supplies	544.00
Construction Material	624.00
Chemical Products	600.00
Sampling Materials and Equipment	49.00
Freight	1,334.00
Misc. Tools and Electrical Supplies	2,106.00
Sales Tax	5,519.00
TOTAL	$ 52,589.00

Table WO-4
Wellfield Subcontract

Item	Estimated Annual Cost
Calibrations	$ 133.00
Equipment Repairs	63,336.00
Technical Support	6,549.00
Service Agreements	22,600.00
Extraction Well Rehab	Note 1
Injection Well Rehab	Note 1

Note 1: Scheduled rehabs as indicated on Tables WO-1 and WO-2, varies from FY to FY.

1.5.2 EEWW2 – Treatment Facilities Operations

1) Task #1 – Operations and Maintenance

R1-F04-008

This work scope encompasses all activities necessary for the operation, maintenance and management of the water treatment facilities (see Overview, 1.1 for listing). The IAWWT and SPIT facilities will be shutdown ~~in 2001~~ at the end of FY2002. The STP will be changed over to an Extended Areation Facility by the end of FY03 due to decreased sanitary waste flows. As explained in Section 1.2, Assumptions: all others will continue on-line through the end of this contract to accomplish the aquifer clean-up, to treat storm water and remediation wastewater. The Aquifer Project, the OSDF Project, the WPRAP Project, the SCEP Project, the Soil Remediation Project and the Silos Project schedules all drive the need for water treatment capabilities. Also Included: Labor and vehicles required to collect and transport site wastewater that cannot be "Hard Piped" to the appropriate treatment facility along with the collection of samples and the analytical services to meet all NPDES and Surface Water sample requirements.

- Daily operator rounds within each facility and support facilities to monitor equipment performance and condition, to record data required for reporting purposes and to collect process control and regulatory required samples.

- Maintenance activities to maintain pumps, motors, flow controllers and meters, pressure regulators, level controllers, logic controllers, valves, electrical components, piping, etc. This activity includes preventative maintenance, corrective maintenance and predictive maintenance work.

- AWWT Process Control Laboratory labor, to analyze process control and NPDES samples.

- Maintain project stores to provide spare parts, supplies and materials.

- Management, process engineering and administrative support to keep these systems on-line to treat groundwater, stormwater, sanitary and remediation wastewater.

- Staffing requirements for operation of facilities, functional job descriptions and responsibilities, and conduct of operations are detailed in technical manual M123, "Standing Orders for ARWWP Operations".

- The management policy to ensure that planned modes of operation and maintenance for the ARWWP meet regulatory requirements and satisfy remedy performance commitments for groundwater restoration and wastewater treatment is found in the "Operation and Maintenance Master Plan for the Aquifer Restoration and Wastewater Project".

- Training and Qualification requirements for operators, managers and engineering functions are specified in TQP-065, "Aquifer Restoration/Wastewater Projects Operations Training and Qualification Program Description".

- Technical manuals along with process knowledge and gained experience form the basis for Standard Operating Procedures, which dictate standard performance requirements for each operating system.

- Maintenance work evolutions are controlled by site procedures and the Maintenance Work Order System.

2) Task #2 – Materials and Subcontracts

Materials for this charge number includes equipment, spare parts, materials for maintenance activities, sampling materials, chemicals, office supplies, freight, miscellaneous consumables and sales tax. Excluded are supplies, equipment and chemicals for the Process Control Laboratory. The following table lists actual material costs for FY00, excluding laboratory costs, and is typical of costs experienced and expected in the future.

Subcontract costs include service agreements for NPDES outside laboratory support, equipment repairs/calibrations, rentals/leases, outside technical support, and contractor (building/trades) support for maintenance activities required by Davis Bacon decisions. Also included are estimates for subcontract costs associated with the OSDF Leak Detection and Monitoring Task which has been transferred from PBS03 to PBS04. Excluded from this estimate are costs for outside laundry support. Also excluded from this estimate is the cost for waste containers which is now included in the Waste Disposal section. The following table lists actual subcontract costs for FY00, excluding the exceptions noted above and excluding one time charges from Parsons and Wise Construction in FY00, and is typical of costs experienced and expected annually in the future.

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Table TFO-1
Treatment Facility Materials

Item	Estimated Annual Cost
Maintenance Material and Supplies	$ 343,583.00
Safety Clothing and Supplies	27,937.00
Fuel	5,361.00
Equipment	16,020.00
Construction Materials	79,509.00
Chemicals	241,527.00
Sampling Materials and Equipment	35,158.00
Office Supplies	34,753.00
Freight	14,466.00
Misc. Tools and Electrical Supplies	131,120.00
Permit Fees	904.00
Sales Tax	35,837.00
TOTAL	$ 966,175.00

Table TFO-2
Treatment Facility Subcontract

Item	Estimated Annual Cost
Calibrations	$ 5,711.00
Equipment Repairs	2,688.00
Rentals/Leases	6,873.00
Waste/Garbage	6,918.00
Subcontract - Routine Analysis	20,970.00
Construction - Subcontract	47,014.00
Technical Support	37,163.00
Service Agreements	31,255.00
Leachate Technical Support	15,544.00
Leachate Subcontract	10,000.00
TOTAL	**$ 184,136.00**

1.5.3 EEWW3 – ARWWP Waste Disposal

1) Task #1

R1-D-095

This work scope encompasses all activities including container costs, transport, and ~~final~~ interim disposition of waste materials generated from water treatment operations. Estimates of future waste generation are based upon past operating experience [Table WD-1]. ~~and cost estimates are included in Table WD-2~~

R1-D-095

For FY01 through FY04, the assumption is for 200 metal boxes to be generated each year. The boxes will be delivered and dumped on Stock Pile 7 for Waste Pits to process through IT. For FY05 to project completion: Assume 200 metal boxes generated each year. The boxes will be delivered to PBS06 for final waste disposal).

Table WD-1

Waste Generation Estimates:

FY-01

Waste Source	WMBs	Drums	Equivalent FT ^{3}	Equivalent YD^3	Equivalent ROB
Filter Cake from AWWT SDF	192		16200	600	60
Spent Resin	8		680	25.2	3
Anthracite from BDN	20		1700	63	7
Spent Carbon from AWWT Phase II	10		840	31.1	4
Maintenance Waste	8		680	25.2	3
Organo Clay		6	42	1.6	1

FY-02 and FY-08 (each year)

Waste Source	WMBs	Drums	Equivalent FT ^{3}	Equivalent YD^3	Equivalent ROB
Filter Cake from AWWT SDF	192		16200	600	60
Spent Resin	8		680	25.2	3
Maintenance Waste	8		680	25.2	3
Organo Clay		8	42	1.6	1
Multimedia	16		1350	50	5
Decant Liquids from Filter Cake		142			

FY-03, FY-05, FY-07 (each year)

Waste Source	WMBs	Drums	Equivalent FT ^{3}	Equivalent YD^3	Equivalent ROB
Filter Cake from AWWT SDF	192		16200	600	60
Spent Resin	8		680	25.2	3
Spent Carbon from AWWT Phase II	10		840	31.1	4
Maintenance Waste	8		680	25.2	3
Organo Clay		6	42	1.6	1

FY-04 and FY-06

Waste Source	WMBs	Drums	Equivalent FT ^{3}	Equivalent YD^3	Equivalent ROB
Filter Cake from AWWT SDF	192		16200	600	60
Spent Resin	8		680	25.2	3
Spent Carbon from AWWT Phase II	10		840	31.1	4
Maintenance Waste	8		680	25.2	3
Organo Clay		6	42	1.6	1

FY-09

Waste Source	WMBs	Drums	Equivalent FT ^{3}	Equivalent YD^3	Equivalent ROB

Filter Cake from AWWT SDF	192		16200	600	60
Spent Resin	8		680	25.2	3
Spent Carbon from AWWT Phase II	10		840	31.1	4
Maintenance Waste	8		680	25.2	3
Organo Clay		8	42	1.6	1

Table WD-1
(Continued)

FY-10 (1st Quarter)

Waste Source	WMBs	Drums	Equivalent FT ^{3}	Equivalent YD^3	Equivalent ROB
Filter Cake from AWWT SDF	48		4050	150	15
Spent Resin	2		170	6.3	1
Spent Carbon from AWWT Phase II	2		210	7.8	1
Maintenance Waste	2		170	6.3	1
Organo Clay		2	42	.4	1

~~Table WD-2~~

~~Waste Stream~~	~~FY-01 Volume~~	~~FY-01 Containers~~	~~FY-02 Volume~~	~~FY-02 Containers~~	~~FY-03 Volume~~	~~FY-03 Containers~~	~~FY-04 Volume~~	~~FY-04 Containers~~
~~SDF Filter Cake~~	~~600 cubic yds~~	~~60 ROB~~	~~600 cubic yds~~	~~60 ROB~~	~~600 cubic yds~~	~~60 ROB~~	~~600 cubic yds~~	~~60 ROB~~
~~Spent Carbon~~	~~30 cubic yds~~	~~4 ROB~~	~~0~~	~~0~~	~~31 cubic yds~~	~~3 ROB~~	~~0~~	~~0~~
~~Spent Resin~~	~~25 cubic yds~~	~~3 ROB~~	~~25 cubic yds~~	~~3 ROB~~	~~25 cubic yds~~	~~3 ROB~~	~~25 cubic yds~~	~~3 ROB~~
~~Anthracite From BDN~~	~~63 cubic yds~~	~~7 ROB~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~
~~Decant Liquids~~			~~7800 gallons~~	~~142 drums~~	~~0~~	~~0~~	~~0~~	~~0~~
~~Multimedia~~	~~0~~	~~0~~	~~50 cubic yds~~	~~5 ROB~~	~~0~~	~~0~~	~~0~~	~~0~~
~~Maintenance Waste~~	~~25.2 cubic yds~~	~~3 ROB~~	~~25.2 cubic yds~~	~~3 ROB~~	~~25 cubic yds~~	~~3 ROB~~	~~25 cubic yds~~	~~3 ROB~~
~~Organoclay~~	~~1.6 cubic yds~~	~~1 ROB~~	~~0.2 cubic yds~~	~~1 ROB~~	~~0.2 cubic yds~~	~~1 ROB~~	~~0.2 cubic yds~~	~~1 ROB~~
~~**FTEs**~~	~~**0.22**~~		~~**0.21**~~		~~**0.20**~~		~~**0.19**~~	
~~**Labor Costs**~~								
~~**Material Costs**~~	~~***$54,200.00**~~		~~**+$5,680.00**~~					
~~**Transportation to Utah**~~								
~~**Disposal Fee at Envirocare**~~								
~~**Total Costs/Year**~~	~~**$54,200.00**~~		~~**$5,680.00**~~		~~**$0.00**~~		~~**$0.00**~~	

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~~Waste Stream~~	~~FY-05 Volume~~	~~FY-05 Containers~~	~~FY-06 Volume~~	~~FY-06 Containers~~	~~FY-07 Volume~~	~~FY-07 Containers~~	~~FY-08 Volume~~	~~FY-08 Containers~~
~~SDF Filter Cake~~	~~600 cubic yds~~	~~60 ROB~~	~~600 cubic yds~~	~~60 ROB~~	~~600 cubic yds~~	~~60 ROB~~	~~600 cubic yds~~	~~60 ROB~~
~~Spent Carbon~~	~~31cubic yds~~	~~3 ROB~~	~~0~~	~~0~~	~~31 cubic yds~~	~~3 ROB~~	~~0~~	~~0~~
~~Spent Resin~~	~~25 cubic yds~~	~~3 ROB~~	~~25 cubic yds~~	~~3 ROB~~	~~25 cubic yds~~	~~3 ROB~~	~~25 cubic yds~~	~~3 ROB~~
~~Anthracite From BDN~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~
~~Decant Liquids~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~7800 gallsons~~	~~142 drums~~
~~Multimedia~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~50 cubic yds~~	~~5 ROB~~
~~Maintenance Waste~~	~~25 cubic yds~~	~~3 ROB~~	~~25 cubic yds~~	~~3 ROB~~	~~25 cubic yds~~	~~3 ROB~~	~~25 cubic yds~~	~~3 ROB~~
~~Organoclay~~	~~0.2 cubic yds~~	~~1 ROB~~	~~0.2 cubic yds~~	~~1 ROB~~	~~0.2 cubic yds~~	~~1 ROB~~	~~0.2 cubic yds~~	~~1 ROB~~
~~**FTEs**~~	~~**0.20**~~		~~**0.19**~~		~~**0.20**~~		~~**0.21**~~	
~~**Labor Costs**~~								
~~**Material Costs**~~							~~**+$5,680.00**~~	
~~**Transportation to Utah**~~								
~~**Disposal Fee at Envirocare**~~								
~~**Total Costs/Year**~~	~~**$0.00**~~		~~**$0.00**~~		~~**$0.00**~~		~~**$0.00**~~	

~~Table WD-2~~
~~(Continued)~~

R1-D-095
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D-811

~~Waste Stream~~	~~FY-09 (3 Qtrs) FY-09~~		~~FY-09 (Last Qtr) FY-09~~		~~FY-10 (1st Qtr) FY-10~~	
	~~Volume~~	~~Containers~~	~~Volume~~	~~Containers~~	~~Volume~~	~~Containers~~
~~SDF Filter Cake~~	~~450 cubic yds~~	~~45 ROB~~	~~150 cubic yds~~	~~15 ROB~~	~~150 cubic yds~~	~~15 ROB~~
~~Spent Carbon~~	~~24cubic yds~~	~~3 ROB~~	~~8 cubic yds~~	~~1 ROB~~	~~8 cubic yds~~	~~1 ROB~~
~~Spent Resin~~	~~17 cubic yds~~	~~2 ROB~~	~~8 cubic yds~~	~~1 ROB~~	~~8 cubic yds~~	~~1 ROB~~
~~Anthracite From BDN~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~
~~Decant Liquids~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0~~
~~Multimedia~~	~~39 cubic yds~~	~~4 ROB~~	~~13 cubic yds~~	~~2 ROB~~	~~13 cubic yds~~	~~2 ROB~~
~~Maintenance Waste~~	~~1.8 cubic yds~~	~~2 ROB~~	~~0.7 cubic yds~~	~~2 ROB~~	~~0.7 cubic yds~~	~~2 ROB~~
~~Organoclay~~	~~0.15 cubic yds~~	~~1 ROB~~	~~0.05 cubic yds~~	~~1 ROB~~	~~0.05 cubic yds~~	~~1 ROB~~
~~**FTEs**~~	~~**0.16**~~		~~**0.06**~~		~~**0.06**~~	
~~**Labor Costs**~~						
~~**Material Costs**~~			~~***$165,940.00**~~			
~~**Transportation to Utah**~~			~~**$76,000.00**~~		~~**$76,000.00**~~	
~~**Disposal Fee at Envirocare**~~			~~**$48,533.00**~~		~~**$48,533.00**~~	
~~**Total Costs/Year**~~	~~**$0.00**~~		~~**$290,473.00**~~		~~**$124,533.00**~~	

~~Total Costs Assumptions:~~

~~*1. 5 Self Dumping Hoppers will be purchased FY-01~~
~~*2. 10 each 10 Cubic Yard Roll-Off Boxes will be purchased FY-01~~
~~3. HVOs will move the Roll-Off Boxes (ROB) and one HVO can dump one box each 5 hours~~
~~4. FTEs calculated as number of ROBs to be emptied times 5 hours per ROB divided by 1747 hours per FTE~~
~~5. ARWWP MVOs will move Self Dumping Hoppers~~
~~*6. Last Quarter FY-09 and 1st Quarter FY-10 will need to be shipped off-site which will require additional containers in the amount of approximately 35 ROBs and 72 each 55 gallon drums~~
~~7. Assumes all labor charges other than HVO are already in the ARWWP baseline~~
~~8. Dollars are based on FY-01 Dollars~~
~~9. 4th Qtr. FY-09 and 1st Qtr. FY-10 material transported to Utah at cost of $4,000 per truck~~
~~*10. Self-Dumping Hoppers cost estimate based on published prices from catalog for Material Flow & Conveyor Systems, Inc. (Includes est. freight charges)~~
~~11. Roll-off boxes cost estimate based on quote from Galbreath Inc. (Dated Feb. 2000) with 10% inflation factor added. (Includes est. freight charges)~~
~~+12. Drums are estimated at $40 per 55-gallon drum~~

1.5.4 Staffing Requirements

1) Task #1 – Management/Support

- ARWWP Operations is a mature project having gained experience in determining staffing needs to provide continuous operation without serious interruptions.

- Management and Support staffing (Thru end of contract)

  - Operations Manager (1)

    - The **Operations Manager** is responsible to the Aquifer Restoration and Wastewater Projects Manager for all aspects of ARWWP Operations.

  - Field/Facility Manager (1)

    - The **Facility/Field Manager** is responsible to the Operations Manager for ARWWP water facility operations, for personnel administration, and for other assignments including:
    - Providing operational direction to the Shift Supervisors related to Wastewater and groundwater processing facilities based on the current Operating Orders from the Operations Manager.
    - Ensuring compliance with the OMMP, Standing and Operations Orders, and the Fluor Fernald and S&WP Procedures referenced herein.
    - Ensuring compliance with approved operating procedures.
    - Identifying technical questions and abnormalities to the Process Engineer for resolution.
    - Informing the Operations Manager of any reportable events, or safety or regulatory violations, and any material deficiency which would limit the capability of an operational system or process.
    - Directing independent verifications of system alignments.
    - Informing the Operations Manager and Process Engineer if any doubt exists regarding the accuracy of a procedure, reference document, analysis, or system operating characteristic or parameter.
    - Approving Operator Aids.
    - Approving the shift assignments of Shift Supervisors and Operators.
    - Selecting, training, and qualifying Shift Supervisors and Operators.
    - Periodically reviewing operating logs and records to evaluate abnormal conditions, trends, and adequacy of data.

- Process Engineer (2)

  - The **Process Engineer(s)** is responsible to the Operations Manager for all technical aspects of the various processes employed in operations including:
  - Ensuring the safety of personnel, operations and protection of the environment.
  - Reviewing ARWWP process performance data for efficiency and effectiveness in comparison to the design basis and Project goals, and making recommendations to the Operations Manager for improvement.
  - Resolving technical, procedural, and process difficulties affecting operations
  - Recommending resolutions for abnormal and unexpected events and conditions to the Operations Manager
  - Preparing and validating operating procedures
  - Periodically reviewing operating logs and records to evaluate abnormal conditions, trends, and adequacy of data
  - Notifying the Facility/Field Manager and Training Department Representative of any modifications to systems, components, and operating parameters
  - Compiling, submitting and maintaining operational performance data
  - Participating in the start up of new systems as directed by the Operations Manager.
  - Providing assistance to the Maintenance Group for Electronic troubleshooting and repair.
  - Maintaining security for the AWWT DCS system, troubleshooting DCS software logic, fiber optics and hardware; updating DCS graphics; programs and troubleshooting Programmable Logic Controllers. Also performing troubleshooting and providing technical direction for all other instrumentation problems throughout the Project.
  - Reviewing new sources of material input to AWWT that could contain uranium at concentrations greater than 12 ppm or other materials not analyzed in existing safety documentation or exceeding limits in existing safety documentation.

- Training Supervisor (1)

  - The **Training Supervisor** is a senior qualified Shift Supervisor responsible to the Operations Manager for the proper conduct of training, documentation of qualification and development of specific tasks requiring new or additional training.

- Maintenance Supervisor (2)

  - **Maintenance Supervisors** are responsible to the Operations Manager for directing craft personnel, for planning, and conducting all forms of maintenance in accordance with Maintenance Functional Area procedures while at the same time complying with these Standing Orders, the OMMP, and all Operations procedures and orders. One supervisor is responsible for the Wellfields, the SWRB, SPIT, IAWWT, and the Leachate Conveyance System. The other supervisor is responsible for the AWWT, SDF, and the remaining facilities.

- Operations Supervisor (7)

  - The **Operations Supervisor** is responsible to the Facility/Field Manager for the safe and proper conduct of all ARWWP Operations during the shift, and for the performance of assigned Shift Operators as directed in the Standing Orders, the OMMP, operating procedures and operations orders, including:
  - Ensuring the safety of personnel, operations and protection of the environment.
  - Conducting Shift crew briefings.
  - Directing the actions of assigned Shift Operators in accordance with approved operating procedures, orders and instructions.
  - Ensuring that alarms, abnormal events and conditions are appropriately acted upon.
  - Ensuring only qualified Operators are assigned duties involving the operation of facilities, systems and components.
  - Conducting training (OJT) with the watch section (if qualified as an OJT Instructor).
  - The position of Operations Supervisor is staffed for rotating shifts/rotating days off to provide 24 hour/7 day coverage plus provide for two supervisors coverage on the day shift, Monday-Friday. An additional supervisor is staffed for the IVLO and MVO task on day shift, Monday-Friday.

- Planner Estimator (1)

  - **The Maintenance Planner** Estimator is responsible to the Maintenance Supervisor for planning, estimating and processing Maintenance work orders to comply with all site policies and procedures. He/she also performs walkdowns of jobs with support group personnel, and purchases supplies for Maintenance tasks.

- Project Stores Supervisor (1)

  - The **Project Stores Supervisor** is responsible to the Operations Manager for the purchase, control and inventory of all spare parts and materials used in ARWWP processes and systems using sitewide computer based data bases and internally prepared documents including:
  - Purchasing all project supplies
  - Proper disposal of parts and materials that are no longer needed or that have expired shelf life
  - Tracking chemical inventories
  - Ordering and maintaining spare parts for all ARWWP facilities
  - Managing the AWWT Stores and maintaining adequate inventory of all supplies

- Administrative Support (1)

  - The **Administrative Assistant** is responsible to the Operations Manager for all of the general administrative details and functions for ARWWP Operations including:
  - Data entry of all process flow and sample data
  - Assisting in the development and issuance of SEPs and EIPs
  - Maintaining Operations records and ensuring the records are stored per all applicable procedures
  - Ensuring procedures progress through all required review steps
  - Other duties as assigned by the Operations Manager.

- Operations Technical Support (1)

  - The **Operations Technical Support Representative** is responsible to the Operations Manager for Integrated Safety Management and Conduct of Operations requirements directed by DOE Orders and Fluor Fernald policy including:
  - Determining applicability and compliance with DOE and Fluor Fernald procedures, orders, directives and requirements regarding Integrated Safety Management, and Conduct of Operations (CONOPS) throughout the ARWWP.
  - Performing periodic assessments and surveillances of compliance with requirements.
  - Providing primary support for the start up of new systems or processes and preparation for the conduct of Pre-Operational Readiness Assessments (ORR/RA/SSR).
  - Performing investigations of all unusual events or occurrences.
  - Performing other duties as assigned by the Operations Manager.

- Process Control Lab Chemist (3)

  - The Laboratory Analysts are matrixed from the Analytical Laboratory and are responsible to the Laboratory Supervisor for performance of chemical analyses for all ARWWP facilities and reporting the results of the analyses to the Analytical Supervisor or the Shift Supervisor if unusual results are obtained.

- ALS Lab Chemist (2)
- RAD Tech (3)
- IH Tech (0.5)

2) Task #2 – General

- In accordance with the FAT&LC/Company contract, the ability to move Operators, Crafts and MVO's to satisfy short-term staffing needs is limited.

  - ARWWP Operations has been divided into three area assignments:
    - AWWT
    - STP
    - Valve House (SPIT/IAWWT)
    - Overtime is reserved exclusively to Operators assigned to the specific areas and short-term assignments need to be approved by the Company/Union Labor Council.
  - Crafts and MVO's cannot cross project assignments; all staffing needs must be filled from within the project.

3) Task #3 – AWWT (Through end of contract)

Operate, monitor and maintain AWWT Phase I, II and III, SDF, Resin Regeneration, Sampling, BSL Sludge Removal, BSL, HNT, K65 Storm Runoff Basin, SW and NW Detention. Inlet Structures, and BSL Ozone System. Operator and craft staffing needs were established originally in January 1995 upon start up of AWWT Phase I and II. Since then, AWWT Phase III, the SDF, Resin Regeneration, BSL Sludge Removal and BSL Ozone Systems have been brought on-line with no increase in Operator staffing. In addition, all Extraction Wells, Injection Wells and Leachate Conveyance System alarms are received at the AWWT Control Room DCS.

R1-F04 008

The four ~~five person~~ crews are divided up with 2 crews on day shift and one crew on each of the off shifts. ~~With rotating days off, normal staffing on day shift for Monday, Wednesday, Thursday and Friday is 8 Operators and 4 Operators each on the off shifts. Staffing drops to 6 on day shift for Tuesday, Saturday and Sunday and 3 Operators each on the off shifts. Holidays are covered with minimal staffing on all three shifts.~~ Minimal staffing is scheduled to operate the facility on weekends and holidays. The additional

Operators on day shift cover the additional duties of K-65 rounds, Resin Regeneration, BSL Sludge Removal, BSL Ozone, dropping the SDF Filter Press and housekeeping.

R1-F04 008

~~Four five person crews~~ Operators to operate this facility and listed functions 24 hours/day, 7 days/week.

- Waste Water Operators ~~(20)~~ (17)

4) Task #4 – Industrial Vacuum Trucks, Water Tankers, and Water Truck (Through end of Contract)

Collection and transport of waste waters that cannot be "Hard Piped" to the treatment Facilities (until September 2005), plus dust control on the main Haul Road during OSDF Operations (until April FY02).

R1-F04 008

	Through FY01	FY02 through FY05
• Industrial Vacuum Truck Loader/Operator (IVLO)	(4)	(3)
• Motor Vehicle Operator (MVO)	(2)	(1.5)
~~• Motor Vehicle Operator (MVO)~~	~~(1) During OSDF Operation~~	

5) Task #5 – SPIT and IAWWT (Through September ~~2001~~ 2002)

Operate, monitor and maintain SPIT, IAWWT, Valve House, SWRB, SWRB Ozone, Injection Surge Tank Systems and perform sampling functions.

- One 5-person crew working rotating shifts, rotating days off to operate these facilities and listed functions 24 hours/day, 7 days/week.
  - Waste Water Operators (5)

6) Task #6 – STP ~~(Through end of FY03)~~

Operate, monitor and maintain STP and perform process control and NPDES sampling.

R1-F04 008

- One 5-person crew until end of FY2003 working rotating shifts, rotating days off to operate the facility and listed functions 24 hours/day, 7 days/week.

	FY01 through FY03	FY04-EOC
• Waste Water Operators	(5)	(1)

~~7) Task #7 – STP (FY04 through end of Contract)~~

- One Wastewater Operator, Monday-Friday, Day Shift.

For baseline purposes, the maintenance craft personnel are divided between the Treatment Facility Operations and the Wellfield Operations but in reality it is one maintenance crew that responds to corrective maintenance and/or preventative maintenance activities throughout the project whenever and wherever required. Maintenance craft manhours charged to the project for CY00 are included in Table TS2 Number 2 as verification/justification for staffing levels. A reduction in maintenance staffing is projected based on discontinuation of the South Waste Unit pumping operation and shutdown of the SPIT and IAWWT treatment facilities combined with some assumed efficiency based on consistency/familiarity with equipment and miscellaneous construction project improvements.

R1-F04 008

8) Task #8 – Staffing for Maintenance Activities-Treatment Facility Operations

- Millwrights ~~(4)~~ (3)
- Pipefitters ~~(5)~~ (3)
- Instrument Mechanics ~~(2)~~ (1.5)
- Electricians ~~(2)~~ (1.5)
- Welder (0.2)
- Oiler (0.4)

Table TSQ-2
Maintenance Craft Manhours Charged to Project for CY00

Preventative Maintenance

Craft	Regular Hours	Time/Half Hours	Double Time Hours	Total
Electrician	922.0	4.5		926.5
Instrument Mechanic	2472.0	147.5	20.0	2639.5
Millwright	653.5		4.5	658.0
Oiler	1.0			1.0
Pipefitter	1688.5	39.5	11.0	1739.0
Rigger	37.5			37.5
Welder	2.0			2.0
			Total:	6003.5

Corrective Maintenance

Craft	Regular Hours	Time/Half Hours	Double Time Hours	Total
Carpenter	392.5			392.5
Electrician	1181.0	27.5	15.5	1224.0
Instrument Mechanic	127.0	53.0	19.0	199.0
Machinist	10.0			10.0
Millwright	1591.0	89.5	11.0	1691.5
Painter	39.0			39.0
Pipefitter	3178.0	239.5	35.0	3452.5
Rigger	330.0			330.0
Welder	237.0	17.0	3.5	257.5
			Total:	7596.0

Maintenance Tickets

Craft	Regular Hours	Time/Half Hours	Double Time Hours	Total
Carpenter	226.5		2.0	228.5
Electrician	1564.5	19.0	1.0	1584.5
Instrument Mechanic	990.5	24.7	1.5	1016.7
Machinist	23.0			23.0
Millwright	1082.0	28.0	2.0	1112.0
Painter	96.5			96.5
Pipefitter	2112.0	13.5	4.5	2130.0
Rigger	26.0			26.0
Welder	127.5	2.5	1.0	131.0
			Total	6348.2

Non-planned
(Pre-Job Briefings,Troubleshooting,Meetings,Medical,Career Developement, ect.)

Craft	Regular Hours	Time/Half Hours	Double Time Hours	Total
Carpenter	9.0			9.0
Electrician	1441.0	16.0	9.0	1466.0
Instrument Mechanic	967.5	26.0		993.5
Millwright	1418.0	3.0	2.5	1423.5
Painter	9.0			9.0
Pipefitter	2136.5	9.0	17.5	2163.0
Rigger	1.0			1.0
Welder	502.0	1.0	5.0	508.0
			Total:	6573.0

9) Task #9 – Wellfield/PF/Leachate/Surface Water Sampling (Through end of contract)

Operate, monitor and maintain Wellfield Systems, the Leachate Collection and Transfer System, sample and monitor the PF, collect all surface water samples as per the Integrated Environmental Monitoring Plan and operate/monitor the Soil and Disposal Facility Project Certification Buffer Area pumps starting in FY05. Note: Pumpers time is divided between Wellfield Operations and Treatment Facilities Operations.

R1-F04 008

- One 5-person crew working rotating shifts, rotating days off to operate the facilities and listed functions 24 hours/day, 7 days/week. One additional pumper for the Certification Buffer Area pumps (beginning in FY05)

  - Pump Operators (5) FY01-FY04
  - Pump Operators (6) FY05 Thru end of contract

- Staffing for maintenance functions

  - Pipefitters (1)
  - Instrument Mechanic (1)
  - Electricians (1)
  - Heavy Equipment Operator (0.3)
  - Rigger (0.3)
  - Well Drilling Contractor
  - Environmental Scientist (1)
  - Environmental Technician (0.1)

Table TSQ-3
Wellfield Operations - Charge Number EEWW1 FY01 - 1st Quarter FY10

Resource	Resource Code	FTE
Process Engineer	ENG PRC	0.5
Maintenance Supervisor	MTN MGR	0.5
Environmental Scientist	ENS REP	1
Environmental Technician	ENS TEC	0.1
Pump Operator	PMP OPR	2
Pipefitter	PIPFTR	1
Instrument Mechanic	INS MEC	1
Electrician	ELEC TN	1
Heavy Equipment Operator	HEO OPR	0.2
Rigger	RIGGER	0.2

Table TSQ-4
Water Treatment Operations - Charge Number EEWW2 FY01-FY10

Resource	Resource Code	FY01 FTE	FY02-FY03 FTE	FY04-FY10 (1st Qtr) FTE
Operations Engineer	PJR MGR	1	1	1
Facility Field Manager	PJS MGR	1	1	1
Process Engineer	ENG PRC	1.5	1.5	1.5
Training Supervisor	OPR MGR	1	1	1
Maintenance Supervisor	MTN MGR	1.5	1.5	1.5
Operations Supervisor	OPR MGR	7	7	7
Maintenance Planner/Estimator	MTN REP	1	1	1
Project Stores Supervisor	PJS REP	1	1	1
Administrative Support	INR REP	1	1	1
Operations Technical Support	PJS REP	1	1	1
Lab Chemist	LAB CHM	5	5	5
RAD Tech	RAD MGR	3	3	3
IH Tech	INN TEC	0.5	0.5	0.5
Waste Water Operator	WWR OPR	30	25	21
Pump Operator	PMP OPR	3	3	3-4
IVLO	IND VAC	4	4	4
Motor Vehicle Operator	MVO OPR	2-3	2	2-3
Millwright	MIL WRT	4	4	4
Pipefitter	PIPFTR	5	5	5
Instrument Mechanic	INS MEC	2	2	2
Electrician	ELECTN	2	2	2
Welder	WELDER	0.2	0.2	0.2
Oiler	OIL REM	0.5	0.5	0.5

10) Task #10 – Overtime and Premium Pay Factors

Due to the requirement for continuous operation of AWWT, SDF, IAWWT, SPIT, STP, Wellfield, Leachate Conveyance System, and the PF, overtime and premium pay are factors that must be included in the planning process.

10)1 Overtime

Overtime is any paid time over 40 hours per workweek and is defined in the FAT&LC Union/Company Contract and in Human Resource Policy HR-0203 and paid at the rate of 1 1/2 times base pay. Overtime is limited to covering those work stations with minimal staffing for facility operation as required by Technical Manual M123, "Standing Orders for ARWWP Operations", for corrective

maintenance activities that are critical to facility operation and cannot be completed during normal work hours, and allowable time for employees shift turnover.

- Minimal watch standards, as defined in M-123, to allow continuous facility operation are as follows:

  - Shift Supervisor
  - AWWT Control Room Operator
  - AWWT Field Operator
  - SDF Operator
  - SPIT/IAWWT Operator
  - Pump Operator
  - STP Operator
  - Process Control Lab Chemist

  - Maintenance activities on an overtime basis are restricted to corrective actions necessary for continuous operation and to maintain components critical to meet regulatory requirements.

- The baseline for planning purposes will be the actual overtime charged from October 2000 through and including February, 2001

Oct 00 = 506 Hours
Nov 00 = 943
Dec 00 = 886
Jan 01 = 477
Feb 01 = 667
3479 divided by 5 = 696 hours/month goal

Tasks Require Overtime	Rate	Planned Overtime/Month
Shift Turnover	35 WW OPS @ 0.3/day	315 hours
Minimal Shift Staffing Requirements	20 Shift Vacancies @ 8 Hours Each	160 hours
Corrective Maintenance Activities Including Call-In Pay		221 hours
	Total	696 hours

11)2 Premium Pay

Premium pay is defined as extra pay for working Saturdays, Sundays and holidays plus shift differential, which is extra pay for working a shift other than day shift and is currently paid at the rate of $0.50 cents/hour.

- The Treatment Facilities are required to operate continuously and operators/supervisors assigned to those facilities work rotating shifts/rotating days off to provide coverage without normally exceeding a standard 40-hour workweek. Based upon established work schedules, calculations for determining premium pay for planning purposes follows:

  3 of 5 weeks = straight time at 40 hour/week = 120 hours
  2 of 5 weeks
  6 days @ 8 hours pay = 48 hours
  2 days @ 1 1/2 times 8 hours pay = 24 hours
  2 days @ 2 times 8 hours pay = 32 hours

  Total = 224 hours for 5 week period

- Shift differential calculations are based upon minimal staffing requirements for afternoon and night shift operations:

  2 supervisors on off shifts 7 days/week
  (2) (40) ($ 0.50) = $40/week
  12 operators on off shifts 7 days/week
  (12) (40) ($0.50) = $240/week

2.0 SCHEDULE

- Wellfield Operations (see attached schedule)
- Treatment Facilities Operations (see attached schedule)

EXTRACTION/INJECTION WELLS OPERATING SCHEDULE

EXTRACTION	Existing	FY'01	FY'02	FY'03	FY'04	FY'05	FY'06	FY'07	FY'08	FY'09	DESCRIPTION (3)
South Plume	4	4	4	4	3	3	3	3	3	3	Shutdown 04 because of SPO addition
South Plume Optimization	2	2	2	2	3	3	3	3	3	3	Add 1 - 03
S. Field - Phase I	11	11	12	12	11	11	11	11	11	11	Add 1 - 01 Delete 13 - 04
S. Field - Phase II	--	--	--	3	3	3	3	3	3	3	Add 3 - 02
Waste Pits - Phase I	--	--	3	3	3	3	3	3	3	3	Add 3 - 01
Waste Pits - Phase II	--	--	--	--	--	--	--	2	2	2	Add 2 - 06
Plant 6	--	--	--	--	--	--	--	--	--	--	--
Additional Ext. Wells	--	--	--	--	2	4	6	7	8	9	Add 2 ea - 03, 04, 05, 06, 07, & 08
TOTAL EXTRACTION	**17**	**17**	**21**	**24**	**25**	**27**	**29**	**32**	**33**	**34**	
INJECTION											
South Field	5	5	5	5	6	6	6	6	6	6	Add 1 - 03
S. Field - Phase II	--	--	--	2	2	2	2	2	2	2	Add 2 - 02
North Line	--	--	--	--	--	--	--	--	--	--	
Additional Injection Wells	--	--	--	--	1	2	3	4	5	6	Add 1 ea - 04, 05 & 06 Add 1 ea - 07, 08, & 09
TOTAL INJECTION	**5**	**5**	**5**	**7**	**9**	**10**	**11**	**12**	**13**	**14**	
GRAND TOTAL	**22**	**22**	**26**	**31**	**33**	**37**	**40**	**44**	**46**	**48**	

Notes: ~~1) If get agreement on 30 ppb change may stop pumping S. Field - Phase 1 wells 13, 14 & 16, and South Plume well 4 (outside of Baseline assumptions)~~

1) In outer years, may have to rotate extraction wells online as required to address system hydraulics and meet allowable discharge limits. It is expected that some wells will be in rebound pumping configuration.

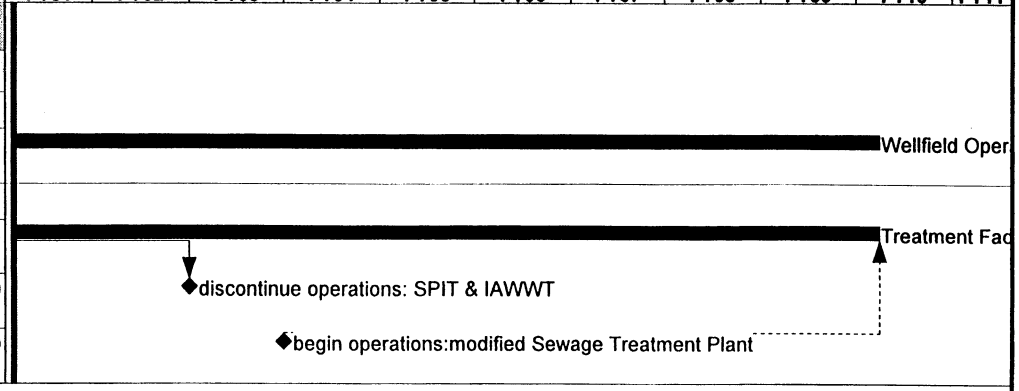
PBS-04, AQUIFER RESTORATION PROJECT

2) Added well year shown is year well is constructed. Table indicates that well will be operational in year following construction. Note that a well could actually be in operation for a short period in the year it is constructed.

SECTION 2

2.0 SCHEDULE

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
E PBS 04 - AQUIFER RESTORATION				
1.1.E.E TREATMENT OPERATIONS				
EEWW1 Well Field Operations				
ECEWW10000	Wellfield Operations & Maintenance	01DEC00	27DEC09	3,314
EEWW2 Treatment Facilities Operations				
ECEWW20000	Treatment Facilities Operations & Maint.	01DEC00	27DEC09	3,314
ECEWW2M001	discontinue operations: SPIT & IAWWT		30SEP02	0
ECEWW2M003	begin operations:modified Sewage Treatment Plant	01OCT03		0



FLUOR FERNALD

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Start Date	01DEC00
Finish Date	27DEC09
Data Date	01DEC00
Run Date	05SEP01 15:15

BLCF - EC01

Sheet 1 of 1

AQUIFER RESTORATION

1.1.E.E TREATMENT OPERATIONS

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved
	F04-009		

SECTION 2

3.0 MANPOWER PLANS

Manpower Planning Sheet (CR2)

MPS # 1EE01 WELL FIELD OPERATIONS

DRIVERS	START DATE	END DATE	FY 2001 Q1	FY 2001 Q2	FY 2001 Q3	FY 2001 Q4	FY 2002 Q1	FY 2002 Q2	FY 2002 Q3	FY 2002 Q4	FY 2003 Q1	FY 2003 Q2	FY 2003 Q3	FY 2003 Q4	FY 2004 Q1	FY 2004 Q2	FY 2004 Q3	FY 2004 Q4	FY 2005 Q1	FY 2005 Q2	FY 2005 Q3	FY 2005 Q4	FY 2006 Q1	FY 2006 Q2	FY 2006 Q3	FY 2006 Q4
301 OSDF Summary Schedule	04/01/2004	12/23/2009															xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
502 WASTE PIT SHIP/DISPOSAL OPERATIONS	10/02/2000	08/01/2005	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xx				
601 Soils Excavation Project Summary	10/01/2003	12/31/2009													xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
704 Silos AWR Summary	10/02/2000	10/23/2003	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	x											
710 Silos 1, 2, & 3 Summary Activity	10/02/2000	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx

		TOT	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Operations Labor	Engineer: Process & Startup	18.50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maintenance	Maintenance Manager	18.50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Environmental	Environmental Scientist Rep.	37.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Environmental	Environmental Scientist Tech.	3.70	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Operations Labor	Pump Operator	74.00	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Craft Labor	Pipefitter	37.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Craft Labor	Instrument Mechanic	37.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Craft Labor	Electrician	37.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Transportation Labor	Heavy Equipment Operator	7.40	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Craft Labor	Rigger	7.40	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Sheet Totals:	277.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50

Manpower Planning Sheet (CR2)

MPS # 1EE01 WELL FIELD OPERATIONS

DRIVERS	START DATE	END DATE	FY 2007 Q1	FY 2007 Q2	FY 2007 Q3	FY 2007 Q4	FY 2008 Q1	FY 2008 Q2	FY 2008 Q3	FY 2008 Q4	FY 2009 Q1	FY 2009 Q2	FY 2009 Q3	FY 2009 Q4	FY 2010 Q1	FY 2010 Q2	FY 2010 Q3	FY 2010 Q4	FY 2011 Q1	FY 2011 Q2	FY 2011 Q3	FY 2011 Q4
301 OSDF Summary Schedule	04/01/2004	12/23/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
502 WASTE PIT SHIP/DISPOSAL OPERATION	10/02/2000	08/01/2005																				
601 Soils Excavation Project Summary	10/01/2003	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
704 Silos AWR Summary	10/02/2000	10/23/2003																				
710 Silos 1, 2, & 3 Summary Activity	10/02/2000	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
Operations Labor	Engineer: Process & Startup		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0
Maintenance	Maintenance Manager		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0
Environmental	Environmental Scientist Rep.		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Environmental	Environmental Scientist Tech.		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0
Operations Labor	Pump Operator		2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0
Craft Labor	Pipefitter		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Craft Labor	Instrument Mechanic		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Craft Labor	Electrician		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Transportation Labor	Heavy Equipment Operator		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0	0	0	0	0	0	0
Craft Labor	Rigger		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0	0	0	0	0	0	0
		Sheet Totals:	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Manpower Planning Sheet (CR2)

MPS # 1EE02 TREATMENT FACILITIES OPERATIONS

DRIVERS	START DATE	END DATE	FY 2001 Q1	FY 2001 Q2	FY 2001 Q3	FY 2001 Q4	FY 2002 Q1	FY 2002 Q2	FY 2002 Q3	FY 2002 Q4	FY 2003 Q1	FY 2003 Q2	FY 2003 Q3	FY 2003 Q4	FY 2004 Q1	FY 2004 Q2	FY 2004 Q3	FY 2004 Q4	FY 2005 Q1	FY 2005 Q2	FY 2005 Q3	FY 2005 Q4	FY 2006 Q1	FY 2006 Q2	FY 2006 Q3	FY 2006 Q4
301 OSDF Summary Schedule	04/01/2004	12/23/2009															xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
502 WASTE PIT SHIP/DISPOSAL OPERATIONS	10/02/2000	08/01/2005	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xx				
601 Soils Excavation Project Summary	10/01/2003	12/31/2009													xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
704 Silos AWR Summary	10/02/2000	10/23/2003	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	x											
710 Silos 1, 2, & 3 Summary Activity	10/02/2000	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx

		TOT	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Project Management	Project Mgr.	37.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Maintenance	Project Support Manager	37.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Operations Labor	Engineer: Process & Startup	48.90	1.5	1.5	1.5	1.5	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Operations	Operations Manager	246.00	8	8	8	8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	6	6	6	6
Maintenance	Maintenance Manager	55.50	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Operations Labor	Waste Water Plant Operator	795.00	30	30	30	30	27	27	27	27	23	23	23	23	19	19	19	19	19	19	19	19	19	19	19	19
Operations Labor	Pump Operator	132.00	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4
Operations Labor	Industrial Vacuum Operator	64.00	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	0	0	0	0
Transportation Labor	Motor Vehicle Operator	60.80	2	2.3	3	3	2	2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Craft Labor	Millwright	115.00	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Craft Labor	Pipefitter	119.00	5	5	5	5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Craft Labor	Instrument Mechanic	57.50	2	2	2	2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Craft Labor	Electrician	57.50	2	2	2	2	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Craft Labor	Welder	7.40	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Craft Labor	Oiler (Maintenance)	18.50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Maintenance	Maintenance Rep.	37.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Maintenance	Project Support Rep.	41.00	2	2	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Information Management	Information Records Rep.	37.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Lab	Chemist	185.00	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Environmental Safety & H	Rad Supervisor/Manager	111.00	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Environmental Safety & H	Industrial Hygienist Tech.	18.50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Sheet Totals:		2280.60	78.20	78.50	79.20	79.20	68.00	68.00	67.50	67.50	63.50	63.50	63.50	63.50	59.50	59.50	59.50	59.50	60.50	60.50	60.50	60.50	56.50	56.50	56.50	56.50

Manpower Planning Sheet (CR2)

MPS # 1EE02 TREATMENT FACILITIES OPERATIONS

DRIVERS	START DATE	END DATE	FY 2007 Q1	FY 2007 Q2	FY 2007 Q3	FY 2007 Q4	FY 2008 Q1	FY 2008 Q2	FY 2008 Q3	FY 2008 Q4	FY 2009 Q1	FY 2009 Q2	FY 2009 Q3	FY 2009 Q4	FY 2010 Q1	FY 2010 Q2	FY 2010 Q3	FY 2010 Q4	FY 2011 Q1	FY 2011 Q2	FY 2011 Q3	FY 2011 Q4
301 OSDF Summary Schedule	04/01/2004	12/23/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
502 WASTE PIT SHIP/DISPOSAL OPERATION	10/02/2000	08/01/2005																				
601 Soils Excavation Project Summary	10/01/2003	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
704 Silos AWR Summary	10/02/2000	10/23/2003																				
710 Silos 1, 2, & 3 Summary Activity	10/02/2000	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
Project Management	Project Mgr.		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Maintenance	Project Support Manager		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Operations Labor	Engineer: Process & Startup		1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	0	0	0	0	0	0	0
Operations	Operations Manager		6	6	6	6	6	6	6	6	6	6	6	6	6	0	0	0	0	0	0	0
Maintenance	Maintenance Manager		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0	0	0	0	0	0	0
Operations Labor	Waste Water Plant Operator		19	19	19	19	19	19	19	19	19	19	19	19	19	0	0	0	0	0	0	0
Operations Labor	Pump Operator		4	4	4	4	4	4	4	4	4	4	4	4	4	0	0	0	0	0	0	0
Operations Labor	Industrial Vacuum Operator		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transportation Labor	Motor Vehicle Operator		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0	0	0	0	0	0	0
Craft Labor	Millwright		3	3	3	3	3	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0
Craft Labor	Pipefitter		3	3	3	3	3	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0
Craft Labor	Instrument Mechanic		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0	0	0	0	0	0	0
Craft Labor	Electrician		1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0	0	0	0	0	0	0
Craft Labor	Welder		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0	0	0	0	0	0	0
Craft Labor	Oiler (Maintenance)		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0
Maintenance	Maintenance Rep.		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Maintenance	Project Support Rep.		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Information Management	Information Records Rep.		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Lab	Chemist		5	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0
Environmental Safety & Health	Rad Supervisor/Manager		3	3	3	3	3	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0
Environmental Safety & Health	Industrial Hygienist Tech.		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0
		Sheet Totals:	56.50	56.50	56.50	56.50	56.50	56.50	56.50	56.50	56.50	56.50	56.50	56.50	56.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Manpower Planning Sheet (CR2)

MPS # 1EE03 ARWWP WASTE DISPOSAL

DRIVERS	START DATE	END DATE	FY 2001 Q1	FY 2001 Q2	FY 2001 Q3	FY 2001 Q4	FY 2002 Q1	FY 2002 Q2	FY 2002 Q3	FY 2002 Q4	FY 2003 Q1	FY 2003 Q2	FY 2003 Q3	FY 2003 Q4	FY 2004 Q1	FY 2004 Q2	FY 2004 Q3	FY 2004 Q4	FY 2005 Q1	FY 2005 Q2	FY 2005 Q3	FY 2005 Q4	FY 2006 Q1	FY 2006 Q2	FY 2006 Q3	FY 2006 Q4
301 OSDF Summary Schedule	04/01/2004	12/23/2009															xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
502 WASTE PIT SHIP/DISPOSAL OPERATIONS	10/02/2000	08/01/2005	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xx				
601 Soils Excavation Project Summary	10/01/2003	12/31/2009													xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
704 Silos AWR Summary	10/02/2000	10/23/2003	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	x											
710 Silos 1, 2, & 3 Summary Activity	10/02/2000	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx

		TOT	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
General Labor	Hazwat	4.40	1.1	1.1	1.1	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transportation Labor	Motor Vehicle Operator	2.40	0.6	0.6	0.6	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transportation Labor	Heavy Equipment Operator	8.60	0.5	0.5	0.5	0.5	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Operations	Operations Manager	0.80	0.2	0.2	0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Safety & H	Rad Tech	2.00	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QA/QC	QA Engineer	1.60	0.4	0.4	0.4	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Waste Management	Waste Engineer	4.40	1.1	1.1	1.1	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Safety & H	Rad Engineer	0.80	0.2	0.2	0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Safety & H	Safety Engineer	2.00	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Safety & H	Safety Tech.	0.40	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Procurement	Material Property Control Rep.	0.40	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Management	Project Mgr.	0.40	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Clerks	0.40	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sheet Totals:	28.60	5.50	5.50	5.50	5.50	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20

Manpower Planning Sheet (CR2)

MPS # 1EE03 ARWWP WASTE DISPOSAL

DRIVERS	START DATE	END DATE	FY 2007 Q1	FY 2007 Q2	FY 2007 Q3	FY 2007 Q4	FY 2008 Q1	FY 2008 Q2	FY 2008 Q3	FY 2008 Q4	FY 2009 Q1	FY 2009 Q2	FY 2009 Q3	FY 2009 Q4	FY 2010 Q1	FY 2010 Q2	FY 2010 Q3	FY 2010 Q4	FY 2011 Q1	FY 2011 Q2	FY 2011 Q3	FY 2011 Q4
301 OSDF Summary Schedule	04/01/2004	12/23/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
502 WASTE PIT SHIP/DISPOSAL OPERATION	10/02/2000	08/01/2005																				
601 Soils Excavation Project Summary	10/01/2003	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
704 Silos AWR Summary	10/02/2000	10/23/2003																				
710 Silos 1, 2, & 3 Summary Activity	10/02/2000	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
General Labor	Hazwat		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transportation Labor	Motor Vehicle Operator		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transportation Labor	Heavy Equipment Operator		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0	0	0	0	0	0	0
Operations	Operations Manager		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Safety & Health	Rad Tech		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QA/QC	QA Engineer		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Waste Management	Waste Engineer		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Safety & Health	Rad Engineer		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Safety & Health	Safety Engineer		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Safety & Health	Safety Tech.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Procurement	Material Property Control Rep.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Management	Project Mgr.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Clerks		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Sheet Totals:	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SECTION 2

4.0 ESTIMATE

EEWW1

WELLFIELD OPERATIONS

09/06/2001
3:27 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EEWW
CHARGE NO: EEWW1
COMMENT NO: R1D-173

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: EV HENRY
FISCAL YEAR: 2001-2010

Resource: ELECTN **ELECTRICIAN** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,452.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	421.0
Cum Hours:	1,452.0	3,199.0	4,946.0	6,693.0	8,440.0	10,187.0	11,934.0	13,681.0	15,428.0	15,849.0
Yr Total Cost:	45,506	57,630	61,041	64,640	68,472	73,155	79,306	83,589	92,891	23,075
Cum Total Cost:	45,506	103,135	164,177	228,817	297,290	370,445	449,751	533,340	626,232	649,307

Resource: ENGPRC **ENG PROCESS/STARTUP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	726.0	873.5	873.5	873.5	873.5	873.5	873.5	873.5	873.5	210.5
Cum Hours:	726.0	1,599.5	2,473.0	3,346.5	4,220.0	5,093.5	5,967.0	6,840.5	7,714.0	7,924.5
Yr Total Cost:	40,641	51,470	54,517	57,731	61,153	65,335	70,829	74,654	82,962	20,609
Cum Total Cost:	40,641	92,111	146,628	204,359	265,512	330,847	401,676	476,331	559,292	579,901

Resource: ENSREP **ENVIR SCIENCE REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,452.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	421.0
Cum Hours:	1,452.0	3,199.0	4,946.0	6,693.0	8,440.0	10,187.0	11,934.0	13,681.0	15,428.0	15,849.0
Yr Total Cost:	60,926	77,158	81,726	86,545	91,675	97,945	106,180	111,915	124,369	30,895
Cum Total Cost:	60,926	138,084	219,811	306,355	398,031	495,975	602,156	714,070	838,439	869,334

Resource: ENSTEC **ENVIR SCIENTIST TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	145.2	174.7	174.7	174.7	174.7	174.7	174.7	174.7	174.7	42.1
Cum Hours:	145.2	319.9	494.6	669.3	844.0	1,018.7	1,193.4	1,368.1	1,542.8	1,584.9
Yr Total Cost:	4,112	5,208	5,516	5,841	6,187	6,611	7,166	7,553	8,394	2,085
Cum Total Cost:	4,112	9,320	14,836	20,677	26,864	33,475	40,641	48,195	56,589	58,674

INCLUDES ESCALATION COSTS

09/06/2001
3:27 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EEWW
CHARGE NO: EEWW1
COMMENT NO: R1D-173

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: EV HENRY
FISCAL YEAR: 2001-2010

Resource: FIELDSUB **FIELD SUBS** **EOC:** SUBCONTRACTORS
Res Dept: **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	251,279.0	845,021.0	445,021.0	720,021.0	670,021.0	1,245,021.0	945,021.0	1,195,021.0	995,021.0	12,194.0
Cum Units:	251,279.0	1,096,300.0	1,541,321.0	2,261,342.0	2,931,363.0	4,176,384.0	5,121,405.0	6,316,426.0	7,311,447.0	7,323,641.0
Yr Total Cost:	251,279	867,837	469,377	780,691	746,819	1,427,970	1,115,320	1,451,272	1,243,429	15,680
Cum Total Cost:	251,279	1,119,116	1,588,492	2,369,183	3,116,002	4,543,973	5,659,292	7,110,564	8,353,993	8,369,673

Resource: HEOOPR **HEAVY EQUIP OPERATOR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	290.4	349.4	349.4	349.4	349.4	349.4	349.4	349.4	349.4	84.2
Cum Hours:	290.4	639.8	989.2	1,338.6	1,688.0	2,037.4	2,386.8	2,736.2	3,085.6	3,169.8
Yr Total Cost:	9,136	11,570	12,255	12,978	13,747	14,687	15,922	16,782	18,649	4,633
Cum Total Cost:	9,136	20,706	32,961	45,939	59,686	74,373	90,295	107,077	125,726	130,359

Resource: INSMEC **INSTRUMENT MECHANIC** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,452.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	421.0
Cum Hours:	1,452.0	3,199.0	4,946.0	6,693.0	8,440.0	10,187.0	11,934.0	13,681.0	15,428.0	15,849.0
Yr Total Cost:	45,259	57,317	60,710	64,290	68,101	72,758	78,876	83,136	92,387	22,950
Cum Total Cost:	45,259	102,576	163,286	227,576	295,677	368,436	447,311	530,447	622,835	645,785

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	315,097.0	56,328.0	56,328.0	56,328.0	56,328.0	56,328.0	56,328.0	56,328.0	56,328.0	9,398.0
Cum Units:	315,097.0	371,425.0	427,753.0	484,081.0	540,409.0	596,737.0	653,065.0	709,393.0	765,721.0	775,119.0
Yr Total Cost:	315,097	57,849	59,411	61,074	62,784	64,605	66,479	68,407	70,390	12,085
Cum Total Cost:	315,097	372,946	432,357	493,431	556,215	620,820	687,299	755,706	826,096	838,181

INCLUDES ESCALATION COSTS

09/06/2001
3:27 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EEWW
CHARGE NO: EEWW1
COMMENT NO: R1D-173

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: EV HENRY
FISCAL YEAR: 2001-2010

Resource: MNTMGR **MAINTENANCE MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	726.0	873.5	873.5	873.5	873.5	873.5	873.5	873.5	873.5	210.5
Cum Hours:	726.0	1,599.5	2,473.0	3,346.5	4,220.0	5,093.5	5,967.0	6,840.5	7,714.0	7,924.5
Yr Total Cost:	32,365	40,988	43,415	45,974	48,700	52,030	56,405	59,451	66,067	16,412
Cum Total Cost:	32,365	73,353	116,768	162,742	211,442	263,472	319,877	379,329	445,396	461,808

Resource: PIPFTR **PIPE FITTER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,887.6	2,271.1	2,271.1	2,271.1	2,271.1	2,271.1	2,271.1	2,271.1	2,271.1	547.3
Cum Hours:	1,887.6	4,158.7	6,429.8	8,700.9	10,972.0	13,243.1	15,514.2	17,785.3	20,056.4	20,603.7
Yr Total Cost:	65,752	83,270	88,199	93,400	98,936	105,703	114,590	120,779	134,220	33,342
Cum Total Cost:	65,752	149,022	237,221	330,621	429,557	535,260	649,850	770,629	904,849	938,190

Resource: PMPOPR **PUMP OPERATOR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	3,049.2	3,668.7	3,668.7	3,668.7	3,668.7	3,668.7	3,668.7	3,668.7	3,668.7	884.1
Cum Hours:	3,049.2	6,717.9	10,386.6	14,055.3	17,724.0	21,392.7	25,061.4	28,730.1	32,398.8	33,282.9
Yr Total Cost:	97,953	124,050	131,394	139,141	147,389	157,469	170,709	179,929	199,952	49,670
Cum Total Cost:	97,953	222,003	353,397	492,538	639,927	797,396	968,105	1,148,034	1,347,986	1,397,656

Resource: RIGGER **RIGGER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	290.4	349.4	349.4	349.4	349.4	349.4	349.4	349.4	349.4	84.2
Cum Hours:	290.4	639.8	989.2	1,338.6	1,688.0	2,037.4	2,386.8	2,736.2	3,085.6	3,169.8
Yr Total Cost:	9,136	11,570	12,255	12,978	13,747	14,687	15,922	16,782	18,649	4,633
Cum Total Cost:	9,136	20,706	32,961	45,939	59,686	74,373	90,295	107,077	125,726	130,359

INCLUDES ESCALATION COSTS

09/06/2001
3:27 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EEWW
CHARGE NO: EEWW1
COMMENT NO: R1D-173

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: EV HENRY
FISCAL YEAR: 2001-2010

Resource: SERVSUB **SUBS** **EOC:** SUBCONTRACTORS
Res Dept: 952 **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	22,620.0	22,620.0	22,620.0	22,620.0	22,620.0	22,620.0	22,620.0	22,620.0	0.0
Cum Units:	0.0	22,620.0	45,240.0	67,860.0	90,480.0	113,100.0	135,720.0	158,340.0	180,960.0	180,960.0
Yr Total Cost:	0	23,231	23,858	24,526	25,213	25,944	26,696	27,470	28,267	0
Cum Total Cost:	0	23,231	47,089	71,615	96,827	122,771	149,468	176,938	205,205	205,205

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	11,470.8	13,801.3	13,801.3	13,801.3	13,801.3	13,801.3	13,801.3	13,801.3	13,801.3	3,325.9
Cum Hours:	11,470.8	25,272.1	39,073.4	52,874.7	66,676.0	80,477.3	94,278.6	108,079.9	121,881.2	125,207.1
Yr Total Cost:	977,161	1,469,147	1,103,674	1,449,809	1,452,925	2,178,900	1,924,400	2,301,720	2,180,626	236,068
Cum Total Cost:	977,161	2,446,308	3,549,982	4,999,791	6,452,716	8,631,616	10,556,016	12,857,736	15,038,362	15,274,430

CAM_____ for MJ _____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

EEWW2

TREATMENT FACILITIES OPERATIONS

09/06/2001
3:29 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EEWW
CHARGE NO: EEWW2
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: EV HENRY
FISCAL YEAR: 2001-2010

Resource: CLERKS **CLERKS** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	145.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2
Yr Total Cost:	3,469	0	0	0	0	0	0	0	0	0
Cum Total Cost:	3,469	3,469	3,469	3,469	3,469	3,469	3,469	3,469	3,469	3,469

Resource: ELECTN **ELECTRICIAN** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	3,499.3	3,336.8	3,336.8	3,336.8	3,336.8	3,336.8	3,336.8	3,336.8	3,336.8	753.1
Cum Hours:	3,499.3	6,836.1	10,172.9	13,509.6	16,846.4	20,183.2	23,519.9	26,856.7	30,193.5	30,946.6
Yr Total Cost:	118,997	121,887	129,103	136,715	144,819	154,723	167,732	176,792	196,465	46,009
Cum Total Cost:	118,997	240,884	369,987	506,702	651,521	806,244	973,976	1,150,768	1,347,233	1,393,242

Resource: ENGPRC **ENG PROCESS/STARTUP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	2,178.0	2,271.1	2,271.1	2,271.1	2,271.1	2,271.1	2,183.8	2,183.8	2,183.8	483.8
Cum Hours:	2,178.0	4,449.1	6,720.2	8,991.3	11,262.4	13,533.5	15,717.3	17,901.0	20,084.8	20,568.5
Yr Total Cost:	121,924	133,821	141,743	150,100	158,998	169,872	177,072	186,636	207,405	47,361
Cum Total Cost:	121,924	255,745	397,489	547,589	706,587	876,460	1,053,532	1,240,168	1,447,572	1,494,933

Resource: FIELDSUB **FIELD SUBS** **EOC:** SUBCONTRACTORS
Res Dept: **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	139,791.0	20,976.0	20,976.0	20,976.0	20,976.0	20,976.0	20,976.0	20,976.0	20,976.0	5,244.0
Cum Units:	139,791.0	160,767.0	181,743.0	202,719.0	223,695.0	244,671.0	265,647.0	286,623.0	307,599.0	312,843.0
Yr Total Cost:	139,791	21,542	22,124	22,743	23,380	24,058	24,756	25,474	26,213	6,743
Cum Total Cost:	139,791	161,333	183,457	206,201	229,581	253,639	278,395	303,869	330,082	336,825

INCLUDES ESCALATION COSTS

09/06/2001
3:29 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EEWW
CHARGE NO: EEWW2
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: EV HENRY
FISCAL YEAR: 2001-2010

Resource: HAZWAT **HAZWAT** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,597.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	1,597.2	1,597.2	1,597.2	1,597.2	1,597.2	1,597.2	1,597.2	1,597.2	1,597.2	1,597.2
Yr Total Cost:	45,983	0	0	0	0	0	0	0	0	0
Cum Total Cost:	45,983	45,983	45,983	45,983	45,983	45,983	45,983	45,983	45,983	45,983

Resource: HEOOPR **HEAVY EQUIP OPERATOR** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	726.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0
Yr Total Cost:	22,840	0	0	0	0	0	0	0	0	0
Cum Total Cost:	22,840	22,840	22,840	22,840	22,840	22,840	22,840	22,840	22,840	22,840

Resource: INDVAC **INDUSTRIAL VACUUM OP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	5,808.0	5,241.8	5,241.0	5,241.0	5,241.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	5,808.0	11,049.8	16,290.8	21,531.8	26,772.8	26,772.8	26,772.8	26,772.8	26,772.8	26,772.8
Yr Total Cost:	154,319	146,598	155,253	164,406	174,152	0	0	0	0	0
Cum Total Cost:	154,319	300,917	456,169	620,576	794,728	794,728	794,728	794,728	794,728	794,728

Resource: INHTEC **INDUST HYGIENIST TEC** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	726.0	873.5	873.5	873.5	873.5	873.5	873.5	873.5	873.5	210.5
Cum Hours:	726.0	1,599.5	2,473.0	3,346.5	4,220.0	5,093.5	5,967.0	6,840.5	7,714.0	7,924.5
Yr Total Cost:	27,363	34,653	36,705	38,869	41,173	43,989	47,687	50,263	55,856	13,875
Cum Total Cost:	27,363	62,016	98,721	137,590	178,763	222,752	270,439	320,702	376,558	390,434

INCLUDES ESCALATION COSTS

09/06/2001
3:29 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EEWW
CHARGE NO: EEWW2
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: EV HENRY
FISCAL YEAR: 2001-2010

Resource: INRREP **INFO RECORDS REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,452.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	421.0
Cum Hours:	1,452.0	3,199.0	4,946.0	6,693.0	8,440.0	10,187.0	11,934.0	13,681.0	15,428.0	15,849.0
Yr Total Cost:	43,095	54,577	57,808	61,217	64,846	69,280	75,105	79,162	87,971	21,853
Cum Total Cost:	43,095	97,673	155,481	216,698	281,543	350,823	425,929	505,091	593,062	614,915

Resource: INSMEC **INSTRUMENT MECHANIC** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	3,499.3	3,336.8	3,336.8	3,336.8	3,336.8	3,336.8	3,336.8	3,336.8	3,336.8	753.1
Cum Hours:	3,499.3	6,836.1	10,172.9	13,509.6	16,846.4	20,183.2	23,519.9	26,856.7	30,193.5	30,946.6
Yr Total Cost:	118,352	121,226	128,402	135,973	144,033	153,884	166,823	175,833	195,399	45,759
Cum Total Cost:	118,352	239,578	367,980	503,953	647,987	801,871	968,693	1,144,526	1,339,925	1,385,684

Resource: LABCHM **CHEMIST** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	7,260.0	8,735.0	8,735.0	8,735.0	8,735.0	8,735.0	8,735.0	8,735.0	8,735.0	2,105.0
Cum Hours:	7,260.0	15,995.0	24,730.0	33,465.0	42,200.0	50,935.0	59,670.0	68,405.0	77,140.0	79,245.0
Yr Total Cost:	281,398	356,371	377,468	399,723	423,419	452,376	490,412	516,899	574,420	142,693
Cum Total Cost:	281,398	637,768	1,015,236	1,414,959	1,838,378	2,290,754	2,781,166	3,298,066	3,872,485	4,015,178

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	774,226.0	986,160.0	986,160.0	986,160.0	986,160.0	986,160.0	986,160.0	986,160.0	986,160.0	145,778.0
Cum Units:	774,226.0	1,760,386.0	2,746,546.0	3,732,706.0	4,718,866.0	5,705,026.0	6,691,186.0	7,677,346.0	8,663,506.0	8,809,284.0
Yr Total Cost:	774,226	1,012,786	1,040,132	1,069,255	1,099,194	1,131,071	1,163,872	1,197,624	1,232,355	187,455
Cum Total Cost:	774,226	1,787,012	2,827,144	3,896,399	4,995,593	6,126,664	7,290,536	8,488,161	9,720,516	9,907,971

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EEWW
CHARGE NO: EEWW2
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: EV HENRY
FISCAL YEAR: 2001-2010

Resource: MILWRT **MILLWRIGHT** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	5,808.0	5,241.0	5,241.0	5,241.0	5,241.0	5,241.0	5,241.0	5,241.0	5,241.0	1,161.0
Cum Hours:	5,808.0	11,049.0	16,290.0	21,531.0	26,772.0	32,013.0	37,254.0	42,495.0	47,736.0	48,897.0
Yr Total Cost:	181,500	172,393	182,599	193,365	204,827	218,835	237,235	250,048	277,873	63,452
Cum Total Cost:	181,500	353,893	536,491	729,856	934,683	1,153,519	1,390,753	1,640,802	1,918,675	1,982,127

Resource: MNTMGR **MAINTENANCE MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	2,178.0	2,620.5	2,620.5	2,620.5	2,620.5	2,620.5	2,620.5	2,620.5	2,620.5	631.5
Cum Hours:	2,178.0	4,798.5	7,419.0	10,039.5	12,660.0	15,280.5	17,901.0	20,521.5	23,142.0	23,773.5
Yr Total Cost:	97,095	122,964	130,244	137,923	146,099	156,091	169,215	178,354	198,202	49,236
Cum Total Cost:	97,095	220,060	350,304	488,227	634,326	790,417	959,632	1,137,986	1,336,187	1,385,423

Resource: MNTREP **MAINTENANCE REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,452.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	421.0
Cum Hours:	1,452.0	3,199.0	4,946.0	6,693.0	8,440.0	10,187.0	11,934.0	13,681.0	15,428.0	15,849.0
Yr Total Cost:	50,457	63,900	67,683	71,674	75,923	81,115	87,935	92,684	102,998	25,586
Cum Total Cost:	50,457	114,357	182,040	253,714	329,637	410,752	498,687	591,371	694,370	719,956

Resource: MPCREP **MATL PROP CTRL REP** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	145.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2
Yr Total Cost:	4,693	0	0	0	0	0	0	0	0	0
Cum Total Cost:	4,693	4,693	4,693	4,693	4,693	4,693	4,693	4,693	4,693	4,693

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EEWW
CHARGE NO: EEWW2
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: EV HENRY
FISCAL YEAR: 2001-2010

Resource: MVOOPR **MOTOR VEHICLE OPER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	4,791.1	3,049.0	2,620.5	2,620.5	2,620.5	2,620.5	2,620.5	2,620.5	2,620.5	580.5
Cum Hours:	4,791.1	7,840.1	10,460.6	13,081.1	15,701.6	18,322.1	20,942.6	23,563.1	26,183.6	26,764.1
Yr Total Cost:	138,271	92,621	84,317	89,288	94,581	101,049	109,546	115,462	128,311	29,300
Cum Total Cost:	138,271	230,892	315,209	404,497	499,078	600,127	709,673	825,135	953,446	982,746

Resource: ODC700 **ODC 700** **EOC:** ODC
Res Dept: 952 **Overtime:** **Class:** ODC

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	1,302.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	1,302.0	1,302.0	1,302.0	1,302.0	1,302.0	1,302.0	1,302.0	1,302.0	1,302.0	1,302.0
Yr Total Cost:	1,302	0	0	0	0	0	0	0	0	0
Cum Total Cost:	1,302	1,302	1,302	1,302	1,302	1,302	1,302	1,302	1,302	1,302

Resource: OILERM **OILER MAINTENANCE** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	726.0	873.5	873.5	873.5	873.5	873.5	873.5	873.5	873.5	210.5
Cum Hours:	726.0	1,599.5	2,473.0	3,346.5	4,220.0	5,093.5	5,967.0	6,840.5	7,714.0	7,924.5
Yr Total Cost:	19,290	24,429	25,875	27,401	29,025	31,010	33,618	35,433	39,377	9,782
Cum Total Cost:	19,290	43,719	69,594	96,996	126,021	157,031	190,649	226,083	265,459	275,241

Resource: OPRMGR **OPERATIONS MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	12,225.8	12,613.6	12,613.3	12,613.3	12,613.3	10,866.3	10,866.3	10,866.3	10,866.3	2,509.8
Cum Hours:	12,225.8	24,839.5	37,452.8	50,066.1	62,679.5	73,545.8	84,412.2	95,278.5	106,144.8	108,654.7
Yr Total Cost:	698,225	768,907	814,410	862,427	913,552	853,996	925,800	975,802	1,084,389	259,427
Cum Total Cost:	698,225	1,467,132	2,281,542	3,143,969	4,057,521	4,911,517	5,837,316	6,813,118	7,897,508	8,156,935

INCLUDES ESCALATION COSTS

09/06/2001
3:29 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EEWW
CHARGE NO: EEWW2
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: EV HENRY
FISCAL YEAR: 2001-2010

Resource: PIPFTR **PIPE FITTER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	7,855.3	5,957.3	5,957.3	5,957.3	5,957.3	5,957.3	5,957.3	5,957.3	5,957.3	1,333.6
Cum Hours:	7,855.3	13,812.6	19,769.9	25,727.1	31,684.4	37,641.7	43,598.9	49,556.2	55,513.5	56,847.1
Yr Total Cost:	254,618	207,600	219,890	232,855	246,659	263,528	285,685	301,115	334,623	77,553
Cum Total Cost:	254,618	462,218	682,108	914,964	1,161,622	1,425,150	1,710,835	2,011,950	2,346,573	2,424,127

Resource: PJSMGR **PROJECT SUPPORT MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,452.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	421.0
Cum Hours:	1,452.0	3,199.0	4,946.0	6,693.0	8,440.0	10,187.0	11,934.0	13,681.0	15,428.0	15,849.0
Yr Total Cost:	66,385	84,073	89,050	94,300	99,890	106,722	115,695	121,943	135,513	33,663
Cum Total Cost:	66,385	150,458	239,508	333,808	433,698	540,419	656,114	778,058	913,571	947,234

Resource: PJSREP **PROJECT SUPPORT REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	2,904.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	387.0
Cum Hours:	2,904.0	4,651.0	6,398.0	8,145.0	9,892.0	11,639.0	13,386.0	15,133.0	16,880.0	17,267.0
Yr Total Cost:	118,396	74,970	79,408	84,090	89,075	95,167	103,169	108,741	120,842	27,594
Cum Total Cost:	118,396	193,366	272,775	356,865	445,940	541,107	644,276	753,017	873,859	901,453

Resource: PMPOPR **PUMP OPERATOR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	4,690.0	5,642.8	5,642.8	5,642.8	7,389.8	7,389.8	7,389.8	7,389.8	7,389.8	1,780.8
Cum Hours:	4,690.0	10,332.8	15,975.6	21,618.4	29,008.2	36,398.0	43,787.8	51,177.6	58,567.4	60,348.3
Yr Total Cost:	148,047	187,491	198,590	201,681	273,697	292,415	317,001	334,123	371,304	92,236
Cum Total Cost:	148,047	335,537	534,127	735,808	1,009,505	1,301,920	1,618,921	1,953,044	2,324,348	2,416,584

INCLUDES ESCALATION COSTS

09/06/2001
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Fluor Fernald, Inc.

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EEWW
CHARGE NO: EEWW2
COMMENT NO: F04-008

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: EV HENRY
FISCAL YEAR: 2001-2010

Resource: PRJMGR **PROJECT MANAGER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,597.2	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	421.0
Cum Hours:	1,597.2	3,344.2	5,091.2	6,838.2	8,585.2	10,332.2	12,079.2	13,826.2	15,573.2	15,994.2
Yr Total Cost:	142,406	163,953	173,659	183,897	194,799	208,121	225,620	237,806	264,269	65,647
Cum Total Cost:	142,406	306,359	480,017	663,915	858,714	1,066,835	1,292,455	1,530,260	1,794,529	1,860,177

Resource: QACENG **QA ENGINEER** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	580.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	580.8	580.8	580.8	580.8	580.8	580.8	580.8	580.8	580.8	580.8
Yr Total Cost:	26,694	0	0	0	0	0	0	0	0	0
Cum Total Cost:	26,694	26,694	26,694	26,694	26,694	26,694	26,694	26,694	26,694	26,694

Resource: RADENG **RAD ENGINEER** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	290.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	290.4	290.4	290.4	290.4	290.4	290.4	290.4	290.4	290.4	290.4
Yr Total Cost:	13,707	0	0	0	0	0	0	0	0	0
Cum Total Cost:	13,707	13,707	13,707	13,707	13,707	13,707	13,707	13,707	13,707	13,707

Resource: RADMGR **RAD SUPERVISOR/MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	4,356.0	5,241.0	5,241.0	5,241.0	5,241.0	5,241.0	5,241.0	5,241.0	5,241.0	1,263.0
Cum Hours:	4,356.0	9,597.0	14,838.0	20,079.0	25,320.0	30,561.0	35,802.0	41,043.0	46,284.0	47,547.0
Yr Total Cost:	260,532	329,946	349,479	370,084	392,023	418,833	454,049	478,572	531,827	132,112
Cum Total Cost:	260,532	590,479	939,957	1,310,042	1,702,065	2,120,898	2,574,947	3,053,519	3,585,346	3,717,458

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EEWW
CHARGE NO: EEWW2
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: EV HENRY
FISCAL YEAR: 2001-2010

Resource: RADTEC **RAD TECH** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	726.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0
Yr Total Cost:	24,742	0	0	0	0	0	0	0	0	0
Cum Total Cost:	24,742	24,742	24,742	24,742	24,742	24,742	24,742	24,742	24,742	24,742

Resource: S&HENG **SAFETY ENGINEER** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	726.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0	726.0
Yr Total Cost:	36,089	0	0	0	0	0	0	0	0	0
Cum Total Cost:	36,089	36,089	36,089	36,089	36,089	36,089	36,089	36,089	36,089	36,089

Resource: S&HTEC **SAFETY TECH** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	145.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2
Yr Total Cost:	4,198	0	0	0	0	0	0	0	0	0
Cum Total Cost:	4,198	4,198	4,198	4,198	4,198	4,198	4,198	4,198	4,198	4,198

Resource: SERVSUB **SUBS** **EOC:** SUBCONTRACTORS
Res Dept: 952 **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	163,164.0	163,164.0	163,164.0	163,164.0	163,164.0	163,164.0	163,164.0	163,164.0	25,110.0
Cum Units:	0.0	163,164.0	326,328.0	489,492.0	652,656.0	815,820.0	978,984.0	1,142,148.0	1,305,312.0	1,330,422.0
Yr Total Cost:	0	167,569	172,094	176,912	181,866	187,140	192,567	198,152	203,898	32,289
Cum Total Cost:	0	167,569	339,663	516,576	698,442	885,582	1,078,149	1,276,300	1,480,198	1,512,487

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EEWW
CHARGE NO: EEWW2
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: EV HENRY
FISCAL YEAR: 2001-2010

Resource: WELDER **WELDER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	290.4	349.4	349.4	349.4	349.4	349.4	349.4	349.4	349.4	84.2
Cum Hours:	290.4	639.8	989.2	1,338.6	1,688.0	2,037.4	2,386.8	2,736.2	3,085.6	3,169.8
Yr Total Cost:	9,136	11,570	12,255	12,978	13,747	14,687	15,922	16,782	18,649	4,633
Cum Total Cost:	9,136	20,706	32,961	45,939	59,686	74,373	90,295	107,077	125,726	130,359

Resource: WSTENG **WASTE ENGINEER** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,597.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	1,597.2	1,597.2	1,597.2	1,597.2	1,597.2	1,597.2	1,597.2	1,597.2	1,597.2	1,597.2
Yr Total Cost:	81,505	0	0	0	0	0	0	0	0	0
Cum Total Cost:	81,505	81,505	81,505	81,505	81,505	81,505	81,505	81,505	81,505	81,505

Resource: WWROPR **WASTE WATER PLT OPER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	47,131.9	49,177.4	43,937.1	36,232.8	36,232.8	36,232.8	36,232.8	36,232.8	36,232.8	8,405.1
Cum Hours:	47,131.9	96,309.3	140,246.3	176,479.1	212,711.9	248,944.7	285,177.5	321,410.2	357,643.0	366,048.2
Yr Total Cost:	1,702,374	1,864,866	1,792,983	1,568,509	1,661,490	1,775,119	1,924,371	2,028,306	2,254,017	542,114
Cum Total Cost:	1,702,374	3,567,239	5,360,222	6,928,731	8,590,221	10,365,340	12,289,712	14,318,018	16,572,035	17,114,149

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	128,559.6	123,295.4	117,625.5	109,921.2	111,668.2	104,680.2	104,592.9	104,592.9	104,592.9	24,336.6
Cum Hours:	128,559.6	251,855.0	369,480.5	479,401.8	591,070.0	695,750.2	800,343.1	904,936.0	1,009,528.9	1,033,865.5
Yr Total Cost:	5,931,419	6,340,714	6,481,272	6,486,386	6,891,268	7,003,083	7,510,887	7,882,007	8,642,176	1,956,372
Cum Total Cost:	5,931,419	12,272,133	18,753,406	25,239,792	32,131,060	39,134,144	46,645,031	54,527,037	63,169,214	65,125,585

CAM _____ for MJ _____ CONTROL TEAM _____

INCLUDES ESCALATION COSTS

EEWW3

ARWWP WASTE DISPOSAL

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EEWW
CHARGE NO: EEWW3
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: EV HENRY
FISCAL YEAR: 2001-2010

Resource: HEOOPR **HEAVY EQUIP OPERATOR** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	349.4	349.4	349.4	349.4	349.4	349.4	349.4	349.4	84.2
Cum Hours:	0.0	349.4	698.8	1,048.2	1,397.6	1,747.0	2,096.4	2,445.8	2,795.2	2,879.4
Yr Total Cost:	0	11,570	12,255	12,978	13,747	14,687	15,922	16,782	18,649	4,633
Cum Total Cost:	0	11,570	23,825	36,803	50,550	65,237	81,159	97,941	116,590	121,223

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: 952 **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	29,680.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	0.0	29,680.0	29,680.0	29,680.0	29,680.0	29,680.0	29,680.0	29,680.0	29,680.0	29,680.0
Yr Total Cost:	0	30,481	0	0	0	0	0	0	0	0
Cum Total Cost:	0	30,481	30,481	30,481	30,481	30,481	30,481	30,481	30,481	30,481

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	349.4	349.4	349.4	349.4	349.4	349.4	349.4	349.4	84.2
Cum Hours:	0.0	349.4	698.8	1,048.2	1,397.6	1,747.0	2,096.4	2,445.8	2,795.2	2,879.4
Yr Total Cost:	0	42,051	12,255	12,978	13,747	14,687	15,922	16,782	18,649	4,633
Cum Total Cost:	0	42,051	54,306	67,284	81,031	95,718	111,640	128,422	147,071	151,704

CAM_____ per MJ _____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

SECTION 2

5.0 RISK PLAN

Risk/Opportunity Identification and Analysis Form

Project: ARWWP Operations		PBS Number: 04	Total Baseline Dollars (Minimum Case): $80,551,720
Evaluator:Henry, Glassmeyer, Leslie, Sparks, Gilbert	Date: 4/26/01	WBS Number: 1.1.E.E	
CAM: Ev Henry	Date: 4/26/01	Control Account Number: EEWW	

Project Task	Risk and/or Opportunity	Potential Impact	Internal Or External Driver	Impact Cost (Maximum Case)	Risk Impact Level	Risk Probability %	Risk Probability Level	Probable Cost (Likeliest Case)	Risk Critical Value	Risk Handling Strategy
Wastewater Treatment	Site cleanup schedule extends wastewater treatment by 1 years	Continue operating treatment facilities for 1 years	Internal	$7,000,000	3	50	4	$3,500,000	5	Accept
Leachate Transfer System	LTS unacceptable failure	Stop placing material in OSDF until line is repaired/replaced	Internal	$250,000	2	24	2	$60,000	2	Accept
Extraction Wells	Site cleanup schedule extends well pumping by 1 years	Continue operating treatment facilities and pumping extraction wells for 1 year	Internal	$2,000,000	3	50	4	$1,000,000	5	Accept
Reinjection Wells	Reinjection wells fail to perform	Increase repairs or replacement of wells	Internal	$150,000	2	70	5	$105,000	3	Accept
Slurry Dewatering Facility	Waste container failure during storage or transport shuts down process	Interim operation and Repair/replace affected equipment	Internal	$2,000,000	5	10	2	$200,000	8	Accept
Slurry Dewatering Facility	Filter press failure shuts down STP and AWWT Phases I and II	Interim operation and Repair/replace affected equipment	Internal	$5,000,000	4	20	2	$1,000,000	5	Accept
All facilities	Inadequate process air supply Shutdown of AWWT systems	Interim operation and Repair/replace affected equipment	Internal	$500,000	2	60	4	$300,000	5	Accept
All facilities	Operator error/procedure error/system failure/accident resulting in shutdown or investigation all treatment facilities until investigation complete and recommendations implemented	Interim operations during long delay in treatment and costs for implementing recommendations	Internal	$7,500,000	5	10	2	$750,000	8	Accept
Sludge disposal	Sludge can not be disposed of through the WPRAP project or the OSDF	Procure containers and transport sludge to NTS	Internal	$15,000,000	5	20	2	$3,000,000	8	Accept
BSL & SWRB	Berm and/or liner damage	Immediate repair required to berm of liner	Internal	$5,000,000	4	30	3	$1,500,000	7	Accept
Wastewater Treatment	Loss of primary and redundant pumping systems/controls	Interim operation and Repair/replace affected equipment	Internal	$100,000	2	60	4	$60,000	3	Accept
All facilities	Facilities, lines and/or tanks freeze	Repair/replace affected equipment	Internal	$1,000,000	3	20	2	$200,000	3	Accept
Wastewater Treatment	Major NPDES permit violation	Fines and negative public perception	Internal	$750,000	2	5	1	$37,500	1	Accept

Risk/Opportunity Identification and Analysis Form

Project: ARWWP Operations		PBS Number: 04	Total Baseline Dollars (Minimum Case): $80,551,720
Evaluator:Henry, Glassmeyer, Leslie, Sparks, Gilbert	Date: 4/26/01	WBS Number: 1.1.E.E	
CAM: Ev Henry	Date: 4/26/01	Control Account Number: EEWW	

Project Task	Risk and/or Opportunity	Potential Impact	Internal Or External Driver	Impact Cost (Maximum Case)	Risk Impact Level	Risk Probability %	Risk Probability Level	Probable Cost (Likeliest Case)	Risk Critical Value	Risk Handling Strategy
Wastewater Treatment	Exceeding uranium discharge limitations	Fines	Internal	$338,000	2	5	1	$16,900	1	Accept
BSL	Unexpected contaminants or higher than expected levels in BSL	Additional treatment steps required at AWWT	Internal	$5,000,000	4	25	2	$1,250,000	5	Accept
Wastewater Treatment	Complete tank failure (AWWT)	Interim operation and Repair/replace affected equipment	Internal	$750,000	2	5	1	$37,500	1	Accept
BSL	Transfer line failure	Interim operation and Repair/replace affected equipment	Internal	$500,000	2	5	1	$25,000	1	Accept
All facilities	Instrumentation/communication system failure	Interim operation and Repair/replace affected equipment	Internal	$1,000,000	3	30	3	$300,000	4	Accept
Wastewater Treatment	Resin supply shortage inflates costs or shutdown of treatment if resin cannot be procured	Pay inflated costs increases operating costs	Internal	$1,000,000	3	10	2	$100,000	2	Accept
All facilities	PAAA requires subcontracting work that could be done internally	Increase in operating costs	Internal	$2,000,000	5	20	2	$400,000	8	Accept
Personnel staffing	Loss of key personnel. Inability to perform required tasks	Increased operating costs due to subcontracting and extra training	Internal	$500,000	2	25	2	$125,000	2	Accept
Extraction Wells	Piping failure	Interim operation and Repair/replace affected equipment	Internal	$5,000,000	4	5	1	$250,000	3	Accept
Sewage Treatment	Complete tank failure (STP)	Interim operation and Repair/replace affected equipment	Internal	$500,000	2	5	1	$25,000	1	Accept
Wastewater Treatment	DCS server failure	Interim operation and Repair/replace affected equipment	Internal	$150,000	2	5	1	$7,500	1	Accept
			Total:	$62,988,000			Total:	$14,249,400		

ARWWP Engineering and Construction Projects

WBS DICTIONARY
CONTROL ACCOUNT/CHARGE NUMBER

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE OF CONTRACT 12/01/2000
3. IDENTIFICATION NUMBER DE-AC24-01OH20115	4. INDEX LINE NO. 39
5. WBS ELEMENT CODE 1.1.E.F	6. WBS ELEMENT TITLE ENGINEERING CONSTRUCTION PROJECTS
7. APPROVED CP NO. NEW PER CP# FY01-0115-0004-00	8. DATE OF CHANGES 12/01/2000
9. SYSTEM DESIGN DESCRIPTION CERCLA/ACA	10. BUDGET AND REPORTING NUMBER EW05H3040

11. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials
Subcontracts
ODCs

b. TECHNICAL CONTENT:

Provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute
- OSDF EPLTS Valve House #7

c. SCOPE OF WORK:

Engineering and Construction Management:

The Engineering and Construction task provides for all Flour Fernald and Teaming Partner labor and expenses to support engineering and construction activities

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	39

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

for the Aquifer Restoration Project(ARP).

Additional Wells:

As presented in the Baseline Remedial Strategy Report (BRSR), the proposed well fields for the aquifer restoration includes extraction wells in the South Field, South Plume, Waste Pit and Plant 6 areas and reinjection wells in the South Field. During the course of the remediation remedy, the location of plume "hot spots", depth of contamination and condition of the wells in these areas may change and additional and/or replacement extraction or reinjection wells will be required to enhance remediation performance. These additional extraction and reinjection well packages provide for this needed enhancement.

Waste Storage Area Extraction System:

The Waste Pit Area Extraction System will recover contaminants from the portion of the Great Miami Aquifer (GMA) that underlies the waste storage area (Operable Unit 1 and Operable Unit 4) and a portion of the South Field. The current, plan calls for five (5) extraction wells to be located in and near the FEMP waste pit area, the Pilot Plant Runoff ditch and the its associated plume and one well located southeast of the SWRB. The final location of the extraction wells will be determined in the months prior to actual design and construction by geoprobing the area to find the optimum locations and depths and upon concurrance with the USEPA and OEPA. The project is divided into two parts: Part 1, to be installed in FYs01/02 includes 3 extractions wells along the Pilot Plant Runoff plume and one well southeast of the SWRB; Part 2 will be designed and constructed later and will consists of two wells installed in the Waste pit Storage Area.

South Field Extraction System Phase II:

The ten-well, early-start South Field Extraction System-Phase I was designed to support the initial 27-year base case system presented in the Operable Unit 5 FS and ROD (DOE 1995a). As presented in the Baseline Remedial Strategy Report (BRSR), the proposed well field for aquifer restoration includes additional extraction and injection wells in the south field area. These additional extraction and injection wells will comprise Phase II of the South Field Extraction System. The final location of the extraction wells will be determined in the months prior to actual design and construction by geoprobing the area to find the optimum locations and depths and upon concurrance with the USEPA and

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	39

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

OEPA.

Replace Vacuum Truck:

Two (2) vacuum trucks are used to transport wastewater to the Advanced Wastewater Treatment (AWWT) facility. The trucks transport materials from various tanks, sumps, wells and other sources where direct piping to the existing treatment systems do not exist. One of the vacuum trucks has been in operation for years and is fast approaching the end of its useful life. The older truck needs to be replaced with a new truck, which will continue to supplement the better of the two current vacuum trucks.

AWWT Process Improvements:

The Operable Unit 5 Record of Decision (ROD) includes requirements for treatment of remediation wastewater's, stormwater runoff, and recovered groundwater. The FEMP utilizes a number of advanced wastewater treatment (AWWT) systems to address these wastewater, stormwater, and groundwater treatment requirements. These systems include a variety of unit process operations - flow surge basins and tanks, aeration and ozonation pretreatment, chemical addition, clarification, filtration, ion exchange, slurry conditioning and dewatering, etc. This task will maintain these treatment systems and implement improvements for higher efficiency, reliability, and operating cost effectiveness.

DCS Equipment/Software Upgrades:

The Distributed Control System (DCS) is located at the Advanced Wastewater Treatment facility (AWWT). The DCS is used to control process activities and systems via computer controls. The DCS provides a means of remotely controlling various process systems throughout the facility. In order to maintain the highest possible efficiency of the ARWWP operations, the DCS control system must be kept current. Including replacing current software with the latest revision of the control package, communication wiring and fiber optic system, additional/replacement of controllers and monitors, printers, DCS hardware such as RAM chips, controllers, circuit boards, and programming upgrades and changes.

SWRB/BSL Liner Testing:

The SWRB and BSL liners are more than 10 years old. This activity provides for

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	39

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

liner integrity testing as a quality control program to prevent releases of stormwater and process water to the environment.

South Plume Optimization Phase II:

As presented in the Baseline Remedial Strategy Report (BRSR), if ongoing technical and logistical deliberations during the remediation regarding performance of the initial South Plume Optimization system result in a third optimization well being required then an additional well will be added. Current technical performance indicators show a well being required in the off-property portion of the South Plume.

AWWT Steam Heat Replacement:

The AWWT Facility is currently heated by steam, supplied by the site's Boiler Plant operations. This activity replaces the current steam heat system with an alternate heating method (natural gas heat) to provide heat to the AWWT after the shutdown of the Boiler Plant.

SDF Sludge Drying:

The Slurry Dewatering Facility processes AWWT clarifer bottoms, Sewage Treatment Plant sludge and miscellaneous sludges. The filtered sludge is above the Waste Acceptance Criteria for the OSDF and as such is currently being transported to the WPRAP facility for shipment by rail. This method of disposal will cease after the shutdown of the WPRAP. After WPRAP shutdown, AWWT waste will have to be handled somewhat differently. Currently, the SDF Sludge does not meet the moisture content WAC for direct disposal. This activity provides for the design, construction and start-up of a sludge drying facility at the SDF to meet a direc disposal moisture WAC.

Leachate reroute:

The On-Site Disposal Facility (OSDF) Leachate is transferred from the Leachate Transmission System (LTS) permanent lift station to the Bio-Surge Lagoon (BSL). Upon start of remediation of the BSL, the leachate will have to be transferred directly to the AWWT for treatment. While the BSL remains in operation throughout out this contract the contract requires that all aquifer restoration infrasturcture be in place at the end of this contract. This Task provides for the piping modification to enable this direct flow option.

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE OF CONTRACT 12/01/2000
3. IDENTIFICATION NUMBER DE-AC24-01OH20115	4. INDEX LINE NO. 39
5. WBS ELEMENT CODE 1.1.E.F	6. WBS ELEMENT TITLE ENGINEERING CONSTRUCTION PROJECTS
7. APPROVED CP NO. NEW PER CP# FY01-0115-0004-00	8. DATE OF CHANGES 12/01/2000
9. SYSTEM DESIGN DESCRIPTION CERCLA/ACA	10. BUDGET AND REPORTING NUMBER EW05H3040

11. ELEMENT TASK DESCRIPTION

OSDF Enhanced Permanent Leachate Transmission System (EPLTS) Valve House #7:

Per agreement with USEPA and OEPA, the EPLTS was constructed with six (6) valve houses. This task provides for the Design, Construction and Start-up of an additional OSDF EPLTS Valve House #7. This valve house is required for management of OSDF Cell 7 leachate and will have to be installed prior to the construction of cell 7.

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 1

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	J. HUGHES/3751	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		**11. ESTIMATED START / COMPLETION DATE**
NEW PER CP# FY01-0115-0004-00		12/01/00 - 12/27/09
12. TASK IDENTIFICATION (CONTROL ACCOUNT)	**13. TASK DESCRIPTION (ONE LINE)**	
EFEC	ARWWP ENGINEERING & CONSTRUCTION PROJECTS	

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials
Subcontracts
ODCs

b. TECHNICAL CONTENT:

Provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute
- OSDF EPLTS Valve House #7

c. SCOPE OF WORK:

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
EFEC	ARWWP ENGINEERING & CONSTRUCTION PROJECTS

14. ELEMENT TASK DESCRIPTION

Engineering and Construction Management:

The Engineering and Construction task provides for all Flour Fernald and Teaming Partner labor and expenses to support engineering and construction activities for the Aquifer Restoration Project(ARP).

Additional Wells:

As presented in the Baseline Remedial Strategy Report (BRSR), the proposed well fields for the aquifer restoration includes extraction wells in the South Field, South Plume, Waste Pit and Plant 6 areas and reinjection wells in the South Field. During the course of the remediation remedy, the location of plume "hot spots", depth of contamination and condition of the wells in these areas may change and additional and/or replacement extraction or reinjection wells will be required to enhance remediation performance. These additional extraction and reinjection well packages provide for this needed enhancement.

Waste Storage Area Extraction System:

The Waste Pit Area Extraction System will recover contaminants from the portion of the Great Miami Aquifer (GMA) that underlies the waste storage area (Operable Unit 1 and Operable Unit 4) and a portion of the South Field. The current, plan calls for five (5) extraction wells to be located in and near the FEMP waste pit area, the Pilot Plant Runoff ditch and the its associated plume and one well located southeast of the SWRB. The final location of the extraction wells will be determined in the months prior to actual design and construction by geoprobing the area to find the optimum locations and depths and upon concurrance with the USEPA and OEPA. The project is divided into two parts: Part 1, to be installed in FYs01/02 includes 3 extractions wells along the Pilot Plant Runoff plume and one well southeast of the SWRB; Part 2 will be designed and constructed later and will consists of two wells installed in the Waste pit Storage Area.

South Field Extraction System Phase II:

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 3

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
EFEC	ARWWP ENGINEERING & CONSTRUCTION PROJECTS

14. ELEMENT TASK DESCRIPTION

The ten-well, early-start South Field Extraction System-Phase I was designed to support the initial 27-year base case system presented in the Operable Unit 5 FS and ROD (DOE 1995a). As presented in the Baseline Remedial Strategy Report (BRSR), the proposed well field for aquifer restoration includes additional extraction and injection wells in the south field area. These additional extraction and injection wells will comprise Phase II of the South Field Extraction System. The final location of the extraction wells will be determined in the months prior to actual design and construction by geoprobing the area to find the optimum locations and depths and upon concurrance with the USEPA and OEPA.

Replace Vacuum Truck:

Two (2) vacuum trucks are used to transport wastewater to the Advanced Wastewater Treatment (AWWT) facility. The trucks transport materials from various tanks, sumps, wells and other sources where direct piping to the existing treatment systems do not exist. One of the vacuum trucks has been in operation for years and is fast approaching the end of its useful life. The older truck needs to be replaced with a new truck, which will continue to supplement the better of the two current vacuum trucks.

AWWT Process Improvements:

The Operable Unit 5 Record of Decision (ROD) includes requirements for treatment of remediation wastewater's, stormwater runoff, and recovered groundwater. The FEMP utilizes a number of advanced wastewater treatment (AWWT) systems to address these wastewater, stormwater, and groundwater treatment requirements. These systems include a variety of unit process operations - flow surge basins and tanks, aeration and ozonation pretreatment, chemical addition, clarification, filtration, ion exchange, slurry conditioning and dewatering, etc. This task will maintain these treatment systems and implement improvements for higher efficiency, reliability, and operating cost effectiveness.

DCS Equipment/Software Upgrades:

The Distributed Control System (DCS) is located at the Advanced Wastewater

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(Control Account)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
EFEC	ARWWP ENGINEERING & CONSTRUCTION PROJECTS

14. ELEMENT TASK DESCRIPTION

Treatment facility (AWWT). The DCS is used to control process activities and systems via computer controls. The DCS provides a means of remotely controlling various process systems throughout the facility. In order to maintain the highest possible efficiency of the ARWWP operations, the DCS control system must be kept current. Including replacing current software with the latest revision of the control package, communication wiring and fiber optic system, additional/replacement of controllers and monitors, printers, DCS hardware such as RAM chips, controllers, circuit boards, and programming upgrades and changes.

SWRB/BSL Liner Testing:

The SWRB and BSL liners are more than 10 years old. This activity provides for liner integrity testing as a quality control program to prevent releases of stormwater and process water to the environment.

South Plume Optimization Phase II:

As presented in the Baseline Remedial Strategy Report (BRSR), if ongoing technical and logistical deliberations during the remediation regarding performance of the initial South Plume Optimization system result in a third optimization well being required then an additional well will be added. Current technical performance indicators show a well being required in the off-property portion of the South Plume.

AWWT Steam Heat Replacement:

The AWWT Facility is currently heated by steam, supplied by the site's Boiler Plant operations. This activity replaces the current steam heat system with an alternate heating method (natural gas heat) to provide heat to the AWWT after the shutdown of the Boiler Plant.

SDF Sludge Drying:

The Slurry Dewatering Facility processes AWWT clarifer bottoms, Sewage Treatment Plant sludge and miscellaneous sludges. The filtered sludge is above the Waste Acceptance Criteria for the OSDF and as such is currently being transported to the WPRAP facility for shipment by rail. This method of disposal will cease

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 5

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	J. HUGHES/3751	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		**11. ESTIMATED START / COMPLETION DATE**
NEW PER CP# FY01-0115-0004-00		12/01/00 - 12/27/09
12. TASK IDENTIFICATION (CONTROL ACCOUNT)	**13. TASK DESCRIPTION (ONE LINE)**	
EFEC	ARWWP ENGINEERING & CONSTRUCTION PROJECTS	

14. ELEMENT TASK DESCRIPTION

after the shutdown of the WPRAP. After WPRAP shutdown, AWWT waste will have to be handled somewhat differently. Currently, the SDF Sludge does not meet the moisture content WAC for direct disposal. This activity provides for the design, construction and start-up of a sludge drying facility at the SDF to meet a direc disposal moisture WAC.

Leachate reroute:

The On-Site Disposal Facility (OSDF) Leachate is transferred from the Leachate Transmission System (LTS) permanent lift station to the Bio-Surge Lagoon (BSL). Upon start of remediation of the BSL, the leachate will have to be transferred directly to the AWWT for treatment. While the BSL remains in operation throughout out this contract the contract requires that all aquifer restoration infrasturcture be in place at the end of this contract. This Task provides for the piping modification to enable this direct flow option.

OSDF Enhanced Permanent Leachate Transmission System (EPLTS) Valve House #7:

Per agreement with USEPA and OEPA, the EPLTS was constructed with six (6) valve houses. This task provides for the Design, Construction and Start-up of an additional OSDF EPLTS Valve House #7. This valve house is required for management of OSDF Cell 7 leachate and will have to be installed prior to the construction of cell 7.

d. WORK SPECIFICALLY EXCLUDED:

The following centralized groups will need to support activities within this control account (but are not resource loaded within this account):

- Procurement - Buyers
- Engineering and Construction Document Control
- Quality Assurance
- Security
- Medical services
- Safety Engineering

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 6

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
EFEC	ARWWP ENGINEERING & CONSTRUCTION PROJECTS

14. ELEMENT TASK DESCRIPTION

- Safety Assessments
- WAO
- Environmental Compliance
- ARWWP Operations and Maintenance
- ARWWP Hydrogeology Group
- ARP Project Controls group

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 1

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFEC1	ARWWP PROJECTS - PROJECT MGMT., FF ENGINEERING

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials
Subcontracts
ODCs

b. TECHNICAL CONTENT:

Provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute
- OSDF EPLTS Valve House #7

c. SCOPE OF WORK:

Engineering and Construction Management:

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS	
5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00		12/01/00 - 12/27/09
12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)	
EFEC1	ARWWP PROJECTS - PROJECT MGMT., FF ENGINEERING	

14. ELEMENT TASK DESCRIPTION

The Engineering and Construction task provides for all Flour Fernald and Teaming Partner labor and expenses to support engineering and construction activities for the Aquifer Restoration Project(ARP).

Additional Wells:

As presented in the Baseline Remedial Strategy Report (BRSR), the proposed well fields for the aquifer restoration includes extraction wells in the South Field, South Plume, Waste Pit and Plant 6 areas and reinjection wells in the South Field. During the course of the remediation remedy, the location of plume "hot spots", depth of contamination and condition of the wells in these areas may change and additional and/or replacement extraction or reinjection wells will be required to enhance remediation performance. These additional extraction and reinjection well packages provide for this needed enhancement.

Waste Storage Area Extraction System:

The Waste Pit Area Extraction System will recover contaminants from the portion of the Great Miami Aquifer (GMA) that underlies the waste storage area (Operable Unit 1 and Operable Unit 4) and a portion of the South Field. The current, plan calls for five (5) extraction wells to be located in and near the FEMP waste pit area, the Pilot Plant Runoff ditch and the its associated plume and one well located southeast of the SWRB. The final location of the extraction wells will be determined in the months prior to actual design and construction by geoprobing the area to find the optimum locations and depths and upon concurrance with the USEPA and OEPA. The project is divided into two parts: Part 1, to be installed in FYs01/02 includes 3 extractions wells along the Pilot Plant Runoff plume and one well southeast of the SWRB; Part 2 will be designed and constructed later and will consists of two wells installed in the Waste pit Storage Area.

South Field Extraction System Phase II:

The ten-well, early-start South Field Extraction System-Phase I was designed to support the initial 27-year base case system presented in the Operable Unit 5 FS and ROD (DOE 1995a). As presented in the Baseline Remedial Strategy Report

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 3

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFEC1	ARWWP PROJECTS - PROJECT MGMT., FF ENGINEERING

14. ELEMENT TASK DESCRIPTION

(BRSR), the proposed well field for aquifer restoration includes additional extraction and injection wells in the south field area. These additional extraction and injection wells will comprise Phase II of the South Field Extraction System. The final location of the extraction wells will be determined in the months prior to actual design and construction by geoprobing the area to find the optimum locations and depths and upon concurrance with the USEPA and OEPA.

Replace Vacuum Truck:

Two (2) vacuum trucks are used to transport wastewater to the Advanced Wastewater Treatment (AWWT) facility. The trucks transport materials from various tanks, sumps, wells and other sources where direct piping to the existing treatment systems do not exist. One of the vacuum trucks has been in operation for years and is fast approaching the end of its useful life. The older truck needs to be replaced with a new truck, which will continue to supplement the better of the two current vacuum trucks.

AWWT Process Improvements:

The Operable Unit 5 Record of Decision (ROD) includes requirements for treatment of remediation wastewater's, stormwater runoff, and recovered groundwater. The FEMP utilizes a number of advanced wastewater treatment (AWWT) systems to address these wastewater, stormwater, and groundwater treatment requirements. These systems include a variety of unit process operations - flow surge basins and tanks, aeration and ozonation pretreatment, chemical addition, clarification, filtration, ion exchange, slurry conditioning and dewatering, etc. This task will maintain these treatment systems and implement improvements for higher efficiency, reliability, and operating cost effectiveness.

DCS Equipment/Software Upgrades:

The Distributed Control System (DCS) is located at the Advanced Wastewater Treatment facility (AWWT). The DCS is used to control process activities and systems via computer controls. The DCS provides a means of remotely controlling various process systems throughout the facility. In order to maintain the

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 4

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	J. HUGHES/3751	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		**11. ESTIMATED START / COMPLETION DATE**
NEW PER CP# FY01-0115-0004-00		12/01/00 - 12/27/09
12. TASK IDENTIFICATION (WORK PACKAGE)	**13. TASK DESCRIPTION (ONE LINE)**	
EFEC1	ARWWP PROJECTS - PROJECT MGMT., FF ENGINEERING	

14. ELEMENT TASK DESCRIPTION

highest possible efficiency of the ARWWP operations, the DCS control system must be kept current. Including replacing current software with the latest revision of the control package, communication wiring and fiber optic system, additional/replacement of controllers and monitors, printers, DCS hardware such as RAM chips, controllers, circuit boards, and programming upgrades and changes.

SWRB/BSL Liner Testing:

The SWRB and BSL liners are more than 10 years old. This activity provides for liner integrity testing as a quality control program to prevent releases of stormwater and process water to the environment.

South Plume Optimization Phase II:

As presented in the Baseline Remedial Strategy Report (BRSR), if ongoing technical and logistical deliberations during the remediation regarding performance of the initial South Plume Optimization system result in a third optimization well being required then an additional well will be added. Current technical performance indicators show a well being required in the off-property portion of the South Plume.

AWWT Steam Heat Replacement:

The AWWT Facility is currently heated by steam, supplied by the site's Boiler Plant operations. This activity replaces the current steam heat system with an alternate heating method (natural gas heat) to provide heat to the AWWT after the shutdown of the Boiler Plant.

SDF Sludge Drying:

The Slurry Dewatering Facility processes AWWT clarifer bottoms, Sewage Treatment Plant sludge and miscellaneous sludges. The filtered sludge is above the Waste Acceptance Criteria for the OSDF and as such is currently being transported to the WPRAP facility for shipment by rail. This method of disposal will cease after the shutdown of the WPRAP. After WPRAP shutdown, AWWT waste will have to be handled somewhat differently. Currently, the SDF Sludge does not meet the moisture content WAC for direct disposal. This activity provides for the design,

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(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFEC1	ARWWP PROJECTS - PROJECT MGMT., FF ENGINEERING

14. ELEMENT TASK DESCRIPTION

construction and start-up of a sludge drying facility at the SDF to meet a direc disposal moisture WAC.

Leachate reroute:

The On-Site Disposal Facility (OSDF) Leachate is transferred from the Leachate Transmission System (LTS) permanent lift station to the Bio-Surge Lagoon (BSL). Upon start of remediation of the BSL, the leachate will have to be transferred directly to the AWWT for treatment. While the BSL remains in operation throughout out this contract the contract requires that all aquifer restoration infrasturcture be in place at the end of this contract. This Task provides for the piping modification to enable this direct flow option.

OSDF Enhanced Permanent Leachate Transmission System (EPLTS) Valve House #7:

Per agreement with USEPA and OEPA, the EPLTS was constructed with six (6) valve houses. This task provides for the Design, Construction and Start-up of an additional OSDF EPLTS Valve House #7. This valve house is required for management of OSDF Cell 7 leachate and will have to be installed prior to the construction of cell 7.

d. WORK SPECIFICALLY EXCLUDED:

The following centralized groups will need to support activities within this control account (but are not resource loaded within this account):

- Procurement - Buyers
- Engineering and Construction Document Control
- Quality Assurance
- Security
- Medical services
- Safety Engineering
- Safety Assessments
- WAO
- Environmental Compliance

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFEC1	ARWWP PROJECTS - PROJECT MGMT., FF ENGINEERING

14. ELEMENT TASK DESCRIPTION

- ARWWP Operations and Maintenance
- ARWWP Hydrogeology Group
- ARP Project Controls group

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	J. HUGHES/3751	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		**11. ESTIMATED START / COMPLETION DATE**
NEW PER CP# FY01-0115-0004-00		10/01/02 - 09/02/08
12. TASK IDENTIFICATION (WORK PACKAGE)	**13. TASK DESCRIPTION (ONE LINE)**	
EFEC2	ADDITIONAL WELLS	

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials
Subcontracts
ODCs

b. TECHNICAL CONTENT:

Provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute
- OSDF EPLTS Valve House #7

c. SCOPE OF WORK:

Additional Wells:

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS	
5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00		10/01/02 - 09/02/08
12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)	
EFEC2	ADDITIONAL WELLS	

14. ELEMENT TASK DESCRIPTION

As presented in the Baseline Remedial Strategy Report (BRSR), the proposed well fields for the aquifer restoration includes extraction wells in the South Field, South Plume, Waste Pit and Plant 6 areas and reinjection wells in the South Field. During the course of the remediation remedy, the location of plume "hot spots", depth of contamination and condition of the wells in these areas may change and additional and/or replacement extraction or reinjection wells will be required to enhance remediation performance. These additional extraction and reinjection well packages provide for this needed enhancement.

d. WORK SPECIFICALLY EXCLUDED:

The following centralized groups will need to support activities within this control account (but are not resource loaded within this account):

- Procurement - Buyers
- Engineering and Construction Document Control
- Quality Assurance
- Security
- Medical services
- Safety Engineering
- Safety Assessments
- WAO
- Environmental Compliance
- ARWWP Operations and Maintenance
- ARWWP Hydrogeology Group
- ARP Project Controls group

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	02/01/01 - 09/05/06

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFEC3	WASTE STORAGE AREA EXTRACTION SYSTEM

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials
Subcontracts
ODCs

b. TECHNICAL CONTENT:

Provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute
- OSDF EPLTS Valve House #7

c. SCOPE OF WORK:

Waste Storage Area Extraction System:

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	J. HUGHES/3751	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		**11. ESTIMATED START / COMPLETION DATE**
NEW PER CP# FY01-0115-0004-00		02/01/01 - 09/05/06
12. TASK IDENTIFICATION (WORK PACKAGE)	**13. TASK DESCRIPTION (ONE LINE)**	
EFEC3	WASTE STORAGE AREA EXTRACTION SYSTEM	

14. ELEMENT TASK DESCRIPTION

The Waste Pit Area Extraction System will recover contaminants from the portion of the Great Miami Aquifer (GMA) that underlies the waste storage area (Operable Unit 1 and Operable Unit 4) and a portion of the South Field. The current, plan calls for five (5) extraction wells to be located in and near the FEMP waste pit area, the Pilot Plant Runoff ditch and the its associated plume and one well located southeast of the SWRB. The final location of the extraction wells will be determined in the months prior to actual design and construction by geoprobing the area to find the optimum locations and depths and upon concurrance with the USEPA and OEPA. The project is divided into two parts: Part 1, to be installed in FYs01/02 includes 3 extractions wells along the Pilot Plant Runoff plume and one well southeast of the SWRB; Part 2 will be designed and constructed later and will consists of two wells installed in the Waste pit Storage Area.

d. WORK SPECIFICALLY EXCLUDED:

The following centralized groups will need to support activities within this control account (but are not resource loaded within this account):

- Procurement - Buyers
- Engineering and Construction Document Control
- Quality Assurance
- Security
- Medical services
- Safety Engineering
- Safety Assessments
- WAO
- Environmental Compliance
- ARWWP Operations and Maintenance
- ARWWP Hydrogeology Group
- ARP Project Controls group

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1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	10/01/01 - 10/14/02

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFEC4	SFES, PHASE II

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials
Subcontracts
ODCs

b. TECHNICAL CONTENT:

Provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute
- OSDF EPLTS Valve House #7

c. SCOPE OF WORK:

South Field Extraction System Phase II:

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

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(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS	
5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00		10/01/01 - 10/14/02
12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)	
EFEC4	SFES, PHASE II	

14. ELEMENT TASK DESCRIPTION

The ten-well, early-start South Field Extraction System-Phase I was designed to support the initial 27-year base case system presented in the Operable Unit 5 FS and ROD (DOE 1995a). As presented in the Baseline Remedial Strategy Report (BRSR), the proposed well field for aquifer restoration includes additional extraction and injection wells in the south field area. These additional extraction and injection wells will comprise Phase II of the South Field Extraction System. The final location of the extraction wells will be determined in the months prior to actual design and construction by geoprobing the area to find the optimum locations and depths and upon concurrance with the USEPA and OEPA.

d. WORK SPECIFICALLY EXCLUDED:

The following centralized groups will need to support activities within this control account (but are not resource loaded within this account):

- Procurement - Buyers
- Engineering and Construction Document Control
- Quality Assurance
- Security
- Medical services
- Safety Engineering
- Safety Assessments
- WAO
- Environmental Compliance
- ARWWP Operations and Maintenance
- ARWWP Hydrogeology Group
- ARP Project Controls group

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1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	10/01/02 - 05/17/03

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFEC5	REPLACE VACUUM TRUCK

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials
Subcontracts
ODCs

b. TECHNICAL CONTENT:

Provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute
- OSDF EPLTS Valve House #7

c. SCOPE OF WORK:

Replace Vacuum Truck:

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS	
5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00		10/01/02 - 05/17/03
12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)	
EFEC5	REPLACE VACUUM TRUCK	

14. ELEMENT TASK DESCRIPTION

Two (2) vacuum trucks are used to transport wastewater to the Advanced Wastewater Treatment (AWWT) facility. The trucks transport materials from various tanks, sumps, wells and other sources where direct piping to the existing treatment systems do not exist. One of the vacuum trucks has been in operation for years and is fast approaching the end of its useful life. The older truck needs to be replaced with a new truck, which will continue to supplement the better of the two current vacuum trucks.

d. WORK SPECIFICALLY EXCLUDED:

The following centralized groups will need to support activities within this control account (but are not resource loaded within this account):

- Procurement - Buyers
- Engineering and Construction Document Control
- Quality Assurance
- Security
- Medical services
- Safety Engineering
- Safety Assessments
- WAO
- Environmental Compliance
- ARWWP Operations and Maintenance
- ARWWP Hydrogeology Group
- ARP Project Controls group

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1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	01/02/02 - 09/28/07

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFEC6	AWWT PROCESS IMPROVEMENTS

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials
Subcontracts
ODCs

b. TECHNICAL CONTENT:

Provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute
- OSDF EPLTS Valve House #7

c. SCOPE OF WORK:

AWWT Process Improvements:

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	01/02/02 - 09/28/07

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFEC6	AWWT PROCESS IMPROVEMENTS

14. ELEMENT TASK DESCRIPTION

The Operable Unit 5 Record of Decision (ROD) includes requirements for treatment of remediation wastewater's, stormwater runoff, and recovered groundwater. The FEMP utilizes a number of advanced wastewater treatment (AWWT) systems to address these wastewater, stormwater, and groundwater treatment requirements. These systems include a variety of unit process operations - flow surge basins and tanks, aeration and ozonation pretreatment, chemical addition, clarification, filtration, ion exchange, slurry conditioning and dewatering, etc. This task will maintain these treatment systems and implement improvements for higher efficiency, reliability, and operating cost effectiveness.

d. WORK SPECIFICALLY EXCLUDED:

The following centralized groups will need to support activities within this control account (but are not resource loaded within this account):

- Procurement - Buyers
- Engineering and Construction Document Control
- Quality Assurance
- Security
- Medical services
- Safety Engineering
- Safety Assessments
- WAO
- Environmental Compliance
- ARWWP Operations and Maintenance
- ARWWP Hydrogeology Group
- ARP Project Controls group

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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	10/01/01 - 12/31/07

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFEC7	DCS EQUIPMENT/SOFTWARE UPGRADES

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials
Subcontracts
ODCs

b. TECHNICAL CONTENT:

Provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute
- OSDF EPLTS Valve House #7

c. SCOPE OF WORK:

DCS Equipment/Software Upgrades:

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS	
5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00		10/01/01 - 12/31/07
12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)	
EFEC7	DCS EQUIPMENT/SOFTWARE UPGRADES	

14. ELEMENT TASK DESCRIPTION

The Distributed Control System (DCS) is located at the Advanced Wastewater Treatment facility (AWWT). The DCS is used to control process activities and systems via computer controls. The DCS provides a means of remotely controlling various process systems throughout the facility. In order to maintain the highest possible efficiency of the ARWWP operations, the DCS control system must be kept current. Including replacing current software with the latest revision of the control package, communication wiring and fiber optic system, additional/replacement of controllers and monitors, printers, DCS hardware such as RAM chips, controllers, circuit boards, and programming upgrades and changes.

d. WORK SPECIFICALLY EXCLUDED:

The following centralized groups will need to support activities within this control account (but are not resource loaded within this account):

- Procurement - Buyers
- Engineering and Construction Document Control
- Quality Assurance
- Security
- Medical services
- Safety Engineering
- Safety Assessments
- WAO
- Environmental Compliance
- ARWWP Operations and Maintenance
- ARWWP Hydrogeology Group
- ARP Project Controls group

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1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	04/01/03 - 6/30/06

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFEC8	SWRB/BSL LINER TESTING

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials
Subcontracts
ODCs

b. TECHNICAL CONTENT:

Provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute
- OSDF EPLTS Valve House #7

c. SCOPE OF WORK:

SWRB/BSL Liner Testing:

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	04/01/03 - 6/30/06

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFEC8	SWRB/BSL LINER TESTING

14. ELEMENT TASK DESCRIPTION

The SWRB and BSL liners are more than 10 years old. This activity provides for liner integrity testing as a quality control program to prevent releases of stormwater and process water to the environment.

d. WORK SPECIFICALLY EXCLUDED:

The following centralized groups will need to support activities within this control account (but are not resource loaded within this account):

- Procurement - Buyers
- Engineering and Construction Document Control
- Quality Assurance
- Security
- Medical services
- Safety Engineering
- Safety Assessments
- WAO
- Environmental Compliance
- ARWWP Operations and Maintenance
- ARWWP Hydrogeology Group
- ARP Project Controls group

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 1

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	J. HUGHES/3751	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		**11. ESTIMATED START / COMPLETION DATE**
NEW PER CP# FY01-0115-0004-00		10/01/02 - 09/30/03
12. TASK IDENTIFICATION (WORK PACKAGE)	**13. TASK DESCRIPTION (ONE LINE)**	
EFEC9	SOUTH PLUME OPTIMIZATION PHASE II	

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials
Subcontracts
ODCs

b. TECHNICAL CONTENT:

Provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute
- OSDF EPLTS Valve House #7

c. SCOPE OF WORK:

South Plume Optimization Phase II:

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	J. HUGHES/3751	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		**11. ESTIMATED START / COMPLETION DATE**
NEW PER CP# FY01-0115-0004-00		10/01/02 - 09/30/03
12. TASK IDENTIFICATION (WORK PACKAGE)	**13. TASK DESCRIPTION (ONE LINE)**	
EFEC9	SOUTH PLUME OPTIMIZATION PHASE II	

14. ELEMENT TASK DESCRIPTION

As presented in the Baseline Remedial Strategy Report (BRSR), if ongoing technical and logistical deliberations during the remediation regarding performance of the initial South Plume Optimization system result in a third optimization well being required then an additional well will be added. Current technical performance indicators show a well being required in the off-property portion of the South Plume.

d. WORK SPECIFICALLY EXCLUDED:

The following centralized groups will need to support activities within this control account (but are not resource loaded within this account):

- Procurement - Buyers
- Engineering and Construction Document Control
- Quality Assurance
- Security
- Medical services
- Safety Engineering
- Safety Assessments
- WAO
- Environmental Compliance
- ARWWP Operations and Maintenance
- ARWWP Hydrogeology Group
- ARP Project Controls group

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 1

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/03 - 08/26/04

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFECA	AWWT STEAM HEAT REPLACEMENT

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials
Subcontracts
ODCs

b. TECHNICAL CONTENT:

Provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute
- OSDF EPLTS Valve House #7

c. SCOPE OF WORK:

AWWT Steam Heat Replacement:

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/03 - 08/26/04

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFECA	AWWT STEAM HEAT REPLACEMENT

14. ELEMENT TASK DESCRIPTION

The AWWT Facility is currently heated by steam, supplied by the site's Boiler Plant operations. This activity replaces the current steam heat system with an alternate heating method (natural gas heat) to provide heat to the AWWT after the shutdown of the Boiler Plant.

d. WORK SPECIFICALLY EXCLUDED:

The following centralized groups will need to support activities within this control account (but are not resource loaded within this account):

- Procurement - Buyers
- Engineering and Construction Document Control
- Quality Assurance
- Security
- Medical services
- Safety Engineering
- Safety Assessments
- WAO
- Environmental Compliance
- ARWWP Operations and Maintenance
- ARWWP Hydrogeology Group
- ARP Project Controls group

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	04/03/06 - 01/04/07

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFECC	LEACHATE REROUTE

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials
Subcontracts
ODCs

b. TECHNICAL CONTENT:

Provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute
- OSDF EPLTS Valve House #7

c. SCOPE OF WORK:

Leachate reroute:

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	04/03/06 - 01/04/07

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EFECC	LEACHATE REROUTE

14. ELEMENT TASK DESCRIPTION

The On-Site Disposal Facility (OSDF) Leachate is transferred from the Leachate Transmission System (LTS) permanent lift station to the Bio-Surge Lagoon (BSL). Upon start of remediation of the BSL, the leachate will have to be transferred directly to the AWWT for treatment. While the BSL remains in operation throughout out this contract the contract requires that all aquifer restoration infrasturcture be in place at the end of this contract. This Task provides for the piping modification to enable this direct flow option.

d. WORK SPECIFICALLY EXCLUDED:

The following centralized groups will need to support activities within this control account (but are not resource loaded within this account):

- Procurement - Buyers
- Engineering and Construction Document Control
- Quality Assurance
- Security
- Medical services
- Safety Engineering
- Safety Assessments
- WAO
- Environmental Compliance
- ARWWP Operations and Maintenance
- ARWWP Hydrogeology Group
- ARP Project Controls group

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 1

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	J. HUGHES/3751	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		**11. ESTIMATED START / COMPLETION DATE**
NEW PER CP# FY01-0115-0004-00		10/27/05 - 09/29/06
12. TASK IDENTIFICATION (WORK PACKAGE)	**13. TASK DESCRIPTION (ONE LINE)**	
EFECD	OSDF EPLTS VALVE HOUSE #7	

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Materials
Subcontracts
ODCs

b. TECHNICAL CONTENT:

Provides for all engineering (Title I/II/III), construction management labor, construction and testing subcontracts, and material costs associated with the following ARWWP activities:

- Engineering and Construction Management
- Additional Wells
- Waste Storage Area Extraction System
- South Field Extraction System Phase II
- Replace Vacuum Truck
- AWWT Process Improvements
- DCS Equipment/Software Upgrades
- SWRB/BSL Liner Testing
- South Plume Optimization Phase II
- AWWT Steam Heat Replacement
- SDF Sludge Drying
- Leachate Reroute
- OSDF EPLTS Valve House #7

c. SCOPE OF WORK:

OSDF Enhanced Permanent Leachate Transmission System (EPLTS) Valve House #7:

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.F	ENGINEERING CONSTRUCTION PROJECTS	
5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	J. HUGHES/3751	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00		10/27/05 - 09/29/06
12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)	
EFECD	OSDF EPLTS VALVE HOUSE #7	

14. ELEMENT TASK DESCRIPTION

Per agreement with USEPA and OEPA, the EPLTS was constructed with six (6) valve houses. This task provides for the Design, Construction and Start-up of an additional OSDF EPLTS Valve House #7. This valve house is required for management of OSDF Cell 7 leachate and will have to be installed prior to the construction of cell 7.

d. WORK SPECIFICALLY EXCLUDED:

The following centralized groups will need to support activities within this control account (but are not resource loaded within this account):

- Procurement - Buyers
- Engineering and Construction Document Control
- Quality Assurance
- Security
- Medical services
- Safety Engineering
- Safety Assessments
- WAO
- Environmental Compliance
- ARWWP Operations and Maintenance
- ARWWP Hydrogeology Group
- ARP Project Controls group

SECTION 3

1.0 NARRATIVE

1. PROJECT TITLE: AQUIFER RESTORATION PROJECT	2. DATE: 09/10/01	3. PBS#: 04
4. WBS ELEMENT CODE: 1.1.E.F.	5. WBS ELEMENT TITLE: ARWWP ENGINEERING & CONSTRUCTION PROJECTS	
6. CAM NAME/ PHONE: DAVE BRETTSCHNEIDER	7. CAM SIGNATURE:	
8. ORIGINAL/ CHANGE SCOPE/ PER CP#:	9.CONTROL ACCOUNT: EFEC	

SECTION 3: EFEC – ARWWP ENGINEERING AND CONSTRUCTION PROJECTS

1.0 NARRATIVE

1.1 OVERVIEW

This control account provides for all engineering and construction labor, subcontract, and material costs associated with the ARWWP. This account is divided into several individual Tasks/Activities (Charge Numbers). These Tasks include:

- Engineering and Construction Management (EFEC1)
- Additional Wells (EFEC2)
- Waste Storage Area Extraction System (EFEC3)
- South Field Extraction System Phase II (EFEC4)
- Replace Vacuum Truck (EFEC5)
- AWWT Process Improvements (EFEC6)
- DCS Equipment/Software Upgrades (EFEC7)
- SWRB/BSL Liner Testing (EFEC8)
- South Plume Optimization Phase II (EFEC9)
- AWWT Steam Heat Replacement (EFECA)
- Leachate Reroute (EFECC)
- OSDF EPLTS Valve House #7 (EFECD)

1.2 ASSUMPTIONS/EXCLUSIONS

1.2.1 Assumptions

1. The Fernald Closure Contract (DE-AC24-01OH20115), November 2000, Section H.7.e permits Flour Fernald to request the DOE Contracting Officer to grant approval to self-perform design engineering. All ARP projects are small and of a repetitive nature; therefore it is assumed that design engineering will be self-performed by in-house services. Single expertise in a specialized area may be contracted, but Fluor Fernald personnel will complete the overall design.

R1-D-124

2. All remaining ARWWP construction and engineering activities are expected to be Standard Industrial Hazards and as such will have SSC Performance Grades of 4 or 5. ~~Thus Configuration Management requirements do not apply.~~ Therefore, the

requirements of Procedure No. CM-0001, "Configuration Management" for activities associated with Pg. 1,2, & 3 SSCs are not applicable.

3. The Closure Contract Baseline begins on December 1, 2000, and details all scope as it relates to the contract through completion, December 30, 2009.

4. The rationale for FY01 manpower is based on the charge in and charge out practices that were in effect as of the start of the Fluor Fernald Contract in December 2000." The rationale defined in this document is effective as of October 1, 2001 and is based on Rev. 0 of the "Functional Responsibilities Matrix" issued in January of 2001.

R1-D-147

5. ~~An~~ EPA and DOE approved ~~regrading~~ restoration grading plans will be available ~~from OU2~~ prior to the start of Title I/II design on ~~well field additions for~~ the Waste Pit area and the South Field area.

6. Well drilling, subcontract construction and construction management are to be performed on a four day 10 hour schedule. Abnormal weather (extreme cold, extreme heat, above normal rain), is not planned for.

1.2.2 Exclusions

1. The following centralized groups will need to support activities within this control account (but are not resourced loaded within this account):

- Procurement - Buyers
- Engineering and Construction Document Control
- Quality Assurance/ QA/QC Management
- Security
- Medical services
- Safety Engineering
- Safety Assessments
- WAO
- Environmental Compliance

2. The ARWWP Hydrogeology group will develop all extraction and reinjection well designs and perform pre-design geoprobing and modeling to select well locations and pumping rates. They will also develop the Project Specific Plan (PSP) for well drilling. These costs are not covered by this control account.

3. This account excludes the ARWWP Operations and Maintenance group expenses (labor and material) for SOP development, training, start-up support, and SSR coverage. This account also excludes spare parts for operations and maintenance.

4. BSL or SWRB liner repairs or replacement are not covered in this cost account.

1.2.3 Government-Furnished Equipment/Services

None

1.3 DRIVERS

R1-D-148

1. The SFES Phase II extraction and injection wells (currently under evaluation) as required by the BRSR and area geoprobing will be installed after Operable Unit 2 remedial activities for contaminated soils and source areas have been completed.

R1-D-149

2. The ~~EPA schedule dates for the~~ Waste Pit Area Extraction System Part I ~~and the South Field~~ well installation activities ~~as required by the BRSR and area geoprobing~~ are contingent on the completion of the source operable unit and soil remedial activities in this area.

R1-D-150

3. The Waste Pit Area Extraction extraction system Part 2 will be installed (if needed) after WPRAP project is complete. No earlier than August 2005.

4. OSDF Cell 7 construction and the Area 5 Drain Line form the Access Control Facility requires EPLTS Valve House 7 to be operational by October 1, 2006.

5. Boiler Plant steam will go off line in May 2004 requiring AWWT to have an alternate heat source prior to the next winter.

6. Piping located in the K65 trench will be D&D in FY03. Currently the BSL force main uses a portion of the trench piping for its routing. Prior to FY03 the BSL will have to be rerouted out of the trench. (This is an AWWT Process Improvement sub-project)

R1-D-808

7. ~~Following the D&D of the administration areas the STP will have to be modified to an extended aeration system due to low sewage flow. The Administration Facility will be closed in FY04. (This is an AWWT Process Improvement sub-project)~~ Due to decreasing site population, the Sewage Treatment Plant will require modification to properly function with the associated reduced influent loading

8. Aquifer Restoration Approach_ - The FEMP has received EPA and OEPA approval for the accelerated aquifer restoration approach contained in the Baseline Remedial Strategy Report for Aquifer Restoration (DOE 1997a). This approved approach initiates the commitments for well locations, installation sequence, and projected pumping and injection schedules needed over the life of the groundwater remedy. The approach represents the controlling vision for when the various groundwater flow streams are expected to come on line, and the life-of-remedy groundwater treatment and injection water demands that have been estimated through computer modeling.

9. Operable Unit 5 Record of Decision (DOE 1995a)

10. To maintain the ability to truck and vacuum water out of site area storage sumps an Vacuum Truck will be replaced by a new truck by FY04.

R1-D-180

11. The Operable Unit 5 Record of Decision (ROD) includes requirements for treatment of remediation wastewater, stormwater runoff, and recovered groundwater to meet an 20ppb uranium discharge (assumed changed to 30 ppb beginning in FY02). Treatment facilities must be keep in a high state of efficiency to meet this requirement. Thus DCS upgrades and AWWT Process Improvements are required.

12. The SWRB and BSL liner system are more than 10 years old. To ensure environmental containment the liners will be tested throughout the remaining contract period to ensure integrity.

1.4 Project Physical Description

1.4.1 EFEC1 – Engineering and Construction Management

The Engineering and Construction management task provides for all Flour Fernald and Teaming Partner labor and expenses to support engineering and construction service activities for the ARWWP and the Analytical Lab Services' Laboratory Consolidation Project.

This charge number is broken down into the following Tasks required for the support of activities listed in 1.4.2 through 1.4.12 (refer to the Technical Scope and Quantification 1.5.1 for specific sub-projects requiring these Tasks and to the Project Schedule for the required performance time frame):

1) Title I Engineering
2) Title II Engineering
3) Title III Engineering
4) Well Drilling Oversight Activities
5) Construction Management and Oversight
6) Pre-operational Acceptance and Start-up Testing
7) Project Closeout
8) ARWWP Operations Support

1.4.2 EFEC2 – Additional Wells

As presented in the Baseline Remedial Strategy Report (BRSR), the proposed well fields for the aquifer restoration includes extraction wells in the South Field, South Plume, Waste Pit and Plant 6 areas and reinjection wells in the South Field. During the course of the remediation remedy, the location of plume "hot spots", depth of contamination and condition of the wells in these areas may change and additional and/or replacement extraction or reinjection wells will be required to enhance remediation performance. These

supplemental extraction and reinjection wells packages provide for this needed enhancement.

This task includes only construction subcontracts and materials for the installation of two extraction wells and one injection well and infrastructure in each of FY2003, Fy2004 and FY2005 and the installation of one extraction well and one injection well and infrastructure in each of FY2006, FY2007, and FY2008.

1.4.3 EFEC3 – Waste Storage Area Extraction System

The Waste Pit Area Extraction System will recover contaminants from the portion of the Great Miami Aquifer (GMA) that underlies the waste storage area (Operable Unit 1 and Operable Unit 4) and the South Field. The current, selected plan calls for five (5) extraction wells to be located in and near the FEMP waste pit area, the Pilot Plant Runoff ditch and the its associated plume and one well located south of the SWRB in the South Field The final location of the extraction wells will be determined in the months prior to actual design and construction by geoprobing the area to find the optimum locations and depths. The project is divided into two parts: Part 1, to be installed in Fys01/02 includes 3 extractions wells along the Pilot Plant Runoff plume and one well in the South Field; Part 2 will be designed and constructed later and will consists of two wells installed in the Waste pit Storage Area.

This task includes only construction subcontracts and materials for the installation of three extraction wells and infrastructure in FY2001 and the installation of two extraction wells and infrastructure in FY2006.

1.4.4 EFEC4 – South Field Extraction System Phase II

The ten-well, early-start South Field Extraction System-Phase I was designed to support the initial 27-year base case system presented in the Operable Unit 5 FS and ROD (DOE 1995a). As presented in the Baseline Remedial Strategy Report (BRSR), the proposed well field for Aquifer restoration includes additional extraction and injection wells in the south field area. These additional extraction and injection wells will comprise Phase II of the South Field Extraction System. The final location of the extraction wells will be determined in the months prior to actual design and construction by geoprobing the area to find the optimum locations and depths.

This task includes only construction subcontracts and materials for the installation of three extraction wells and two injection wells and infrastructure in each of FY2002.

1.4.5 EFEC5 – Replace Vacuum Truck

Two (2) vacuum trucks are used to transport wastewater to the Advanced Wastewater Treatment (AWWT) facility. The trucks transport materials from various tanks, sumps, wells and other sources where direct piping to the existing treatment streams do not exist. One of the vacuum trucks has been in operation for years and is fast approaching the end

of its useful life. The older truck needs to be replaced with a new truck, which will continue to supplement the better of the two current vacuum trucks.

This Task includes only the procurement costs of the truck.

1.4.6 EFEC6 – AWWT Process Improvements

The Operable Unit 5 Record of Decision (ROD) includes requirements for treatment of remediation wastewater, stormwater runoff, and recovered groundwater. The FEMP utilizes a number of advanced wastewater treatment (AWWT) systems to address these wastewater, stormwater, and groundwater treatment requirements. These systems include a variety of unit process operations - flow surge basins and tanks, aeration and ozonation pretreatment, chemical addition, clarification, filtration, ion exchange, slurry conditioning and dewatering, etc. This task will maintain these treatment systems and implement improvements for higher efficiency, reliability, and operating cost effectiveness. This task includes only construction subcontracts and materials.

1.4.7 EFEC7 – DCS Equipment/Software Upgrades

The Distributed Control System (DCS) is located at the Advanced Wastewater Treatment facility (AWWT). The DCS is used to control process activities and systems via computer controls. The DCS provides a means of remotely controlling various process systems throughout the facility. In order to maintain the highest possible efficiency of the ARWWP operations, the DCS control system must be kept current. Including replacing current software with the latest revision of the control package, communication wiring and fiber optic system, additional/replacement of controllers and monitors, printers, DCS hardware such as RAM chips, controllers, circuit boards, and programming upgrades and changes.

R1-D-151 125

This Task includes only the ~~procurement~~ costs of ~~the~~ equipment and subcontractor services.

1.4.8 EFEC8 – SWRB/BSL Liner Testing

The SWRB and BSL liners are more than 10 years old. This activity provides for liner integrity testing as a quality control program to prevent environmental releases of stormwater and process wastewater.

This Task includes only the costs for the testing service subcontract.

1.4.9 EFEC9 – South Plume Optimization Phase II

As presented in the Baseline Remedial Strategy Report (BRSR), "if ongoing technical and logistical deliberations during the remediation regarding performance of the initial South Plume Optimization system result in a third optimization well being required then an additional well will be added". Currently the technical performance indicators show an

extraction well being required in the off-property portion of the South Plume and a reinjection well along Wiley Road.

This task includes only construction subcontracts and materials for the installation of an extraction well and injection well and infrastructure in FY2003.

1.4.10 EFECA – AWWT Steam Heat Replacement

The AWWT Facility is currently heated by steam, supplied by the site's Boiler Plant operations. This activity replaces the current steam heat system with an alternate heating method (natural gas heat) to provide heat to the AWWT after the shutdown of the Boiler Plant.

This task includes only construction subcontracts and materials.

1.4.11 EFECC – Leachate Reroute

The OSDF Leachate is transferred from the LTS permanent lift station to the Bio-Surge lagoon. Following the remediation of the waste pit area and soils in the waste pit and silo area the leachate will have to be transferred directly to the AWWT from treatment. While the BSL remains in operation throughout out this contract the option of transferring leachate directly to the AWWT may become desirable when flow drop to the BSL. This Task provides for the piping and control modifications to enable this direct flow option.

This task includes only construction subcontracts and materials.

1.4.12 EFECD – OSDF EPLTS Valve House #7

This task provides for the Design, Construction and Start-up of OSDF EPLTS Valve House #7. This valve house is required to for leachate management of OSDF Cell 7 and will have to be installed prior to the construction of Cell 7.

This task includes only construction subcontracts and materials.

1.5 PROJECT PLAN/TECHNICAL SCOPE AND QUANTIFICATION

1.5.1 EFEC1 – Engineering and Construction

General Information

The Engineering and Construction task provides for all Flour Fernald and Teaming Partner labor and expenses to support engineering and construction activities for the ARWWP. These activities are discussed in more detail in the described tasks below (1.5.2 and so on).

All engineering and construction activities for the remaining ARWWP task will be self-performed due to the simplicity of the activities. This self-performance is allowable by contract, pending approval of the DOE Contracting Officer.

This Task also includes the engineering and construction management services for the Analytical Lab Services' Laboratory Consolidation Project. For FY2001 activities have been adjusted to the following:

ARASA Basin Reroute Project	Costs for labor, materials, and subcontract from December 2000 to October 1, 2001 are to be crosswalked into EFEC1
WSA Test Well	Costs for labor, materials, and subcontract from December 2000 to October 1, 2001 are to be crossedwalked into EFEC1
Waste Storage Area Extraction Project Part 1	Costs for labor, materials, and subcontract from December 2000 to Part 1 completion (expected early FY2002) are contained in EFEC3

The ARWWP Engineering/Construction Team is responsible for all engineering design and construction activities within the project, which includes:

- Safety - safe execution of construction
- Reviewing operations and maintenance processes to improve efficiency and cost effectiveness.
- Ensuring compliance to engineering and construction procedures.
- Engineering functional requirements, design basis and detailed design drawings and documents
- Title III engineering support during construction
- Start-up Plans, System Operability Test procedures and the supervision of tests
- Standard Start-up Review Plan and coordinate resolution of issues
- Technical support to Operations
- Coordination of project-specific activities associated with procurement and management of construction contractors.

ARWWP Engineering is responsible for developing the Title I (Preliminary Design), Title II (Detail Design), and Design Change Notices (DCNs).

This activity does include engineering/technical support of operations following the SOT of the below tasks.

ARWWP Construction Management provides services including conducting constructability reviews and planning and bidding activities. Construction will lead field construction activities, and will manage sub-contractors who perform the work. The contractor contract administration and reviews and approves contract modifications with concurrence from the PM and the CAM

Construction will prepare Invitations for Bid/Requests for Proposal (IFBs/RFPs) using input from Engineering, Safety and Health, Quality Assurance, Waste Management, Environmental Compliance, Acquisitions and Asset Management, and others as appropriate.

1) Task #1 – Title I Engineering

1.1) Plan/Scope – Title I Engineering

Under Title I Design for each sub-project, a Functional Requirements & Design Basis Document (FR&DBD) is to be developed and is to serve as the technical subproject baseline for proceeding to Title II Design. The FR&DBD is to include the following:

- A general project description outlining the key assumptions, the purpose and any constraints or limitations placed on the system.
- Identification of the major functional elements and each defined in terms of its performance objectives.
- Identification of general design criteria and considerations that apply to the design.
- Development of the design basis for each SSC of the system, including the following information:

    a. Function
    b. Performance Basis
    c. Description
    d. Performance Grade

- A preliminary Site Plan and Piping and Instrumentation Diagrams (P&ID'S)
- A preliminary construction cost estimate.

The draft submittal of the FR&DBD will constitute a 30 percent design submittal.

A Functional Requirements and Design Basis Document will be prepared, for each Task identified in Table 1.5.1A and it will serve as the technical project baseline for proceeding with Title II Design for each sub-project. The proposed sections of the document include:

1.0 Project Description
    1.1 Project Purpose
    1.2 Project Scope and Boundaries
    1.3 Assumptions
    1.4 Constraints and Limitations
2.0 Functional Objectives
    2.1 Groundwater Extraction and Reinjection rates
    2.2 Groundwater and injection water Transport

2.3 Control Philosophy
3.0 General Design Criteria and Constraints
3.1 ARAR/DOE Constraints
3.2 Security
3.3 Health and Safety
3.4 Constructability
3.5 Maintenance and Operations
3.6 Interfaces with Other Facilities
3.7 Provisions for expansion
3.8 Utilities Support
3.9 Future Well Removal and Replacement
3.10 Future Decontamination and Demolition
3.11 Secondary Containment
3.12 Codes and Standards
4.0 Design Basis
4.1 Pipeline Design Strategy
4.2 Well field Description (wells, pumps, valves, piping, instrumentation, controls, buildings, utilities)
4.3 Pipeline Descriptions (piping, valves, instrumentation, and utilities)
5.0 Basis for Design Drawings (including 1 layout drawing)
6.0 Preliminary Cost Estimate
7.0 Title I Specifications
8.0 Preliminary List of Title II Drawings

1.2) Quantification – Title I Engineering

Table 1.5.1A – FR&DBD Requirements

Sub-Project	FR&DBD	Resources
Additional Wells	6 packages required	Per package..... ENGINR – 80 hrs ENGELE – 10 hrs ENGCVL – 10 hrs DRFCAD – 40 hrs
Waste Storage Area Extraction System	1 (Part 2 only)	ENGINR – 80 hrs ENGELE – 10 hrs ENGCVL – 10 hrs DRFCAD – 40 hrs
South Field Extraction System Phase II	1	ENGINR – 80 hrs ENGELE – 10 hrs ENGCVL – 10 hrs DRFCAD – 40 hrs
Replace Vacuum Truck	Not required	0
AWWT Process Improvements	5 packages	Per package.... ENGINR – 80 hrs ENGELE – 10 hrs ENGCVL – 10 hrs DRFCAD – 40 hrs
DCS Equipment/Software Upgrades	Not required	0
SWRB/BSL Liner Testing	Not required	0
South Plume Optimization Phase II	1	ENGINR – 80 hrs ENGELE – 10 hrs ENGCVL – 10 hrs DRFCAD – 40 hrs
AWWT Steam Heat Replacement	1	ENGINR – 148 hrs ENGELE – 24 hrs ENGCVL – 40 hrs DRFCAD – 40 hrs
Leachate Reroute	1	ENGINR – 80 hrs ENGCVL – 10 hrs DRFCAD – 40 hrs
OSDF EPLTS Valve House #7	1	ENGINR – 80 hrs ENGELE – 10 hrs ENGCVL – 10 hrs DRFCAD – 40 hrs

2) Task #2 – Engineering Title II Design

2.1) Plan/Scope – Engineering Title Design

The detail design for each includes the following deliverables:

- Technical specifications for procurement and construction. Table 1.5.1B identifies requirements for specifications for each sub-project.
- Drawings. Table 1.5.1C identifies requirements for drawings for each sub-project.
- Construction cost estimate. Estimates are performed by the site Estimating group.

Design review presentation to be given at the 90 percent completion levels. All comments to be resolved and incorporated before the next issue of the project design.

The typical functional roles are:

- Project Engineer /Engineer(PE)

  - Coordinate/facilitate project activities, documents, and meetings
  - Monitor project cost, schedule, and technical performance
  - Prepare sub-section information for this PEP
  - Prepare Functional Requirements and Design Basis Document (FR&DBD)
  - Review and approve detailed design drawings and documents
  - Monitor project budget and schedule
  - Provide Title III engineering support during construction
  - Prepare Start-up Plan
  - Prepare Standard Start-up Review (SSR) Plan and coordinate resolution of issues resulting from the SSR
  - Coordinate closeout of project; prepare Closeout Report.

- Project Technical Expert

  - Develop project technical scope, functional requirements, and design basis
  - Review subcontractor testing and evaluation
  - Provide technical oversight of design activities
  - Provide Title III engineering support during construction
  - Prepare system "technical" manual
  - Prepare System Operability Test (SOT) Procedure and supervise test
  - Assist in operations preparations - review SOPs, assist operator training, etc
  - Prepare Start-up Plan (dual role with PE)
  - Prepare SSR Plan and coordinate resolution of issues resulting from the SSR.

- Design Engineer

  - Prepare detailed design drawings and instructions
  - Provides Title I (preliminary) and II (CFC) design packages, including design drawings and specifications and cost estimates
  - Provide Title III engineering services during construction, includes reviewing submittals, responding to RCI/DCN, technical input, and as- built drawings.

1.2) Quantification – Engineering Title II

Table 1.5.1B Technical Specification Requirements

Sub-Task	Technical Specifications	Resources
Additional Wells	Pipe, Fittings, Valves and Accessories Pipe Supports and Anchors Pipe Insulation Concrete Concrete Finishing Metal Fabrications Clearing Earthwork Paving Storm Drainage Landscaping Doors Special Coatings Painting Pre-Engineered Buildings Pumps Basic Electrical materials and Methods Grounding and Bonding Instrumentation Equipment Variable Frequency Drives Lighting Installation of Instrumentation Mechanical – Heating and Ventilation	Per package..... ENGELE – 60 hrs ENGCVL – 80 hrs ENGINR – 160 hrs QACENG – 40 hrs
Waste Storage Area Extraction System	Same as the Additional Wells Task	ENGELE – 80 hrs ENGCVL – 80 hrs ENGINR – 160 hrs QACENG – 40 hrs
South Field Extraction System Phase II	Same as the Additional Wells Task	ENGELE – 60 hrs ENGCVL – 80 hrs ENGINR – 160 hrs QACENG – 40 hrs
Replace Vacuum Truck	Procurement Specifications including: Tankage Capacity, suction flow rates, materials criteria, general truck specifications and requirements, maintenance criteria	ENGINR – 148 hrs

Table 1.5.1B Technical Specification Requirements
(Continued)

Sub-Task	Technical Specifications	Resources
AWWT Process Improvements	Same as Additional Wells Task, plus heat trace	Per package ... ENGELE – 60 hrs ENGCVL – 80 hrs ENGINR – 160 hrs QACENG – 40 hrs
DCS Equipment/Software Upgrades	Procurement Specifications including: technical requirements, current DCS requirements, and equipment specifications for computers, printers and technical support.	ENGINR – 150 hrs
SWRB/BSL Liner Testing	Procurement Specifications including: safety requirements, testing quality assurance, reporting requirements and training.	ENGINR – 148 hrs
South Plume Optimization Phase II	Same as Additional Wells Task	ENGELE – 80 hrs ENGCVL – 80 hrs ENGINR – 160 hrs QACENG – 40 hrs
AWWT Steam Heat Replacement	Same as Additional Well Task	ENGELE – 40 hrs ENGCVL – 80 hrs ENGINR – 100 hrs QACENG – 40 hrs
Leachate Reroute	Same as Additional Well Task, plus heat trace	ENGELE – 20 hrs ENGCVL – 80 hrs ENGINR – 80 hrs QACENG – 20 hrs
OSDF EPLTS Valve House #7	Same as Additional Well Task	ENGELE – 80 hrs ENGCVL – 80 hrs ENGINR – 160 hrs QACENG – 40 hrs

Table 1.5.1C Title II Drawing Requirements

Sub-project	Title II Drawings	Resources
Additional Wells	2- P&IDs 2- Loop Diagrams 1- Instrument Arrangement 1- Site Power Plan 1 - Schematic Diagram 1 - interconnection Diagram 1 - Well house Piping Plan 1 - Well House piping Sections and Details 1 - Pipe Support Plan 2 - Well field plans and Profiles 2 - main Header Plans and profiles 1 - master Site Plan 4 - Sections and Details/Road Profiles 1 - Floor Plan and Elevations 1 - Foundation Plan and Details 1 - Re-injection Well Piping Plan 1 - Re-injection well piping Sections and Details 1 - Tank and pump Piping Plan and Elevations 1 - Tank, Pump and Well Pad, Foundation Plan and Details	Per package..... ENGELE – 40 hrs ENGCVL – 80 hrs ENGINR – 160 hrs DRFCAD – 15 hrs per drawing
Waste Storage Area Extraction System	Same as the Additional Wells Task except the following: 1 - Foundation Plan and Details 1 - Re-injection Well Piping Plan 1 - Re-injection well piping Sections and Details 1 - Tank and pump Piping Plan and Elevations 1 - Tank, Pump and Well Pad, Foundation Plan and Details	ENGELE – 40 hrs ENGCVL – 100 hrs ENGINR – 160 hrs DRFCAD – 15 hrs per drawing
South Field Extraction System Phase II	Same as the Additional Wells Task	ENGELE – 40 hrs ENGCVL – 80 hrs ENGINR – 160 hrs DRFCAD – 15 hrs per drawing
Replace Vacuum Truck	N/A	
AWWT Process Improvements	Title II Drawings will vary greatly based on the package. The drawings will more than likely are revisions to existing treatment system drawings. Changes will be treated as revisions. 10 drawings will be required per package.	ENGELE – 40 hrs ENGCVL – 80 hrs ENGINR – 160 hrs DRFCAD – 15 hrs per drawing
DCS Equipment/Software Upgrades	N/A	

Table 1.5.1C Title II Drawing Requirements
(Continued)

Sub-project	Title II Drawings	Resources
SWRB/BSL Liner Testing	N/A	
South Plume Optimization Phase II	Same as Additional Wells Task	ENGELE – 40 hrs ENGCVL – 100 hrs ENGINR – 160 hrs DRFCAD – 15 hrs per drawing
AWWT Steam Heat Replacement	1 – P&ID 1 – Loop Diagram 1 – Instrumentation Arrangement 1 – Site Power Plan 2 – Sections and Details 1 – master Site Plan 2 – Floor Plan and Elevations	ENGELE – 40 hrs ENGCVL – 160 hrs ENGINR – 200 hrs DRFCAD – 15 hrs per drawing
Leachate Reroute	1- Site Master Plan 1 – Sections and Details 1 – Piping Details/Plans 1 - Electrical	ENGELE – 20 hrs ENGCVL – 80 hrs ENGINR – 80 hrs DRFCAD – 15 hrs per drawing
OSDF EPLTS Valve House #7	1 – P&ID 2 – Loop Diagrams 2 – Plans and profiles 2 – Electrical Details 4 – Structural Details 2 - Mechanical	ENGELE – 40 hrs ENGCVL – 100 hrs ENGINR – 160 hrs DRFCAD – 15 hrs per drawing

3) Task #3 – Title III Engineering

3.1) Plan/Scope – Title III Engineering

Provide Title III Engineering Services per site Engineering procedures for each sub-project as identified in Table 1.5.1D as follows:

1. Review of vendor submittals
2. Disposition of Requests For Clarification Information (RCI) and Design Change Notices (DCN).
3. Field engineering support.
4. Preparation of as-built drawings.
5. Prepare response to comments by EPA on CFC design package.

3.2) Quantification – Title III Engineering

5 hrs to review each vendor submittal
20 to resolve each RCI/DCN
80 per month to support field construction

Table 1.5.1D Title III Requirements

Sub-Project	Title III Services Required	Resources
Laboratory Consolidation Project	Vendor Submittals – 50 RCI/DCN disposition- 12 As-built Drawings 15 Comment Response Field Engineering - 12m Provide by design/build communication system	ENGINR- 2 hrs/submittal + 40 hrs/month + 10 hrs/DCN ENGELE- 40 DRFCAD –10 hrs per drawing
Additional Wells	Vendor Submittals – 65 RCI/DCN disposition – 12 As-built Drawings – 13 Comment Response Field Engineering – 8m Per package	ENGINR- 2 hrs/submittal + 40 hrs/month + 10 hrs/DCN ENGELE- 40 DRFCAD –10 hrs per drawing
Waste Storage Area Extraction System	Vendor Submittals – 70 RCI/DCN disposition – 12 As-built Drawings – 15 Comment Response Field Engineering – 8m Per package	ENGINR- 2 hrs/submittal + 40 hrs/month + 10 hrs/DCN DRFCAD –10 hrs per drawing
South Field Extraction System Phase II	Vendor Submittals – 70 RCI/DCN disposition – 12 As-built Drawings – 15 Comment Response Field Engineering – 8m	ENGINR- 2 hrs/submittal + 40 hrs/month + 10 hrs/DCN DRFCAD –10 hrs per drawing
Replace Vacuum Truck	Vendor Submittals – 5 RCI/DCN disposition – 2 Comment Response	ENGINR- 148 hrs
AWWT Process Improvements	Vendor Submittals – 25 RCI/DCN disposition – 5 As-built Drawings –5 Comment Response Field Engineering - 6m Per package	ENGINR- 2 hrs/submittal + 40 hrs/month + 10 hrs/DCN DRFCAD –10 hrs per drawing

Table 1.5.1D Title III Requirements
(Continued)

Sub-Project	Title III Services Required	Resources
DCS Equipment/Software Upgrades	Vendor Submittals 4 RCI/DCN disposition 2 Comment Response/Support	ENGINR – 250 hrs
SWRB/BSL Liner Testing	Vendor Submittals – 4 RCI/DCN disposition –2 Per package	ENGINR – 75 hrs
South Plume Optimization Phase II	Vendor Submittals – 70 RCI/DCN disposition – 12 As-built Drawings – 15 Comment Response Field Engineering – 8m	ENGINR- 2 hrs/submittal + 40 hrs/month + 10 hrs/DCN DRFCAD –10 hrs per drawing
AWWT Steam Heat Replacement	Vendor Submittals – 35 RCI/DCN disposition – 10 As-built Drawings – 5 Comment Response Field Engineering - 5m	ENGINR- 2 hrs/submittal + 40 hrs/month + 10 hrs/DCN ENGELE- 10 DRFCAD –10 hrs per drawing
Leachate Reroute	Vendor Submittals – 12 RCI/DCN disposition – 1 As-built Drawings – 2 Comment Response Field Engineering - 6m	ENGINR- 2 hrs/submittal + 20 hrs/month + 10 hrs/DCN ENGELE- 10 DRFCAD –10 hrs per drawing
OSDF EPLTS Valve House #7	Vendor Submittals – 50 RCI/DCN disposition – 10 As-built Drawings – 7 Comment Response Field Engineering - 6m	ENGINR- 2 hrs/submittal + 40 hrs/month + 10 hrs/DCN ENGELE- 40 DRFCAD –10 hrs per drawing

The Laboratory Consolidation Project will require design activities to cover Communication Systems Upgrades at approximately $45,000 for subcontract design and build services from Honeywell.

4) Task #4 – Well Drilling Activities

4.1) Plan/Scope – Well Drilling Activities

A PSP will be developed by the ARWWP Hydrogeology group to serve as the controlling document for the installation of extraction and injection wells. The installation program consists of the drilling of 20-inch diameter boreholes for extraction and 24-inch boreholes

for reinjection using cable-tool drilling rigs, and the installation and development of 12-inch diameter extraction and 16-inch diameter reinjection wells. All drilling and sampling field activities will conform to the guidelines set forth in the Sitewide CERCLA Quality Assurance manual (SCQ). The PSP and well design will be forwarded to the EPA and OEPA for review and approval prior to field activities.

Environmental Monitoring will support the ARWWP in the drilling of extraction and injection wells with personnel trained in well drilling and geology.

4.2) Quantification – Well Drilling Activities

Table 1.5.1E Well Drilling Oversight

Sub-Project	Well Drilling Oversight Services Required	Resources
Additional Wells	9 – Extraction wells 6 - Injection wells	Per well..... ENSREP – 120 hrs RADTEC – 10 hrs BUYCON – 8
Waste Storage Area Extraction System	5 Extraction Wells	Per well..... ENSREP – 120 hrs RADTEC – 10 hrs BUYCON – 8
South Field Extraction System Phase II	3 Extraction Wells 2 Injection Wells	Per well..... ENSREP – 120 hrs RADTEC – 10 hrs BUYCON – 8
South Plume Optimization Phase II	1 Extraction Well 1 Injection Well	Per well..... ENSREP – 120 hrs RADTEC – 10 hrs BUYCON – 8

5) Task #5 – Construction Management Activities

5.1) Plan/Scope – Construction Management Activities

Construction Services include: constructability reviewers, construction planning, construction coordination, safety and health oversight, and engineering/construction document control activities.

Constructability reviews will be performed during the preliminary engineering and detail phase of the project. Construction planning will initiate prior to the start of construction. The Construction Manager will chair a "kick-off" meeting (after contract award) to review work scope, safety issues, and answer questions. The subcontractor's Project Manager, Field Superintendent, Safety Representative and key lower tier subcontractor representatives shall attend. The subcontractor will submit a schedule for approval, by which planned construction activities will be installed and coordinated.

Construction activities will be coordinated with all known and planned activities in the construction area. The Project Team will implement construction activities per plans outlined in the approved schedule and as agreed during the "kick-off" meeting.

There are no special quality issues for ARWWP Tasks beyond those associated with conformance to site procedures (RM-0012) or project specific documentation. Part 9, of the construction subcontract, which lists the requirements the Constructor's Quality Assurance Plan should contain. QA will approve the plan prior to commencement of work.

Field QC inspections will be made of work as it progresses to ensure conformance with the contractor's QA plan and the drawings and specifications.

Specific QC inspections and documentation are required for, but not limited to the following:

- Concrete slump and break test
- Reinforcing bars placement
- Soil compaction
- Piping pressure tests
- Electrical resistance test

Construction Oversight includes the following:

- Construction Contracts Manager

  - Manage all project construction field activities
  - Conduct pre-bid and kick-off meetings
  - Enforce construction schedule
  - Conduct construction progress meetings
  - Review and approve subcontractor's invoices
  - Write construction change proposals and field change requests as required
  - Manage the day-to-day subcontractor activity.

- Construction Engineer

  - Coordinate interface of engineering and other project construction support with subcontractor
  - Review and comment on project design
  - Provide construction surveillance as necessary
  - Administer project RCI's and DCN's
  - Provide assistance regarding issues that impact daily construction activities
  - Record minutes of weekly progress meetings, distribute, and send copy to ECDC

- Coordinate procurement of construction subcontractor
- Coordinate procurement of construction materials.

- Construction Coordinator

  - Coordinate day-to-day subcontractor support activities - work permits, waste management, health/safety permits and guidance, etc.
  - Monitor subcontractor site safety and good housekeeping on a daily basis.

- Field H&S Officer

  - Monitor health and safety practices of construction contractor. Provide oversight and guidance to construction contractor.

- IH Technicians

  - Monitor IH conditions at construction job site and provides guidance, instruction, and related support.

- Radiological Technicians

  - Monitor radiological conditions at construction job site and provides guidance, instruction, and related support.

- Construction Contract Procurement

  - Assemble and distribute project bid documents and change orders Lead interface with subcontractor over contract concerns, adds and deletions.

5.2) Quantification – Construction Management Activities

Table 1.5.1 F – CM Services

Sub-Project	CM Services Duration	Resource hrs/month (one time event – design review)
Laboratory Consolidation Project	7 months, (plus Construction Design Review)	CNSMGR – 40 (20) CNSENG – 80 (20) CNSCOD – 50 QACTEC – 40 BUYCON – 40 RADTEC – 100** S&HTEC – 40 HAZWAT – 1100**
Additional Wells	8 months/package	CNSMGR – 80 (40) CNSENG – 80 (40) CNSCOD – 80 QACTEC – 40 BUYCON – 40 RADTEC – 100** S&HTEC – 40
Waste Storage Area Extraction System	8 months/package	CNSMGR – 80 (40) CNSENG – 80 (40) CNSCOD – 80 QACTEC – 40 BUYCON – 40 RADTEC – 100** S&HTEC – 40
South Field Extraction System Phase II	8 months	CNSMGR – 80 (40) CNSENG – 80 (40) CNSCOD – 80 QACTEC – 40 BUYCON – 40 RADTEC – 100** S&HTEC – 40
Replace Vacuum Truck	8 months	N/A
AWWT Process Improvements	6 months/package	CNSMGR – 80 (40) CNSENG – 80 (40) CNSCOD – 80 QACTEC – 40 BUYCON – 40 RADTEC – 100** S&HTEC – 40
DCS Equipment/Software Upgrades	6 months/package	CNSENG – 20 (5) CNSCOD – 10 BUYCON – 20

Table 1.5.1 F – CM Services
(Continued)

Sub-Project	CM Services Duration	Resource hrs/month (one time event – design review)
SWRB/BSL Liner Testing	3 months/package	CNSMGR – 60 (5) CNSENG – 40 CNSCOD – 40 QACTEC – 40 BUYCON – 10 RADTEC – 250** S&HTEC – 40
South Plume Optimization Phase II	8 months	CNSMGR – 80 (40) CNSENG – 80 (40) CNSCOD – 80 QACTEC – 40 BUYCON – 40 RADTEC – 100** S&HTEC – 40
AWWT Steam Heat Replacement	5 months	CNSMGR – 80 (40) CNSENG – 80 (40) CNSCOD – 80 QACTEC – 40 BUYCON – 40 RADTEC – 100** S&HTEC – 20
Leachate Reroute	6 months	CNSMGR – 20 (5) CNSENG – 20 (5) CNSCOD – 20 QACTEC – 20 BUYCON – 20 RADTEC – 100** S&HTEC – 40
OSDF EPLTS Valve House #7	6 months	CNSMGR – 80 (40) CNSENG – 80 (40) CNSCOD – 80 QACTEC – 148 BUYCON – 40 RADTEC – 100** S&HTEC – 80

** = hrs for total effort, not by the month

6) Task #6 – Pre-Operational Acceptance, Start-Up Testing and SSR

6.1) Plan/Scope – Pre-Operational Acceptance, Start-Up Testing and SSR

A project Start-up Plan and Standard Startup Review Plan (if required, see table) shall be prepared by the Start-up Engineer, Project Engineer, Process Engineer and Operations Process Engineer, which shall outline the scope of system operability testing, standard

start-up review activities, and turnover to ARWWP Operations. Detailed project team member roles and responsibilities shall also be described in the plans.

The Start-up Engineer shall prepare a System Operability Test (SOT) Procedure. The SOT will test the mechanical and hydraulic performance of the system as a whole, including instrumentation and automatic control functions. Turnover to Operations and Standard Start-up Review will not be initiated until satisfactory results are achieved.

Acceptance Testing

The construction subcontractor will be required to prepare procedures for and execute two separate acceptance tests prior to FDF acceptance of the construction:

Construction Acceptance Testing (CAT)

Includes basic static testing of equipment and piping (meggaring, hydrotesting, etc.).

Integrated Construction Acceptance Testing (ICAT)

Individual process systems will first be tested in a dry state for control verification.

6.2) Quantification – Pre-Operational Acceptance, Start-Up Testing and SSR

Table - Start-Up Requirements

Task	Services Required	Resources
Laboratory Consolidation Project	CAT/ICAT/SOT/SSR	ENGINR – 80 CNSENG – 40
Additional Wells	CAT/ICAT/SOT Per package	ENGINR – 80 CNSENG – 40
Waste Storage Area Extraction System	CAT/ICAT/SOT Per package	ENGINR – 80 CNSENG – 40
South Field Extraction System Phase II	CAT/ICAT/SOT	ENGINR – 80 CNSENG – 40
Replace Vacuum Truck	CAT/SOT	ENGINR - 80
AWWT Process Improvements	CAT/ICAT/SOT Per package	ENGINR – 40 CNSENG – 20
DCS Equipment/Software Upgrades	CAT/ICAT/SOT Per package	ENGINR – 50 CNSENG – 20
SWRB/BSL Liner Testing	N/A	
South Plume Optimization Phase II	CAT/ICAT/SOT/SSR	ENGINR – 80 CNSENG – 40
AWWT Steam Heat Replacement	CAT/ICAT/SOT	ENGINR – 80 CNSENG – 80
Leachate Reroute	CAT/ICAT/SOT	ENGINR – 50 CNSENG – 20
OSDF EPLTS Valve House #7	CAT/ICAT/SOT	ENGINR – 188 CNSENG – 188 QACTEC- 80

7) Task #7 – Project Closeout

7.1) Plan/Scope – Project Closeout

At the conclusion of the Task (Standard Start-up Review completed and approval to operate), the project shall be closed in accordance with ED-12-9004. Operation of the project will then be continued under the ARWWP Operations and Maintenance.

Project closeout will include, reconciliation of project documentation and records with ECDC, submittal of any outstanding operations and maintenance information to Operations and Maintenance, closure of purchase orders and project construction contract, reconciliation of Government property requirements (per RM-0033, Government Property Management Requirements), and control account termination.

7.2) Quantification – Project Closeout

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All Sub-Projects will require a Project Closeout report. Also, for Sub-projects ~~that have~~ with multiple engineering/construction packages (e.g., Additional Wells, AWWT Process Improvements, DCS upgrades) a closeout report for each FY sub-project package is necessary ~~shall produce a closeout report for each package~~. It will take 40 hours of ENGINR time to complete each report.

8) Task #8 – ARWWP Engineering Operations Support

8.1) Plan/Scope – ARWWP Engineering Operations Support

ARWWP Engineering is needed to support current and planned operations.

Technical support is required for extraction and injection well field operations including:

Well Performance Monitoring
Well Maintenance Monitoring

Technical support for wastewater treatment including:

Resin regeneration support
Maintenance Work Order Review
Maintenance Support
Energy Isolation Plan reviews and input
Trouble shooting

8.2) Quantification – ARWWP Engineering Operations Support

Engineering support at 1 FTEs (ENGINR ½ and ENGCVL ½) is required to support ARWWP Operations through FY2005. After FY2005 this support will drop to ½ ENGCVL.

1.5.2 EFEC2 – Additional Wells

1) Task #1 – Additional Wells

1.1) Plan/Scope – Additional Wells

As presented in the Baseline Remedial Strategy Report (BRSR), the proposed well fields for the aquifer restoration includes extraction wells in the South Field, South Plume, Waste Pit and Plant 6 areas and reinjection wells in the South Field. During the course of the remediation remedy, the location of plume "hot spots", depth of contamination and condition of the wells in these areas may change and additional and/or replacement extraction or reinjection wells will be required to enhance remediation performance. This supplemental extraction and reinjection well packages provides for this needed

enhancement. The final locations of the wells in each supplemental extraction and reinjection well package will be determined prior to actual design and construction by the results gained from the Integrated Environmental Monitoring Plan (DOE 1997), the Operations and Maintenance Master Plan for Aquifer Restoration and Wastewater Treatment (DOE 1997) and Geoprobe results.

The scope of work for the additional extraction and reinjection wells packages for FYs 03, 04 and 05 will consist of only Construction, (as Title I/II/III engineering, and Start-up are covered under EFEC1) for two (2) extraction wells and one (1) reinjection well system per each package. For FYs 06, 07 and 08 the scope consists of the Construction for one (1) extraction well and one (1) reinjection well system per each package. Each system will include: predrilled, 12 inch diameter stainless steel extraction wells with five (5) foot sumps, submersible vertical turbine pumps with variable speed drives, access roadway, electrical service, instrumentation, well houses, fiber optic control system, and SDR-11 high density polyethylene (HDPE) piping. The discharge from the extraction wells will tie into to the existing two-header system at previously provided or new connection points. Each well will be capable of discharging (through valving arrangements) to either header. Each well will have the capability to discharge to a header designated for treatment or to a header directing untreated flows to the Great Miami River (GMR). The wells will be monitored and controlled via a fiber optic network from the existing Distributed Control System (DCS) in building #51.

Each system will also include: a predrilled 16 inch diameter schedule 80 PVC re-injection well with stainless steel screens and five (5) foot sump, access roadway, electrical service, instrumentation, fiber optic control system, and SDR-11 high density polyethylene (HDPE) piping.) The wells will be monitored and controlled via a fiber optic network from the existing Distributed Control System (DCS) in building #51.

A PSP will be developed by the ARWWP Hydrogeology group to serve as the controlling document for the installation of the extraction and injection wells. All drilling and sampling field activities will conform to the guidelines set forth in the Sitewide CERCLA Quality Assurance manual (SCQ).

The general well configuration will be the same as that used for SFES Phase I and the Injection Demonstration:

- For Extraction wells: A twenty (20") inch diameter bore hole with a twelve (12") inch diameter stainless steel well casing with five (5') foot sump centered in it.

- For Reinjection Wells: A twenty (24") inch diameter bore hole with a sixteen (16") inch diameter schedule 80 PVC well casing with a stainless steel screen and a five (5') foot sump centered in it.

- A two (2") inch I.D. PVC observation well with a five (5') screen installed

between the well casing and the outside edge of the borehole.

The position of the observation well screen will be dependent on the depth of the extraction well and location of its screen. The size of openings, length and position of the screened area of the extraction well will be determined by the sieve analysis of the soil samples taken from a four (4") inch diameter rotosonic core boring of the saturated aquifer at the center location of the planned well.

The construction effort for each of the extraction and injection well packages will be made up of two major subcontracts, one for the drilling, installation and development of the wells and one for the construction of the system infrastructure including, piping, well houses, roadways, electric power, controls, etc.

The site well drilling contractor under a task order assigned to the site-drilling contract will perform the drilling of the wells. This mechanism is the preferred route since it provides a contractor cognizant of site working conditions and regulations and saves time and cost in the procurement effort

The construction subcontractor will be responsible for all field activities with the exception of the well drilling and development. The subcontractor shall procure all materials and equipment necessary to complete the work outline in the CFC specifications and drawings. The work includes electrical (high and low voltage), civil work (trenching, roadways), mechanical (piping - steel and HDPE), instrumentation (fiber optics, controllers) and safety and management oversight to the requirements of the contract.

1.2) Quantification – Additional Wells

- Well drilling and construction activities are on a four day 10 hour schedule, no overtime
- Fridays are weather related make-up days
- Normal weather patterns (rain, snow, heat, etc.)
- Each package will follow the same general direction as the design for the respective enhancement area system as follows:

    - All extraction wells will have identical monitoring requirements to include motor rpm, flow rate, accumulated flow, well pump discharge pressure, and discharge valve position. These indications will be displayed in the AWWT Control Room.
    - Well discharge valves will be manually operated.
    - All extraction well pumps will have variable speed motors and controllers
    - Pumps for each package will be submersible vertical turbines matching those used in the respective well fields unless operating experience dictates a different type or size.
    - Well houses will be identical for each well
    - Permanent gravel access roads to the well sites are required.

- All injection wells will have identical monitoring requirements to include flow rate, well injection pressure, well water level, and valve position. These indications will be displayed in the AWWT Control Room. The injection water supply tank levels and the supply pump pressure will also be displayed in the AWWT Control Room.
- Well injection valves will be manually operated.
- The injection water supply pump will be single speed with nominal gpm flow rate for the given upgrade.
- Each well pad configuration will be identical and fenced
- Electrical power and fiber optic control loop to each well site.

- Well Construction

  Experience gained from drilling, installing and developing the ten (10) existing SFES Phase I wells, five injection Demonstration wells and the two (2) SPO wells, has shown that a well takes a drill crew twenty (20), ten (10) hour days to complete. The cost per well is approximately $100,000 each.

- Infrastructure Construction

  It's assumed that the infrastructure construction for each package will mirror that of the respective well field. The package is to be installed in and include the following:

  For each Extraction Well

  - 12'x 13' pre-engineered (frame-less) steel building.
  - Submersible well pumps with variable speed drives.
  - Approximately 600 ft. 8" SDR-11 HDPE piping including 300 ft. of excavation and backfilling for same.
  - Approximately 600 ft. of 12ft. Wide gravel access roadways, with culverts and guard rails where necessary.
  - Approximately 600 ft of overhead 13.2 kV power with step- down, pole-mounted, transformers to 480V at each well house. Inside each well house a 15 KVA dry-type transformer will provide local 120/240V power.
  - Each well house to have lighting, convenience power, 3.3 kW electric heater with thermostat, 680 CFM exhaust fan with matching automatic, motorized, damper and intake louver.
  - The pumps will be controlled both locally and remotely from the AWWT Distributed Control System (DCS) via a fiber optic overhead cable network (approximately 800-ft.) and controllers at each well house.
  - Flow and level controllers will also be provided for each well pump and mounted in the well house.

- Each well house to include the following: Approximately 25 ft. of aboveground 6" diameter sch. 40 steel pipe, one 6" Y fitting, two 6" elbows, two 3" elbolets, one 6" check valve, one air and vacuum valve, two 6" butterfly valves, two 3" gate valves, one l/2" globe valve, one pressure indicating transmitter, and six sets of 6" flanges and two sets of 3" flanges.
- Approximately, 35,000sq.ft. of miscellaneous clearing and finish grading 35,000sq.ft. of fertilizing, grass seeding and mulching will be required.
- Each well house to contain a 225A electrical distribution panel and 100A lighting panel.

Injection Wells

- Concrete pads for well head and piping.
- Upgrading the centrifugal injection water supply pump.
- Approximately 600 ft. of 8" SDR-11 HDPE piping including excavation and backfilling for same.
- Approximately 500 ft. of 12ft. Wide gravel access roadways, with culverts and guard rails where necessary.
- Approximately 500 ft of overhead 13.2 kV power with step- down, pole-mounted, transformers to 240V at each well pad to provide local 120/240V power.
- Each well pad to have lighting, convenience and instrumentation power.
- The flow control valve at each well will be controlled both locally and remotely from the AWWT Distributed Control System (DCS) via a fiber optic overhead cable network (approximately 500 ft.) with controllers at each well pad.
- A flow meter and well level transducer will also be provided for each well. The meter mounted in the piping train to the well and the level transducer housed in a stilling well, at mid-screen level.
- Each well pad to include the following: Approximately 20 ft. of aboveground insulated 4" diameter sch. 40 steel pipe, two 4" elbows, two 4"x 1" sockolets, one air release valve, one 4" butterfly valve, one 1" and two, l/2" globe valves, one 1/4" gate valve, one pressure indicating transmitter, one 4" flow indicating transmitter and one 4" flow control valve.
- Approximately, 35,000 sq.ft. of miscellaneous clearing and finish grading and 35,000 sq.ft. of fertilizing, grass seeding and mulching will be required.
- Each well pad to contain a 100A electrical distribution panel and fiber optic control panel.

Historically, a small quantity of Fluor Fernald supplied material and equipment is needed for each well field installation project. Gravel for road repair and access through muddy areas at $15,000; equipment rental at $2,000; and safety equipment at $750.

1.5.3 EFEC3 – Waste Storage Area Extraction System

1) Task #1 – Waste Storage Area Extraction System

1.1) Plan/Scope – Waste Storage Area Extraction System

The Waste Pit Area Extraction System will recover contaminants from the portion of the Great Miami Aquifer (GMA) that underlies the waste storage area (Operable Unit 1 and Operable Unit 4) and the South Field. The current, selected plan calls for five (5) extraction wells to be located in and near the FEMP waste pit area, the Pilot Plant Runoff ditch and the its associated plume and one well located south of the SWRB in the South Field The final location of the extraction wells will be determined in the months prior to actual design and construction by geoprobing the area to find the optimum locations and depths. The project is divided into two parts: Part 1, to be installed in FYs01/02 includes 3 extractions wells along the Pilot Plant Runoff plume and one well in the South Field; Part 2 will be designed and constructed later and will consists of two wells installed in the Waste pit Storage Area.

The system will include: predrilled, 12 inch diameter stainless steel extraction wells with five (5) foot sumps, submersible vertical turbine pumps with variable speed drives, access roadway, electrical service, instrumentation, well houses, fiber optic control system, and high density polyethylene (HDPE) piping. The discharge from the wells will tie into to the existing two-header system at previously provided connection points. Each well will be capable of discharging (through valving arrangements) to either header. Each well will have the capability to discharge to a header designated for treatment or to a header directing untreated flows to the Great Miami River (GMR). Part 2 wells will not be arranged in a two-header system, but will rather tie directly into the ARASA basin discharge line. The wells will be monitored and controlled via a fiber optic network from the existing Distributed Control System (DCS) in building #51.

A PSP will be developed by the ARWWP Hydrogeology group to serve as the controlling document for the installation of the extraction wells. All drilling and sampling field activities will conform to the guidelines set forth in the Sitewide CERCLA Quality Assurance manual (SCQ).

The position of the observation well screen will be dependent on the depth of the extraction well and location of its screen. The size of openings, length and position of the screened area of the extraction well will be determined by the sieve analysis of the soil samples taken from a four (4") inch diameter rotosonic core boring of the saturated aquifer at the center location of the planned well.

The construction effort will be made up of two major subcontracts, one for the drilling, installation and development of the wells and one for the construction of the system infrastructure including, piping, well houses, roadways, electric power, controls, etc.

The site well drilling contractor under a task order assigned to the site-drilling contract will perform the drilling of the wells. This mechanism is the preferred route since it provides a contractor cognizant of site working conditions and regulations and saves time and cost in the procurement effort

The construction subcontractor will be responsible for all field activities with the exception of the well drilling and development. The subcontractor shall procure all materials and equipment necessary to complete the work outline in the CFC specifications and drawings. The work includes electrical (high and low voltage), civil work (trenching, roadways), mechanical (piping - steel and HDPE), instrumentation (fiber optics, controllers) and safety and management oversight to the requirements of the contract.

1.2) Quantification – Waste Storage Area Extraction System

- Well drilling and construction activities are on a four day 10 hour schedule, no overtime
- Fridays are weather related make-up days
- Normal weather patterns (rain, snow, heat, etc.)
- Each package will follow the same general direction as the design for the respective enhancement area system as follows:

  - All extraction wells will have identical monitoring requirements to include motor rpm, flow rate, accumulated flow, well pump discharge pressure, and discharge valve position. These indications will be displayed in the AWWT Control Room.
  - Well discharge valves will be manually operated.
  - All extraction well pumps will have variable speed motors and controllers
  - Pumps for each package will be submersible vertical turbines matching those used in the respective well fields unless operating experience dictates a different type or size.
  - Well houses will be identical for each well
  - Permanent gravel access roads to the well sites are required.
  - Electrical power and fiber optic control loop to each well site.
  - Part 2 wells will have single discharge headers and will be tied into the ARASA Basin Reroute pipe header.

- Well Construction

  Experience gained from drilling, installing and developing the ten (10) existing SFES Phase I wells and the two (2) SPO wells, has shown that a 12" diameter well takes a drill crew twenty (20), ten (10) hour days to complete. The cost per well is approximately $100,000 each.

- Infrastructure Construction

It's assumed that the infrastructure construction for each package will mirror that of the respective well field the package is to be installed in and include the following:

- 12'x 13' pre-engineered (frame-less) steel building for each extraction well
- Submersible well pumps with variable speed drives.
- For Part 1: Approximately 4200 ft. 8" SDR-11 HDPE piping including 2100 ft. of excavation and backfilling for same. (Double Header System)
- For Part 2: Approximately 700 ft. 8" HDPE piping including 700 ft. of excavation and backfilling for same. (Single Header System)
- For Part 1: Approximately 700 ft. of 12ft. Wide gravel access roadways, with culverts and guard rails where necessary.
- For Part 2: Approximately 400 ft. of 12ft. Wide gravel access roadways, with culverts and guard rails where necessary.
- For Part 1: Approximately 1,200 ft of overhead 13.2 kV power
- For Part 2: Approximately 2,000 ft of overhead 13.2 kV power
- Step-down, pole-mounted, transformers to 480V at each well house.
- Inside each well house a 15 KVA dry-type transformer will provide local 120/240V power.
- Each well house to have lighting, convenience power, 3.3 kW electric heater with thermostat, 680 CFM exhaust fan with matching automatic, motorized, damper and intake louver.
- The pumps will be controlled both locally and remotely from the AWWT Distributed Control System (DCS) via a fiber optic overhead cable network (approximately 1200 ft for Part 1 and 2000 feet for Part 2.) and controllers at each well house.
- Flow and level controllers will also be provided for each well pump and mounted in the well house.
- Each well house to include the following: Approximately 25 ft. of aboveground 6" diameter sch. 40 steel pipe, one 6" Y fitting, two 6" elbows, two 3" elbolets, one 6" check valve, one air and vacuum valve, two 6" butterfly valves, two 3" gate valves, one 1/2" globe valve, one pressure indicating transmitter, and six sets of 6" flanges and two sets of 3" flanges.
- Approximately, 30,000sq.ft. of miscellaneous clearing and finish grading 30,000sq.ft.of fertilizing, grass seeding and mulching will be required for Part 1.
- Approximately, 10,000sq.ft. of miscellaneous clearing and finish grading 10,000sq.ft.of fertilizing, grass seeding and mulching will be required for Part 2.
- Each well house to contain a 225A electrical distribution panel and 100A lighting panel.

Historically, a small quantity of Fluor Fernald supplied material and equipment is needed for each well field installation project. Gravel for road repair and access through muddy areas at $15,000; equipment rental at $2,000; and safety equipment at $750.

1.5.4 EFEC4 – South Field Extraction System Phase II

1) Task #1 – South Field Extraction System Phase II

1.1) Plan/Scope – South Field Extraction System Phase II

The ten-well, early-start South Field Extraction System-Phase I was designed to support the initial 27-year base case system presented in the Operable Unit 5 FS and ROD (DOE 1995a). As presented in the Baseline Remedial Strategy Report (BRSR), the proposed well field FOR Aquifer restoration includes additional extraction and injection wells in the south field area. These additional extraction and injection wells will comprise Phase II of the South Field Extraction System. The final location of the extraction and injection wells will be determined in the months prior to actual design and construction by geoprobing the area to find the optimum locations and depths.

The scope of work for the SFES Phase II will consist of the construction for a three- (3) well extraction system and a two (2) well injection system. The system will include: predrilled, 12 inch diameter stainless steel extraction wells with five (5) foot sumps, submersible vertical turbine pumps with variable speed drives, access roadway, electrical service, instrumentation, well houses, fiber optic control system, and high density polyethylene (HDPE) piping. The existing well field piping is arranged in a two-header discharge system and the new header system for the three extraction wells will follow the same arrangement. The discharge from the three extraction wells will tie into to the existing two-header system at previously provided connection points, located in the SFES valve House. Each well will be capable of discharging (through valving arrangements) to either header. Each well will have the capability to discharge to a header designated for treatment ~~(i.e. the AWWT, SPIT, and IAWWT~~ or to a header directing untreated flows to the Great Miami River (GMR). The wells will be monitored and controlled via a fiber optic network from the existing Distributed Control System (DCS) in building #51.

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The scope also includes two (2) injection wells located in the south-central portion of the FEMP, within the South Field Area, and along the north edge of what was the Inactive Fly Ash Pile. The final location of the re-injection wells will be determined in the months prior to actual design and construction by geoprobing the area to find the optimum locations and depths.

The system will include: predrilled, 16 inch diameter schedule 80 PVC re-injection wells with stainless steel screens and five (5) foot sumps, 500 gpm centrifugal pump, access roadway, electrical service, instrumentation, fiber optic control system, and of high density polyethylene (HDPE) piping, and a chlorination addition system. The wells will be

monitored and controlled via a fiber optic network from the existing Distributed Control System (DCS) in building #51.

The scope of work also includes the upgrading of the existing South Field extraction wells to be capable of pumping more groundwater. Extractions Wells 17, 18, 19, 20, 21, 22, 23, and 24 will have new 40 Hp motors and pumps installed in order to increase the range of extraction rates available to 200 to 400+ gpm. This will require removal of the existing pumps and replacing with new, and some well house electrical changes.

R1-D-155 The scope also includes the installation of a chlorine addition system for the reinjection system (or installation of an alternative system as per design evaluation).

A PSP will be developed by the ARWWP Hydrogeology group to serve as the controlling document for the installation of the extraction and reinjection wells. All drilling and sampling field activities will conform to the guidelines set forth in the Sitewide CERCLA Quality Assurance manual (SCQ).

The position of the observation well screen will be dependent on the depth of the extraction well and location of its screen. The size of openings, length and position of the screened area of the extraction well will be determined by the sieve analysis of the soil samples taken from a four (4") inch diameter rotosonic core boring of the saturated aquifer at the center location of the planned well.

The construction effort will be made up of two major subcontracts, one for the drilling, installation and development of the wells and one for the construction of the system infrastructure including, piping, well houses, roadways, electric power, controls, etc.

The site well drilling contractor under a task order assigned to the site-drilling contract will perform the drilling of the wells. This mechanism is the preferred route since it provides a contractor cognizant of site working conditions and regulations and saves time and cost in the procurement effort

The construction subcontractor will be responsible for all field activities with the exception of the well drilling and development. The subcontractor shall procure all materials and equipment necessary to complete the work outline in the CFC specifications and drawings. The work includes electrical (high and low voltage), civil work (trenching, roadways), mechanical (piping - steel and HDPE), instrumentation (fiber optics, controllers) and safety and management oversight to the requirements of the contract.

1.2) Quantification – South Field Extraction System Phase II

- Well drilling and construction activities are on a four day 10 hour schedule, no overtime
- Fridays are weather related make-up days
- Normal weather patterns (rain, snow, heat, etc.)

- The package will follow the same general direction as the design for the respective enhancement area system as follows:

  - All extraction wells will have identical monitoring requirements to include motor rpm, flow rate, accumulated flow, well pump discharge pressure, and discharge valve position. These indications will be displayed in the AWWT Control Room.
  - Well discharge valves will be manually operated.
  - All extraction well pumps will have variable speed motors and controllers
  - Pumps for will be submersible vertical turbines matching those used in the respective well fields unless operating experience dictates a different type or size.
  - Well houses will be identical for each well
  - Permanent gravel access roads to the well sites are required.
  - All injection wells will have identical monitoring requirements to include flow rate, well injection pressure, well water level, and valve position. These indications will be displayed in the AWWT Control Room. The injection water supply tank levels and the supply pump pressure will also be displayed in the AWWT Control Room.
  - Well injection valves will be manually operated.
  - The injection water supply pump will be single speed with nominal gpm flow rate for the given upgrade.
  - Each well pad configuration will be identical and fenced
  - Electrical power and fiber optic control loop to each well site.

- Well Construction

  Experience gained from drilling, installing and developing the ten (10) existing SFES Phase I wells and the two (2) SPO wells, has shown that a 12" diameter well takes a drill crew twenty (20), ten (10) hour days to complete. The cost per well is approximately $100,000 each.

- Infrastructure Construction

  It's assumed that the infrastructure construction for each package will mirror that of the respective well field the package is to be installed in and include the following:

  For Extraction Wells

  - 12'x 13' pre-engineered (frame-less) steel building.
  - Submersible well pumps with variable speed drives.
  - Approximately 2,400 ft. 8" SDR-11 HDPE piping including 1,200 ft. of excavation and backfilling for same.

- Approximately 800 ft. of 12ft. Wide gravel access roadways, with culverts and guard rails where necessary.
- Approximately 800 ft of overhead 13.2 kV power with step-down, pole-mounted, transformers to 480V at each well house. Inside each well house a 15 KVA dry-type transformer will provide local 120/240V power.
- Each well house to have lighting, convenience power, 3.3 kW electric heater with thermostat, 680 CFM exhaust fan with matching automatic, motorized, damper and intake louver.
- The pumps will be controlled both locally and remotely from the AWWT Distributed Control System (DCS) via a fiber optic overhead cable network (approximately 900-ft.) and controllers at each well house.
- Flow and level controllers will also be provided for each well pump and mounted in the well house.
- Each well house to include the following: Approximately 25 ft. of aboveground 6" diameter sch. 40 steel pipe, one 6" Y fitting, two 6" elbows, two 3" elbolets, one 6" check valve, one air and vacuum valve, two 6" butterfly valves, two 3" gate valves, one 1/2" globe valve, one pressure indicating transmitter, and six sets of 6" flanges and two sets of 3" flanges.
- Approximately, 20,000sq.ft. of finish grading 20,000sq.ft. of fertilizing, grass seeding and mulching will be required.
- Each well house to contain a 225A electrical distribution panel and 100A lighting panel.

Injection Wells

- Concrete pads for well head and piping.
- Adding an additional centrifugal injection water supply pump to pump 500gpm. .
- Approximately 2000 ft. of 8" SDR-11 HDPE piping including excavation and backfilling for injection water supply.
- Approximately 900 feet of 8-inch SDR-11 HDPE piping for groundwater backwash routed to the groundwater treatment header.
- Approximately 800 ft. of 12ft. Wide gravel access roadways, with culverts and guard rails where necessary.
- Approximately 800 ft of overhead 13.2 kV power with step- down, pole-mounted, transformers to 240V at each well pad to provide local 120/240V and 480V power.
- Each well pad to have lighting, convenience and instrumentation power.
- The flow control valve at each well will be controlled both locally and remotely from the AWWT Distributed Control System (DCS) via a fiber optic overhead cable network (approximately 850 ft.) with controllers at each well pad.
- A flow meter and well level transducer will also be provided for each well. The meter mounted in the piping train to the well and the level transducer housed in a stilling well, at mid-screen level.

- Each well pad to include the following: Approximately 20 ft. of aboveground insulated 4" diameter sch. 40 steel pipe, two 4" elbows, two 4"x 1" sockolets, one air release valve, one 4" butterfly valve, one 1" and two, l/2" globe valves, one 1/4" gate valve, one pressure indicating transmitter, one 4" flow indicating transmitter and one 4" flow control valve.
- Approximately, 20,000 sq.ft. of miscellaneous clearing and finish grading and 20,000 sq.ft. of fertilizing, grass seeding and mulching will be required.
- Each well pad to contain a 100A electrical distribution panel and fiber optic control panel.
- The injection well shall be enhanced with extraction pumps to extract 400 gpm of groundwater for 2 hours per day. Will require a extraction well pump

Pump upgrades

- Replace current 30 Hp pumps with new 40 Hp motors and pumps. Site standard extraction pump shall be used.

Chlorine Addition System

- Install a Cl addition system at the Injection Supply tank to provide a continuous flow of chlorinated feed water to the injection wells (technical evaluation may delete or alter this system).

R1-D-112

Historically, a small quantity of Fluor Fernald supplied material and equipment is needed for each well field installation project. Gravel for road repair and access through muddy areas at $15,000; equipment rental at $2,000; and safety equipment at $750.

1.5.5 EFEC5 – Replace Vacuum Truck

1) Task #1 – Replace Vacuum Truck

1.1) Plan/Scope – Replace Vacuum Truck

Two (2) vacuum trucks are used to transport wastewater to the Advanced Wastewater Treatment (AWWT) facility. The trucks transport materials from various tanks, sumps, wells and other sources where direct piping to the existing treatment streams do not exist. One of the vacuum trucks has been in operation for years and is fast approaching the end of its useful life. The older truck needs to be replaced with a new truck, which will continue to supplement the better of the two current vacuum trucks. This task will cover the subcontract cost for the new truck.

1.2) Quantification – Replace Vacuum Truck

- The truck shall be a wet/dry vacuum truck suitable for removing wet or dry material accumulation from at 380 feet from the truck.
- The truck must have a completely modular filtration system, which allows all filter and installation of components to be individually unbolted and replaced in the field.
- The truck shall be similar to the existing truck.

1.5.6 EFEC6 – AWWT Process Improvements

1) Task #1 – AWWT Process Improvements

1.1) Plan/Scope – AWWT Process Improvements

The Operable Unit 5 Record of Decision (ROD) includes requirements for treatment of remediation wastewater, stormwater runoff, and recovered groundwater. The FEMP utilizes a number of advanced wastewater treatment (AWWT) systems to address these wastewater, stormwater, and groundwater treatment requirements. These systems include a variety of unit process operations - flow surge basins and tanks, aeration and ozonation pretreatment, chemical addition, clarification, filtration, ion exchange, slurry conditioning and dewatering, etc. This task covers the subcontractor construction costs.

The construction subcontractor will be responsible for all field. The subcontractor shall procure all materials and equipment necessary to complete the work outlined in the CFC specifications and drawings. Fluor Fernald will procure all materials and equipment for the Site Services Contractor.

1.2) Quantification – AWWT Process Improvements

Activities that are required to maintain the ARWWP treatment systems and the FY the work is planned for is as follows:

FY	Activities Planned
2002	1. Replacement of alum metering pumps (2 –pumps) 2. Replacement of worn components - pumps valves, instrumentation, etc. 3. Piping rerouting of BSL away from K65 trench (400 feet of SDR11 HDPE piping and trenching) 4. Improved clarification: pH adjustment or lime addition 5. New clarifier pumps, controllers and piping (replace clarifer underflow pumps with new 40 hp motors and pumps) 6. For Tanks 361 and 701 replace centrifugal pumps with positive displacement pump 7. Pipe to allow sending treated eluate to Phase I (in addition to Phase II)
2003	1. Tank repairs and refurbishment 2. Replace stainless steel brine piping with PVC 3. Phase I, II or Expansion flow modifications to increase throughput 4. Replacement of worn components - pumps valves, instrumentation, etc. 5. STP modification to an extended aeration facility 6. Install easily removable inlet well screens on IX vessels ~~7. Replace stainless steel brine piping with PVC~~
2004	1. Replacement of worn components - pumps valves, instrumentation, etc. 2. Separate source of low-pressure air for filter air scour
2005	1. Replacement of worn components - pumps valves, instrumentation, etc. 2. Tank repairs and refurbishment
2007	1. Replacement of worn components - pumps valves, instrumentation, etc. 2. Tank repairs and refurbishment

R1-D-158

Historically, a small quantity of Fluor Fernald supplied material and equipment is needed for each package: equipment rental at $2,000; and safety equipment at $750.

1.5.7 EFEC7 – DCS Equipment/Software Upgrades

1) Task #1 – DCS Equipment/Software Upgrades

1.1) Plan/Scope – DCS Equipment/Software Upgrades

The Distributed Control System (DCS) is located at the Advanced Wastewater Treatment facility (AWWT). The DCS is used to control process activities and systems via computer controls. The DCS provides a means of remotely controlling various process systems throughout the facility. Various algorithms programmed in the computer provide precise control over analog and digital components required to facilitate treatment of contaminated wastewater.

R1-D-113

In order to maintain the highest possible efficiency of the ~~AWWT, SPIT, IAWWT and AWWT Expansion~~ DCS-controlled ARWWP wastewater treatment systems, the DCS control system will ~~must~~ be kept current, where needed, as determined by periodical evaluations. Including replacing current software with the latest revision of the control

package, communication wiring and fiber optic system, additional/replacement of controllers and monitors, printers, DCS hardware such as RAM chips, controllers, circuit boards, and programming upgrades and changes.

1.2) Quantification – DCS Equipment/Software Upgrades

Technical Assumptions per upgrade (FYs 02, 05 & 07)

- Design will involve the development of technical procurement specifications using the existing Bailey Controls system as a guide.
- The design must be compatible to the existing system
- The specification shall require Bailey Technical supervision of installation at $1,000 per day and travel of $500/day
- Upgrade of the base conductor NT software with Global Database Access – at $11,000
- 2- Personal Computers upgrades at $5,000 per
- Printer - $1000

1.5.8 EFEC8 – SWRB/BSL Liner Testing

1) Task #1 – SWRB/BSL Liner Testing

1.1) Plan/Scope – SWRB/BSL Liner Testing

The SWRB and BSL liners are more than 10 years old. This activity provides for liner integrity testing as a quality control program to prevent environment releases of stormwater and process water and covers the cost of the subcontractor.

The construction subcontractor will be responsible for all field activities.

1.2) Quantification – SWRB/BSL Liner Testing

- Testing shall be conducted using an electrical leak location method. Must be able to detect 0.01 square inch leaks in liners covered with two feet of water and sludge.
- A final report is required from the contractor.

1.5.9 EFEC9 – South Plume Optimization Phase II

1) Task #1 – South Plume Optimization Phase II

1.1) Plan/Scope – South Plume Optimization Phase II

As presented in the Baseline Remedial Strategy Report (BRSR), if ongoing technical and logistical deliberations during the remediation regarding performance of the initial South

Plume Optimization system result in a third optimization well being required then an additional well will be added. Currently technical performance indicators show a well being required in the off-property portion of the South Plume. The final locations of the well will be determined prior to actual design and construction by the results gained from the Integrated Environmental Monitoring Plan (DOE 1997), the Operations and Maintenance Master Plan for Aquifer Restoration and Wastewater Treatment (DOE 1997) and Geoprobe results.

The scope of work includes one (1) extraction located off-property and one (1) reinjection well located on-property and will consist of the Construction only. The system will include: 1 predrilled, 12 inch diameter stainless steel extraction wells with five (5) foot sumps, submersible vertical turbine pumps with fixed speed drives, access roadway, electrical service, instrumentation, modifications to the South Plume valve House, fiber optic control system, and high density polyethylene (HDPE) piping. The extraction well will tie into a new header arrangement header for the South Plume. This new header will involve routing a new 10-inch HDPE pipe through the existing 20-inch South Plume discharge header from the Valve House to a location near Well House 22. This arrangement will separate the higher contaminated groundwater from the South Plume Optimization from the lower contaminated groundwater from the South Plume Recovery wells.

The subproject will also include: predrilled 16 inch diameter schedule 80 PVC re-injection wells with stainless steel screens and five (5) foot sumps, access roadway, electrical service, instrumentation, fiber optic control system, and approximately 700 feet of high density polyethylene (HDPE) piping.) The well will be monitored and controlled via a fiber optic network from the existing Distributed Control System (DCS) in building #51.

A PSP will be developed by the ARWWP Hydrogeology group to serve as the controlling document for the installation of the extraction and reinjection wells. All drilling and sampling field activities will conform to the guidelines set forth in the Sitewide CERCLA Quality Assurance manual (SCQ).

The position of the observation well screen will be dependent on the depth of the extraction well and location of its screen. The size of openings, length and position of the screened area of the extraction well will be determined by the sieve analysis of the soil samples taken from a four (4") inch diameter rotosonic core boring of the saturated aquifer at the center location of the planned well.

The construction effort will be made up of two major subcontracts, one for the drilling, installation and development of the wells and one for the construction of the system infrastructure including, piping, well houses, roadways, electric power, controls, etc.

The site well drilling contractor under a task order assigned to the site-drilling contract will perform the drilling of the wells. This mechanism is the preferred route

since it provides a contractor cognizant of site working conditions and regulations and saves time and cost in the procurement effort

The construction subcontractor will be responsible for all field activities with the exception of the well drilling and development. The subcontractor shall procure all materials and equipment necessary to complete the work outline in the CFC specifications and drawings. The work includes electrical (high and low voltage), civil work (trenching, roadways), mechanical (piping - steel and HDPE), instrumentation (fiber optics, controllers) and safety and management oversight to the requirements of the contract.

1.2) Quantification – South Plume Optimization Phase II

- Well drilling and construction activities are on a four day 10 hour schedule, no overtime
- Fridays are weather related make-up days
- Normal weather patterns (rain, snow, heat, etc.)
- The package will follow the same general direction as the design for the respective enhancement area system as follows:

  - The extraction well will have identical monitoring requirements to include flow rate, accumulated flow, well pump discharge pressure, and discharge valve position. These indications will be displayed in the AWWT Control Room.
  - Well discharge valves will be manually operated.
  - The extraction well pump will be fixed speed
  - The South Plume Valve House will be enlarged to include addition well piping.
  - Permanent gravel access roads to the well sites are required.
  - All injection wells will have identical monitoring requirements to include flow rate, well injection pressure, well water level, and valve position. These indications will be displayed in the AWWT Control Room. The injection water supply tank levels and the supply pump pressure will also be displayed in the AWWT Control Room.
  - Well injection valves will be manually operated.
  - The injection water supply pump will be single speed with nominal gpm flow rate for the given upgrade.
  - The well pad configuration will be identical and fenced
  - Electrical power and fiber optic control loop to each well site.
  - The South Plume Optimization and Injection Demonstration projects (53300 and 53100) drawing and specification shall be revised.

- Well Construction

  Experience gained from drilling, installing and developing the ten (10) existing SFES Phase I wells and the two (2) SPO wells, has shown that a 12" diameter well takes

a drill crew twenty (20), ten (10) hour days to complete. The cost per well is approximately $100,000 each.

- Infrastructure Construction

For Extraction Well

- Submersible well pumps with fixed speed drives – sized for 400 gpm (40HP motor and pump).
- Approximately 450 ft. 8" SDR-11 HDPE piping including 450 ft. of excavation and backfilling for same. (Assumes the well can use the existing 400 feet of spare underground pipe along EWs 6 & 7.
- Approximately 1500 feet of 10-inch SDR-11 HDPE piping.
- Approximately 400 ft. of 12ft. Wide gravel access roadways, with culverts and guard rails where necessary.
- Approximately 1200 ft of direct bury 480 V.
- The pump will be controlled both locally and remotely from the AWWT Distributed Control System (DCS) via a existing fiber optic overhead cable network and controllers at each well house.
- Approximately, 5000 sq.ft. of miscellaneous clearing and finish grading 5,000sq.ft. of fertilizing, grass seeding and mulching will be required.

Injection Well

- Concrete pads for well head and piping.
- Upgrading the centrifugal injection water supply pump.
- Approximately 400 ft. of 8" HDPE (SDR11) piping including excavation and backfilling for same for injection supply water
- Approximately 400 ft of 8-inch HDPE (SDR 11) piping including excavation and backfilling for backwash to groundwater treatment header.
- Approximately 500 ft. of 12ft. Wide gravel access roadways, with culverts and guard rails where necessary.
- Approximately 500 ft of overhead 13.2 kV power with step- down, pole-mounted, transformers to 240V at each well pad to provide local 120/240V and 488V power.
- Each well pad to have lighting, convenience and instrumentation power.
- The flow control valve at each well will be controlled both locally and remotely from the AWWT Distributed Control System (DCS) via a fiber optic overhead cable network (approximately 2000 ft.) with controllers at each well pad.
- A flow meter and well level transducer will also be provided for each well. The meter mounted in the piping train to the well and the level transducer housed in a stilling well, at mid-screen level.
- Each well pad to include the following: Approximately 20 ft. of aboveground insulated 4" diameter sch. 40 steel pipe, two 4" elbows, two 4"x 1" sockolets, one air release valve, one 4" butterfly valve, one 1" and two, l/2"

globe valves, one 1/4" gate valve, one pressure indicating transmitter, one 4" flow indicating transmitter and one 4" flow control valve.

- Approximately, 5,000 sq.ft. of miscellaneous clearing and finish grading and 5,000 sq.ft. of fertilizing, grass seeding and mulching will be required.
- Each well pad to contain a 100A electrical distribution panel and fiber optic control panel.
- The injection well shall be enhanced with extraction pumps to extract 400 gpm of groundwater for 2 hours per day. Will require a extraction well pump

Historically, a small quantity of Fluor Fernald supplied material and equipment is needed for each well field installation project. Gravel for road repair and access through muddy areas at $15,000; equipment rental at $2,000; and safety equipment at $750.

1.5.10 EFECA – AWWT Steam Heat Replacement

1) Task #1 – AWWT Steam Heat Replacement

1.1) Plan/Scope – AWWT Steam Heat Replacement

The AWWT Facility is currently heated by steam, supplied by the site's Boiler Plant operations. This activity replaces the current steam heat system with an alternate heating method (natural gas heat) to provide heat to the AWWT after the shutdown of the Boiler Plant. This task cover the subcontractor costs only.

The construction subcontractor will be responsible for all field. The subcontractor shall procure all materials and equipment necessary to complete the work outlined in the CFC specifications and drawings.

1.2 Quantification – AWWT Steam Heat Replacement

- Construction activities are on a four day 10 hour schedule, no overtime
- Fridays are weather related make-up days
- Normal weather patterns (rain, snow, heat, etc.)
- Assumes installation of ductwork, forced air-handling units, heating units to maintain building to no less than 40 deg. F.
- No air-cooling is required.
- The AWWT is approximately 33,000 sq feet, with ceiling heights ranging from 30 to 75 feet.
- Return air handlers will be required to move air from the upper levels to the floor.

1.5.11 EFECC – Leachate Reroute

1) Task #1 – Leachate Reroute

1.1) Plan/Scope – Leachate Reroute

The OSDF Leachate is transferred from the LTS permanent lift station to the Bio-Surge lagoon. Following the remediation of the waste pit area and soils in the waste pit and silo area the leachate will have to be transferred directly to the AWWT from treatment. While the BSL remains in operation throughout out this contract, the option of transferring leachate directly to the AWWT will become desirable when the flow drops to the BSL. This Task provides for the construction subcontractor piping modification to enable this direct flow option.

The construction subcontractor will be responsible for all field activities with the exception of the well drilling and development. The subcontractor shall procure all materials and equipment necessary to complete the work outline the CFC specifications and drawings

1.2) Quantification – Leachate Reroute

- Construction activities are on a four day 10 hour schedule, no overtime
- Fridays are weather related make-up days
- Normal weather patterns (rain, snow, heat, etc.)
- The Leachate piping currently is routed on the west side of the AWWT. This project will tie into this line. New piping will be routed along the existing AWWT pipe bridges to Tank 155. The piping will be heat traced. Approximately 250 feet of 6-inch steel pipe, insulated.

1.5.12 EFECD – OSDF/EPLTS Valve House #7

1) Task #1 – OSDF/EPLTS Valve House #7

1.1 Plan/Scope – OSDF/EPLTS Valve House #7

This task provides for the subcontractor construction of OSDF EPLTS Valve House #7. This valve house is required to for lachate management of OSDF Cell 7 and will have to be installed prior to the construction of Cell 7.

The construction subcontractor will be responsible for all field activities with the exception of the well drilling and development. The subcontractor shall procure all materials and equipment necessary to complete the work outlined in the CFC specifications and drawings.

1.2) Quantification – OSDF/EPLTS Valve House #7

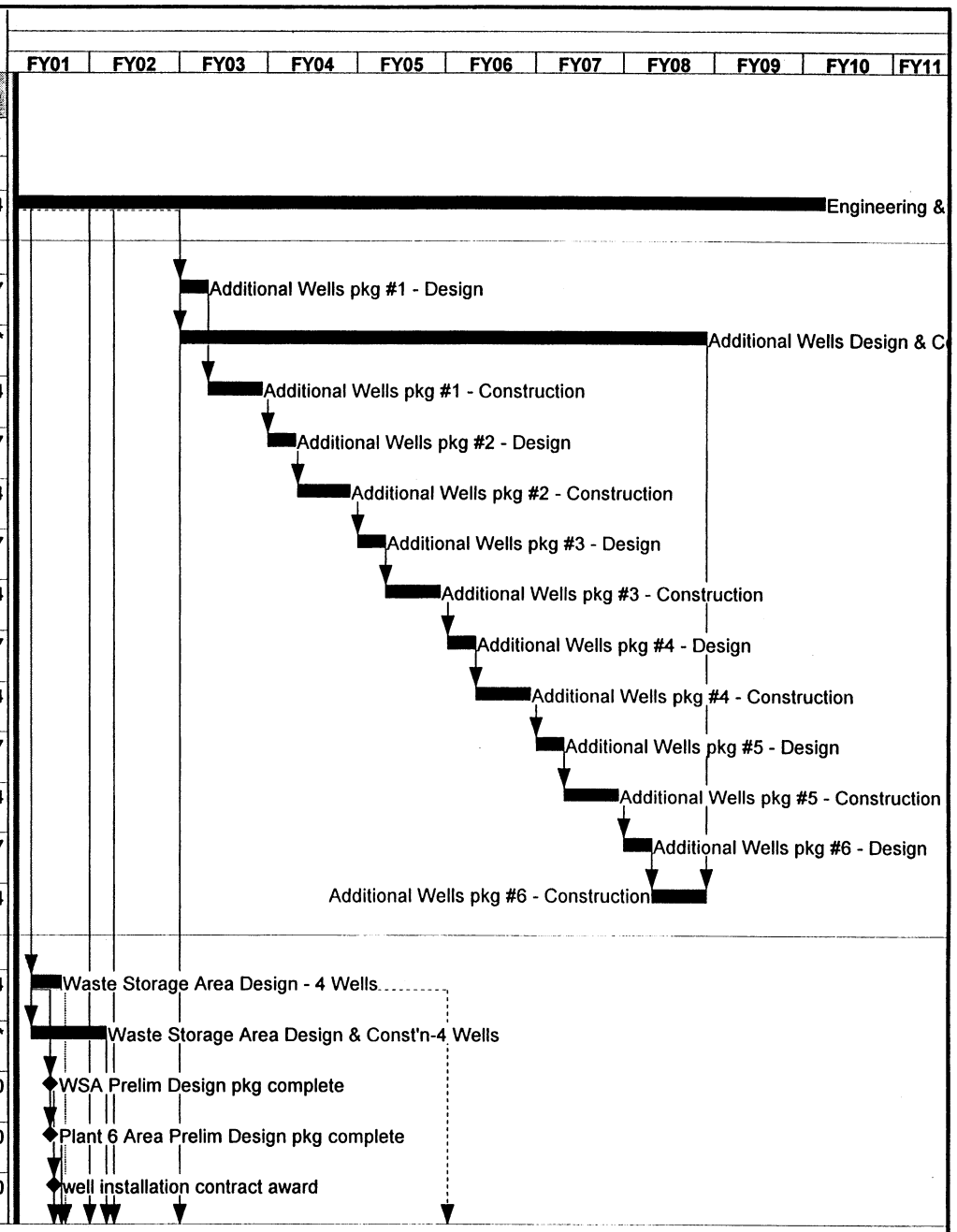
- Construction activities are on a four day 10 hour schedule, no overtime
- Fridays are weather related make-up days
- Normal weather patterns (rain, snow, heat, etc.)
- EPLTS Valve House 7 will be similar to the existing six valve houses already installed.

Historically, a small quantity of Fluor Fernald supplied material and equipment is needed for the installation project. Gravel for road repair and access through muddy areas at $15,000; equipment rental at $2,000; and safety equipment at $750.

SECTION 3

2.0 SCHEDULE

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
E PBS 04 - AQUIFER RESTORATION				
1.1.E.F ENGINEERING CONSTRUCTION PROJECTS				
EFEC1 ARWWP Projects - Project Mgt., FF Engineering				
ECFEC10000	Engineering & Construction Management	01DEC00	27DEC09	3,314
EFEC2 Additional Wells				
ECFEC20300	Additional Wells pkg #1 - Design	01OCT02*	23JAN03	77
ECFEC2H000	Additional Wells Design & Construction	01OCT02	02SEP08	1,480*
ECFEC20350	Additional Wells pkg #1 - Construction	24JAN03	03SEP03	154
ECFEC20400	Additional Wells pkg #2 - Design	01OCT03	23JAN04	77
ECFEC20450	Additional Wells pkg #2 - Construction	26JAN04	01SEP04	154
ECFEC20500	Additional Wells pkg #3 - Design	01OCT04	25JAN05	77
ECFEC20550	Additional Wells pkg #3 - Construction	26JAN05	02SEP05	154
ECFEC20600	Additional Wells pkg #4 - Design	03OCT05	25JAN06	77
ECFEC20650	Additional Wells pkg #4 - Construction	26JAN06	05SEP06	154
ECFEC20700	Additional Wells pkg #5 - Design	02OCT06	24JAN07	77
ECFEC20750	Additional Wells pkg #5 - Construction	25JAN07	04SEP07	154
ECFEC20800	Additional Wells pkg #6 - Design	01OCT07	23JAN08	77
ECFEC20850	Additional Wells pkg #6 - Construction	24JAN08	02SEP08	154
EFEC3 Waste Storage Area Extraction System				
ECFEC30100	Waste Storage Area Design - 4 Wells	01FEB01	01JUN01	84
ECFEC3H100	Waste Storage Area Design & Const'n-4 Wells	01FEB01	07DEC01	214*
ECFEC3M011	WSA Prelim Design pkg complete		16APR01	0
ECFEC3M012	Plant 6 Area Prelim Design pkg complete		16APR01	0
ECFEC3M006	well installation contract award		07MAY01	0



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AQUIFER RESTORATION

1.1.E.F ENGINEERING CONSTRUCTION PROJECTS

Early Bar
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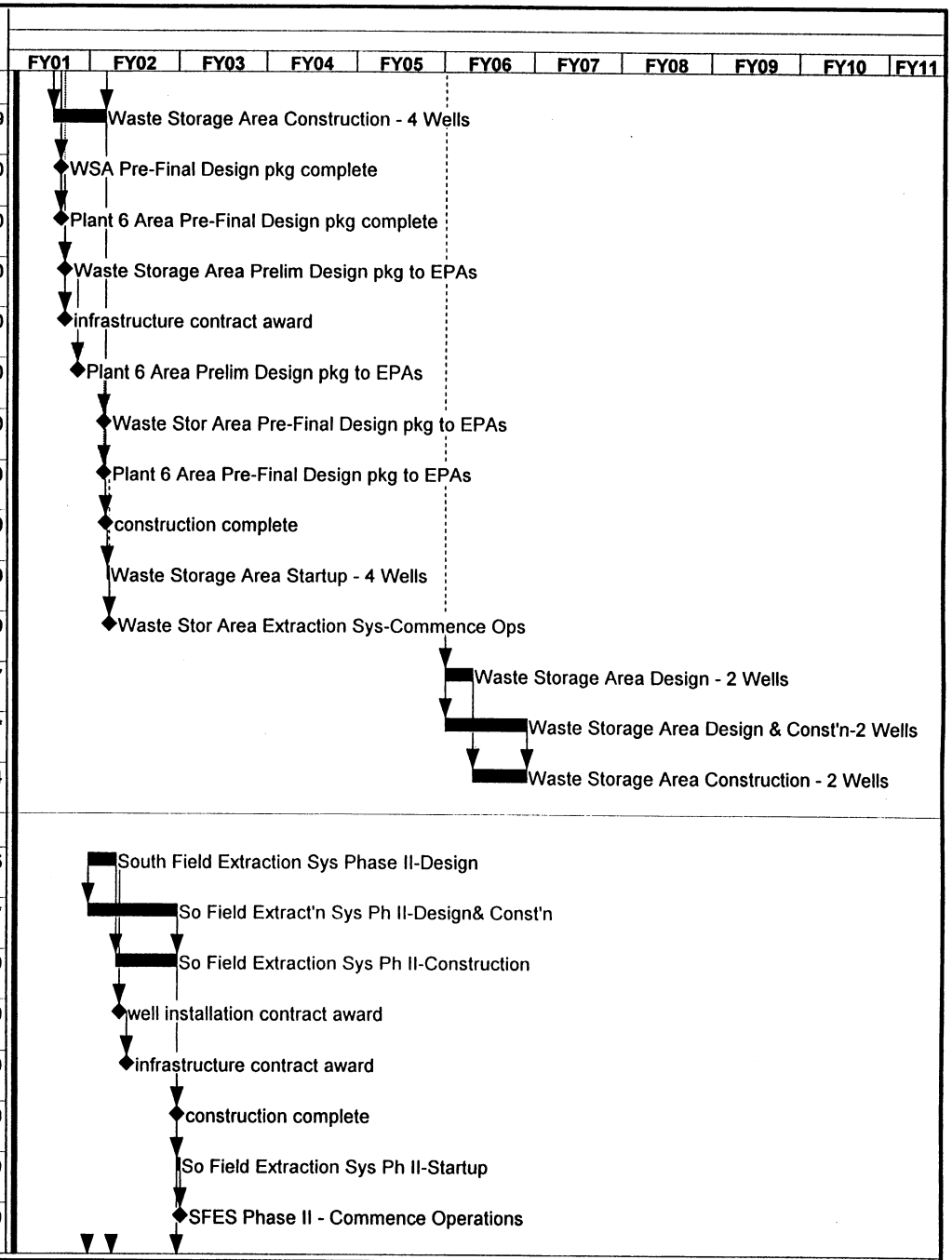
Critical Activity

Date	Revision	Checked	Approved
	F04-003		
	F04-007		
	F04-010		

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
EFEC3 Waste Storage Area Extraction System				
ECFEC30150	Waste Storage Area Construction - 4 Wells	07MAY01	07DEC01	149
ECFEC3M013	WSA Pre-Final Design pkg complete		01JUN01	0
ECFEC3M014	Plant 6 Area Pre-Final Design pkg complete		01JUN01	0
ECFEC3M001	Waste Storage Area Prelim Design pkg to EPAs		15JUN01	0
ECFEC3M007	infrastructure contract award		15JUN01	0
ECFEC3M002	Plant 6 Area Prelim Design pkg to EPAs		15AUG01	0
ECFEC3M003	Waste Stor Area Pre-Final Design pkg to EPAs		30NOV01	0
ECFEC3M004	Plant 6 Area Pre-Final Design pkg to EPAs		30NOV01	0
ECFEC3M008	construction complete		07DEC01	0
ECFEC30190	Waste Storage Area Startup - 4 Wells	10DEC01	21DEC01	10
ECFEC3M010	Waste Stor Area Extraction Sys-Commence Ops		21DEC01	0
ECFEC30600	Waste Storage Area Design - 2 Wells	03OCT05	25JAN06	77
ECFEC3H200	Waste Storage Area Design & Const'n-2 Wells	03OCT05	05SEP06	231*
ECFEC30650	Waste Storage Area Construction - 2 Wells	26JAN06	05SEP06	154
EFEC4 South Field Extraction System, Phase II				
ECFEC40100	South Field Extraction Sys Phase II-Design	01OCT01*	23JAN02	115
ECFEC4H100	So Field Extract'n Sys Ph II-Design& Const'n	01OCT01	30SEP02	365*
ECFEC40150	So Field Extraction Sys Ph II-Construction	24JAN02	30SEP02	250
ECFEC4M006	well installation contract award		02FEB02	0
ECFEC4M007	infrastructure contract award		05MAR02	0
ECFEC4M008	construction complete		30SEP02	0
ECFEC40190	So Field Extraction Sys Ph II-Startup	01OCT02	14OCT02	10
ECFEC4M010	SFES Phase II - Commence Operations		14OCT02	0



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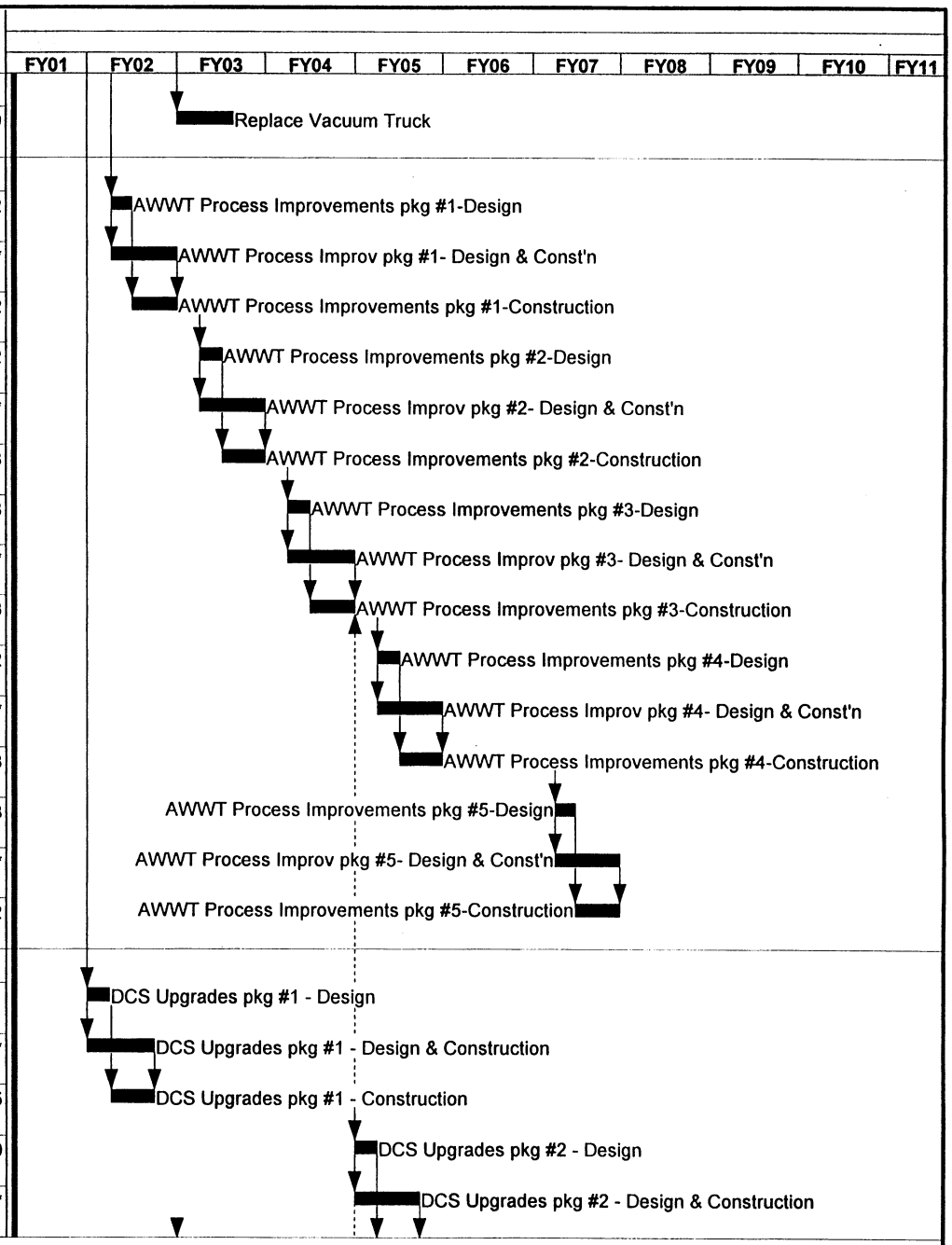
AQUIFER RESTORATION

1.1.E.F ENGINEERING CONSTRUCTION PROJECTS

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved
	F04-003		
	F04-007		
	F04-010		

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
EFEC5 Replace Vacuum Truck				
ECFEC50000	Replace Vacuum Truck	01OCT02	17MAY03	229
EFEC6 AWWT Process Improvements				
ECFEC60200	AWWT Process Improvements pkg #1-Design	02JAN02	01APR02	62
ECFEC6H200	AWWT Process Improv pkg #1- Design & Const'n	02JAN02	30SEP02	189*
ECFEC60250	AWWT Process Improvements pkg #1-Construction	02APR02	30SEP02	182
ECFEC60300	AWWT Process Improvements pkg #2-Design	02JAN03	31MAR03	62
ECFEC6H300	AWWT Process Improv pkg #2- Design & Const'n	02JAN03	30SEP03	189*
ECFEC60350	AWWT Process Improvements pkg #2-Construction	01APR03	30SEP03	183
ECFEC60400	AWWT Process Improvements pkg #3-Design	02JAN04	31MAR04	63
ECFEC6H400	AWWT Process Improv pkg #3- Design & Const'n	02JAN04	30SEP04	190*
ECFEC60450	AWWT Process Improvements pkg #3-Construction	01APR04	30SEP04	183
ECFEC60500	AWWT Process Improvements pkg #4-Design	03JAN05	31MAR05	62
ECFEC6H500	AWWT Process Improv pkg #4- Design & Const'n	03JAN05	30SEP05	190*
ECFEC60550	AWWT Process Improvements pkg #4-Construction	01APR05	30SEP05	183
ECFEC60700	AWWT Process Improvements pkg #5-Design	02JAN07	30MAR07	63
ECFEC6H700	AWWT Process Improv pkg #5- Design & Const'n	02JAN07	28SEP07	189*
ECFEC60750	AWWT Process Improvements pkg #5-Construction	31MAR07	28SEP07	182
EFEC7 DCS Equipment/Software upgrades				
ECFEC70200	DCS Upgrades pkg #1 - Design	01OCT01	31DEC01	61
ECFEC7H200	DCS Upgrades pkg #1 - Design & Construction	01OCT01	28JUN02	186*
ECFEC70250	DCS Upgrades pkg #1 - Construction	02JAN02	28JUN02	125
ECFEC70500	DCS Upgrades pkg #2 - Design	01OCT04	30DEC04	60
ECFEC7H500	DCS Upgrades pkg #2 - Design & Construction	01OCT04	30JUN05	186*



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AQUIFER RESTORATION

1.1.E.F ENGINEERING CONSTRUCTION PROJECTS

Early Bar
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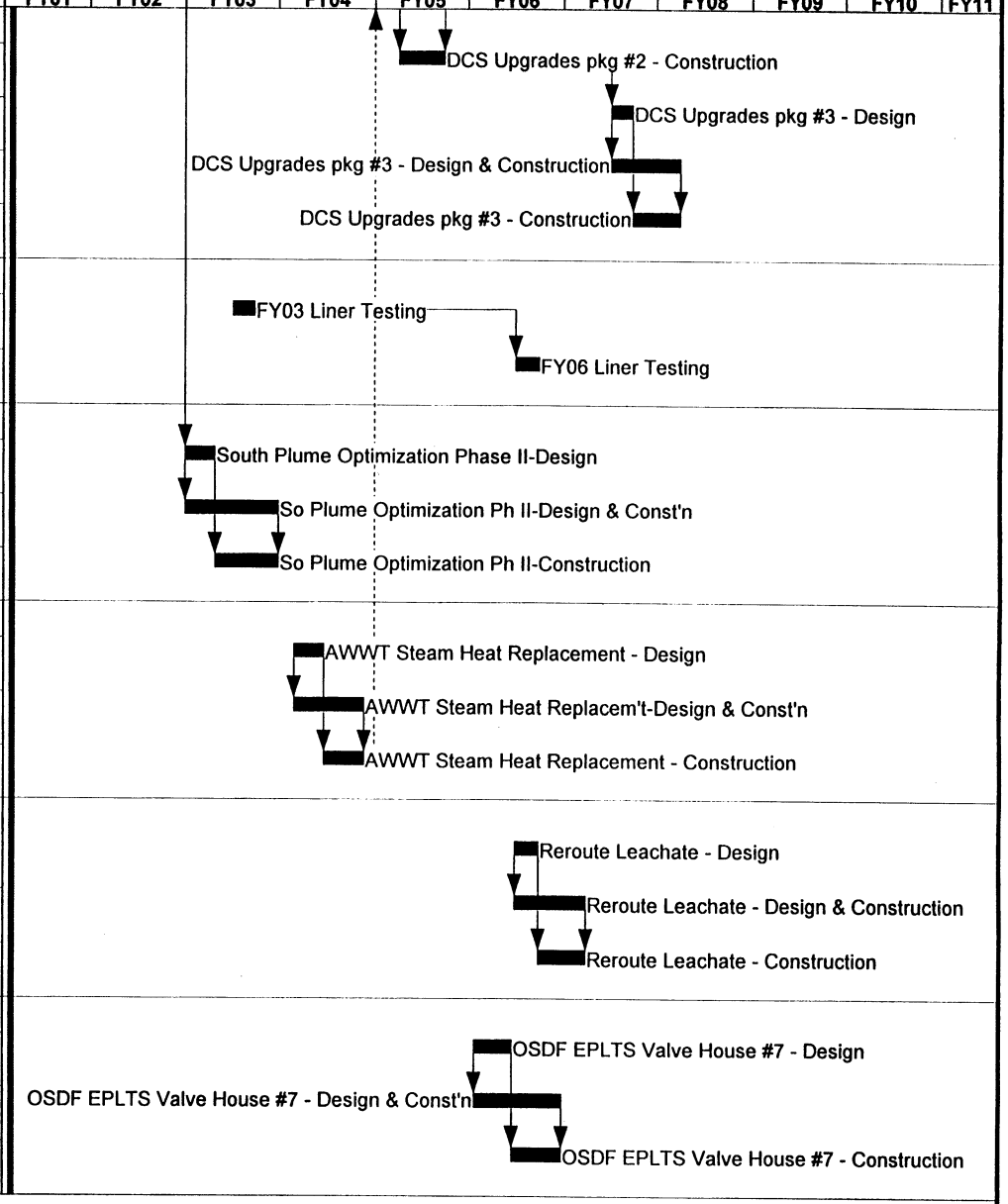
Critical Activity

Date	Revision	Checked	Approved
	F04-003		
	F04-007		
	F04-010		

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
EFEC7 DCS Equipment/Software upgrades				
ECFEC70550	DCS Upgrades pkg #2 - Construction	03JAN05	30JUN05	126
ECFEC70700	DCS Upgrades pkg #3 - Design	02APR07	29JUN07	63
ECFEC7H700	DCS Upgrades pkg #3 - Design & Construction	02APR07	31DEC07	187*
ECFEC70750	DCS Upgrades pkg #3 - Construction	02JUL07	31DEC07	124
EFEC8 SWRB/BSL Liner Testing				
ECFEC80300	FY03 Liner Testing	01APR03	30JUN03	63
ECFEC80600	FY06 Liner Testing	03APR06	30JUN06	63
EFEC9 South Plume Optimization, Phase II				
ECFEC90100	South Plume Optimization Phase II-Design	01OCT02	23JAN03	115
ECFEC9H100	So Plume Optimization Ph II-Design & Const'n	01OCT02	30SEP03	250*
ECFEC90150	So Plume Optimization Ph II-Construction	24JAN03	30SEP03	250
EFECA AWWT Steam Heat Replacement				
ECFECA0100	AWWT Steam Heat Replacement - Design	01DEC03*	22MAR04	77
ECFECAH100	AWWT Steam Heat Replacem't-Design & Const'n	01DEC03	26AUG04	187*
ECFECA0150	AWWT Steam Heat Replacement - Construction	23MAR04	26AUG04	110
EFECC Leachate Reroute				
ECFECC0100	Reroute Leachate - Design	03APR06*	03JUL06	64
ECFECCH100	Reroute Leachate - Design & Construction	03APR06	04JAN07	189*
ECFECC0150	Reroute Leachate - Construction	05JUL06	04JAN07	125
EFECD OSDF EPLTS Valve House #7				
ECFECD0100	OSDF EPLTS Valve House #7 - Design	27OCT05*	23MAR06	99
ECFECDH100	OSDF EPLTS Valve House #7 - Design & Const'n	27OCT05	29SEP06	231*
ECFECD0150	OSDF EPLTS Valve House #7 - Construction	24MAR06	29SEP06	132



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1.1.E.F ENGINEERING CONSTRUCTION PROJECTS

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Critical Activity

Date	Revision	Checked	Approved
	F04-003		
	F04-007		
	F04-010		

SECTION 3

3.0 MANPOWER PLANS

Manpower Planning Sheet (CR2)

MPS # 1EF01 ARWWP PROJECTS-PROJECT MGT. FF ENGNRG

DRIVERS	START DATE	END DATE	FY 2001 Q1	FY 2001 Q2	FY 2001 Q3	FY 2001 Q4	FY 2002 Q1	FY 2002 Q2	FY 2002 Q3	FY 2002 Q4	FY 2003 Q1	FY 2003 Q2	FY 2003 Q3	FY 2003 Q4	FY 2004 Q1	FY 2004 Q2	FY 2004 Q3	FY 2004 Q4	FY 2005 Q1	FY 2005 Q2	FY 2005 Q3	FY 2005 Q4	FY 2006 Q1	FY 2006 Q2	FY 2006 Q3	FY 2006 Q4
301 OSDF Summary Schedule	04/01/2004	12/23/2009															xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
502 WASTE PIT SHIP/DISPOSAL OPERATIONS	10/02/2000	08/01/2005	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xx				
601 Soils Excavation Project Summary	10/01/2003	12/31/2009													xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
704 Silos AWR Summary	10/02/2000	10/23/2003	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	x											
710 Silos 1, 2, & 3 Summary Activity	10/02/2000	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx

		TOT	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Construction	Construction Engineer	34.20	1	1	1	1	1.1	1.6	1.7	1	0.3	1.5	1.7	1.4	0.3	1.5	1.6	0.8	0.5	1.1	1.2	0.8	0.3	1.8	2.4	1.7
Waste Management	Waste Engineering Mgr.	0.80	0.4	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QA/QC	QA Engineer	2.20	0.1	0.1	0.1	0.1	0.2	0	0	0	0.4	0	0	0	0.3	0	0	0	0.2	0	0	0	0.4	0	0	0
Engineering & Design	Engineer	77.30	0	2.1	4.8	4.8	4	2.6	2.1	2.3	4.2	2.9	2.7	2.5	3.6	2.3	2.1	1.8	3.4	2.1	1.8	1.6	4.2	2.7	3.2	2.5
Construction	Construction Mgr.	27.40	0.7	0.5	0.1	1.3	0.5	0.8	0.8	0.8	0.3	1.5	1.8	1.5	0.3	1.1	1.1	0.6	0.7	0.6	0.5	0.2	0.3	1.8	2.4	1.7
Construction	Construction Coordinator	28.90	0.3	0.3	1.3	1.3	0.8	1	0.9	0.6	0	1.4	1.7	1.2	0	1.7	1.6	1	0.1	1	1.1	0.7	0	1.8	2.4	1.7
Administration	Clerks	0.60	0.1	0.3	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Safety & H	Rad Tech	7.00	0	0	0.2	0.8	0	0.3	0.2	0	0	0.3	1.1	0.2	0	0.4	0.4	0.1	0	0.1	0.2	0.1	0	0.1	1.4	0.2
Environmental Safety & H	Safety Tech.	12.90	0	0	0.3	0.3	0.1	0.5	0.7	0.4	0	0.8	1.3	0.7	0	0.6	0.5	0.3	0	0.5	0.6	0.4	0	0.3	1.3	0.8
Lab	Lab Tech.	0.20	0	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lab	Chemist	0.10	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental	Environmental Scientist Rep.	8.10	0.3	0.3	0.6	0.4	0	0.6	1	0	0	0.7	0.6	0	0	0.5	0.3	0	0	0.5	0.3	0	0	1	0	0
Procurement	Buyer/Contracts Administrator	14.10	0	0	0.3	0.1	0.4	0.6	0.6	0.3	0	0.6	0.6	0.6	0	0.8	0.8	0.4	0.1	0.6	0.7	0.4	0.2	0.9	1.3	0.9
Engineering & Design	Drafter/CAD Operator	16.30	0	0.4	0.1	0.1	1.4	0	0	0.7	2.4	0	0	0.7	1.9	0	0.2	0.3	1.4	0	0	0.3	3	0	0	0.7
Engineering & Design	Engineer Civil	34.20	0	0.1	0.5	0.6	1.6	0.8	0.7	0.8	2	0.8	0.8	0.8	2.2	0.8	0.8	0.8	1.3	0.8	0.7	0.7	2.2	0.5	0.7	0.5
QA/QC	QA/QC Tech.	15.70	0	0	0.1	0.1	0.3	0.8	0.8	0.5	0	0.7	0.9	0.7	0	0.8	0.8	0.4	0	0.5	0.5	0.4	0	1.5	2	1.4
Engineering & Design	Engineer Electrical	5.10	0	0.1	0	0	0.6	0	0	0	0.9	0	0	0	0.9	0	0	0	0.6	0	0	0	1	0	0.1	0
Project Controls	Estimator	0.10	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subcontract	Subcontract Staff	68.50	2	1.3	2	3	2	1.3	3.7	3	0	0.7	3.7	4	0	0.3	5	7	2	2.3	1.3	1	0	0.3	2	3
Subcontract	Subcontract Craft	193.70	8	6	8.1	12	4.7	1	10.7	12	0	2	9	15	0	1	12	18	6	5	5.3	5	0	1	6.3	9
General Labor	General Laborer	2.60	0	0	0	0	0	0	1.3	1.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sheet Totals:	550.00	13.00	13.10	19.70	26.00	17.70	11.90	25.20	23.70	10.50	13.90	25.90	29.30	9.50	11.80	27.20	31.50	16.30	15.10	14.20	11.60	11.60	13.70	25.50	24.10

Manpower Planning Sheet (CR2)

MPS # 1EF01 ARWWP PROJECTS-PROJECT MGT. FF ENGNRG

DRIVERS	START DATE	END DATE	FY 2007 Q1	FY 2007 Q2	FY 2007 Q3	FY 2007 Q4	FY 2008 Q1	FY 2008 Q2	FY 2008 Q3	FY 2008 Q4	FY 2009 Q1	FY 2009 Q2	FY 2009 Q3	FY 2009 Q4	FY 2010 Q1	FY 2010 Q2	FY 2010 Q3	FY 2010 Q4	FY 2011 Q1	FY 2011 Q2	FY 2011 Q3	FY 2011 Q4
301 OSDF Summary Schedule	04/01/2004	12/23/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
502 WASTE PIT SHIP/DISPOSAL OPERATION	10/02/2000	08/01/2005																				
601 Soils Excavation Project Summary	10/01/2003	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
704 Silos AWR Summary	10/02/2000	10/23/2003																				
710 Silos 1, 2, & 3 Summary Activity	10/02/2000	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
Construction	Construction Engineer		0.4	1	1.5	0.8	0.3	0.6	0.7	0.6	0	0	0	0	0	0	0	0	0	0	0	0
Waste Management	Waste Engineering Mgr.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QA/QC	QA Engineer		0.2	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Engineering & Design	Engineer		3.1	1.9	1.9	1.4	0.9	0.6	0.7	0.5	0	0	0	0	0	0	0	0	0	0	0	0
Construction	Construction Mgr.		0.3	0.9	1.4	0.7	0.3	0.6	0.7	0.6	0	0	0	0	0	0	0	0	0	0	0	0
Construction	Construction Coordinator		0	1	1.4	0.7	0	0.6	0.7	0.6	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Clerks		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Safety & Health	Rad Tech		0	0.2	0.3	0.1	0	0.1	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Safety & Health	Safety Tech.		0	0.5	0.7	0.4	0	0.3	0.3	0.3	0	0	0	0	0	0	0	0	0	0	0	0
Lab	Lab Tech.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lab	Chemist		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental	Environmental Scientist Rep.		0	0.5	0	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Procurement	Buyer/Contracts Administrator		0.1	0.6	0.8	0.4	0	0.3	0.4	0.3	0	0	0	0	0	0	0	0	0	0	0	0
Engineering & Design	Drafter/CAD Operator		1.4	0	0	0.3	0.9	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
Engineering & Design	Engineer Civil		1.4	0.5	0.7	0.5	1.3	1	1.3	1	1	1	1	1	1	0	0	0	0	0	0	0
QA/QC	QA/QC Tech.		0	0.5	0.7	0.4	0	0.3	0.3	0.3	0	0	0	0	0	0	0	0	0	0	0	0
Engineering & Design	Engineer Electrical		0.6	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Controls	Estimator		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subcontract	Subcontract Staff		0	1.3	3.7	7	0	0.3	2.3	3	0	0	0	0	0	0	0	0	0	0	0	0
Subcontract	Subcontract Craft		0	3	11.3	11	0	1	5.3	5	0	0	0	0	0	0	0	0	0	0	0	0
General Labor	General Laborer		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Sheet Totals:	7.50	11.90	24.40	23.70	4.10	6.20	12.90	12.30	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SECTION 3

4.0 ESTIMATE

EFEC1

ARWWP PROJECTS-PROJECT MGT.FF ENGNRG

09/06/2001
3:41 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC1
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: BUYCON **BUYER/CONTRACTS ADMN** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1.3	822.5	791.5	865.8	766.1	1,339.6	822.5	363.1	0.0	0.0
Cum Hours:	1.3	823.9	1,615.4	2,481.2	3,247.3	4,586.9	5,409.3	5,772.4	5,772.4	5,772.4
Yr Total Cost:	56	36,275	36,975	42,831	40,144	74,997	49,916	23,225	0	0
Cum Total Cost:	56	36,331	73,306	116,137	156,281	231,278	281,194	304,419	304,419	304,419

Resource: CLERKS **CLERKS** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	165.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	165.3	165.3	165.3	165.3	165.3	165.3	165.3	165.3	165.3	165.3
Yr Total Cost:	3,948	0	0	0	0	0	0	0	0	0
Cum Total Cost:	3,948	3,948	3,948	3,948	3,948	3,948	3,948	3,948	3,948	3,948

Resource: CNSCOD **CONSTRUCTION COORD** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	382.6	1,228.7	1,978.4	1,858.4	1,266.3	2,340.9	1,255.8	721.9	0.0	0.0
Cum Hours:	382.6	1,611.3	3,589.7	5,448.1	6,714.4	9,055.3	10,311.2	11,033.1	11,033.1	11,033.1
Yr Total Cost:	12,142	41,050	70,009	69,640	50,267	99,277	57,736	34,983	0	0
Cum Total Cost:	12,142	53,192	123,201	192,842	243,108	342,385	400,121	435,104	435,104	435,104

Resource: CNSENG **CONSTRUCTION ENG** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	932.4	2,199.6	2,099.2	1,798.7	1,581.4	2,441.4	1,358.7	802.3	0.0	0.0
Cum Hours:	932.4	3,132.0	5,231.2	7,029.9	8,611.3	11,052.7	12,411.4	13,213.8	13,213.8	13,213.8
Yr Total Cost:	50,818	126,180	127,548	115,736	107,787	177,784	107,262	66,758	0	0
Cum Total Cost:	50,818	176,998	304,545	420,282	528,068	705,852	813,115	879,873	879,873	879,873

INCLUDES ESCALATION COSTS

09/06/2001
3:41 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC1
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: CNSMGR **CONSTRUCTION MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	512.8	1,200.5	2,178.7	1,297.6	741.2	2,441.4	1,296.9	802.3	0.0	0.0
Cum Hours:	512.8	1,713.3	3,892.0	5,189.6	5,930.8	8,372.2	9,669.1	10,471.5	10,471.5	10,471.5
Yr Total Cost:	31,798	78,358	150,622	94,996	57,482	202,282	116,492	75,957	0	0
Cum Total Cost:	31,798	110,156	260,778	355,774	413,256	615,538	732,030	807,987	807,987	807,987

Resource: DRFCAD **DRAFTER/CAD OPERATOR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	879.4	1,338.4	985.4	761.6	1,621.0	761.9	430.7	0.0	0.0
Cum Hours:	0.0	879.4	2,217.8	3,203.2	3,964.8	5,585.8	6,347.7	6,778.3	6,778.3	6,778.3
Yr Total Cost:	0	28,871	46,541	36,285	29,709	67,554	34,419	20,507	0	0
Cum Total Cost:	0	28,871	75,412	111,697	141,406	208,960	243,379	263,886	263,886	263,886

Resource: ENGCVL **ENGINEER CIVIL** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	1,669.7	1,859.3	1,921.0	1,502.0	1,622.8	1,243.1	990.5	873.5	210.5
Cum Hours:	0.0	1,669.7	3,529.0	5,449.9	6,952.0	8,574.7	9,817.8	10,808.3	11,681.8	11,892.3
Yr Total Cost:	0	95,573	112,724	123,330	102,150	117,909	97,916	82,237	80,591	20,020
Cum Total Cost:	0	95,573	208,297	331,627	433,777	551,686	649,602	731,839	812,429	832,449

Resource: ENGELE **ENGINEER ELECTRICAL** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	259.5	388.8	409.7	260.3	499.9	250.1	148.4	0.0	0.0
Cum Hours:	0.0	259.5	648.3	1,058.0	1,318.3	1,818.2	2,068.3	2,216.7	2,216.7	2,216.7
Yr Total Cost:	0	14,301	22,691	25,322	17,041	34,967	18,962	11,859	0	0
Cum Total Cost:	0	14,301	36,992	62,315	79,356	114,322	133,284	145,143	145,143	145,143

INCLUDES ESCALATION COSTS

09/06/2001
3:41 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC1
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: ENGINR **ENGINEER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	3,095.8	4,128.7	4,827.5	3,492.7	3,114.6	4,134.6	2,440.1	249.2	0.0	0.0
Cum Hours:	3,095.8	7,224.4	12,051.9	15,544.6	18,659.1	22,793.8	25,233.9	25,483.2	25,483.2	25,483.2
Yr Total Cost:	212,867	298,813	370,074	283,535	267,828	379,863	243,032	26,165	0	0
Cum Total Cost:	212,867	511,679	881,753	1,165,288	1,433,116	1,812,979	2,056,011	2,082,175	2,082,175	2,082,175

Resource: ENSREP **ENVIR SCIENCE REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	251.2	600.0	560.9	362.0	361.6	479.6	239.7	239.9	0.0	0.0
Cum Hours:	251.2	851.2	1,412.1	1,774.0	2,135.6	2,615.2	2,854.9	3,094.8	3,094.8	3,094.8
Yr Total Cost:	10,542	26,498	26,238	17,931	18,973	26,891	14,567	15,367	0	0
Cum Total Cost:	10,542	37,040	63,278	81,208	100,181	127,072	141,639	157,006	157,006	157,006

Resource: FIELDSUB **FIELD SUBS** **EOC:** SUBCONTRACTORS
Res Dept: **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	64,838.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	64,838.0	64,838.0	64,838.0	64,838.0	64,838.0	64,838.0	64,838.0	64,838.0	64,838.0	64,838.0
Yr Total Cost:	64,838	0	0	0	0	0	0	0	0	0
Cum Total Cost:	64,838	64,838	64,838	64,838	64,838	64,838	64,838	64,838	64,838	64,838

Resource: HAZWAT **HAZWAT** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	1,215.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	0.0	1,215.4	1,215.4	1,215.4	1,215.4	1,215.4	1,215.4	1,215.4	1,215.4	1,215.4
Yr Total Cost:	0	36,831	0	0	0	0	0	0	0	0
Cum Total Cost:	0	36,831	36,831	36,831	36,831	36,831	36,831	36,831	36,831	36,831

INCLUDES ESCALATION COSTS

09/06/2001
3:41 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC1
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: LABCHM **CHEMIST** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Yr Total Cost:	49	0	0	0	0	0	0	0	0	0
Cum Total Cost:	49	49	49	49	49	49	49	49	49	49

Resource: LABTEC **LAB TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	10.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Yr Total Cost:	282	0	0	0	0	0	0	0	0	0
Cum Total Cost:	282	282	282	282	282	282	282	282	282	282

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	101,691.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	101,691.0	101,691.0	101,691.0	101,691.0	101,691.0	101,691.0	101,691.0	101,691.0	101,691.0	101,691.0
Yr Total Cost:	101,691	0	0	0	0	0	0	0	0	0
Cum Total Cost:	101,691	101,691	101,691	101,691	101,691	101,691	101,691	101,691	101,691	101,691

Resource: QACENG **QA ENGINEER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	31.0	79.4	120.6	120.6	79.9	160.5	80.2	40.1	0.0	0.0
Cum Hours:	31.0	110.5	231.0	351.6	431.5	592.0	672.2	712.3	712.3	712.3
Yr Total Cost:	1,427	3,842	6,178	6,542	4,592	9,855	5,342	2,815	0	0
Cum Total Cost:	1,427	5,268	11,446	17,989	22,581	32,435	37,777	40,592	40,592	40,592

INCLUDES ESCALATION COSTS

09/06/2001
3:41 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC1
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: QACTEC **QA/QC TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	961.5	1,011.7	883.0	612.1	1,281.2	611.5	363.1	0.0	0.0
Cum Hours:	0.0	961.5	1,973.2	2,856.1	3,468.3	4,749.4	5,360.9	5,723.9	5,723.9	5,723.9
Yr Total Cost:	0	31,251	34,832	32,190	23,640	52,861	27,350	17,117	0	0
Cum Total Cost:	0	31,251	66,082	98,273	121,913	174,774	202,124	219,240	219,240	219,240

Resource: RADTEC **RAD TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	96.5	159.9	654.9	329.9	231.7	589.7	221.8	145.5	0.0	0.0
Cum Hours:	96.5	256.3	911.2	1,241.1	1,472.8	2,062.5	2,284.3	2,429.8	2,429.8	2,429.8
Yr Total Cost:	3,288	5,734	24,883	13,274	9,874	26,851	10,950	7,572	0	0
Cum Total Cost:	3,288	9,023	33,905	47,179	57,053	83,904	94,853	102,425	102,425	102,425

Resource: S&HTEC **SAFETY TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1.3	642.2	1,170.4	491.0	660.9	899.4	621.5	382.5	0.0	0.0
Cum Hours:	1.3	643.5	1,813.9	2,304.9	2,965.8	3,865.2	4,486.7	4,869.3	4,869.3	4,869.3
Yr Total Cost:	39	19,541	37,724	16,759	23,894	34,743	26,027	16,883	0	0
Cum Total Cost:	39	19,580	57,304	74,063	97,956	132,700	158,727	175,610	175,610	175,610

Resource: SERVSUB **SUBS** **EOC:** SUBCONTRACTORS
Res Dept: 952 **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	45,000.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	0.0	45,000.0	45,000.0	45,000.0	45,000.0	45,000.0	45,000.0	45,000.0	45,000.0	45,000.0
Yr Total Cost:	0	46,215	0	0	0	0	0	0	0	0
Cum Total Cost:	0	46,215	46,215	46,215	46,215	46,215	46,215	46,215	46,215	46,215

INCLUDES ESCALATION COSTS

09/06/2001
3:41 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC1
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: WISE **WISE CONSTRUCTION** **EOC:** SUBCONTRACTORS
Res Dept: **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	243,570.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	243,570.6	243,570.6	243,570.6	243,570.6	243,570.6	243,570.6	243,570.6	243,570.6	243,570.6	243,570.6
Yr Total Cost:	243,571	0	0	0	0	0	0	0	0	0
Cum Total Cost:	243,571	243,571	243,571	243,571	243,571	243,571	243,571	243,571	243,571	243,571

Resource: WSTENG **WASTE ENGINEER** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	152.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	152.6	152.6	152.6	152.6	152.6	152.6	152.6	152.6	152.6	152.6
Yr Total Cost:	7,789	0	0	0	0	0	0	0	0	0
Cum Total Cost:	7,789	7,789	7,789	7,789	7,789	7,789	7,789	7,789	7,789	7,789

Resource: WSTMGR **WASTE ENGINEER MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
Yr Total Cost:	143	0	0	0	0	0	0	0	0	0
Cum Total Cost:	143	143	143	143	143	143	143	143	143	143

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	5,636.9	16,046.9	18,980.1	14,815.6	11,939.7	19,852.1	11,203.8	5,679.5	873.5	210.5
Cum Hours:	5,636.9	21,683.8	40,663.9	55,479.5	67,419.2	87,271.2	98,475.0	104,154.5	105,028.0	105,238.5
Yr Total Cost:	745,287	889,333	1,067,036	878,372	753,380	1,305,833	809,970	401,445	80,591	20,020
Cum Total Cost:	745,287	1,634,620	2,701,656	3,580,029	4,333,409	5,639,242	6,449,212	6,850,657	6,931,247	6,951,267

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

EFEC2

ADDITIONAL WELLS

09/06/2001
3:13 PM

Fluor Fernald, Inc.

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC2
COMMENT NO: R1-D-711

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: FIELDSUB **FIELD SUBS** **EOC:** SUBCONTRACTORS
Res Dept: 952 **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	0.0	1,106,351.6	1,106,351.6	1,106,351.6	807,065.1	807,065.1	807,065.1	0.0	0.0
Cum Units:	0.0	0.0	1,106,351.6	2,212,703.2	3,319,054.8	4,126,119.9	4,933,185.0	5,740,250.1	5,740,250.1	5,740,250.1
Yr Total Cost:	0	0	1,166,901	1,199,574	1,233,162	925,659	952,503	980,126	0	0
Cum Total Cost:	0	0	1,166,901	2,366,475	3,599,638	4,525,297	5,477,800	6,457,926	6,457,926	6,457,926

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: 952 **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	0.0	18,846.0	18,846.0	18,846.0	18,846.0	18,846.0	18,846.0	0.0	0.0
Cum Units:	0.0	0.0	18,846.0	37,692.0	56,538.0	75,384.0	94,230.0	113,076.0	113,076.0	113,076.0
Yr Total Cost:	0	0	19,877	20,434	21,006	21,615	22,242	22,887	0	0
Cum Total Cost:	0	0	19,877	40,311	61,318	82,933	105,175	128,062	128,062	128,062

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Total Cost:	0	0	1,186,779	1,220,008	1,254,169	947,274	974,745	1,003,013	0	0
Cum Total Cost:	0	0	1,186,779	2,406,787	3,660,955	4,608,230	5,582,975	6,585,988	6,585,988	6,585,988

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

FLUOR GLOBAL SERVICES

Memorandum

To:	Jack Hughes,MS52-5 Dick Butterfiled, MS52-5	Date:	August 09, 2001
Location:	Fernald	Reference:	N/A
From:	Ken Kepler, MS80-3	Fernald #:	M:OOTP:(PC/EST)2001-0117
Location:	Springdale	Client:	DOE DE-AC24-01OH20115
Extension:	648-6761	Subject:	ADDITIONAL WELLS

c: File Record Subject ESTIMATE C5010401R1
Tom Wagner, MS80-3

Attached are two (2) copies of the estimate for the ADDITIONAL WELLS.
To request any additional copies of this estimate or for any questions, please contact Ken Kepler on extension 6167.

KGK:hmp
Attachment

Fluor Fernald, Inc.

PROJECTS CONTROLS
ESTIMATING SERVICES

August 9, 2001

PROJECT DESCRIPTION: Additional Wells
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010401 R1

BASIS OF ESTIMATE

SUPPORTING DOCUMENTATION:

Verbal Scope	☒	P & ID's	☐	Work Plan	☐
Drawings	☐	Equipment List	☐	Site Walk	☐
Sketches	☐	Specifications	☐	Eng. Mtg.	☐
Flow Diagrams	☐	Written Scope	☒	Estimate	☐

TYPE OF ESTIMATE:

Change Proposal	☐	Government	☐
Plan/Feasibility	☐	Conceptual	☐
Construction	☐	Title I Design	☐
Budget	☒	Independent	☐

BASIS OF ESTIMATE:

Estimate the cost for construction of 9 new extraction wells and 6 new injection wells.
Package #1 FY03 = 2EW & 1IE
Package #2 FY04 = 2EW & 1IE
Package #3 FY05 = 2EW & 1IE
Package #4 FY06 = 1EW & 1IE
Package #5 FY07 = 1EW & 1IE
Package #6 FY08 = 1EW & 1IE
Rev.01 corrected the Supervision – Contractor dollars from being added to the direct labor dollars.
The result indicated a drop of $379,023 to the Target Estimate.

Fluor Fernald, Inc.

PROJECTS CONTROLS
ESTIMATING SERVICES

August 9, 2001

PROJECT DESCRIPTION: Additional Wells
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010401 R1

ESTIMATE ASSUMPTIONS

EXECUTION:

☒ This project is to be performed on a 40-hour week, 10 hours a day.
☐ This project is to be performed on a 40-hour week, 8 hours a day.
☐ Premium time allowed.

WAGE RATES:

☒ Wage rates within this estimate are based on Project Labor Agreement rates, effective October 2000 and are considered FY01 dollars for estimating.
☐ Wage rates within this estimate are based on FF Support Contractor FSC 599 wage rates, effective October 1999 have been escalated 3% and are considered FY01 dollars for estimating.
☐ Wage rates within this estimate are based on FF FTE Planning Labor Rates FY01.

ENGINEERING:

☒ N/A
☐ Engineering dollars provided by the Project Engineer.
☐ Engineering dollars have been factored in at the standard 12% of the total direct and indirect field costs as per request of Project Engineer.

CONSTRUCTION MANAGEMENT:

☒ N/A
☐ Construction Management dollars provided by the Project Engineer.
☐ Construction Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

PROJECT MANAGEMENT:

☒ N/A
☐ Project Management dollars provided by the Project Engineer.
☐ Project Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

WASTE PROGRAM MANAGEMENT:

☒ N/A
☐ Waste Program Management dollars provided by the Project Engineer.

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

August 9, 2001

PROJECT DESCRIPTION: Additional Wells
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010401 R1

PRODUCTIVITY:

A productivity factor has been developed and applied to the unit man-hours derived from MEANS, Richardson, NECA, and or any other published estimating source. See attachment APPENDIX "A" and APPENDIX "B".

ESCALATION:

Escalation costs are excluded from the target estimate. The escalation costs are calculated within the Micro-Frame computer system according to the plan for rebaselining.

UNIT RATES:

Unit man-hours, equipment and material dollars are based on Richardson, MEANS, NECA, and or other published rates.

G & A (HO EXPENSE):

G & A are excluded from the target estimate. The G & A cost are calculated within the Micro-Frame computer system according to the plan for rebaselining.

HEALTH PHYSICS:

See attached APPENDIX "C".

RISK BUDGET:

N/A

Fluor Fernald, Inc.

PROJECTS CONTROLS
ESTIMATING SERVICES

August 9, 2001

PROJECT DESCRIPTION: Additional Wells
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010401 R1

ESTIMATE INCLUSIONS & EXCLUSIONS

INCLUSIONS:

- Premobilization & Mobilization.
- Demobilization.
- Labor hours.
- Material dollars.
- Equipment dollars.

EXCLUSIONS:

- Premium time.
- Permits and fees.
- FF G & A (Home Office Expense).
- Construction Management.
- Any second tier subcontract costs.
- Project Management dollars.
- Waste Management dollars.

ESTIMATE SUMMARY SHEET

Fluor Fernald, Inc.

PROJECT: Additional Wells
ESTIMATE #: C5010401 R1
CLIENT: DOE
WBS #: 1.1.E.F

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM DESCRIPTION	M/H	RATE	LABOR $	S/C $	MAT'L $	EQUIP. $	TOTAL $
Package #1 FY03	5,210		$123,080	$308,092	$272,770	$34,990	$738,932
Package #2 FY04	5,210		$123,080	$308,092	$272,770	$34,990	$738,932
Package #3 FY05	5,210		$123,080	$308,092	$272,770	$34,990	$738,932
Package #4 FY06	4,115		$97,180	$208,092	$186,170	$26,470	$517,912
Package #5 FY07	4,115		$97,180	$208,092	$186,170	$26,470	$517,912
Package #6 FY08	4,115		$97,180	$208,092	$186,170	$26,470	$517,912
DIRECT FIELD COSTS TOTAL	27,975	$23.62	$660,780	$1,548,553	$1,376,820	$184,380	$3,770,533
SUPERVISION - CONTRACTOR	7,029		$159,720				$159,720
SMALL TOOLS & CONSUMABLES	-	-	-		$39,600		$39,600
MISC. EQUIP. RENTAL	-	-	-			$97,900	$97,900
TEMPORARY FACILITIES		-					
TEMPORARY UTILITY HOOK-UP	546	-	$12,900		$6,900		$19,800
JOB CLEAN-UP	1,259	-	$29,700		$9,900		$39,600
PER DIEM / SUBSISTANCE	-	-	-				
HEALTH PHYS.	233	-	$5,500		$100		$5,600
ADDITIONAL AND JOB SPECIFIC TRAINING	16	-	$378				$378
GENERAL SITE WORKER TRAINING	246	-	$5,819				$5,819
PAYROLL BURDENS & BENEFITS	-	-	$498,600				$498,600
OVERHEAD & PROFIT	-	-	-	$927,500			$927,500
BOND	-	-	-	$72,300			$72,300
SALES TAX	-	-	-		$86,000	$16,900	$102,900
INDIRECT FIELD COSTS TOTAL	9,329		$712,617	$999,800	$142,500	$114,800	$1,969,717
DIRECT & INDIRECT FIELD COSTS TOTAL	37,304	$36.82	$1,373,397	$2,548,353	$1,519,320	$299,180	$5,740,250
TARGET ESTIMATE				(FY 01 DOLLARS)			$5,740,250

ESTIMATE PERFORMED BY ESTIMATING SERVICES

ESTIMATE SUMMARY SHEET

FACTORS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

FIXED PRICE $	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
DFC DOLLARS	$660,780	$1,548,553	$1,376,820	$184,380	$100	$3,770,633
IFC COST FACTOR	2.0784	–	1.0410	1.5310	–	
BOND + OVERHEAD & PROFIT COST FACTOR	1.2109	1.2109	1.2109	1.2109	1.2109	
SALES TAX	-	-	1.0600	1.0600	1.0600	
DIRECT FIELD COST FACTOR =	2.5168	1.2109	1.3361	1.9651	1.2836	
BASE ESTIMATE $'s	$1,663,058	$1,875,155	$1,839,628	$362,324	$128	$5,740,293
BASE FACTOR W/ RISK	1.0000	1.0000	1.0000	1.0000	1.0000	
TARGET ESTIMATE FACTOR	2.5168	1.2109	1.3361	1.9651	1.2836	
FPS TARGET ESTIMATE (FY01 $)	$1,663,058	$1,875,155	$1,839,628	$362,324	$128	$5,740,293

NOTE:

If there are no DFC Equip. $, enter The IFC Equip. $'s into the direct field cost TOTAL and delete IFC Factor in G65.

ESTIMATE SUMMARY SHEET

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

Direct Field Cost w/FACTORS

YES	NO
X	

PAY ITEM NO.	DESCRIPTION	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
		(ASSIGN OR PRORATE PPE MAT'L.$'s)-->>				16.67	
	Package #1 FY03	123080	308092.1053	272770	34990	16.67	
		$309,770	$373,070	$364,450	$68,760	$20	$1,116,080
	Package #2 FY04	123080	308092	272770	34990	16.67	
		$309,770	$373,070	$364,450	$68,760	$20	$1,116,080
	Package #3 FY05	123080	308092	272770	34990	16.67	
		$309,770	$373,070	$364,450	$68,760	$20	$1,116,080
	Package #4 FY06	97180	208092	186170	26470	16.67	
		$244,580	$251,980	$248,750	$52,020	$20	$797,350
	Package #5 FY07	97180	208092	186170	26470	16.67	
		$244,580	$251,980	$248,750	$52,020	$20	$797,350
	Package #6 FY08	97180	208092	186170	26470	16.67	
		$244,580	$251,980	$248,750	$52,020	$20	$797,350
TOTAL DIRECT FIELD COSTS w/FACTORS		(FY01 DOLLARS)					$5,740,290

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	SUMMARY	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST / UNIT Labor	COST / UNIT S/C	COST / UNIT Mat'l	COST / UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Package #1 FY03				5,210						$123,080	$308,092	$272,770	$34,990	$738,932
	Package #2 FY04				5,210						$123,080	$308,092	$272,770	$34,990	$738,932
	Package #3 FY05				5,210						$123,080	$308,092	$272,770	$34,990	$738,932
	Package #4 FY06				4,115						$97,180	$208,092	$186,170	$26,470	$517,912
	Package #5 FY07				4,115						$97,180	$208,092	$186,170	$26,470	$517,912
	Package #6 FY08				4,115						$97,180	$208,092	$186,170	$26,470	$517,912
	Subtotal Direct Cost	1	LOT		27,975	$23.62					$660,780	$1,548,553	$1,376,620	$184,380	$3,770,533

s:\estdept\fy01rebaselinecp\new additional wellsr1.xls

CONTRACTOR - Stated In FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #1 FY03	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION														
	Insurance Certificates, List of Sub-Tier Contractors Procurement Documents, Safe Work Plans, QA/QC Plan, Project Execution Plan, Construction and Engineering Documentation, Acceptable baseline Schedules														
	Duration 2 wks	1	LS	40.0	80	50.00					$4,000				$4,000
	MOBILIZATION														
	S/C Office Trailer	7	mo					300.00				$2,092			$2,092
	Survey and Engineering Controls	1	LS					3,000.00	500.00	500.00		$3,000	$500	$500	$4,000
D	Install Utilities	1	LS	40.0	40	22.69			1,000.00	500.00	$900		$1,000	$500	$2,400
D	Other misc. requirements as required.	1	LS	80.0	80	22.69			500.00	500.00	$1,800		$500	$500	$2,800
										6,360.00					
	Total				120						$2,700	$5,092	$2,000	$1,500	$11,292
	DEMOBILIZATION														
D	Complete Punch List Items.	1	LS	20.0	20	22.69					$500				$500
D	Remove Trailer and Change Facilities.	1	LS	20.0	20	22.69					$500				$500
D	Remove all Utilities.	1	LS	20.0	20	22.69					$500				$500
mC	Decontaminate Equipment.	1	LS	10.0	10	22.69					$200				$200
D	Loadout contractors equipment.	1	LS	20.0	20	22.69					$500				$500
D	Other area requirements.	1	LS	10.0	10	22.69					$200				$200
	Total				100						$2,400				$2,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #1 FY03	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Site Prep														
D	Survey (3) man team	1	ac					3,000.00				$3,000			$3,000
D	Plastic warning tape & Safety Fencing	3000	lf	0.13	453	21.49			0.77		$9,730		$2,310		$12,040
D	Gravel erosion control allowance	35	cy	0.30	12	21.49			10.15	7.60	$260		$360	$270	$890
	Site Clearing														
D	Clear and grub	1	ac	48.0	55	21.49				1,125.00	$1,180			$1,130	$2,310
	Grading & Excavation														
	Access Road(s) 600'EW & 500'IW														
D	Site grading	500	cy	0.10	57	21.49				2.31	$1,230			$1,160	$2,390
D	Excavation	489	cy	0.20	112	21.49				4.38	$2,400			$2,140	$4,540
D	Backfill	244	cy	0.20	56	21.49					$1,200				$1,200
D	Geotextile filter fabric	1467	sy	0.01	17	21.49			1.35		$360		$1,980		$2,340
D	Gravel road	1467	sy	0.08	131	21.49			1.20	0.35	$2,810		$1,760	$510	$5,080
D	Vibrating compaction	244	cy	0.10	28	21.49				0.26	$600			$60	$660
D	Prepare & roll sub-base	1467	sy	0.05	84	21.49				0.44	$1,800			$650	$2,450
	Pipe Trench 300' EW & 600' IW														
D	Trenching	375	cy	0.05	21	21.49				3.00	$460			$1,130	$1,590
D	Backfill	375	cy	0.15	64	21.49				3.00	$1,380			$1,130	$2,510
D	Compaction	375	cy	0.009	4	21.49				0.26	$80			$100	$180
	Well House(s)														
D	Excavate	90	cy	0.15	15	21.49				3.00	$330			$270	$600
D	Backfill	60	cy	0.25	17	21.49				4.00	$370			$240	$610
D	Dispose excess soil	30	cy	0.08	3	21.49				4.00	$60			$120	$180
D	**Existing Road Repair allowance**		ls	40.0		21.49			1,500.00	500.00					
	Culvert Pipe														
D	Culvert pipes	250	lf	0.20	57	21.49			5.20		$1,230		$1,300		$2,530
D	Backfill culvert pipes	100	cy	1.50	172	21.49				1.07	$3,690			$110	$3,800
D	Catch Basin	2	ea	24.0	55	21.49			650.00	216.00	$1,180		$1,300	$430	$2,910
	Guard Rail														
D	Guard rail corrugated steel, galv. steel posts	500	lf	0.10	57	21.49			9.45	0.55	$1,230		$4,730	$280	$6,240
D	End sections, galv flared	6	ea	0.65	4	21.49			38.50	9.25	$100		$230	$60	$390
	Subtotal Direct Cost				1475						$31,080	$3,000	$13,970	$9,790	$58,440

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #1 FY03	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	reinforcing	1	ls	38.0	43	22.43			1,084.00	112.00	$980		$1,080	$110	$2,170
D	formwork	1000	sf	0.20	229	22.43			1.00	0.20	$5,130		$1,000	$200	$6,330
D	exjoint	40	lf	0.10	5	22.43			0.40		$100		$20		$120
D	water stop	54	lf	0.10	6	22.43			0.50		$140		$30		$170
D	concrete matl 4000#	30	cy	1.0	34	22.43			70.00	4.00	$770		$2,100	$120	$2,990
D	anchor bolts	1	ls	4.0	5	22.43			40.00		$100		$40		$140
D	grout	1	ls	8.0	9	22.43			50.00		$210		$50		$260
D	finish concrete	550	sy	0.03	19	22.43				0.03	$420			$20	$440
D	precast concrete splash blocks	4	ea	0.25	1	22.43			20.00		$30		$80		$110
D	special coatings	146	sf	0.08	13	22.43			0.32	0.50	$300		$50	$70	$420
D	special sealant & b/rod	20	lf	0.20	5	22.43			4.00		$100		$80		$180
	Subtotal Direct Cost	1	LOT		369	$22.49					$8,300		$4,500	$500	$13,300

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #1 FY03	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Auger Truck	75	hr	1.0	86	22.66				75.00	$1,940			$5,630	$7,570
D	Bucket Truck	60	hr	1.0	69	22.66				75.00	$1,560			$4,500	$6,060
D	45' Class II pole	3	ea	12.1	42	22.66			373.20		$940		$1,120		$2,060
D	#1/0 AL Power cable	3	clf	2.0	7	22.66			42.62		$160		$128		$288
D	Ground Cu wire	150	lf	0.05	9	22.66			0.44		$190		$66		$256
D	Messenger attachments	12	ea	3.3	45	22.66			69.75		$1,030		$837		$1,867
D	Guy wire typical	3	ea	5.0	17	22.66					$390				$390
D	Disconnect switch 480v 3ph	3	ea	8.0	27	22.66			250.00	50.00	$620		$750	$150	$1,520
D	Combo starter NEMA 1 enclosure	3	ea	10.0	34	22.66			600.00	50.00	$780		$1,800	$150	$2,730
D	Transformer 13.2KVA 480v IPH pole mounted	9	ea	20.0	206	22.66			900.00	100.00	$4,670		$8,100	$900	$13,670
D	Variable speed AC drive 40hp 480v 60Hz	2	ea	23.0	53	22.66			8,000.00	50.00	$1,190		$16,000	$100	$17,290
D	Transformer Mini power 15KVA 480v 3ph	3	ea	16.0	55	22.66			3,150.00	50.00	$1,240		$9,450	$150	$10,840
D	Fuses	12	ea	0.40	5	22.66			100.00		$120		$1,200		$1,320
D	3" conduit rgs	240	lf	0.25	69	22.66			4.50	0.50	$1,560		$1,080	$120	$2,760
D	3" conduit fittings	3	ls	10.0	34	22.66			400.00		$780		$1,200		$1,980
D	1 1/2" conduit rgs	150	lf	0.10	17	22.66			1.70	0.40	$390		$255	$60	$705
D	1 1/2" conduit fittings	3	ls	8.0	27	22.66			100.00		$620		$300		$920
D	3/4" conduit rgs	450	lf	0.06	31	22.66			0.70	0.10	$700		$315	$50	$1,065
D	3/4" conduit fittings	3	ls	20.0	69	22.66			190.00		$1,560		$570		$2,130
D	3/4" liquid tight	75	lf	0.08	7	22.66			2.50		$160		$188		$348
	INSTRUMENTATION														
D	Flowmeter, w/ element, transducer set, flow computer, analog cord, handheld programmer, & flow meter programming	3	ea	11.0	38	22.66			5,765.00		$860		$17,295		$18,155
D	Pressure indicating transmitter	3	ea	0.50	2	22.66			205.00		$40		$615		$655
D	#16 awg contrl cable	225	lf	0.02	5	22.66			0.38		$120		$86		$206
D	6.25/125uM Fiber Optic Cable dual window(850/1300),loose buffer,gel fill	1800	lf	0.010	21	22.66			0.73		$470		$1,314		$1,784
D	DCS Components, incls, analog input, output modules, discrete input module, transnet term. interface board, contr. mod.., encl's sub panel programming etc.	3	ea	36.0	124	22.66			7,338.00		$2,800		$22,014		$24,814
D	Instrument Calibration/Testing	3	ls	10.0	34	22.66			100.00		$780		$300		$1,080
D	Fiber optic cable bulk plenum	1.8	CLF	3.5	7	22.66			375.00		$160		$675		$835
D	Fiber optic jumper	3	LS	6.0	21	22.66			500.00		$470		$1,500		$1,970
D	Fiber optic pigtail	3	LS	6.0	21	22.66			425.00		$470		$1,275		$1,745
D	Fiber optic connector	3	LS	6.0	21	22.66			300.00		$470		$900		$1,370
D	Fiber optic finger splice	3	LS	6.0	21	22.66			500.00		$470		$1,500		$1,970
D	Transceiver	3	LS	10.0	34	22.66			800.00		$780		$2,400		$3,180
D	Multi-channel rack enclosure 10 mods.	3	LS	20.0	69	22.66			1,200.00		$1,560		$3,600		$5,160
D	Fiber optic patch panel 12 ports	3	LS	12.0	41	22.66			1,000.00		$930		$3,000		$3,930
2	Subtotal Direct Cost	1	LOT		1,365	$22.71					31,000		99,800	11,800	$142,600

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #1 FY03	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Piping Installation														
D	8" pipe HDPE	1200	lf	0.018	25	26.40			6.74		$650		$8,090		$8,740
D	8" flange adapter HDPE	12	ea	1.6	22	26.40			88.00	10.00	$580		$1,060	$120	$1,760
D	8" DI flanges w/ backup ring	12	ea	1.0	14	26.40			40.00	5.00	$360		$480	$60	$900
D	8" DI blind flanges	12	ea	1.0	14	26.40			50.00	5.00	$360		$600	$60	$1,020
D	Post Indicator Valve	6	ea	8.0	55	26.40			420.00	50.00	$1,450		$2,520	$300	$4,270
D	Connectioins allowance to existing headers	3	ls	40.0	137	26.40			1,500.00	500.00	$3,620		$4,500	$1,500	$9,620
D	Pipe concrete thrust blocks	15	cy	1.0	17	26.40			65.00	10.00	$450		$980	$150	$1,580
D	10 ga stranded magnetic detectable wire & tapin	12	clf	0.800	11	26.40			8.40		$290		$100		$390
D	plastic warning tape indicating buried pipe	12	clf	0.053	0.7	26.40			3.70		$20		$40		$60
	MECHANICAL PIPING EW														
D	6" steel pipe	200	lf	0.77	177	26.40			22.00		$4,670		$4,400		$9,070
D	6" steel pipe insulate	75	lf	0.32	27	26.40			9.75		$720		$730		$1,450
D	3" pvc sch 40 drain & ck valves	2	lot	4.0	9	26.40			220.00	60.00	$240		$440	$120	$800
D	winged drain frame & grate 13"sq.	2	ea	2.0	5	26.40			100.00	20.00	$120		$200	$40	$360
D	6" flanged cast iron pipe (4ea @ 5')	40	lf	0.329	15	26.40			12.90		$400		$520		$920
D	6" flange cast iron 90d elbow	8	ea	1.4	13	26.40			29.00		$340		$230		$570
D	Subcontract Well Drilling/Developing allow.	2	ls					100,000				$200,000			$200,000
D	10" HDPE pipe		lf	0.020		26.40			10.47						
D	20" HDPE pipe		lf	0.030		26.40			36.24						
	MECHANICAL PIPING IW														
D	8" PIPE HDPE	600	LF	0.018	12	26.40			6.74		$330		$4,040		$4,370
D	10" PIPE HDPE		LF	0.030		26.40			36.24						
D	4" PIPE HDPE		LF	0.014		26.40			1.82						
D	8" FLANGE ADAPTER HDPE	10	EA	1.6	18	26.40			88.00	10.00	$480		$880	$100	$1,460
D	10" FLANGE ADAPTER HDPE	10	EA	2.0	23	26.40			95.00	10.00	$600		$950	$100	$1,650
D	4" FLANGE ADAPTER HDPE	10	EA	1.0	11	26.40			55.00	10.00	$300		$550	$100	$950
D	10" TO 8" REDUCING TEE HDPE	6	EA	5.0	34	26.40			460.00	10.00	$910		$2,760	$60	$3,730
D	10" X 8" CONCENTRIC REDUCER HDPE	6	EA	3.1	21	26.40			300.00	10.00	$560		$1,800	$60	$2,420
D	10" X 6" CONCENTRIC REDUCER HDPE	6	EA	3.1	21	26.40			300.00	10.00	$560		$1,800	$60	$2,420
D	8" X 6" CONCENTRIC REDUCER HDPE	6	EA	2.7	19	26.40			170.00	10.00	$490		$1,020	$60	$1,570
D	Subcontract Well Drilling/Developing allow.	1	ea					100,000				$100,000			$100,000
	Subtotal Direct Cost	1	LOT		702	$26.36					18,500	300,000	38,700	2,900	0,100

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C6010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #1 FY03	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	Dbl Swing Gate 10'w	1	ea	20.0	23	21.49			385.00		$490		$390		$880
D	Install Chain Link Fence 7'h, 9gage, w/ 3 strand	86	lf	0.150	15	21.49			11.50		$320		$990		$1,310
D	Ground rods (fence & gate)	2	ea	1.5	3	21.49			20.00		$70		$40		$110
D	#4 bare cu wire (fence & gate grounding)	88	lf	0.010	1	21.49			0.27		$20		$20		$40
D	Ground clamps	36	ea	0.15	6	21.49			4.00		$130		$140		$270
D	Concrete pad for well & pump	4	cy	4.7	20	21.49			151.00	1.61	$430		$560	$10	$1,000
D	Concrete pad for elect	1	cy	5.0	6	21.49			151.00	1.61	$120		$150		$270
D	Watt hour meter	1	ea	1.0	1	22.66			2,350.00		$30		$2,350		$2,380
D	20A Duplex receptacles	1	ea	0.49	1	22.66			50.30		$10		$50		$60
D	1 5/8" Unistrut channel	50	lf	0.19	11	22.66			3.30		$250		$170		$420
D	Terminations #2	5	ea	0.330	2	22.66			3.40		$40		$20		$60
D	Terminations #6	1	ea	0.270	0.3	22.66			2.00		$10				$10
D	Terminations #8	2	ea	0.220	1	22.66			1.85		$10				$10
D	Terminations #12	2	ea	0.15	0.3	22.66			1.25		$10				$10
D	Terminations #2/0	2	ea	0.50	1	22.66			4.15		$30		$10		$40
D	Distribution Panel 100A	1	ea	8.0	9	22.66			138.00		$210		$140		$350
D	100w fixture w/ photocell	1	ea	1.5	2	22.66			632.50		$40		$630		$670
D	1 1/4" conduit stanchion	10	lf	0.18	2	22.66			1.55		$50		$20		$70
D	1/x #12 cu wire	100	lf	0.01	1	22.66			0.07		$30		$10		$40
D	1/c #12 terminations	2	ea	0.15	0	22.66			1.25		$10				$10
D	Heat tracing	100	lf	0.10	11	26.40			2.00		$300		$200		$500
D	4" flow control valve	1	ea	4.5	5	26.40			2,850.00		$140		$2,850		$2,990
D	4" magnet flow meter	1	ea	4.0	5	26.40			4,800.00		$120		$4,800		$4,920
D	Surge arrestors	8	ea	1.1	10	26.40			100.00		$270		$800		$1,070
D	3" orifice plast 316 stl.	1	ea	1.9	2	26.40			124.00		$60		$120		$180
D	4" pipe cs	6	lf	0.17	1	26.40			6.56		$30		$40		$70
D	3" pipe cs	6	lf	0.13	1	26.40			4.61		$20		$30		$50
D	4" pipe pvc	70	lf	0.16	13	26.40			2.10		$340		$150		$490
D	3" pipe pvc	80	lf	0.13	12	26.40			1.45		$310		$120		$430
D	2" pipe pvc	80	lf	0.11	10	26.40			0.70		$270		$60		$330
D	4" 90 degree ell cs sch 40	2	ea	2.7	6	26.40			9.63		$160		$20		$180
D	3" 90 degree ell cs sch 40	2	ea	1.6	4	26.40			5.75		$90		$10		$100
D	3" 45 degree ell cs sch 40	1	ea	1.6	2	26.40			4.54		$50		$5		$55
D	4" tee cs shd 40	1	ea	4.1	5	26.40			15.72		$120		$20		$140
D	4"x3" weldolet	1	ea	2.6	3	26.40			14.87		$80		$10		$90
D	4" cap cs	1	ea	1.3	1	26.40			8.00		$40		$10		$50
D	1/2" sockolet 3000# cs	5	ea	0.56	3	26.40			2.85		$80		$10		$90
D	1/4" sockolet 3000# cs	1	ea	0.23	0.3	26.40			1.50		$10		$2		$12
D	1" sockolet 3000# cs	1	ea	0.06	0.1	26.40			3.45				$3		$3
D	4" adapter cs to pvc	1	ea	0.70	1	26.40			11.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.50	1	26.40			9.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.33	0.4	26.40			4.50		$10		$5		$15
	Subtotal Direct Cost	1	LOT		201	$24.35					4,900		15,000		$19,900

CONTRACTOR Stated in FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #1 FY03	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	1"x3" pipe nipples	1	ea	0.80	1	26.40			4.12		$20		$4		$24
D	1"x6" pipe nipples	1	ea	0.80	1	26.40			5.60		$20		$10		$30
D	1/2"x6" pipe nipples	1	ea	0.80	1	26.40			3.75		$20		$4		$24
D	1/2"x3" pipe nipples	3	ea	0.70	2	26.40			3.75		$60		$11		$71
D	1/4"x3" pipe nipples	1	ea	0.70	1	26.40			2.12		$20		$2		$22
D	1/2" sockegtweld 90 degree ell	1	ea	0.80	1	26.40			8.35		$20		$8		$28
D	4" 150# flange	9	ea	1.6	17	26.40			11.83		$450		$106		$556
D	4" 150# flange	3	ea	1.6	6	26.40			9.17		$150		$28		$178
D	3" pvc she 80 caps	1	ea	0.29	0	26.40			3.20		$10		$3		$13
D	4" pvc she 80 caps	1	ea	0.38	0	26.40			3.70		$10		$4		$14
D	4" 150# butterfly valve wafer	1	ea	1.54	2	26.40			54.00		$50		$54		$104
D	3" 150# butterfly valve wafer	1	ea	1.33	2	26.40			54.00		$40		$54		$94
D	1" ball valve	2	ea	0.84	2	26.40			81.60		$50		$163		$213
D	1/2" ball valve	1	ea	0.84	1	26.40			51.00		$30		$51		$81
D	1/4" gate valve	2	ea	0.84	2	26.40			56.00		$50		$112		$162
D	Level transmitter		ea	4.6		26.40			1,500.00						
D	Pressure Indicator transmitter		ea	7.9		26.40			950.00						
D	Flow Indicating Controller		ea	13.0		26.40			1,800.00						
D	Pre Engr. Bldg. EW	2	ea	60.0	137	22.43			5,672.21	500.00	$3,080		$11,340	$1,000	$15,420
	HVAC														
D	electric heaters 400cfm 3.3kw	2	ea	4.0	9	22.66			600.00		$210		$1,200		$1,410
D	fan, intake louver, exhaust & cntrl.	2	ea	8.0	18	22.66			843.50		$410		$1,690		$2,100
	WELL PUMP														
D	pump submersed 40hp 400gpm, equip & assem	3	ea	80.0	275	26.40			28,000.00	2,500.00	$7,250		$84,000	$7,500	$98,750
D	HYDROSTATIC TESTING	1	ls	100.0	114	26.40					$3,020				$3,020
D	ELECTRICAL TESTING	1	ls	100.0	114	22.66					$2,590				$2,590
D	ACCEPTANCE TEST	1	ls	80.0	92	22.66					$2,070				$2,070
	Subtotal Direct Cost	1	LOT		798	$24.57					19,600		95,000	8,500	$126,000

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #1 FY03		QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Project Staffing	Each														
	1. Project Manager			hr	1.0		45.19									
	2. Project Superintendent	0.25	293	hr	1.0	293	31.92					$9,350				$9,350
	3. Project Engineer	0.25	293	hr	1.0	293	20.71					$6,070				
	4. Safety Engineer	0.25	293	hr	1.0	293	19.75					$5,780				$5,780
	5. QA/QC Engineer	0.25	293	hr	1.0	293	18.51					$5,420				$5,420
	6. Office Administration			hr	1.0		15.75									
	7. Contract Administration/ Scheduler			hr	1.0		27.10									
	8. Clerical			hr	1.0		14.00									
	TOTAL					1,172	22.72					$26,620				$26,620

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CONTRACTOR - Stated in FY01 DOLLARS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #2 FY04	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION														
	Insurance Certificates, List of Sub-Tier Contractors Procurement Documents, Safe Work Plans, QA/QC Plan, Project Execution Plan, Construction and Engineering Documentation, Acceptable baseline Schedules														
	Duration 2 wks	1	LS	40.0	80	50.00					$4,000				$4,000
	MOBILIZATION														
	S/C Office Trailer	7	mo					300.00				$2,092			$2,092
	Survey and Engineering Controls	1	LS					3,000.00	500.00	500.00		$3,000	$500	$500	$4,000
D	Install Utilities	1	LS	40.0	40	22.69			1,000.00	500.00	$900		$1,000	$500	$2,400
D	Other misc. requirements as required.	1	LS	80.0	80	22.69			500.00	500.00	$1,800		$500	$500	$2,800
	Total				120					6,360.00	$2,700	$5,092	$2,000	$1,500	$11,292
	DEMOBILIZATION														
D	Complete Punch List items.	1	LS	20.0	20	22.69					$500				$500
D	Remove Trailer and Change Facilities.	1	LS	20.0	20	22.69					$500				$500
D	Remove all Utilities.	1	LS	20.0	20	22.69					$500				$500
mC	Decontaminate Equipment.	1	LS	10.0	10	22.69					$200				$200
D	Loadout contractors equipment.	1	LS	20.0	20	22.69					$500				$500
D	Other area requirements.	1	LS	10.0	10	22.69					$200				$200
	Total				100						$2,400				$2,400

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CONTRACTOR [illegible]ated in FY01 DOLLARS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #2 FY04	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Site Prep														
D	Survey (3) man team	1	ac					3,000.00				$3,000			$3,000
D	Plastic warning tape & Safety Fencing	3000	lf	0.13	453	21.49			0.77		$9,730		$2,310		$12,040
D	Gravel erosion control allowance	35	cy	0.30	12	21.49			10.15	7.60	$260		$360	$270	$890
	Site Clearing														
D	Clear and grub	1	ac	48.0	55	21.49				1,125.00	$1,180			$1,130	$2,310
	Grading & Excavation														
	Access Road(s) 600'EW & 500'IW														
D	Site grading	500	cy	0.10	57	21.49				2.31	$1,230			$1,160	$2,390
D	Excavation	489	cy	0.20	112	21.49				4.38	$2,400			$2,140	$4,540
D	Backfill	244	cy	0.20	56	21.49					$1,200				$1,200
D	Geotextile filter fabric	1467	sy	0.01	17	21.49			1.35		$360		$1,980		$2,340
D	Gravel road	1467	sy	0.08	131	21.49			1.20	0.35	$2,810		$1,760	$510	$5,080
D	Vibrating compaction	244	cy	0.10	28	21.49				0.26	$600			$60	$660
D	Prepare & roll sub-base	1467	sy	0.05	84	21.49				0.44	$1,800			$650	$2,450
	Pipe Trench 300' EW & 600' IW														
D	Trenching	375	cy	0.05	21	21.49				3.00	$460			$1,130	$1,590
D	Backfill	375	cy	0.15	64	21.49				3.00	$1,380			$1,130	$2,510
D	Compaction	375	cy	0.009	4	21.49				0.26	$80			$100	$180
	Well House(s)														
D	Excavate	90	cy	0.15	15	21.49				3.00	$330			$270	$600
D	Backfill	60	cy	0.25	17	21.49				4.00	$370			$240	$610
D	Dispose excess soil	30	cy	0.08	3	21.49				4.00	$60			$120	$180
D	**Existing Road Repair allowance**		ls	40.0		21.49			1,500.00	500.00					
	Culvert Pipe														
D	Culvert pipes	250	lf	0.20	57	21.49			5.20		$1,230		$1,300		$2,530
D	Backfill culvert pipes	100	cy	1.50	172	21.49				1.07	$3,690			$110	$3,800
D	Catch Basin	2	ea	24.0	55	21.49			650.00	216.00	$1,180		$1,300	$430	$2,910
	Guard Rail														
D	Guard rail corrugated steel, galv. steel posts	500	lf	0.10	57	21.49			9.45	0.55	$1,230		$4,730	$280	$6,240
D	End sections, galv flared	6	ea	0.65	4	21.49			38.50	8.25	$100		$230	$60	$390
	Subtotal Direct Cost				1475						$31,680	$3,000	$13,970	$9,790	$58,440

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CONTRACTOR - Stated in FY01 DOLLARS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #2 FY04	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	reinforcing	1	ls	38.0	43	22.43			1,084.00	112.00	$980		$1,080	$110	$2,170
D	formwork	1000	sf	0.20	229	22.43			1.00	0.20	$5,130		$1,000	$200	$6,330
D	exjoint	40	lf	0.10	5	22.43			0.40		$100		$20		$120
D	water stop	54	lf	0.10	6	22.43			0.50		$140		$30		$170
D	concrete matl 4000#	30	cy	1.0	34	22.43			70.00	4.00	$770		$2,100	$120	$2,990
D	anchor bolts	1	ls	4.0	5	22.43			40.00		$100		$40		$140
D	grout	1	ls	8.0	9	22.43			50.00		$210		$50		$260
D	finish concrete	550	sy	0.03	19	22.43				0.03	$420			$20	$440
D	precast concrete splash blocks	4	ea	0.25	1	22.43			20.00		$30		$80		$110
D	special coatings	146	sf	0.08	13	22.43			0.32	0.50	$300		$50	$70	$420
D	special sealant & b/rod	20	lf	0.20	5	22.43			4.00		$100		$80		$180
	Subtotal Direct Cost	1	LOT		369	$22.49					$8,300		$4,500	$500	[illegible]3,300

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CONTRACTOR [illegible]ted in FY01 DOLLARS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #2 FY04	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Auger Truck	75	hr	1.0	86	22.66				75.00	$1,940			$5,630	$7,570
D	Bucket Truck	60	hr	1.0	69	22.66				75.00	$1,560			$4,500	$6,060
D	45' Class II pole	3	ea	12.1	42	22.66			373.20		$940		$1,120		$2,060
D	#1/0 AL Power cable	3	clf	2.0	7	22.66			42.62		$160		$128		$288
D	Ground Cu wire	150	lf	0.05	9	22.66			0.44		$190		$66		$256
D	Messenger attachments	12	ea	3.3	45	22.66			69.75		$1,030		$837		$1,867
D	Guy wire typical	3	ea	5.0	17	22.66					$390				$390
D	Disconnect switch 480v 3ph	3	ea	8.0	27	22.66			250.00	50.00	$620		$750	$150	$1,520
D	Combo starter NEMA 1 enclosure	3	ea	10.0	34	22.66			600.00	50.00	$780		$1,800	$150	$2,730
D	Transformer 13.2KVA 480v IPH pole mounted	9	ea	20.0	206	22.66			900.00	100.00	$4,670		$8,100	$900	$13,670
D	Variable speed AC drive 40hp 480v 60Hz	2	ea	23.0	53	22.66			8,000.00	50.00	$1,190		$16,000	$100	$17,290
D	Transformer Mini power 15KVA 480v 3ph	3	ea	16.0	55	22.66			3,150.00	50.00	$1,240		$9,450	$150	$10,840
D	Fuses	12	ea	0.40	5	22.66			100.00		$120		$1,200		$1,320
D	3" conduit rgs	240	lf	0.25	69	22.66			4.50	0.50	$1,560		$1,080	$120	$2,760
D	3" conduit fittings	3	ls	10.0	34	22.66			400.00		$780		$1,200		$1,980
D	1 1/2" conduit rgs	150	lf	0.10	17	22.66			1.70	0.40	$390		$255	$60	$705
D	1 1/2" conduit fittings	3	ls	8.0	27	22.66			100.00		$620		$300		$920
D	3/4" conduit rgs	450	lf	0.06	31	22.66			0.70	0.10	$700		$315	$50	$1,065
D	3/4" conduit fittings	3	ls	20.0	69	22.66			190.00		$1,560		$570		$2,130
D	3/4" liquid tight	75	lf	0.08	7	22.66			2.50		$160		$188		$348
	INSTRUMENTATION														
D	Flowmeter, w/ element, transducer set, flow computer, analog cord, handheld programmer, & flow meter programming	3	ea	11.0	38	22.66			5,765.00		$860		$17,295		$18,155
D	Pressure indicating transmitter	3	ea	0.50	2	22.66			205.00		$40		$615		$655
D	#16 awg contrl cable	225	lf	0.02	5	22.66			0.38		$120		$86		$206
D	6.25/125uM Fiber Optic Cable dual window(850/1300),loose buffer,gel fill	1800	lf	0.010	21	22.66			0.73		$470		$1,314		$1,784
D	DCS Components, incls, analog input, output modules, discrete input module, transnet term. interface board, contr. mod.., encl's sub panel programming etc.	3	ea	36.0	124	22.66			7,338.00		$2,800		$22,014		$24,814
D	Instrument Calibration/Testing	3	ls	10.0	34	22.66			100.00		$780		$300		$1,080
D	Fiber optic cable bulk plenum	1.8	CLF	3.5	7	22.66			375.00		$160		$675		$835
D	Fiber optic jumper	3	LS	6.0	21	22.66			500.00		$470		$1,500		$1,970
D	Fiber optic pigtail	3	LS	6.0	21	22.66			425.00		$470		$1,275		$1,745
D	Fiber optic connector	3	LS	6.0	21	22.66			300.00		$470		$900		$1,370
D	Fiber optic finger splice	3	LS	6.0	21	22.66			500.00		$470		$1,500		$1,970
D	Transceiver	3	LS	10.0	34	22.66			800.00		$780		$2,400		$3,180
D	Multi-channel rack enclosure 10 mods.	3	LS	20.0	69	22.66			1,200.00		$1,560		$3,600		$5,160
D	Fiber optic patch panel 12 ports	3	LS	12.0	41	22.66			1,000.00		$930		$3,000		$3,930
	Subtotal Direct Cost	1	LOT		1,365	$22.71					31,000		99,800	11,800	$142,600

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CONTRACTOR - Stated in FY01 DOLLARS

PROJECT: Additional Wells
ESTIMATE NO.: C6010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #2 FY04	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Piping Installation														
D	8" pipe HDPE	1200	lf	0.018	25	26.40			6.74		$650		$8,090		$8,740
D	8" flange adapter HDPE	12	ea	1.6	22	26.40			88.00	10.00	$580		$1,060	$120	$1,760
D	8" DI flanges w/ backup ring	12	ea	1.0	14	26.40			40.00	5.00	$360		$480	$60	$900
D	8" DI blind flanges	12	ea	1.0	14	26.40			50.00	5.00	$360		$600	$60	$1,020
D	Post Indicator Valve	6	ea	8.0	55	26.40			420.00	50.00	$1,450		$2,520	$300	$4,270
D	Connectioins allowance to existing headers	3	ls	40.0	137	26.40			1,500.00	500.00	$3,620		$4,500	$1,500	$9,620
D	Pipe concrete thrust blocks	15	cy	1.0	17	26.40			65.00	10.00	$450		$980	$150	$1,580
D	10 ga stranded magnetic detectable wire & tapin	12	clf	0.800	11	26.40			8.40		$290		$100		$390
D	plastic warning tape indicating buried pipe	12	clf	0.053	0.7	26.40			3.70		$20		$40		$60
	MECHANICAL PIPING EW														
D	6" steel pipe	200	lf	0.77	177	26.40			22.00		$4,670		$4,400		$9,070
D	6" steel pipe insulate	75	lf	0.32	27	26.40			9.75		$720		$730		$1,450
D	3" pvc sch 40 drain & ck valves	2	lot	4.0	9	26.40			220.00	60.00	$240		$440	$120	$800
D	winged drain frame & grate 13"sq.	2	ea	2.0	5	26.40			100.00	20.00	$120		$200	$40	$360
D	6" flanged cast iron pipe (4ea @ 5')	40	lf	0.329	15	26.40			12.90		$400		$520		$920
D	6" flange cast iron 90d elbow	8	ea	1.4	13	26.40			29.00		$340		$230		$570
D	Subcontract Well Drilling/Developing allow.	2	ls				100,000					$200,000			$200,000
D	10" HDPE pipe		lf	0.020		26.40			10.47						
D	20" HDPE pipe		lf	0.030		26.40			36.24						
	MECHANICAL PIPING IW														
D	8" PIPE HDPE	600	LF	0.018	12	26.40			6.74		$330		$4,040		$4,370
D	10" PIPE HDPE		LF	0.030		26.40			36.24						
D	4" PIPE HDPE		LF	0.014		26.40			1.82						
D	8" FLANGE ADAPTER HDPE	10	EA	1.6	18	26.40			88.00	10.00	$480		$880	$100	$1,460
D	10" FLANGE ADAPTER HDPE	10	EA	2.0	23	26.40			95.00	10.00	$600		$950	$100	$1,650
D	4" FLANGE ADAPTER HDPE	10	EA	1.0	11	26.40			55.00	10.00	$300		$550	$100	$950
D	10" TO 8" REDUCING TEE HDPE	6	EA	5.0	34	26.40			460.00	10.00	$910		$2,760	$60	$3,730
D	10" X 8" CONCENTRIC REDUCER HDPE	6	EA	3.1	21	26.40			300.00	10.00	$560		$1,800	$60	$2,420
D	10" X 6" CONCENTRIC REDUCER HDPE	6	EA	3.1	21	26.40			300.00	10.00	$560		$1,800	$60	$2,420
D	8" X 6" CONCENTRIC REDUCER HDPE	6	EA	2.7	19	26.40			170.00	10.00	$490		$1,020	$60	$1,570
D	Subcontract Well Drilling/Developing allow.	1	ea				100,000					$100,000			$100,000
	Subtotal Direct Cost	1	LOT		702	$26.36					18,500	300,000	38,700	2,900	[illegible]0,100

CONTRACTOR - Stated in FY01 DOLLARS

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PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DETAIL E' 'IATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #2 FY04	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	Dbl Swing Gate 10'w	1	ea	20.0	23	21.49			385.00		$490		$390		$880
D	Install Chain Link Fence 7'h, 9gage, w/ 3 strand	86	lf	0.150	15	21.49			11.50		$320		$990		$1,310
D	Ground rods (fence & gate)	2	ea	1.5	3	21.49			20.00		$70		$40		$110
D	#4 bare cu wire (fence & gate grounding)	88	lf	0.010	1	21.49			0.27		$20		$20		$40
D	Ground clamps	36	ea	0.15	6	21.49			4.00		$130		$140		$270
D	Concrete pad for well & pump	4	cy	4.7	20	21.49			151.00	1.61	$430		$560	$10	$1,000
D	Concrete pad for elect	1	cy	5.0	6	21.49			151.00	1.61	$120		$150		$270
D	Watt hour meter	1	ea	1.0	1	22.66			2,350.00		$30		$2,350		$2,380
D	20A Duplex receptacles	1	ea	0.49	1	22.66			50.30		$10		$50		$60
D	1 5/8" Unistrut channel	50	lf	0.19	11	22.66			3.30		$250		$170		$420
D	Terminations #2	5	ea	0.330	2	22.66			3.40		$40		$20		$60
D	Terminations #6	1	ea	0.270	0.3	22.66			2.00		$10				$10
D	Terminations #8	2	ea	0.220	1	22.66			1.85		$10				$10
D	Terminations #12	2	ea	0.15	0.3	22.66			1.25		$10				$10
D	Terminations #2/0	2	ea	0.50	1	22.66			4.15		$30		$10		$10
D	Distribution Panel 100A	1	ea	8.0	9	22.66			138.00		$210		$140		$40
D	100w fixture w/ photocell	1	ea	1.5	2	22.66			632.50		$40		$630		$350
D	1 1/4" conduit stanchion	10	lf	0.18	2	22.66			1.55		$50		$20		$670
D	1/x #12 cu wire	100	lf	0.01	1	22.66			0.07		$30		$10		$70
D	1/c #12 terminations	2	ea	0.15	0	22.66			1.25		$10				$40
D	Heat tracing	100	lf	0.10	11	26.40			2.00		$300		$200		$10
D	4" flow control valve	1	ea	4.5	5	26.40			2,850.00		$140		$2,850		$500
D	4" magnet flow meter	1	ea	4.0	5	26.40			4,800.00		$120		$4,800		$2,990
D	Surge arrestors	8	ea	1.1	10	26.40			100.00		$270		$800		$4,920
D	3" orifice plast 316 stl.	1	ea	1.9	2	26.40			124.00		$60		$120		$1,070
D	4" pipe cs	6	lf	0.17	1	26.40			6.56		$30		$40		$180
D	3" pipe cs	6	lf	0.13	1	26.40			4.61		$20		$30		$70
D	4" pipe pvc	70	lf	0.16	13	26.40			2.10		$340		$150		$50
D	3" pipe pvc	80	lf	0.13	12	26.40			1.45		$310		$120		$490
D	2" pipe pvc	80	lf	0.11	10	26.40			0.70		$270		$60		$430
D	4" 90 degree ell cs sch 40	2	ea	2.7	6	26.40			9.63		$160		$20		$330
D	3" 90 degree ell cs sch 40	2	ea	1.6	4	26.40			5.75		$90		$10		$180
D	3" 45 degree ell cs sch 40	1	ea	1.6	2	26.40			4.54		$50		$5		$100
D	4" tee cs shd 40	1	ea	4.1	5	26.40			15.72		$120		$20		$55
D	4"x3" weldolet	1	ea	2.6	3	26.40			14.87		$80		$10		$140
D	4" cap cs	1	ea	1.3	1	26.40			8.00		$40		$10		$90
D	1/2" sockolet 3000# cs	5	ea	0.56	3	26.40			2.65		$80		$10		$50
D	1/4" sockolet 3000# cs	1	ea	0.23	0.3	26.40			1.50		$10		$2		$90
D	1" sockolet 3000# cs	1	ea	0.06	0.1	26.40			3.45				$3		$12
D	4" adapter cs to pvc	1	ea	0.70	1	26.40			11.00		$20		$10		$3
D	4" adapter cs to pvc	1	ea	0.50	1	26.40			9.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.33	0.4	26.40			4.50		$10		$5		$30
															$15
	Subtotal Direct Cost	1	LOT		201	$24.35					4,900		15,000		$19,900

CONTRACTOR - Stated in FY01 DOLLARS

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PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #2 FY04	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	1"x3" pipe nipples	1	ea	0.80	1	26.40			4.12		$20		$4		$24
D	1"x6" pipe nipples	1	ea	0.80	1	26.40			5.60		$20		$10		$30
D	1/2"x6" pipe nipples	1	ea	0.80	1	26.40			3.75		$20		$4		$24
D	1/2"x3" pipe nipples	3	ea	0.70	2	26.40			3.75		$60		$11		$71
D	1/4"x3" pipe nipples	1	ea	0.70	1	26.40			2.12		$20		$2		$22
D	1/2" sockegtweld 90 degree ell	1	ea	0.80	1	26.40			8.35		$20		$8		$28
D	4" 150# flange	9	ea	1.6	17	26.40			11.83		$450		$106		$556
D	4" 150# flange	3	ea	1.6	6	26.40			9.17		$150		$28		$178
D	3" pvc she 80 caps	1	ea	0.29	0	26.40			3.20		$10		$3		$13
D	4" pvc she 80 caps	1	ea	0.38	0	26.40			3.70		$10		$4		$14
D	4" 150# butterfly valve wafer	1	ea	1.54	2	26.40			54.00		$50		$54		$104
D	3" 150# butterfly valve wafer	1	ea	1.33	2	26.40			54.00		$40		$54		$94
D	1" ball valve	2	ea	0.84	2	26.40			81.60		$50		$163		$213
D	1/2" ball valve	1	ea	0.84	1	26.40			51.00		$30		$51		$81
D	1/4" gate valve	2	ea	0.84	2	26.40			56.00		$50		$112		$162
D	Level transmitter		ea	4.6		26.40			1,500.00						
D	Pressure Indicator transmitter		ea	7.9		26.40			950.00						
D	Flow Indicating Controller		ea	13.0		26.40			1,800.00						
D	Pre Engr. Bldg. EW	2	ea	60.0	137	22.43			5,672.21	500.00	$3,080		$11,340	$1,000	$15,420
	HVAC														
D	electric heaters 400cfm 3.3kw	2	ea	4.0	9	22.66			600.00		$210		$1,200		$1,410
D	fan, intake louver, exhaust & cntrl.	2	ea	8.0	18	22.66			843.50		$410		$1,690		$2,100
	WELL PUMP														
D	pump submersed 40hp 400gpm, equip & assem	3	ea	80.0	275	26.40			28,000.00	2,500.00	$7,250		$84,000	$7,500	$98,750
D	HYDROSTATIC TESTING	1	ls	100.0	114	26.40					$3,020				$3,020
D	ELECTRICAL TESTING	1	ls	100.0	114	22.66					$2,590				$2,590
D	ACCEPTANCE TEST	1	ls	80.0	92	22.66					$2,070				$2,070
	Subtotal Direct Cost	1	LOT		798	$24.57					19,600		98,800	8,500	$126,900

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CONTRACTOR - Stated in FY01 DOLLARS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #2 FY04		QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Project Staffing	Each														
	1. Project Manager	0.25	293	hr	1.0		45.19					$9,350				$9,350
	2. Project Superintendent	0.25	293	hr	1.0	293	31.92					$6,070				$6,070
	3. Project Engineer	0.25	293	hr	1.0	293	20.71					$5,780				$5,780
	4. Safety Engineer	0.25	293	hr	1.0	293	19.75					$5,420				$5,420
	5. QA/QC Engineer	0.25	293	hr	1.0	293	18.51									
	6. Office Administration			hr	1.0		15.75									
	7. Contract Administration/ Scheduler			hr	1.0		27.10									
	8. Clerical			hr	1.0		14.00									
	TOTAL					1,172	22.72					$26,620				$26,620

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CONTRACTOR - Stated in FY01 DOLLARS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #3 FY05	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION														
	Insurance Certificates, List of Sub-Tier Contractors Procurement Documents, Safe Work Plans, QA/QC Plan, Project Execution Plan, Construction and Engineering Documentation, Acceptable baseline Schedules														
	Duration 2 wks	1	LS	40.0	80	50.00					$4,000				$4,000
	MOBILIZATION														
	S/C Office Trailer	7	mo					300.00				$2,092			$2,092
D	Survey and Engineering Controls	1	LS	40.0	40	22.69		3,000.00	500.00	500.00		$3,000	$500	$500	$4,000
D	Install Utilities	1	LS	80.0	80	22.69			1,000.00	500.00	$900		$1,000	$500	$2,400
	Other misc. requirements as required.	1	LS						500.00	500.00	$1,800		$500	$500	$2,800
	Total				120					6,360.00	$2,700	$5,092	$2,000	$1,500	$11,292
	DEMOBILIZATION														
D	Complete Punch List items.	1	LS	20.0	20	22.69					$500				$500
D	Remove Trailer and Change Facilities.	1	LS	20.0	20	22.69					$500				$500
D	Remove all Utilities.	1	LS	20.0	20	22.69					$500				$500
mC	Decontaminate Equipment.	1	LS	10.0	10	22.69					$200				$200
D	Loadout contractors equipment.	1	LS	20.0	20	22.69					$500				$500
D	Other area requirements.	1	LS	10.0	10	22.69					$200				$200
	Total				100						$2,400				$2,400

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CONTRACTOR - Stated in FY01 DOLLARS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #3 FY05	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Site Prep														
D	Survey (3) man team	1	ac					3,000.00				$3,000			$3,000
D	Plastic warning tape & Safety Fencing	3000	lf	0.13	453	21.49			0.77		$9,730		$2,310		$12,040
D	Gravel erosion control allowance	35	cy	0.30	12	21.49			10.15	7.60	$260		$360	$270	$890
	Site Clearing														
D	Clear and grub	1	ac	48.0	55	21.49				1,125.00	$1,180			$1,130	$2,310
	Grading & Excavation														
	Access Road(s) 600'EW & 500'IW														
D	Site grading	500	cy	0.10	57	21.49				2.31	$1,230			$1,160	$2,390
D	Excavation	489	cy	0.20	112	21.49				4.38	$2,400			$2,140	$4,540
D	Backfill	244	cy	0.20	56	21.49					$1,200				$1,200
D	Geotextile filter fabric	1467	sy	0.01	17	21.49			1.35		$360		$1,980		$2,340
D	Gravel road	1467	sy	0.08	131	21.49			1.20	0.35	$2,810		$1,760	$510	$5,080
D	Vibrating compaction	244	cy	0.10	28	21.49				0.26	$600			$60	$660
D	Prepare & roll sub-base	1467	sy	0.05	84	21.49				0.44	$1,800			$650	$2,450
	Pipe Trench 300' EW & 600' IW														
D	Trenching	375	cy	0.05	21	21.49				3.00	$460			$1,130	$1,590
D	Backfill	375	cy	0.15	64	21.49				3.00	$1,380			$1,130	$2,510
D	Compaction	375	cy	0.009	4	21.49				0.26	$80			$100	$180
	Well House(s)														
D	Excavate	90	cy	0.15	15	21.49				3.00	$330			$270	$600
D	Backfill	60	cy	0.25	17	21.49				4.00	$370			$240	$610
D	Dispose excess soil	30	cy	0.08	3	21.49				4.00	$60			$120	$180
D	**Existing Road Repair allowance**		ls	40.0		21.49			1,500.00	500.00					
	Culvert Pipe														
D	Culvert pipes	250	lf	0.20	57	21.49			5.20		$1,230		$1,300		$2,530
D	Backfill culvert pipes	100	cy	1.50	172	21.49				1.07	$3,690			$110	$3,800
D	**Catch Basin**	2	ea	24.0	55	21.49			650.00	216.00	$1,180		$1,300	$430	$2,910
	Guard Rail														
D	Guard rail corrugated steel, galv. steel posts	500	lf	0.10	57	21.49			9.45	0.55	$1,230		$4,730	$280	$6,240
D	End sections, galv flared	6	ea	0.65	4	21.49			38.50	9.25	$100		$230	$60	$390
	Subtotal Direct Cost				1475						$31,680	$3,000	$13,970	$9,790	$58,440

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CONTRACTOR - Stated in FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #3 FY05	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	reinforcing	1	ls	38.0	43	22.43			1,084.00	112.00	$980		$1,080	$110	$2,170
D	formwork	1000	sf	0.20	229	22.43			1.00	0.20	$5,130		$1,000	$200	$6,330
D	exjoint	40	lf	0.10	5	22.43			0.40		$100		$20		$120
D	water stop	54	lf	0.10	6	22.43			0.50		$140		$30		$170
D	concrete matl 4000#	30	cy	1.0	34	22.43			70.00	4.00	$770		$2,100	$120	$2,990
D	anchor bolts	1	ls	4.0	5	22.43			40.00		$100		$40		$140
D	grout	1	ls	8.0	9	22.43			50.00		$210		$50		$260
D	finish concrete	550	sy	0.03	19	22.43				0.03	$420			$20	$440
D	precast concrete splash blocks	4	ea	0.25	1	22.43			20.00		$30		$80		$110
D	special coatings	146	sf	0.08	13	22.43			0.32	0.50	$300		$50	$70	$420
D	special sealant & b/rod	20	lf	0.20	5	22.43			4.00		$100		$80		$180
	Subtotal Direct Cost	1	LOT		369	$22.49					$8,300		$4,500	$500	$13,300

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CONTRACTOR ed in FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #3 FY05	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Auger Truck	75	hr	1.0	86	22.66				75.00	$1,940			$5,630	$7,570
D	Bucket Truck	60	hr	1.0	69	22.66				75.00	$1,560			$4,500	$6,060
D	45' Class II pole	3	ea	12.1	42	22.66			373.20		$940		$1,120		$2,060
D	#1/0 AL Power cable	3	clf	2.0	7	22.66			42.62		$160		$128		$288
D	Ground Cu wire	150	lf	0.05	9	22.66			0.44		$190		$66		$256
D	Messenger attachments	12	ea	3.3	45	22.66			69.75		$1,030		$837		$1,867
D	Guy wire typical	3	ea	5.0	17	22.66					$390				$390
D	Disconnect switch 480v 3ph	3	ea	8.0	27	22.66			250.00	50.00	$620		$750	$150	$1,520
D	Combo starter NEMA 1 enclosure	3	ea	10.0	34	22.66			600.00	50.00	$780		$1,800	$150	$2,730
D	Transformer 13.2KVA 480v IPH pole mounted	9	ea	20.0	206	22.66			900.00	100.00	$4,670		$8,100	$900	$13,670
D	Variable speed AC drive 40hp 480v 60Hz	2	ea	23.0	53	22.66			8,000.00	50.00	$1,190		$16,000	$100	$17,290
D	Transformer Mini power 15KVA 480v 3ph	3	ea	16.0	55	22.66			3,150.00	50.00	$1,240		$9,450	$150	$10,840
D	Fuses	12	ea	0.40	5	22.66			100.00		$120		$1,200		$1,320
D	3" conduit rgs	240	lf	0.25	69	22.66			4.50	0.50	$1,560		$1,080	$120	$2,760
D	3" conduit fittings	3	ls	10.0	34	22.66			400.00		$780		$1,200		$1,980
D	1 1/2" conduit rgs	150	lf	0.10	17	22.66			1.70	0.40	$390		$255	$60	$705
D	1 1/2" conduit fittings	3	ls	8.0	27	22.66			100.00		$620		$300		$920
D	3/4" conduit rgs	450	lf	0.06	31	22.66			0.70	0.10	$700		$315	$50	$1,065
D	3/4" conduit fittings	3	ls	20.0	69	22.66			190.00		$1,560		$570		$2,130
D	3/4" liquid tight	75	lf	0.08	7	22.66			2.50		$160		$188		$348
	INSTRUMENTATION														
D	Flowmeter, w/ element, transducer set, flow computer, analog cord, handheld programmer, & flow meter programming	3	ea	11.0	38	22.66			5,765.00		$860		$17,295		$18,155
D	Pressure indicating transmitter	3	ea	0.50	2	22.66			205.00		$40		$615		$655
D	#16 awg contrl cable	225	lf	0.02	5	22.66			0.38		$120		$86		$206
D	6.25/125uM Fiber Optic Cable dual window(850/1300),loose buffer,gel fill	1800	lf	0.010	21	22.66			0.73		$470		$1,314		$1,784
D	DCS Components, incls, analog input, output modules, discrete input module, transnet term. interface board, contr. mod.., encl's sub panel programming etc.	3	ea	36.0	124	22.66			7,338.00		$2,800		$22,014		$24,814
D	Instrument Calibration/Testing	3	ls	10.0	34	22.66			100.00		$780		$300		$1,080
D	Fiber optic cable bulk plenum	1.8	CLF	3.5	7	22.66			375.00		$160		$675		$835
D	Fiber optic jumper	3	LS	6.0	21	22.66			500.00		$470		$1,500		$1,970
D	Fiber optic pigtail	3	LS	6.0	21	22.66			425.00		$470		$1,275		$1,745
D	Fiber optic connector	3	LS	6.0	21	22.66			300.00		$470		$900		$1,370
D	Fiber optic finger splice	3	LS	6.0	21	22.66			500.00		$470		$1,500		$1,970
D	Transceiver	3	LS	10.0	34	22.66			800.00		$780		$2,400		$3,180
D	Multi-channel rack enclosure 10 mods.	3	LS	20.0	69	22.66			1,200.00		$1,560		$3,600		$5,160
D	Fiber optic patch panel 12 ports	3	LS	12.0	41	22.66			1,000.00		$930		$3,000		$3,930
	Subtotal Direct Cost	1	LOT		1,365	$22.71					31,000		99,800	11,800	$142,600

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CONTRACTOR - Stated In FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #3 FY05	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Piping Installation														
D	8" pipe HDPE	1200	lf	0.018	25	26.40			6.74		$650		$8,090		$8,740
D	8" flange adapter HDPE	12	ea	1.6	22	26.40			88.00	10.00	$580		$1,060	$120	$1,760
D	8" DI flanges w/ backup ring	12	ea	1.0	14	26.40			40.00	5.00	$360		$480	$60	$900
D	8" DI blind flanges	12	ea	1.0	14	26.40			50.00	5.00	$360		$600	$60	$1,020
D	Post Indicator Valve	6	ea	8.0	55	26.40			420.00	50.00	$1,450		$2,520	$300	$4,270
D	Connectioins allowance to existing headers	3	ls	40.0	137	26.40			1,500.00	500.00	$3,620		$4,500	$1,500	$9,620
D	Pipe concrete thrust blocks	15	cy	1.0	17	26.40			65.00	10.00	$450		$980	$150	$1,580
D	10 ga stranded magnetic detectable wire & tapir	12	clf	0.800	11	26.40			8.40		$290		$100		$390
D	plastic warning tape indicating buried pipe	12	clf	0.053	0.7	26.40			3.70		$20		$40		$60
	MECHANICAL PIPING EW														
D	6" steel pipe	200	lf	0.77	177	26.40			22.00		$4,670		$4,400		$9,070
D	6" steel pipe insulate	75	lf	0.32	27	26.40			9.75		$720		$730		$1,450
D	3" pvc sch 40 drain & ck valves	2	lot	4.0	9	26.40			220.00	60.00	$240		$440	$120	$800
D	winged drain frame & grate 13"sq.	2	ea	2.0	5	26.40			100.00	20.00	$120		$200	$40	$360
D	6" flanged cast iron pipe (4ea @ 5')	40	lf	0.329	15	26.40			12.90		$400		$520		$920
D	6" flange cast iron 90d elbow	8	ea	1.4	13	26.40			29.00		$340		$230		$570
D	Subcontract Well Drilling/Developing allow.	2	ls					100,000				$200,000			$200,000
D	10" HDPE pipe		lf	0.020		26.40			10.47						
D	20" HDPE pipe		lf	0.030		26.40			36.24						
	MECHANICAL PIPING IW														
D	8" PIPE HDPE	600	LF	0.018	12	26.40			6.74		$330		$4,040		$4,370
D	10" PIPE HDPE		LF	0.030		26.40			36.24						
D	4" PIPE HDPE		LF	0.014		26.40			1.82						
D	8" FLANGE ADAPTER HDPE	10	EA	1.6	18	26.40			88.00	10.00	$480		$880	$100	$1,460
D	10" FLANGE ADAPTER HDPE	10	EA	2.0	23	26.40			95.00	10.00	$600		$950	$100	$1,650
D	4" FLANGE ADAPTER HDPE	10	EA	1.0	11	26.40			55.00	10.00	$300		$550	$100	$950
D	10" TO 8" REDUCING TEE HDPE	6	EA	5.0	34	26.40			460.00	10.00	$910		$2,760	$60	$3,730
D	10" X 8" CONCENTRIC REDUCER HDPE	6	EA	3.1	21	26.40			300.00	10.00	$560		$1,800	$60	$2,420
D	10" X 6" CONCENTRIC REDUCER HDPE	6	EA	3.1	21	26.40			300.00	10.00	$560		$1,800	$60	$2,420
D	8" X 6" CONCENTRIC REDUCER HDPE	6	EA	2.7	19	26.40			170.00	10.00	$490		$1,020	$60	$1,570
D	Subcontract Well Drilling/Developing allow.	1	ea					100,000				$100,000			$100,000
	Subtotal Direct Cost	1	LOT		702	$26.3f					18,500	300,000	38,700	2,900	0,100

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #3 FY05	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	Dbl Swing Gate 10'w	1	ea	20.0	23	21.49			385.00		$490		$390		$880
D	Install Chain Link Fence 7'h, 9gage, w/ 3 strand	86	lf	0.150	15	21.49			11.50		$320		$990		$1,310
D	Ground rods (fence & gate)	2	ea	1.5	3	21.49			20.00		$70		$40		$110
D	#4 bare cu wire (fence & gate grounding)	88	lf	0.010	1	21.49			0.27		$20		$20		$40
D	Ground clamps	36	ea	0.15	6	21.49			4.00		$130		$140		$270
D	Concrete pad for well & pump	4	cy	4.7	20	21.49			151.00	1.61	$430		$560	$10	$1,000
D	Concrete pad for elect	1	cy	5.0	6	21.49			151.00	1.61	$120		$150		$270
D	Watt hour meter	1	ea	1.0	1	22.66			2,350.00		$30		$2,350		$2,380
D	20A Duplex receptacles	1	ea	0.49	1	22.66			50.30		$10		$50		$60
D	1 5/8" Unistrut channel	50	lf	0.19	11	22.66			3.30		$250		$170		$420
D	Terminations #2	5	ea	0.330	2	22.66			3.40		$40		$20		$60
D	Terminations #6	1	ea	0.270	0.3	22.66			2.00		$10				$10
D	Terminations #8	2	ea	0.220	1	22.66			1.85		$10				$10
D	Terminations #12	2	ea	0.15	0.3	22.66			1.25		$10				$10
D	Terminations #2/0	2	ea	0.50	1	22.66			4.15		$30		$10		$40
D	Distribution Panel 100A	1	ea	8.0	9	22.66			138.00		$210		$140		$350
D	100w fixture w/ photocell	1	ea	1.5	2	22.66			632.50		$40		$630		$670
D	1 1/4" conduit stanchion	10	lf	0.18	2	22.66			1.55		$50		$20		$70
D	1/x #12 cu wire	100	lf	0.01	1	22.66			0.07		$30		$10		$40
D	1/c #12 terminations	2	ea	0.15	0	22.66			1.25		$10				$10
D	Heat tracing	100	lf	0.10	11	26.40			2.00		$300		$200		$500
D	4" flow control valve	1	ea	4.5	5	26.40			2,850.00		$140		$2,850		$2,990
D	4" magnet flow meter	1	ea	4.0	5	26.40			4,800.00		$120		$4,800		$4,920
D	Surge arrestors	8	ea	1.1	10	26.40			100.00		$270		$800		$1,070
D	3" orifice plast 316 stl.	1	ea	1.9	2	26.40			124.00		$60		$120		$180
D	4" pipe cs	6	lf	0.17	1	26.40			6.56		$30		$40		$70
D	3" pipe cs	6	lf	0.13	1	26.40			4.61		$20		$30		$50
D	4" pipe pvc	70	lf	0.16	13	26.40			2.10		$340		$150		$490
D	3" pipe pvc	80	lf	0.13	12	26.40			1.45		$310		$120		$430
D	2" pipe pvc	80	lf	0.11	10	26.40			0.70		$270		$60		$330
D	4" 90 degree ell cs sch 40	2	ea	2.7	6	26.40			9.63		$160		$20		$180
D	3" 90 degree ell cs sch 40	2	ea	1.6	4	26.40			5.75		$90		$10		$100
D	3" 45 degree ell cs sch 40	1	ea	1.6	2	26.40			4.54		$50		$5		$55
D	4" tee cs shd 40	1	ea	4.1	5	26.40			15.72		$120		$20		$140
D	4"x3" weldolet	1	ea	2.6	3	26.40			14.87		$80		$10		$90
D	4" cap cs	1	ea	1.3	1	26.40			8.00		$40		$10		$50
D	1/2" sockolet 3000# cs	5	ea	0.56	3	26.40			2.65		$80		$10		$90
D	1/4" sockolet 3000# cs	1	ea	0.23	0.3	26.40			1.50		$10		$2		$12
D	1" sockolet 3000# cs	1	ea	0.06	0.1	26.40			3.45				$3		$3
D	4" adapter cs to pvc	1	ea	0.70	1	26.40			11.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.50	1	26.40			9.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.33	0.4	26.40			4.50		$10		$5		$15
	Subtotal Direct Cost	1	LOT		201	$24.35					4,900		15,000		$19,900

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #3 FY05	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	1"x3" pipe nipples	1	ea	0.80	1	26.40			4.12		$20		$4		$24
D	1"x6" pipe nipples	1	ea	0.80	1	26.40			5.60		$20		$10		$30
D	1/2"x6" pipe nipples	1	ea	0.80	1	26.40			3.75		$20		$4		$24
D	1/2"x3" pipe nipples	3	ea	0.70	2	26.40			3.75		$60		$11		$71
D	1/4"x3" pipe nipples	1	ea	0.70	1	26.40			2.12		$20		$2		$22
D	1/2" sockegtweld 90 degree ell	1	ea	0.80	1	26.40			8.35		$20		$8		$28
D	4" 150# flange	9	ea	1.6	17	26.40			11.83		$450		$106		$556
D	4" 150# flange	3	ea	1.6	6	26.40			9.17		$150		$28		$178
D	3" pvc she 80 caps	1	ea	0.29	0	26.40			3.20		$10		$3		$13
D	4" pvc she 80 caps	1	ea	0.38	0	26.40			3.70		$10		$4		$14
D	4" 150# butterfly valve wafer	1	ea	1.54	2	26.40			54.00		$50		$54		$104
D	3" 150# butterfly valve wafer	1	ea	1.33	2	26.40			54.00		$40		$54		$94
D	1" ball valve	2	ea	0.84	2	26.40			81.60		$50		$163		$213
D	1/2" ball valve	1	ea	0.84	1	26.40			51.00		$30		$51		$81
D	1/4" gate valve	2	ea	0.84	2	26.40			56.00		$50		$112		$162
D	Level transmitter		ea	4.6		26.40			1,500.00						
D	Pressure Indicator transmitter		ea	7.9		26.40			950.00						
D	Flow Indicating Controller		ea	13.0		26.40			1,800.00						
D	Pre Engr. Bldg. EW	2	ea	60.0	137	22.43			5,672.21	500.00	$3,080		$11,340	$1,000	$15,420
	HVAC														
D	electric heaters 400cfm 3.3kw	2	ea	4.0	9	22.66			600.00		$210		$1,200		$1,410
D	fan, intake louver, exhaust & cntrl.	2	ea	8.0	18	22.66			843.50		$410		$1,690		$2,100
	WELL PUMP														
D	pump submersed 40hp 400gpm, equip & assem	3	ea	80.0	275	26.40			28,000.00	2,500.00	$7,250		$84,000	$7,500	$98,750
D	HYDROSTATIC TESTING	1	ls	100.0	114	26.40					$3,020				$3,020
D	ELECTRICAL TESTING	1	ls	100.0	114	22.66					$2,590				$2,590
D	ACCEPTANCE TEST	1	ls	80.0	92	22.66					$2,070				$2,070
	Subtotal Direct Cost	1	LOT		798	$24.57					19,600		98,800	8,500	$126,900

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #3 FY05		QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Project Staffing	Each														
	1. Project Manager			hr	1.0		45.19									
	2. Project Superintendent	0.25	293	hr	1.0	293	31.92					$9,350				$9,350
	3. Project Engineer	0.25	293	hr	1.0	293	20.71					$6,070				
	4. Safety Engineer	0.25	293	hr	1.0	293	19.75					$5,780				$5,780
	5. QA/QC Engineer	0.25	293	hr	1.0	293	18.51					$5,420				$5,420
	6. Office Administration			hr	1.0		15.75									
	7. Contract Administration/ Scheduler			hr	1.0		27.10									
	8. Clerical			hr	1.0		14.00									
	TOTAL					1,172	22.72					$26,620				$26,620
			1	LOT		2,343	$22.70					53,200				$53,200

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #4 FY06	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION														
	Insurance Certificates, List of Sub-Tier Contractors Procurement Documents, Safe Work Plans, QA/QC Plan, Project Execution Plan, Construction and Engineering Documentation, Acceptable baseline Schedules														
	Duration 2 wks	1	LS	40.0	80	50.00					$4,000				$4,000
	MOBILIZATION														
	S/C Office Trailer	7	mo					300.00				$2,092			$2,092
	Survey and Engineering Controls	1	LS					3,000.00	500.00	500.00		$3,000	$500	$500	$4,000
D	Install Utilities	1	LS	40.0	40	22.69			1,000.00	500.00	$900		$1,000	$500	$2,400
D	Other misc. requirements as required.	1	LS	80.0	80	22.69			500.00	500.00	$1,800		$500	$500	$2,800
										6,360.00					
	Total				120						$2,700	$5,092	$2,000	$1,500	$11,292
	DEMOBILIZATION														
D	Complete Punch List items.	1	LS	20.0	20	22.69					$500				$500
D	Remove Trailer and Change Facilities.	1	LS	20.0	20	22.69					$500				$500
D	Remove all Utilities.	1	LS	20.0	20	22.69					$500				$500
mC	Decontaminate Equipment.	1	LS	10.0	10	22.69					$200				$200
D	Loadout contractors equipment.	1	LS	20.0	20	22.69					$500				$500
D	Other area requirements.	1	LS	10.0	10	22.69					$200				$200
	Total				100						$2,400				$2,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #4 FY 06	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Site Prep														
D	Survey (3) man team	1	ac					3,000.00				$3,000			$3,000
D	Plastic warning tape & Safety Fencing	3000	lf	0.13	453	21.49			0.77		$9,730		$2,310		$12,040
D	Gravel erosion control allowance	35	cy	0.30	12	21.49			10.15	7.60	$260		$360	$270	$890
	Site Clearing														
D	Clear and grub	1	ac	48.0	55	21.49				1,125.00	$1,180			$1,130	$2,310
	Grading & Excavation														
	Access Road(s) 600'EW & 500'IW														
D	Site grading	500	cy	0.10	57	21.49				2.31	$1,230			$1,160	$2,390
D	Excavation	489	cy	0.20	112	21.49				4.38	$2,400			$2,140	$4,540
D	Backfill	244	cy	0.20	56	21.49					$1,200				$1,200
D	Geotextile filter fabric	1467	sy	0.01	17	21.49			1.35		$360		$1,980		$2,340
D	Gravel road	1467	sy	0.08	131	21.49			1.20	0.35	$2,810		$1,760	$510	$5,080
D	Vibrating compaction	244	cy	0.10	28	21.49				0.26	$600			$60	$660
D	Prepare & roll sub-base	1467	sy	0.05	84	21.49				0.44	$1,800			$650	$2,450
	Pipe Trench 300' EW & 600' IW														
D	Trenching	375	cy	0.05	21	21.49				3.00	$460			$1,130	$1,590
D	Backfill	375	cy	0.15	64	21.49				3.00	$1,380			$1,130	$2,510
D	Compaction	375	cy	0.009	4	21.49				0.26	$80			$100	$180
	Well House(s)														
D	Excavate	45	cy	0.15	8	21.49				3.00	$170			$140	$310
D	Backfill	30	cy	0.25	9	21.49				4.00	$180			$120	$300
D	Dispose excess soil	30	cy	0.08	3	21.49				4.00	$60			$120	$180
D	Existing Road Repair allowance		ls	40.0		21.49			1,500.00	500.00					
	Culvert Pipe														
D	Culvert pipes	250	lf	0.20	57	21.49			5.20		$1,230		$1,300		$2,530
D	Backfill culvert pipes	100	cy	1.50	172	21.49				1.07	$3,690			$110	$3,800
D	Catch Basin	1	ea	24.0	27	21.49			650.00	216.00	$590		$650	$220	$1,460
	Guard Rail														
D	Guard rail corrugated steel, galv. steel posts	250	lf	0.10	29	21.49			9.45	0.55	$610		$2,360	$140	$3,110
D	End sections, galv flared	4	ea	0.65	3	21.49			38.50	9.25	$60		$150	$40	$250
	Subtotal Direct Cost				1401						$30,080	$3,000	$10,870	$9,170	$53,120

CONTRACTOR - Stated in FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #4 FY 06	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	reinforcing	1	ls	38.0	43	22.43			1,084.00	112.00	$980		$1,080	$110	$2,170
D	formwork	500	sf	0.20	114	22.43			1.00	0.20	$2,570		$500	$100	$3,170
D	exjoint	20	lf	0.10	2	22.43			0.40		$50		$10		$60
D	water stop	27	lf	0.10	3	22.43			0.50		$70		$10		$80
D	concrete matl 4000#	15	cy	1.0	17	22.43			70.00	4.00	$380		$1,050	$60	$1,490
D	anchor bolts	1	ls	4.0	5	22.43			40.00		$100		$40		$140
D	grout	1	ls	8.0	9	22.43			50.00		$210		$50		$260
D	finish concrete	275	sy	0.03	9	22.43				0.03	$210			$10	$220
D	precast concrete splash blocks	2	ea	0.25	1	22.43			20.00		$10		$40		$50
D	special coatings	73	sf	0.08	7	22.43			0.32	0.50	$150		$20	$40	$210
D	special sealant & b/rod	10	lf	0.20	2	22.43			4.00		$50		$40		$90
	Subtotal Direct Cost	1	LOT		213	$22.52					$4,800		$2,800	$300	$7,900

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CONTRACTOR ...ated in FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #4 FY 06	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Auger Truck	50	hr	1.0	57	22.66				75.00	$1,300			$3,750	$5,050
D	Bucket Truck	40	hr	1.0	46	22.66				75.00	$1,040			$3,000	$4,040
D	45' Class II pole	2	ea	12.1	28	22.66			373.20		$630		$746		$1,376
D	#1/0 AL Power cable	2	clf	2.0	5	22.66			42.62		$100		$85		$185
D	Ground Cu wire	100	lf	0.05	6	22.66			0.44		$130		$44		$174
D	Messenger attachments	8	ea	3.3	30	22.66			69.75		$680		$558		$1,238
D	Guy wire typical	2	ea	5.0	11	22.66					$260				$260
D	Disconnect switch 480v 3ph	2	ea	8.0	18	22.66			250.00	50.00	$410		$500	$100	$1,010
D	Combo starter NEMA 1 enclosure	2	ea	10.0	23	22.66			600.00	50.00	$520		$1,200	$100	$1,820
D	Transformer 13.2KVA 480v 1PH pole mounted	6	ea	20.0	137	22.66			900.00	100.00	$3,110		$5,400	$600	$9,110
D	Variable speed AC drive 40hp 480v 60Hz	1	ea	23.0	26	22.66			8,000.00	50.00	$600		$8,000	$50	$8,650
D	Transformer Mini power 15KVA 480v 3ph	2	ea	16.0	37	22.66			3,150.00	50.00	$830		$6,300	$100	$7,230
D	Fuses	8	ea	0.40	4	22.66			100.00		$80		$800		$880
D	3" conduit rgs	160	lf	0.25	46	22.66			4.50	0.50	$1,040		$720	$80	$1,840
D	3" conduit fittings	2	ls	10.0	23	22.66			400.00		$520		$800		$1,320
D	1 1/2" conduit rgs	100	lf	0.10	11	22.66			1.70	0.40	$260		$170	$40	$470
D	1 1/2" conduit fittings	2	ls	8.0	18	22.66			100.00		$410		$200		$610
D	3/4" conduit rgs	300	lf	0.06	21	22.66			0.70	0.10	$470		$210	$30	$710
D	3/4" conduit fittings	2	ls	20.0	46	22.66			190.00		$1,040		$380		$1,420
D	3/4" liquid tight	50	lf	0.08	5	22.66			2.50		$100		$125		$225
	INSTRUMENTATION														
D	Flowmeter, w/ element, transducer set, flow computer, analog cord, handheld programmer, & flow meter programming	2	ea	11.0	25	22.66			5,765.00		$570		$11,530		$12,100
D	Pressure indicating transmitter	2	ea	0.50	1	22.66			205.00		$30		$410		$440
D	#16 awg contrl cable	150	lf	0.02	3	22.66			0.38		$80		$57		$137
D	6.25/125uM Fiber Optic Cable dual window(850/1300),loose buffer,gel fill	1200	lf	0.010	14	22.66			0.73		$310		$876		$1,186
D	DCS Components, incls, analog input, output modules, discrete input module, transnet term. interface board, contr. mod.., encl's sub panel programming etc.	2	ea	36.0	82	22.66			7,338.00		$1,870		$14,676		$16,546
D	Instrument Calibration/Testing	2	ls	10.0	23	22.66			100.00		$520		$200		$720
D	Fiber optic cable bulk plenum	1.2	CLF	3.5	5	22.66			375.00		$110		$450		$560
D	Fiber optic jumper	2	LS	6.0	14	22.66			500.00		$310		$1,000		$1,310
D	Fiber optic pigtail	2	LS	6.0	14	22.66			425.00		$310		$850		$1,160
D	Fiber optic connector	2	LS	6.0	14	22.66			300.00		$310		$600		$910
D	Fiber optic finger splice	2	LS	6.0	14	22.66			500.00		$310		$1,000		$1,310
D	Transceiver	2	LS	10.0	23	22.66			800.00		$520		$1,600		$2,120
D	Multi-channel rack enclosure 10 mods.	2	LS	20.0	46	22.66			1,200.00		$1,040		$2,400		$3,440
D	Fiber optic patch panel 12 ports	2	LS	12.0	27	22.66			1,000.00		$620		$2,000		$2,620
	Subtotal Direct Cost	1	LOT		901	$22.63					20,400		63,900	7,900	$92,200

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #4 FY 06	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Piping Installation														
D	8" pipe HDPE	600	lf	0.018	12	26.40			6.74		$330		$4,040		$4,370
D	8" flange adapter HDPE	8	ea	1.6	15	26.40			88.00	10.00	$390		$700	$80	$1,170
D	8" DI flanges w/ backup ring	8	ea	1.0	9	26.40			40.00	5.00	$240		$320	$40	$600
D	8" DI blind flanges	8	ea	1.0	9	26.40			50.00	5.00	$240		$400	$40	$680
D	Post Indicator Valve	4	ea	8.0	37	26.40			420.00	50.00	$970		$1,680	$200	$2,850
D	Connectioins allowance to existing headers	2	ls	40.0	92	26.40			1,500.00	500.00	$2,420		$3,000	$1,000	$6,420
D	Pipe concrete thrust blocks	10	cy	1.0	11	26.40			65.00	10.00	$300		$650	$100	$1,050
D	10 ga stranded magnetic detectable wire & tapi	6	clf	0.800	5	26.40			8.40		$140		$50		$190
D	plastic warning tape indicating buried pipe	6	clf	0.053	0.4	26.40			3.70		$10		$20		$30
	MECHANICAL PIPING EW														
D	6" steel pipe	100	lf	0.77	89	26.40			22.00		$2,340		$2,200		$4,540
D	6" steel pipe insulate	38	lf	0.32	14	26.40			9.75		$360		$370		$730
D	3" pvc sch 40 drain & ck valves	1	lot	4.0	5	26.40			220.00	60.00	$120		$220	$60	$400
D	winged drain frame & grate 13"sq.	1	ea	2.0	2	26.40			100.00	20.00	$60		$100	$20	$180
D	6" flanged cast iron pipe (4ea @ 5')	20	lf	0.329	8	26.40			12.90		$200		$260		$460
D	6" flange cast iron 90d elbow	4	ea	1.4	6	26.40			29.00		$170		$120		$290
D	Subcontract Well Drilling/Developing allow.	1	ls					100,000				$100,000			$100,000
D	10" HDPE pipe		lf	0.020		26.40			10.47						
D	20" HDPE pipe		lf	0.030		26.40			36.24						
	MECHANICAL PIPING IW														
D	8" PIPE HDPE	600	LF	0.018	12	26.40			6.74		$330		$4,040		$4,370
D	10" PIPE HDPE		LF	0.030		26.40			36.24						
D	4" PIPE HDPE		LF	0.014		26.40			1.82						
D	8" FLANGE ADAPTER HDPE	10	EA	1.6	18	26.40			88.00	10.00	$480		$880	$100	$1,460
D	10" FLANGE ADAPTER HDPE	10	EA	2.0	23	26.40			95.00	10.00	$600		$950	$100	$1,650
D	4" FLANGE ADAPTER HDPE	10	EA	1.0	11	26.40			55.00	10.00	$300		$550	$100	$950
D	10" TO 8" REDUCING TEE HDPE	6	EA	5.0	34	26.40			460.00	10.00	$910		$2,760	$60	$3,730
D	10" X 8" CONCENTRIC REDUCER HDPE	6	EA	3.1	21	26.40			300.00	10.00	$560		$1,800	$60	$2,420
D	10" X 6" CONCENTRIC REDUCER HDPE	6	EA	3.1	21	26.40			300.00	10.00	$560		$1,800	$60	$2,420
D	8" X 6" CONCENTRIC REDUCER HDPE	6	EA	2.7	19	26.40			170.00	10.00	$490		$1,020	$60	$1,570
D	Subcontract Well Drilling/Developing allow.	1	ea					100,000				$100,000			$100,000
	Subtotal Direct Cost	1	LOT		474	$26.37					12,500	200,000	27,900	2,100	12,500

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #4 FY 06	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	Dbl Swing Gate 10'w	1	ea	20.0	23	21.49			385.00		$490		$390		$880
D	Install Chain Link Fence 7'h, 9gage, w/ 3 strand	86	lf	0.150	15	21.49			11.50		$320		$990		$1,310
D	Ground rods (fence & gate)	2	ea	1.5	3	21.49			20.00		$70		$40		$110
D	#4 bare cu wire (fence & gate grounding)	88	lf	0.010	1	21.49			0.27		$20		$20		$40
D	Ground clamps	36	ea	0.15	6	21.49			4.00		$130		$140		$270
D	Concrete pad for well & pump	4	cy	4.7	20	21.49			151.00	1.61	$430		$560	$10	$1,000
D	Concrete pad for elect	1	cy	5.0	6	21.49			151.00	1.61	$120		$150		$270
D	Watt hour meter	1	ea	1.0	1	22.66			2,350.00		$30		$2,350		$2,380
D	20A Duplex receptacles	1	ea	0.49	1	22.66			50.30		$10		$50		$60
D	1 5/8" Unistrut channel	50	lf	0.19	11	22.66			3.30		$250		$170		$420
D	Terminations #2	5	ea	0.330	2	22.66			3.40		$40		$20		$60
D	Terminations #6	1	ea	0.270	0.3	22.66			2.00		$10				$10
D	Terminations #8	2	ea	0.220	1	22.66			1.85		$10				$10
D	Terminations #12	2	ea	0.15	0.3	22.66			1.25		$10				$10
D	Terminations #2/0	2	ea	0.50	1	22.66			4.15		$30		$10		$40
D	Distribution Panel 100A	1	ea	8.0	9	22.66			138.00		$210		$140		$350
D	100w fixture w/ photocell	1	ea	1.5	2	22.66			632.50		$40		$630		$670
D	1 1/4" conduit stanchion	10	lf	0.18	2	22.66			1.55		$50		$20		$70
D	1/x #12 cu wire	100	lf	0.01	1	22.66			0.07		$30		$10		$40
D	1/c #12 terminations	2	ea	0.15	0	22.66			1.25		$10				$10
D	Heat tracing	100	lf	0.10	11	26.40			2.00		$300		$200		$500
D	4" flow control valve	1	ea	4.5	5	26.40			2,850.00		$140		$2,850		$2,990
D	4" magnet flow meter	1	ea	4.0	5	26.40			4,800.00		$120		$4,800		$4,920
D	Surge arrestors	8	ea	1.1	10	26.40			100.00		$270		$800		$1,070
D	3" orifice plast 316 stl.	1	ea	1.9	2	26.40			124.00		$60		$120		$180
D	4" pipe cs	6	lf	0.17	1	26.40			6.56		$30		$40		$70
D	3" pipe cs	6	lf	0.13	1	26.40			4.61		$20		$30		$50
D	4" pipe pvc	70	lf	0.16	13	26.40			2.10		$340		$150		$490
D	3" pipe pvc	80	lf	0.13	12	26.40			1.45		$310		$120		$430
D	2" pipe pvc	80	lf	0.11	10	26.40			0.70		$270		$60		$330
D	4" 90 degree ell cs sch 40	2	ea	2.7	6	26.40			9.63		$160		$20		$180
D	3" 90 degree ell cs sch 40	2	ea	1.6	4	26.40			5.75		$90		$10		$100
D	3" 45 degree ell cs sch 40	1	ea	1.6	2	26.40			4.54		$50		$5		$55
D	4" tee cs shd 40	1	ea	4.1	5	26.40			15.72		$120		$20		$140
D	4"x3" weldolet	1	ea	2.6	3	26.40			14.87		$80		$10		$90
D	4" cap cs	1	ea	1.3	1	26.40			8.00		$40		$10		$50
D	1/2" sockolet 3000# cs	5	ea	0.56	3	26.40			2.65		$80		$10		$90
D	1/4" sockolet 3000# cs	1	ea	0.23	0.3	26.40			1.50		$10		$2		$12
D	1" sockolet 3000# cs	1	ea	0.06	0.1	26.40			3.45				$3		$3
D	4" adapter cs to pvc	1	ea	0.70	1	26.40			11.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.50	1	26.40			9.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.33	0.4	26.40			4.50		$10		$5		$15
	Subtotal Direct Cost	1	LOT		201	$24.35					4,900		15,000		$19,000

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CONTRACTOR - Stated in FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #4 FY 06	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	1"x3" pipe nipples	1	ea	0.80	1	26.40			4.12		$20		$4		$24
D	1"x6" pipe nipples	1	ea	0.80	1	26.40			5.60		$20		$10		$30
D	1/2"x6" pipe nipples	1	ea	0.80	1	26.40			3.75		$20		$4		$24
D	1/2"x3" pipe nipples	3	ea	0.70	2	26.40			3.75		$60		$11		$71
D	1/4"x3" pipe nipples	1	ea	0.70	1	26.40			2.12		$20		$2		$22
D	1/2" sockegtweld 90 degree ell	1	ea	0.80	1	26.40			8.35		$20		$8		$28
D	4" 150# flange	9	ea	1.6	17	26.40			11.83		$450		$106		$556
D	4" 150# flange	3	ea	1.6	6	26.40			9.17		$150		$28		$178
D	3" pvc she 80 caps	1	ea	0.29	0	26.40			3.20		$10		$3		$13
D	4" pvc she 80 caps	1	ea	0.38	0	26.40			3.70		$10		$4		$14
D	4" 150# butterfly valve wafer	1	ea	1.54	2	26.40			54.00		$50		$54		$104
D	3" 150# butterfly valve wafer	1	ea	1.33	2	26.40			54.00		$40		$54		$94
D	1" ball valve	2	ea	0.84	2	26.40			81.60		$50		$163		$213
D	1/2" ball valve	1	ea	0.84	1	26.40			51.00		$30		$51		$81
D	1/4" gate valve	2	ea	0.84	2	26.40			56.00		$50		$112		$162
D	Level transmitter		ea	4.6		26.40			1,500.00						
D	Pressure Indicator transmitter		ea	7.9		26.40			950.00						
D	Flow Indicating Controller		ea	13.0		26.40			1,800.00						
D	Pre Engr. Bldg. EW	1	ea	60.0	69	22.43			5,672.21	500.00	$1,540		$5,670	$500	$7,710
	HVAC														
D	electric heaters 400cfm 3.3kw	1	ea	4.0	5	22.66			600.00		$100		$600		$700
D	fan, intake louver, exhaust & cntrl.	1	ea	8.0	9	22.66			843.50		$210		$840		$1,050
	WELL PUMP														
D	pump submersed 40hp 400gpm, equip & assem	2	ea	80.0	183	26.40			28,000.00	2,500.00	$4,830		$56,000	$5,000	$65,830
D	HYDROSTATIC TESTING	1	ls	100.0	114	26.40					$3,020				$3,020
D	ELECTRICAL TESTING	1	ls	100.0	114	22.66					$2,590				$2,590
D	ACCEPTANCE TEST	1	ls	80.0	92	22.66					$2,070				$2,070
	Subtotal Direct Cost	1	LOT		624	$24.68					15,400		63,700	5,500	$84,600

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #4 FY 06		QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Project Staffing															
		Each														
	1. Project Manager			hr	1.0		45.19									
	2. Project Superintendent	0.25	293	hr	1.0	293	31.92					$9,350				$9,350
	3. Project Engineer	0.25	293	hr	1.0	293	20.71					$6,070				
	4. Safety Engineer	0.25	293	hr	1.0	293	19.75					$5,780				$5,780
	5. QA/QC Engineer	0.25	293	hr	1.0	293	18.51					$5,420				$5,420
	6. Office Administration			hr	1.0		15.75									
	7. Contract Administration/ Scheduler			hr	1.0		27.10									
	8. Clerical			hr	1.0		14.00									
	TOTAL					1,172	22.72					$26,620				$26,620
			1	LOT		2,343	$22.70					53,200				$53,200

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C6010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #5 FY07	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION														
	Insurance Certificates, List of Sub-Tier Contractors Procurement Documents, Safe Work Plans, QA/QC Plan, Project Execution Plan, Construction and Engineering Documentation, Acceptable baseline Schedules														
	Duration 2 wks	1	LS	40.0	80	50.00					$4,000				$4,000
	MOBILIZATION														
	S/C Office Trailer	7	mo					300.00				$2,092			$2,092
	Survey and Engineering Controls	1	LS					3,000.00	500.00	500.00		$3,000	$500	$500	$4,000
D	Install Utilities	1	LS	40.0	40	22.69			1,000.00	500.00	$900		$1,000	$500	$2,400
D	Other misc. requirements as required.	1	LS	80.0	80	22.69			500.00	500.00	$1,800		$500	$500	$2,800
										6,360.00					
	Total				120						$2,700	$5,092	$2,000	$1,500	$11,292
	DEMOBILIZATION														
D	Complete Punch List items.	1	LS	20.0	20	22.69					$500				$500
D	Remove Trailer and Change Facilities.	1	LS	20.0	20	22.69					$500				$500
D	Remove all Utilities.	1	LS	20.0	20	22.69					$500				$500
mC	Decontaminate Equipment.	1	LS	10.0	10	22.69					$200				$200
D	Loadout contractors equipment.	1	LS	20.0	20	22.69					$500				$500
D	Other area requirements.	1	LS	10.0	10	22.69					$200				$200
	Total				100						$2,400				$2,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #5 FY 07	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Site Prep														
D	Survey (3) man team	1	ac					3,000.00				$3,000			$3,000
D	Plastic warning tape & Safety Fencing	3000	lf	0.13	453	21.49			0.77		$9,730		$2,310		$12,040
D	Gravel erosion control allowance	35	cy	0.30	12	21.49			10.15	7.60	$260		$360	$270	$890
	Site Clearing														
D	Clear and grub	1	ac	48.0	55	21.49				1,125.00	$1,180			$1,130	$2,310
	Grading & Excavation														
	Access Road(s) 600'EWea & 500'IW ea														
D	Site grading	500	cy	0.10	57	21.49				2.31	$1,230			$1,160	$2,390
D	Excavation	489	cy	0.20	112	21.49				4.38	$2,400			$2,140	$4,540
D	Backfill	244	cy	0.20	56	21.49					$1,200				$1,200
D	Geotextile filter fabric	1467	sy	0.01	17	21.49			1.35		$360		$1,980		$2,340
D	Gravel road	1467	sy	0.08	131	21.49			1.20	0.35	$2,810		$1,760	$510	$5,080
D	Vibrating compaction	244	cy	0.10	28	21.49				0.26	$600			$60	$660
D	Prepare & roll sub-base	1467	sy	0.05	84	21.49				0.44	$1,800			$650	$2,450
	Pipe Trench 300' EW & 600' IW														
D	Trenching	375	cy	0.05	21	21.49				3.00	$460			$1,130	$1,590
D	Backfill	375	cy	0.15	64	21.49				3.00	$1,380			$1,130	$2,510
D	Compaction	375	cy	0.009	4	21.49				0.26	$80			$100	$180
	Well House(s)														
D	Excavate	45	cy	0.15	8	21.49				3.00	$170			$140	$310
D	Backfill	30	cy	0.25	9	21.49				4.00	$180			$120	$300
D	Dispose excess soil	30	cy	0.08	3	21.49				4.00	$60			$120	$180
D	Existing Road Repair allowance		ls	40.0		21.49			1,500.00	500.00					
	Culvert Pipe														
D	Culvert pipes	250	lf	0.20	57	21.49			5.20		$1,230		$1,300		$2,530
D	Backfill culvert pipes	100	cy	1.50	172	21.49				1.07	$3,690			$110	$3,800
D	Catch Basin	1	ea	24.0	27	21.49			650.00	216.00	$590		$650	$220	$1,460
	Guard Rail														
D	Guard rail corrugated steel, galv. steel posts	250	lf	0.10	29	21.49			9.45	0.55	$610		$2,360	$140	$3,110
D	End sections, galv flared	4	ea	0.65	3	21.49			38.50	9.25	$60		$150	$40	$250
	Subtotal Direct Cost				1401						$30,080	$3,000	$10,870	$9,170	$53,120

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #5 FY 07	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	reinforcing	1	ls	38.0	43	22.43			1,084.00	112.00	$980		$1,080	$110	$2,170
D	formwork	500	sf	0.20	114	22.43			1.00	0.20	$2,570		$500	$100	$3,170
D	exjoint	20	lf	0.10	2	22.43			0.40		$50		$10		$60
D	water stop	27	lf	0.10	3	22.43			0.50		$70		$10		$80
D	concrete matl 4000#	15	cy	1.0	17	22.43			70.00	4.00	$380		$1,050	$60	$1,490
D	anchor bolts	1	ls	4.0	5	22.43			40.00		$100		$40		$140
D	grout	1	ls	8.0	9	22.43			50.00		$210		$50		$260
D	finish concrete	275	sy	0.03	9	22.43				0.03	$210			$10	$220
D	precast concrete splash blocks	2	ea	0.25	1	22.43			20.00		$10		$40		$50
D	special coatings	73	sf	0.08	7	22.43			0.32	0.50	$150		$20	$40	$210
D	special sealant & b/rod	10	lf	0.20	2	22.43			4.00		$50		$40		$90
	Subtotal Direct Cost	1	LOT		213	$22.52					$4,800		$2,800	$300	$7,900

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #5 FY 07	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Auger Truck	50	hr	1.0	57	22.66				75.00	$1,300			$3,750	$5,050
D	Bucket Truck	40	hr	1.0	46	22.66				75.00	$1,040			$3,000	$4,040
D	45' Class II pole	2	ea	12.1	28	22.66			373.20		$630		$746		$1,376
D	#1/0 AL Power cable	2	clf	2.0	5	22.66			42.62		$100		$85		$185
D	Ground Cu wire	100	lf	0.05	6	22.66			0.44		$130		$44		$174
D	Messenger attachments	8	ea	3.3	30	22.66			69.75		$680		$558		$1,238
D	Guy wire typical	2	ea	5.0	11	22.66					$260				$260
D	Disconnect switch 480v 3ph	2	ea	8.0	18	22.66			250.00	50.00	$410		$500	$100	$1,010
D	Combo starter NEMA 1 enclosure	2	ea	10.0	23	22.66			600.00	50.00	$520		$1,200	$100	$1,820
D	Transformer 13.2KVA 480v IPH pole mounted	6	ea	20.0	137	22.66			900.00	100.00	$3,110		$5,400	$600	$9,110
D	Variable speed AC drive 40hp 480v 60Hz	1	ea	23.0	26	22.66			8,000.00	50.00	$600		$8,000	$50	$8,650
D	Transformer Mini power 15KVA 480v 3ph	2	ea	16.0	37	22.66			3,150.00	50.00	$830		$6,300	$100	$7,230
D	Fuses	8	ea	0.40	4	22.66			100.00		$80		$800		$880
D	3" conduit rgs	160	lf	0.25	46	22.66			4.50	0.50	$1,040		$720	$80	$1,840
D	3" conduit fittings	2	ls	10.0	23	22.66			400.00		$520		$800		$1,320
D	1 1/2" conduit rgs	100	lf	0.10	11	22.66			1.70	0.40	$260		$170	$40	$470
D	1 1/2" conduit fittings	2	ls	8.0	18	22.66			100.00		$410		$200		$610
D	3/4" conduit rgs	300	lf	0.06	21	22.66			0.70	0.10	$470		$210	$30	$710
D	3/4" conduit fittings	2	ls	20.0	46	22.66			190.00		$1,040		$380		$1,420
D	3/4" liquid tight	50	lf	0.08	5	22.66			2.50		$100		$125		$225
	INSTRUMENTATION														
D	Flowmeter, w/ element, transducer set, flow computer, analog cord, handheld programmer, & flow meter programming	2	ea	11.0	25	22.66			5,765.00		$570		$11,530		$12,100
D	Pressure indicating transmitter	2	ea	0.50	1	22.66			205.00		$30		$410		$440
D	#16 awg contrl cable	150	lf	0.02	3	22.66			0.38		$80		$57		$137
D	6.25/125uM Fiber Optic Cable dual window(850/1300),loose buffer,gel fill	1200	lf	0.010	14	22.66			0.73		$310		$876		$1,186
D	DCS Components, incls, analog input, output modules, discrete input module, transnet term. interface board, contr. mod.., encl's sub panel programming etc.	2	ea	36.0	82	22.66			7,338.00		$1,870		$14,676		$16,546
D	Instrument Calibration/Testing	2	ls	10.0	23	22.66			100.00		$520		$200		$720
D	Fiber optic cable bulk plenum	1.2	CLF	3.5	5	22.66			375.00		$110		$450		$560
D	Fiber optic jumper	2	LS	6.0	14	22.66			500.00		$310		$1,000		$1,310
D	Fiber optic pigtail	2	LS	6.0	14	22.66			425.00		$310		$850		$1,160
D	Fiber optic connector	2	LS	6.0	14	22.66			300.00		$310		$600		$910
D	Fiber optic finger splice	2	LS	6.0	14	22.66			500.00		$310		$1,000		$1,310
D	Transceiver	2	LS	10.0	23	22.66			800.00		$520		$1,600		$2,120
D	Multi-channel rack enclosure 10 mods.	2	LS	20.0	46	22.66			1,200.00		$1,040		$2,400		$3,440
D	Fiber optic patch panel 12 ports	2	LS	12.0	27	22.66			1,000.00		$620		$2,000		$2,620
	Subtotal Direct Cost	1	LOT		901	$22.63					20,400		63,600	7,900	$92,200

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #5 FY 07	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Piping Installation														
D	8" pipe HDPE	600	lf	0.018	12	26.40			6.74		$330		$4,040		$4,370
D	8" flange adapter HDPE	8	ea	1.6	15	26.40			88.00	10.00	$390		$700	$80	$1,170
D	8" DI flanges w/ backup ring	8	ea	1.0	9	26.40			40.00	5.00	$240		$320	$40	$600
D	8" DI blind flanges	8	ea	1.0	9	26.40			50.00	5.00	$240		$400	$40	$680
D	Post Indicator Valve	4	ea	8.0	37	26.40			420.00	50.00	$970		$1,680	$200	$2,850
D	Connectioins allowance to existing headers	2	ls	40.0	92	26.40			1,500.00	500.00	$2,420		$3,000	$1,000	$6,420
D	Pipe concrete thrust blocks	10	cy	1.0	11	26.40			65.00	10.00	$300		$650	$100	$1,050
D	10 ga stranded magnetic detectable wire & tapin	6	clf	0.800	5	26.40			8.40		$140		$50		$190
D	plastic warning tape indicating buried pipe	6	clf	0.053	0.4	26.40			3.70		$10		$20		$30
	MECHANICAL PIPING EW														
D	6" steel pipe	100	lf	0.77	89	26.40			22.00		$2,340		$2,200		$4,540
D	6" steel pipe insulate	38	lf	0.32	14	26.40			9.75		$360		$370		$730
D	3" pvc sch 40 drain & ck valves	1	lot	4.0	5	26.40			220.00	60.00	$120		$220	$60	$400
D	winged drain frame & grate 13"sq.	1	ea	2.0	2	26.40			100.00	20.00	$60		$100	$20	$180
D	6" flanged cast iron pipe (4ea @ 5')	20	lf	0.329	8	26.40			12.90		$200		$260		$460
D	6" flange cast iron 90d elbow	4	ea	1.4	6	26.40			29.00		$170		$120		$290
D	Subcontract Well Drilling/Developing allow.	1	ls					100,000				$100,000			$100,000
D	10" HDPE pipe		lf	0.020		26.40			10.47						
D	20" HDPE pipe		lf	0.030		26.40			36.24						
	MECHANICAL PIPING IW														
D	8" PIPE HDPE	600	LF	0.018	12	26.40			6.74		$330		$4,040		$4,370
D	10" PIPE HDPE		LF	0.030		26.40			36.24						
D	4" PIPE HDPE		LF	0.014		26.40			1.82						
D	8" FLANGE ADAPTER HDPE	10	EA	1.6	18	26.40			88.00	10.00	$480		$880	$100	$1,460
D	10" FLANGE ADAPTER HDPE	10	EA	2.0	23	26.40			95.00	10.00	$600		$950	$100	$1,650
D	4" FLANGE ADAPTER HDPE	10	EA	1.0	11	26.40			55.00	10.00	$300		$550	$100	$950
D	10" TO 8" REDUCING TEE HDPE	6	EA	5.0	34	26.40			460.00	10.00	$910		$2,760	$60	$3,730
D	10" X 8" CONCENTRIC REDUCER HDPE	6	EA	3.1	21	26.40			300.00	10.00	$560		$1,800	$60	$2,420
D	10" X 6" CONCENTRIC REDUCER HDPE	6	EA	3.1	21	26.40			300.00	10.00	$560		$1,800	$60	$2,420
D	8" X 6" CONCENTRIC REDUCER HDPE	6	EA	2.7	19	26.40			170.00	10.00	$490		$1,020	$60	$1,570
D	Subcontract Well Drilling/Developing allow.	1	ea					100,000				$100,000			$100,000
	Subtotal / Direct Cost	1	LOT		474	$26.36					12,500	200,000	27,900	2,100	2,500

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CONTRACTO ated in FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #5 FY 07	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	Dbl Swing Gate 10'w	1	ea	20.0	23	21.49			385.00		$490		$390		$880
D	Install Chain Link Fence 7'h, 9gage, w/ 3 strand	86	lf	0.150	15	21.49			11.50		$320		$990		$1,310
D	Ground rods (fence & gate)	2	ea	1.5	3	21.49			20.00		$70		$40		$110
D	#4 bare cu wire (fence & gate grounding)	88	lf	0.010	1	21.49			0.27		$20		$20		$40
D	Ground clamps	36	ea	0.15	6	21.49			4.00		$130		$140		$270
D	Concrete pad for well & pump	4	cy	4.7	20	21.49			151.00	1.61	$430		$560	$10	$1,000
D	Concrete pad for elect	1	cy	5.0	6	21.49			151.00	1.61	$120		$150		$270
D	Watt hour meter	1	ea	1.0	1	22.66			2,350.00		$30		$2,350		$2,380
D	20A Duplex receptacles	1	ea	0.49	1	22.66			50.30		$10		$50		$60
D	1 5/8" Unistrut channel	50	lf	0.19	11	22.66			3.30		$250		$170		$420
D	Terminations #2	5	ea	0.330	2	22.66			3.40		$40		$20		$60
D	Terminations #6	1	ea	0.270	0.3	22.66			2.00		$10				$10
D	Terminations #8	2	ea	0.220	1	22.66			1.85		$10				$10
D	Terminations #12	2	ea	0.15	0.3	22.66			1.25		$10				$10
D	Terminations #2/0	2	ea	0.50	1	22.66			4.15		$30		$10		$40
D	Distribution Panel 100A	1	ea	8.0	9	22.66			138.00		$210		$140		$350
D	100w fixture w/ photocell	1	ea	1.5	2	22.66			632.50		$40		$630		$670
D	1 1/4" conduit stanchion	10	lf	0.18	2	22.66			1.55		$50		$20		$70
D	1/x #12 cu wire	100	lf	0.01	1	22.66			0.07		$30		$10		$40
D	1/c #12 terminations	2	ea	0.15	0	22.66			1.25		$10				$10
D	Heat tracing	100	lf	0.10	11	26.40			2.00		$300		$200		$500
D	4" flow control valve	1	ea	4.5	5	26.40			2,850.00		$140		$2,850		$2,990
D	4" magnet flow meter	1	ea	4.0	5	26.40			4,800.00		$120		$4,800		$4,920
D	Surge arrestors	8	ea	1.1	10	26.40			100.00		$270		$800		$1,070
D	3" orifice plast 316 stl.	1	ea	1.9	2	26.40			124.00		$60		$120		$180
D	4" pipe cs	6	lf	0.17	1	26.40			6.56		$30		$40		$70
D	3" pipe cs	6	lf	0.13	1	26.40			4.61		$20		$30		$50
D	4" pipe pvc	70	lf	0.16	13	26.40			2.10		$340		$150		$490
D	3" pipe pvc	80	lf	0.13	12	26.40			1.45		$310		$120		$430
D	2" pipe pvc	80	lf	0.11	10	26.40			0.70		$270		$60		$330
D	4" 90 degree ell cs sch 40	2	ea	2.7	6	26.40			9.63		$160		$20		$180
D	3" 90 degree ell cs sch 40	2	ea	1.6	4	26.40			5.75		$90		$10		$100
D	3" 45 degree ell cs sch 40	1	ea	1.6	2	26.40			4.54		$50		$5		$55
D	4" tee cs shd 40	1	ea	4.1	5	26.40			15.72		$120		$20		$140
D	4"x3" weldolet	1	ea	2.6	3	26.40			14.87		$80		$10		$90
D	4" cap cs	1	ea	1.3	1	26.40			8.00		$40		$10		$50
D	1/2" sockolet 3000# cs	5	ea	0.56	3	26.40			2.65		$80		$10		$90
D	1/4" sockolet 3000# cs	1	ea	0.23	0.3	26.40			1.50		$10		$2		$12
D	1" sockolet 3000# cs	1	ea	0.06	0.1	26.40			3.45				$3		$3
D	4" adapter cs to pvc	1	ea	0.70	1	26.40			11.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.50	1	26.40			9.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.33	0.4	26.40			4.50		$10		$5		$15
	Subtotal Direct Cost	1	LOT		201	$24.35					4,900		15,000		$19,900

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #5 FY 07	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	1"x3" pipe nipples	1	ea	0.80	1	26.40			4.12		$20		$4		$24
D	1"x6" pipe nipples	1	ea	0.80	1	26.40			5.60		$20		$10		$30
D	1/2"x6" pipe nipples	1	ea	0.80	1	26.40			3.75		$20		$4		$24
D	1/2"x3" pipe nipples	3	ea	0.70	2	26.40			3.75		$60		$11		$71
D	1/4"x3" pipe nipples	1	ea	0.70	1	26.40			2.12		$20		$2		$22
D	1/2" sockegtweld 90 degree ell	1	ea	0.80	1	26.40			8.35		$20		$8		$28
D	4" 150# flange	9	ea	1.6	17	26.40			11.83		$450		$106		$556
D	4" 150# flange	3	ea	1.6	6	26.40			9.17		$150		$28		$178
D	3" pvc she 80 caps	1	ea	0.29	0	26.40			3.20		$10		$3		$13
D	4" pvc she 80 caps	1	ea	0.38	0	26.40			3.70		$10		$4		$14
D	4" 150# butterfly valve wafer	1	ea	1.54	2	26.40			54.00		$50		$54		$104
D	3" 150# butterfly valve wafer	1	ea	1.33	2	26.40			54.00		$40		$54		$94
D	1" ball valve	2	ea	0.84	2	26.40			81.60		$50		$163		$213
D	1/2" ball valve	1	ea	0.84	1	26.40			51.00		$30		$51		$81
D	1/4" gate valve	2	ea	0.84	2	26.40			56.00		$50		$112		$162
D	Level transmitter		ea	4.6		26.40			1,500.00						
D	Pressure Indicator transmitter		ea	7.9		26.40			950.00						
D	Flow Indicating Controller		ea	13.0		26.40			1,800.00						
D	Pre Engr. Bldg. EW	1	ea	60.0	69	22.43			5,672.21	500.00	$1,540		$5,670	$500	$7,710
	HVAC														
D	electric heaters 400cfm 3.3kw	1	ea	4.0	5	22.66			600.00		$100		$600		$700
D	fan, intake louver, exhaust & cntrl.	1	ea	8.0	9	22.66			843.50		$210		$840		$1,050
	WELL PUMP														
D	pump submersed 40hp 400gpm, equip & assem	2	ea	80.0	183	26.40			28,000.00	2,500.00	$4,830		$56,000	$5,000	$65,830
D	HYDROSTATIC TESTING	1	ls	100.0	114	26.40					$3,020				$3,020
D	ELECTRICAL TESTING	1	ls	100.0	114	22.66					$2,590				$2,590
D	ACCEPTANCE TEST	1	ls	80.0	92	22.66					$2,070				$2,070
	Subtotal Direct Cost	1	LOT		624	$24.68					15,400		63,700	5,500	$84,600

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #5 FY 07		QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Project Staffing	Each														
	1. Project Manager			hr	1.0		45.19									
	2. Project Superintendent	0.25	293	hr	1.0	293	31.92					$9,350				$9,350
	3. Project Engineer	0.25	293	hr	1.0	293	20.71					$6,070				
	4. Safety Engineer	0.25	293	hr	1.0	293	19.75					$5,780				$5,780
	5. QA/QC Engineer	0.25	293	hr	1.0	293	18.51					$5,420				$5,420
	6. Office Administration			hr	1.0		15.75									
	7. Contract Administration/ Scheduler			hr	1.0		27.10									
	8. Clerical			hr	1.0		14.00									
	TOTAL					1,172	22.72					$26,620				$26,620
			1	LOT		2,345	$22.70					53,200				$53,200

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CONTRACTOR - Stated in FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C6010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #6 FY08	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION														
	Insurance Certificates, List of Sub-Tier Contractors Procurement Documents, Safe Work Plans, QA/QC Plan, Project Execution Plan, Construction and Engineering Documentation, Acceptable baseline Schedules														
	Duration 2 wks	1	LS	40.0	80	50.00					$4,000				$4,000
	MOBILIZATION														
	S/C Office Trailer	7	mo					300.00				$2,092			$2,092
	Survey and Engineering Controls	1	LS					3,000.00	500.00	500.00		$3,000	$500	$500	$4,000
D	Install Utilities	1	LS	40.0	40	22.69			1,000.00	500.00	$900		$1,000	$500	$2,400
D	Other misc. requirements as required.	1	LS	80.0	80	22.69			500.00	500.00	$1,800		$500	$500	$2,800
										6,360.00					
	Total				120						$2,700	$5,092	$2,000	$1,500	$11,292
	DEMOBILIZATION														
D	Complete Punch List items.	1	LS	20.0	20	22.69					$500				$500
D	Remove Trailer and Change Facilities.	1	LS	20.0	20	22.69					$500				$500
D	Remove all Utilities.	1	LS	20.0	20	22.69					$500				$500
mC	Decontaminate Equipment.	1	LS	10.0	10	22.69					$200				$200
D	Loadout contractors equipment.	1	LS	20.0	20	22.69					$500				$500
D	Other area requirements.	1	LS	10.0	10	22.69					$200				$200
	Total				100						$2,400				$2,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #6 FY08	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Site Prep														
D	Survey (3) man team	1	ac					3,000.00				$3,000			$3,000
D	Plastic warning tape & Safety Fencing	3000	lf	0.13	453	21.49			0.77		$9,730		$2,310		$12,040
D	Gravel erosion control allowance	35	cy	0.30	12	21.49			10.15	7.60	$260		$360	$270	$890
	Site Clearing														
D	Clear and grub	1	ac	48.0	55	21.49				1,125.00	$1,180			$1,130	$2,310
	Grading & Excavation														
	Access Road(s) 600'EWea & 500'IW ea														
D	Site grading	500	cy	0.10	57	21.49				2.31	$1,230			$1,160	$2,390
D	Excavation	489	cy	0.20	112	21.49				4.38	$2,400			$2,140	$4,540
D	Backfill	244	cy	0.20	56	21.49					$1,200				$1,200
D	Geotextile filter fabric	1467	sy	0.01	17	21.49			1.35		$360		$1,980		$2,340
D	Gravel road	1467	sy	0.08	131	21.49			1.20	0.35	$2,810		$1,760	$510	$5,080
D	Vibrating compaction	244	cy	0.10	28	21.49				0.26	$600			$60	$660
D	Prepare & roll sub-base	1467	sy	0.05	84	21.49				0.44	$1,800			$650	$2,450
	Pipe Trench 300' EW & 600' IW														
D	Trenching	375	cy	0.05	21	21.49				3.00	$460			$1,130	$1,590
D	Backfill	375	cy	0.15	64	21.49				3.00	$1,380			$1,130	$2,510
D	Compaction	375	cy	0.009	4	21.49				0.26	$80			$100	$180
	Well House(s)														
D	Excavate	45	cy	0.15	8	21.49				3.00	$170			$140	$310
D	Backfill	30	cy	0.25	9	21.49				4.00	$180			$120	$300
D	Dispose excess soil	30	cy	0.08	3	21.49				4.00	$60			$120	$180
D	Existing Road Repair allowance		ls	40.0		21.49			1,500.00	500.00					
	Culvert Pipe														
D	Culvert pipes	250	lf	0.20	57	21.49			5.20		$1,230		$1,300		$2,530
D	Backfill culvert pipes	100	cy	1.50	172	21.49				1.07	$3,690			$110	$3,800
D	Catch Basin	1	ea	24.0	27	21.49			650.00	216.00	$590		$650	$220	$1,460
	Guard Rail														
D	Guard rail corrugated steel, galv. steel posts	250	lf	0.10	29	21.49			9.45	0.55	$610		$2,360	$140	$3,110
D	End sections, galv flared	4	ea	0.65	3	21.49			38.50	9.25	$60		$150	$40	$250
	Subtotal Direct Cost				1401						$30,080	$3,000	$10,870	$9,170	$53,120

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #6 FY08	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	reinforcing	1	ls	38.0	43	22.43			1,084.00	112.00	$980		$1,080	$110	$2,170
D	formwork	500	sf	0.20	114	22.43			1.00	0.20	$2,570		$500	$100	$3,170
D	exjoint	20	lf	0.10	2	22.43			0.40		$50		$10		$60
D	water stop	27	lf	0.10	3	22.43			0.50		$70		$10		$80
D	concrete matl 4000#	15	cy	1.0	17	22.43			70.00	4.00	$380		$1,050	$60	$1,490
D	anchor bolts	1	ls	4.0	5	22.43			40.00		$100		$40		$140
D	grout	1	ls	8.0	9	22.43			50.00		$210		$50		$260
D	finish concrete	275	sy	0.03	9	22.43				0.03	$210			$10	$220
D	precast concrete splash blocks	2	ea	0.25	1	22.43			20.00		$10		$40		$50
D	special coatings	73	sf	0.08	7	22.43			0.32	0.50	$150		$20	$40	$210
D	special sealant & b/rod	10	lf	0.20	2	22.43			4.00		$50		$40		$90
	Subtotal Direct Cost	1	LOT		213	$22.52					$4,800		$2,800	$300	$7,900

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CONTRACTOI ated in FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #6 FY08	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Auger Truck	50	hr	1.0	57	22.66				75.00	$1,300			$3,750	$5,050
D	Bucket Truck	40	hr	1.0	46	22.66				75.00	$1,040			$3,000	$4,040
D	45' Class II pole	2	ea	12.1	28	22.66			373.20		$630		$746		$1,376
D	#1/0 AL Power cable	2	clf	2.0	5	22.66			42.62		$100		$85		$185
D	Ground Cu wire	100	lf	0.05	6	22.66			0.44		$130		$44		$174
D	Messenger attachments	8	ea	3.3	30	22.66			69.75		$680		$558		$1,238
D	Guy wire typical	2	ea	5.0	11	22.66					$260				$260
D	Disconnect switch 480v 3ph	2	ea	8.0	18	22.66			250.00	50.00	$410		$500	$100	$1,010
D	Combo starter NEMA 1 enclosure	2	ea	10.0	23	22.66			600.00	50.00	$520		$1,200	$100	$1,820
D	Transformer 13.2KVA 480v IPH pole mounted	6	ea	20.0	137	22.66			900.00	100.00	$3,110		$5,400	$600	$9,110
D	Variable speed AC drive 40hp 480v 60Hz	1	ea	23.0	26	22.66			8,000.00	50.00	$600		$8,000	$50	$8,650
D	Transformer Mini power 15KVA 480v 3ph	2	ea	16.0	37	22.66			3,150.00	50.00	$830		$6,300	$100	$7,230
D	Fuses	8	ea	0.40	4	22.66			100.00		$80		$800		$880
D	3" conduit rgs	160	lf	0.25	46	22.66			4.50	0.50	$1,040		$720	$80	$1,840
D	3" conduit fittings	2	ls	10.0	23	22.66			400.00		$520		$800		$1,320
D	1 1/2" conduit rgs	100	lf	0.10	11	22.66			1.70	0.40	$260		$170	$40	$470
D	1 1/2" conduit fittings	2	ls	8.0	18	22.66			100.00		$410		$200		$610
D	3/4" conduit rgs	300	lf	0.06	21	22.66			0.70	0.10	$470		$210	$30	$710
D	3/4" conduit fittings	2	ls	20.0	46	22.66			190.00		$1,040		$380		$1,420
D	3/4" liquid tight	50	lf	0.08	5	22.66			2.50		$100		$125		$225
	INSTRUMENTATION														
D	Flowmeter, w/ element, transducer set, flow computer, analog cord, handheld programmer, & flow meter programming	2	ea	11.0	25	22.66			5,765.00		$570		$11,530		$12,100
D	Pressure indicating transmitter	2	ea	0.50	1	22.66			205.00		$30		$410		$440
D	#16 awg contrl cable	150	lf	0.02	3	22.66			0.38		$80		$57		$137
D	6.25/125uM Fiber Optic Cable dual window(850/1300),loose buffer,gel fill	1200	lf	0.010	14	22.66			0.73		$310		$876		$1,186
D	DCS Components, incls, analog input, output modules, discrete input module, transnet term. interface board, contr. mod.., encl's sub panel programming etc.	2	ea	36.0	82	22.66			7,338.00		$1,870		$14,676		$16,546
D	Instrument Calibration/Testing	2	ls	10.0	23	22.66			100.00		$520		$200		$720
D	Fiber optic cable bulk plenum	1.2	CLF	3.5	5	22.66			375.00		$110		$450		$560
D	Fiber optic jumper	2	LS	6.0	14	22.66			500.00		$310		$1,000		$1,310
D	Fiber optic pigtail	2	LS	6.0	14	22.66			425.00		$310		$850		$1,160
D	Fiber optic connector	2	LS	6.0	14	22.66			300.00		$310		$600		$910
D	Fiber optic finger splice	2	LS	6.0	14	22.66			500.00		$310		$1,000		$1,310
D	Transceiver	2	LS	10.0	23	22.66			800.00		$520		$1,600		$2,120
D	Multi-channel rack enclosure 10 mods.	2	LS	20.0	46	22.66			1,200.00		$1,040		$2,400		$3,440
D	Fiber optic patch panel 12 ports	2	LS	12.0	27	22.66			1,000.00		$620		$2,000		$2,620
	Subtotal Direct Cost	1	LOT		901	$22.63					20,400		63,900	7,900	$92,200

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CONTRACTOR - Stated in FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #6 FY08	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Piping Installation														
D	8" pipe HDPE	600	lf	0.018	12	26.40			6.74		$330		$4,040		$4,370
D	8" flange adapter HDPE	8	ea	1.6	15	26.40			88.00	10.00	$390		$700	$80	$1,170
D	8" DI flanges w/ backup ring	8	ea	1.0	9	26.40			40.00	5.00	$240		$320	$40	$600
D	8" DI blind flanges	8	ea	1.0	9	26.40			50.00	5.00	$240		$400	$40	$680
D	Post Indicator Valve	4	ea	8.0	37	26.40			420.00	50.00	$970		$1,680	$200	$2,850
D	Connectioins allowance to existing headers	2	ls	40.0	92	26.40			1,500.00	500.00	$2,420		$3,000	$1,000	$6,420
D	Pipe concrete thrust blocks	10	cy	1.0	11	26.40			65.00	10.00	$300		$650	$100	$1,050
D	10 ga stranded magnetic detectable wire & tapin	6	clf	0.800	5	26.40			8.40		$140		$50		$190
D	plastic warning tape indicating buried pipe	6	clf	0.053	0.4	26.40			3.70		$10		$20		$30
	MECHANICAL PIPING EW														
D	6" steel pipe	100	lf	0.77	89	26.40			22.00		$2,340		$2,200		$4,540
D	6" steel pipe insulate	38	lf	0.32	14	26.40			9.75		$360		$370		$730
D	3" pvc sch 40 drain & ck valves	1	lot	4.0	5	26.40			220.00	60.00	$120		$220	$60	$400
D	winged drain frame & grate 13"sq.	1	ea	2.0	2	26.40			100.00	20.00	$60		$100	$20	$180
D	6" flanged cast iron pipe (4ea @ 5')	20	lf	0.329	8	26.40			12.90		$200		$260		$460
D	6" flange cast iron 90d elbow	4	ea	1.4	6	26.40			29.00		$170		$120		$290
D	Subcontract Well Drilling/Developing allow.	1	ls					100,000				$100,000			$100,000
D	10" HDPE pipe		lf	0.020		26.40			10.47						
D	20" HDPE pipe		lf	0.030		26.40			36.24						
	MECHANICAL PIPING IW														
D	8" PIPE HDPE	600	LF	0.018	12	26.40			6.74		$330		$4,040		$4,370
D	10" PIPE HDPE		LF	0.030		26.40			36.24						
D	4" PIPE HDPE		LF	0.014		26.40			1.82						
D	8" FLANGE ADAPTER HDPE	10	EA	1.6	18	26.40			88.00	10.00	$480		$880	$100	$1,460
D	10" FLANGE ADAPTER HDPE	10	EA	2.0	23	26.40			95.00	10.00	$600		$950	$100	$1,650
D	4" FLANGE ADAPTER HDPE	10	EA	1.0	11	26.40			55.00	10.00	$300		$550	$100	$950
D	10" TO 8" REDUCING TEE HDPE	6	EA	5.0	34	26.40			460.00	10.00	$910		$2,760	$60	$3,730
D	10" X 8" CONCENTRIC REDUCER HDPE	6	EA	3.1	21	26.40			300.00	10.00	$560		$1,800	$60	$2,420
D	10" X 6" CONCENTRIC REDUCER HDPE	6	EA	3.1	21	26.40			300.00	10.00	$560		$1,800	$60	$2,420
D	8" X 6" CONCENTRIC REDUCER HDPE	6	EA	2.7	19	26.40			170.00	10.00	$490		$1,020	$60	$1,570
D	Subcontract Well Drilling/Developing allow.	1	ea					100,000				$100,000			$100,000
	Subtotal Direct Cost	1	LOT		474	$26,36					12,600	200,000	27,900	2,100	2,500

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CONTRACTOI ated in FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #6 FY08	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	Dbl Swing Gate 10'w	1	ea	20.0	23	21.49			385.00		$490		$390		$880
D	Install Chain Link Fence 7'h, 9gage, w/ 3 strand	86	lf	0.150	15	21.49			11.50		$320		$990		$1,310
D	Ground rods (fence & gate)	2	ea	1.5	3	21.49			20.00		$70		$40		$110
D	#4 bare cu wire (fence & gate grounding)	88	lf	0.010	1	21.49			0.27		$20		$20		$40
D	Ground clamps	36	ea	0.15	6	21.49			4.00		$130		$140		$270
D	Concrete pad for well & pump	4	cy	4.7	20	21.49			151.00	1.61	$430		$560	$10	$1,000
D	Concrete pad for elect	1	cy	5.0	6	21.49			151.00	1.61	$120		$150		$270
D	Watt hour meter	1	ea	1.0	1	22.66			2,350.00		$30		$2,350		$2,380
D	20A Duplex receptacles	1	ea	0.49	1	22.66			50.30		$10		$50		$60
D	1 5/8" Unistrut channel	50	lf	0.19	11	22.66			3.30		$250		$170		$420
D	Terminations #2	5	ea	0.330	2	22.66			3.40		$40		$20		$60
D	Terminations #6	1	ea	0.270	0.3	22.66			2.00		$10				$10
D	Terminations #8	2	ea	0.220	1	22.66			1.85		$10				$10
D	Terminations #12	2	ea	0.15	0.3	22.66			1.25		$10				$10
D	Terminations #2/0	2	ea	0.50	1	22.66			4.15		$30		$10		$40
D	Distribution Panel 100A	1	ea	8.0	9	22.66			138.00		$210		$140		$350
D	100w fixture w/ photocell	1	ea	1.5	2	22.66			632.50		$40		$630		$670
D	1 1/4" conduit stanchion	10	lf	0.18	2	22.66			1.55		$50		$20		$70
D	1/x #12 cu wire	100	lf	0.01	1	22.66			0.07		$30		$10		$40
D	1/c #12 terminations	2	ea	0.15	0	22.66			1.25		$10				$10
D	Heat tracing	100	lf	0.10	11	26.40			2.00		$300		$200		$500
D	4" flow control valve	1	ea	4.5	5	26.40			2,850.00		$140		$2,850		$2,990
D	4" magnet flow meter	1	ea	4.0	5	26.40			4,800.00		$120		$4,800		$4,920
D	Surge arrestors	8	ea	1.1	10	26.40			100.00		$270		$800		$1,070
D	3" orifice plast 316 stl.	1	ea	1.9	2	26.40			124.00		$60		$120		$180
D	4" pipe cs	6	lf	0.17	1	26.40			6.56		$30		$40		$70
D	3" pipe cs	6	lf	0.13	1	26.40			4.61		$20		$30		$50
D	4" pipe pvc	70	lf	0.16	13	26.40			2.10		$340		$150		$490
D	3" pipe pvc	80	lf	0.13	12	26.40			1.45		$310		$120		$430
D	2" pipe pvc	80	lf	0.11	10	26.40			0.70		$270		$60		$330
D	4" 90 degree ell cs sch 40	2	ea	2.7	6	26.40			9.63		$160		$20		$180
D	3" 90 degree ell cs sch 40	2	ea	1.6	4	26.40			5.75		$90		$10		$100
D	3" 45 degree ell cs sch 40	1	ea	1.6	2	26.40			4.54		$50		$5		$55
D	4" tee cs shd 40	1	ea	4.1	5	26.40			15.72		$120		$20		$140
D	4"x3" weldolet	1	ea	2.6	3	26.40			14.87		$80		$10		$90
D	4" cap cs	1	ea	1.3	1	26.40			8.00		$40		$10		$50
D	1/2" sockolet 3000# cs	5	ea	0.56	3	26.40			2.65		$80		$10		$90
D	1/4" sockolet 3000# cs	1	ea	0.23	0.3	26.40			1.50		$10		$2		$12
D	1" sockolet 3000# cs	1	ea	0.06	0.1	26.40			3.45				$3		$3
D	4" adapter cs to pvc	1	ea	0.70	1	26.40			11.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.50	1	26.40			9.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.33	0.4	26.40			4.50		$10		$5		$15
	Subtotal Direct Cost	1	LOT		201	$24.35					4,900		15,000		$19,900

CONTRACTOR - Stated in FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #6 FY08	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	1"x3" pipe nipples	1	ea	0.80	1	26.40			4.12		$20		$4		$24
D	1"x6" pipe nipples	1	ea	0.80	1	26.40			5.60		$20		$10		$30
D	1/2"x6" pipe nipples	1	ea	0.80	1	26.40			3.75		$20		$4		$24
D	1/2"x3" pipe nipples	3	ea	0.70	2	26.40			3.75		$60		$11		$71
D	1/4"x3" pipe nipples	1	ea	0.70	1	26.40			2.12		$20		$2		$22
D	1/2" sockegtweld 90 degree ell	1	ea	0.80	1	26.40			8.35		$20		$8		$28
D	4" 150# flange	9	ea	1.6	17	26.40			11.83		$450		$106		$556
D	4" 150# flange	3	ea	1.6	6	26.40			9.17		$150		$28		$178
D	3" pvc she 80 caps	1	ea	0.29	0	26.40			3.20		$10		$3		$13
D	4" pvc she 80 caps	1	ea	0.38	0	26.40			3.70		$10		$4		$14
D	4" 150# butterfly valve wafer	1	ea	1.54	2	26.40			54.00		$50		$54		$104
D	3" 150# butterfly valve wafer	1	ea	1.33	2	26.40			54.00		$40		$54		$94
D	1" ball valve	2	ea	0.84	2	26.40			81.60		$50		$163		$213
D	1/2" ball valve	1	ea	0.84	1	26.40			51.00		$30		$51		$81
D	1/4" gate valve	2	ea	0.84	2	26.40			56.00		$50		$112		$162
D	Level transmitter		ea	4.6		26.40			1,500.00						
D	Pressure Indicator transmitter		ea	7.9		26.40			950.00						
D	Flow Indicating Controller		ea	13.0		26.40			1,800.00						
D	Pre Engr. Bldg. EW	1	ea	60.0	69	22.43			5,672.21	500.00	$1,540		$5,670	$500	$7,710
	HVAC														
D	electric heaters 400cfm 3.3kw	1	ea	4.0	5	22.66			600.00		$100		$600		$700
D	fan, intake louver, exhaust & cntrl.	1	ea	8.0	9	22.66			843.50		$210		$840		$1,050
	WELL PUMP														
D	pump submersed 40hp 400gpm, equip & assem	2	ea	80.0	183	26.40			28,000.00	2,500.00	$4,830		$56,000	$5,000	$65,830
D	HYDROSTATIC TESTING	1	ls	100.0	114	26.40					$3,020				$3,020
D	ELECTRICAL TESTING	1	ls	100.0	114	22.66					$2,590				$2,590
D	ACCEPTANCE TEST	1	ls	80.0	92	22.66					$2,070				$2,070
	Subtotal Direct Cost	1	LOT		624	$24.68					15,400		63,700	5,500	$84,600

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ITEM NO.	Package #6 FY08		QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Project Staffing															
		Each														
	1. Project Manager			hr	1.0		45.19									
	2. Project Superintendent	0.25	293	hr	1.0	293	31.92					$9,350				$9,350
	3. Project Engineer	0.25	293	hr	1.0	293	20.71					$6,070				
	4. Safety Engineer	0.25	293	hr	1.0	293	19.75					$5,780				$5,780
	5. QA/QC Engineer	0.25	293	hr	1.0	293	18.51					$5,420				$5,420
	6. Office Administration			hr	1.0		15.75									
	7. Contract Administration/ Scheduler			hr	1.0		27.10									
	8. Clerical			hr	1.0		14.00									
	TOTAL					1,172	22.72					$26,620				$26,620
			1	LOT		2,349	$22.70					53,200				$53,200

s:\estdept\fy01rebaselinecp\new additional wellsr1.xls

CONTRACTOR - Stated in FY01 DOLLARS

APPENDIX " A"

PROJECT: Additional Wells
ESTIMATE NOC5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

SITE SPECIFIC

EFFICIENCY / MULTIPLIER ANALYSIS

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

PERCENT OF INFLUENCE ON CHART MANHOURS	40%	50%	60%	70%	80%	90%	100%	105%	110%	% OF INFLUENCE	WT'D VALUE	PROD. RESULT
CRAFT SKILL (NOTE 1)	POOR			FAIR			STD	V.GOOD	XCELLENT	100.0%	12.0%	0.12
CRAFT AVAIL.(NOTE 1)		POOR		FAIR			STD			100.0%	8.0%	0.08
CLIMATE (NOTE 2)	SEVERE	ICE/SNOW			RAIN		+40 TO +85			80.0%	20.0%	0.16
PLANT ELEVATION		OVER 10,000FT			5,000' TO 10,000 FT		UNDER 5,000 FT			100.0%	5.0%	0.05
WORK SPACE				200 SF	250 SF	300 SF	350 SF			100.0%	10.0%	0.1
WORK WEEK	<---- MULTIPLE SHIFTS-											
50 HOUR WORK WEEK	//////////	//////////	//////////				4-10s / 5-8s			100.0%	15.0%	0.15
	//// MULTIPLE-SHIFT ////////			OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS				0.0%	0.0%	0
60 HOUR WORK WEEK	//////////	//////////	OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS					0.0%	0.0%	0
SHIFTWORK 2ND SHIFT 3RD SHIFT			3RD SHIFT		2ND SHIFT		OR ONE SHIFT ONLY			100.0% 100.0%	3.0% 5.0%	0.03 0.05
PROJECT SIZE					400M MH AND UP	300M TO 400M MH	200M TO 300M MH	200M MH OR LESS		100.0%	4.0%	0.04
PLANT TYPE				REVAMP ONLY	REVAMP & NEW	NEW IN EXIST PLT	GRASS ROOTS			90.0%	8.0%	0.072
AREA/UNION INFLUENCE	STRONG		MILD		SOME		NONE			60.0%	10.0%	0.06
											100.0%	91.2%

NOTES.....
1. TURNOVER HAS BEEN CONSIDERED
2. FOR EXTERIOR WORK ONLY

EFFICIENCY (AS A % OFF CHART MANHOURS) 91.2%

MULTIPLIER - (TO BE APPLIED TO CHART M.H.'S TO OBTAIN SITE M.H.'S) 1.10

EFFICIENCY FACTORS

PROJECT: Additional Wells
ESTIMATE NO. C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

Fluor Fernald, Inc.

EXAMPLE:

STANDARD CHART MANHOURS =	NET	100
EFFICIENCY FACTORS:		
* SITE SPECIFIC (SEE APPENDIX A)	10%	10.0
S/T = BASE UNIT MANHOURS		110
OVERTIME PRODUCTIVITY FACTOR (SEE DETAIL WORKSHEET BACK-UP)	0.00%	0
		110
* TASK SPECIFIC (confined space, high elevation, congestion, etc.)	0.0%	0
		110

* PPE SPECIFIC (Based on current data and estimating knowledge)

	PPE LEVEL									
	D		Mod."D"		Mod. "C"		C		C+	
PRODUCTIVITY HOURS		MH's	MULTIPLER	MH's	MULTIPLER	MH's	MULTIPLER	MH's	MULTIPLER	MH's
(AS A %) / ADD MH's	4.00%	4	28.00%	31	66.00%	73	74.00%	81	96.00%	106
(AS A MULTIPLIER)/TOTAL HRS	1.04	114.4	1.28	140.8	1.66	182.6	1.74	191.4	1.96	215.6
TOTAL MULTIPLIER w/SITE PROD.	1.144		1.408		1.826		1.914		2.156	

NOTE : Use the Default Productivity Factor of 'mC' for working in a contaminated area if the Safety Level cannot be determined.

(SEE FD FERNALD ESTIMATING SERVICES REFERENCE MANUAL IM-6006 8.10)

Total hours worked in a specific PPE level divided by 10 hour working days = (PPE) ManDays to determine material cost of PPE's.
(SEE APPENDIX C - HEALTH PHYSICS)

11.0	Man Days	14.0	Man Days	18.0	Man Days	19.0	Man Days	22.0	Man Days

THESE EFFICIENCY FACTORS WERE APPLIED INDIVIDUALLY THROUGHOUT THE ESTIMATE AT A TASK SPECIFIC LEVEL, TO OBTAIN A MORE ACCURATE ACCOUNT OF OVERALL EFFICIENCY IMPACT DUE TO PPE REQUIREMENTS IN HANDLING CONTAMINATED AND HAZARDOUS WASTE.

EFFICIENCY FACTORS

PROJECT: Additional Wells
ESTIMATE NO. C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

PPE MULTIPLIER DEVELOPEMENT

		D	mD	mC	C	C+
CREW SIZE & MAKE-UP	STANDARD	7	7	7	7	7
	WORKER-BUDDY	0	0	0	0	0
	SUPPORT TEAM	0	0	0	0	0
	TOTAL CREW	7	7	7	7	7
CREW SIZE RATIO		1.00	1.00	1.00	1.00	1.00
AVAILABLE WORK TIME FACTOR		0.96	0.78	0.7	0.7	0.68
PPE LABOR PRODUCTIVITY FACTOR		1	1	0.86	0.82	0.75
NET PRODUCTIVITY RATIO		0.96	0.78	0.602	0.574	0.51
NET PRODUCTIVITY MULTIPLIER		**1.04**	**1.28**	**1.66**	**1.74**	**1.96**

These factors were based on Tables 6.1 and 6.2, Moderate Work Efforts, 66F to 85F temperature of 'Hazardous Waste Cost Control' by R.A.Seig.
Modifications were made to reflect a 10 hour work day and no buddy system or support team for levels D, mC and C.
The worker-buddy and support team members, if required, may be covered under Construction Mgmt. (Rad Techs).

AVAILABLE WORK TIME FACTOR		D	mD	mC	C	C+
TOTAL WORK MINUTES per D ····· 4 - 10's ·····		600	600	600	600	600
ADDITN'L.SITE SAFETY MEETINGS NOT INCLD. IN BASE	QUANTITY	1	1	1	1	1
	MINUTES	25	25	25	25	25
TOTAL		25	25	25	25	25
PPE DON & DOFFING	QUANTITY	0	0	3	3	3
(ADJUST LEVEL D per WORK PLAN)	MINUTES	0	0	15	15	20
TOTAL			0	45	45	60
WORK BREAKS	QUANTITY	N/A	2	2	2	2
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			30	30	30	30
MOBILIZATION - ROUND TRIPS	QUANTITY	N/A	4	4	4	4
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			60	60	60	60
COOLDOWNS PER DAY	QUANTITY	N/A	4	4	4	4
** (4 OUT OF 12 MONTHS) 33.33%	MINUTES	N/A	15	15	15	15
TOTAL			20	20	20	20
AIR TANK REPLACEMENT	QUANTITY	N/A	N/A	N/A	N/A	N/A
	MINUTES	N/A	N/A	N/A	N/A	N/A
TOTAL						
AVAILABLE WORK TIME		575	465	420	420	405
AVAILABLE WORK TIME FACTOR		**0.96**	**0.78**	**0.7**	**0.7**	**0.68**

NOTE: Adjust 'Work Minutes per Day' basis to: 5 - 8's, or leave as 4 - 10's. Any other circumstances, over-ride the minutes per day.

** Assumption based on work performed in May, June, July & August, pro-rating cost over one year. Adjust % to individual circumstances.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

Fluor Fernald, Inc.

PPE"s - PERSONAL PROTECTIVE EQUIPMENT

DESCRIPTION	UNIT	UNIT COST	* NO. OF CHANGE OUTS PER WORKER PER DAY	Man Days (TOTAL HOURS worked in PPE's Div. by WORK HOURS / DAY)			
PPE LEVEL C / C+ / B : F/HF MASK w/RESP.&CART.			*	MAN DAYS	MAT'L.$'s	PPE LEVEL	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	0	$0	C / C+	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	0	$0	C / C+	(DOUBLE PPE)
GLOVE LINER - DISPOSABLE	PR	$0.24	3	0	$0	C / C+	
GLOVE, LASTEX - DISPOSABLE	PR	$0.26	3	0	$0	C / C+	
GLOVE, WORK - DISPOSABLE	PR	$1.02	3	0	$0	C / C+	
APR CARTRIDGES - DISPOSABLE	PR	$6.98	3	0	$0	C / C+	
SUB-TOTAL		$17.42	3		$0		
				$/MD =	$0.00		

PPE LEVEL mC : FULL DRESS w/ FACE SHIELD				MAN DAYS	MAT'L.$'s	PPE LEVEL
LT.WT. DISPOSABLE COVERALLS W/HOOD & BOOTIES	PR	$4.46	3	6	$80	mC
GLOVE LINER - DISPOSABLE	PR	$0.24	3	6	$4	mC
GLOVE, LASTEX - DISPOSABLE	PR	$0.26	3	6	$5	mC
GLOVE, WORK - DISPOSABLE	PR	$1.02	3	6	$18	mC
SUB-TOTAL		$5.98	3		$107	
				$/MD =	$17.83	

SUBCONTRACTOR REQUIRED PURCHASES			QTY. PER WKR.	NO. OF WORKERS	MAT'L.$'s	PPE LEVEL
RUBBER BOOT COVERS-(1)PR.PER WORKER	PR	$12.70	6	0	$0	D/C/B
APR w/HALF FACE MASK - (1) PER WORKER	EA	$22.30	6	0	$0	C
APR w/FULL FACE MASK - (1) PER WORKER	EA	$174.00	6	0	$0	C
SCBA	EA	$1,894.00	2	0	$0	B
COOL VESTS	EA	$137.50	6	0	$0	C/B
THERMO STRIPS	EA	$50.00	6	0	$0	C/B
SUB-TOTAL					$0	

TOTAL PPE's = MAT'L.$'s $100

(FORWARD TO PAGE 2 OF 2)

OTHER PPE's SUCH AS HARD HAT, SAFETY GLASSES/GOGGLES, STEEL TOED SAFETY SHOES, HEARING PROTECTION, ARE CONSIDERED THE SUBCONTRACTORS RESPONSIBILITY AND ARE COVERED IN HIS OVERHEAD EXPENSE. COSTS OF FD FERNALD SUPPLIED PPE's, SUCH AS COTTON COVERALLS, EXCHANGE OF RUBBER BOOT COVERS AND RESPIRATORS FOR CHANGEOUTS AND CLEANING OF SAME IS INCURRED BY FD FERNALD AND COSTS ARE NOT INCLUDED AS PART OF PROJECT COSTS AT THIS TIME.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

--MEDICAL MONITORING --

MEDICAL - PHYSICAL and IN-VIVO MONITORING - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION PHYSICAL (3hrs), IN-VIVO (1hr)	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BASELINE PHYSICALS	1	4	5.13	21	$23.62	$480
ANNUAL PHYSICALS	3	4	5.13	62	$23.62	$1,460
EXIT (TERMINATION) PHYSICALS (IN-VIVO)	1	1	5.13	5	$23.62	$120
SUB-TOTAL						$2,060

RADIATION IN-VITRO SURVEILLANCE - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BI-MONTHLY BIOASSAY	21	1	5.13	107	$23.62	$2,540
SUB-TOTAL						$2,540

RANDOM DRUG TESTING

	TESTS	HRS	TOTAL HOURS	AVG. RATE	LABOR $'s	
	20	2	40	$23.62	$900	
NO. OF WKRS. TESTED	TESTING DAYS PER YR.	AVG. NO. OF TESTS PER DAY	CHANCE/ DAY FOR TEST	NO. OF WKRS. FOR THIS ESTIMATE	CHANCES /DAY FOR TEST FOR PROJECT	CONSTR WORKING DAYS
2340	226	10	0.004274	6	0.0256	789

		LABOR $'s THRU SAFETY	LABOR $'s
WORK DELAYS CAUSED BY MONITORING	0.0%	$863,100	$0
			LABOR $'s
WORK DELAYS CAUSED BY RAD CHECKING	0.0%	$863,100	$0

	TOTAL LABOR	TOTAL MAT'L.	GRAND TOTAL
TOTAL HEALTH PHYSICS	$5,500	$100	$5,600

(FORWARD TO ESTIMATE SUMMARY SHEET)

ACTIVITY DURATIONS

Fluor Fernald, Inc.

PROJECT: Additional Wells
ESTIMATE NO.: C5010401 R1
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 09-Aug-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC2

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
Package #1	01-May-01	01-Mar-03	15-Jun-03	29-Sep-03	7	MONTHS
Package #2	01-May-01	01-Mar-04	15-Jun-04	29-Sep-04	7	MONTHS
Package #3	01-May-01	01-Mar-05	15-Jun-05	29-Sep-05	7	MONTHS
Package #4	01-May-01	01-Mar-06	15-Jun-06	29-Sep-06	7	MONTHS
Package #5	01-May-01	01-Mar-07	15-Jun-07	29-Sep-07	7	MONTHS
Package #6	01-May-01	01-Mar-08	15-Jun-08	29-Sep-08	7	MONTHS
TOTAL					42	MONTHS

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
OPERATIONS					0	MONTHS

DATE of EST. to MID-POINT ACTIVITY DURATION	
0	MONTHS

ACTIVITY DURATION IS USED IN DETERMINING NUMBER of WORKERS for CERCLA/SAT TRAINING HOURS and HEALTH PHYSICS COSTS.

TRAINING

PROJECT:	Additional Wells	DATE:	09-Aug-01
ESTIMATE #:	C5010401 R1	ESTIMATOR:	Wagner
CLIENT:	DOE	LOCATION:	Fernald
WBS #:	1.1.E.F	TASK #:	EFEC2

Fluor Fernald, Inc.

Site Access Training Requirements (RM-0055 Rev. 1 Effective: 09/30/99)

Training Requirements	Non-Hazardous	Occasional Site Worker	General Site Worker		
Access Area	Administrative Support Area	Controlled Area	Contamination Compound	Frequency	
	8 Hour	24 Hour Hazwoper	40 Hour Hazwoper		
General Employee Training	X	X	X	Annually	
Site Worker Training		X	X	One Time	
Rad. Worker I		X		Biennially	
Rad. Worker II			X	Biennially	
Respirator Training *			X	Annually	
Respirator Fit Testing *			X	Annually	
Supervised Field Experience	0 HR	8 HR	24 HR	One time →	*On the Job*
Site Worker Refresher		X	X	Annually ⇨	4 Hour
Rad. Worker I Retraining		X		Every 2 years ⇨	4 Hour
Rad. Worker II Retraining			X	Every 2 years ⇨	8 Hour

Additional Training	HRS	No. of Workers	Total Hours
Job Specific Training =	2	7	14
Fire Watch Training =	1	2	2
Lead Worker Training =	4	0	0
Lock out / Tag out Training =	8	0	0
Rigging Training =	24	0	0
Scaffold Training =	16	0	0

DURATION 42 Month(s)

Average Rate $ 23.62

Number of General Site Worker(s) 5

Number of Occasional Site Worker(s) 0

Number of Non-Hazardous Worker(s)

Total Training Hours 262

General Site Worker Training Cost	$5,819
Occasional Site Training Cost	$0
Non-Hazardous Training Cost	$0
Additional Training Cost	$378
Total Training Cost =	$6,197

* = All employees classified as General Site Worker must initially take respirator training. The annual requirement for the repeat of training and the fit test frequency requirements are only needed by those employees that are required to wear a respirator.

EFEC3

WASTE STORAGE AREA EXTRACTION SYSTEM

09/06/2001
3:12 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC3
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: BUYCON **BUYER/CONTRACTS ADMN** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	197.4	80.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	197.4	278.1	278.1	278.1	278.1	278.1	278.1	278.1	278.1	278.1
Yr Total Cost:	8,272	3,556	0	0	0	0	0	0	0	0
Cum Total Cost:	8,272	11,828	11,828	11,828	11,828	11,828	11,828	11,828	11,828	11,828

Resource: CNSCOD **CONSTRUCTION COORD** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	714.0	159.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	714.0	873.9	873.9	873.9	873.9	873.9	873.9	873.9	873.9	873.9
Yr Total Cost:	22,662	5,341	0	0	0	0	0	0	0	0
Cum Total Cost:	22,662	28,004	28,004	28,004	28,004	28,004	28,004	28,004	28,004	28,004

Resource: CNSENG **CONSTRUCTION ENG** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1.1	165.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	1.1	166.7	166.7	166.7	166.7	166.7	166.7	166.7	166.7	166.7
Yr Total Cost:	60	9,500	0	0	0	0	0	0	0	0
Cum Total Cost:	60	9,560	9,560	9,560	9,560	9,560	9,560	9,560	9,560	9,560

Resource: CNSMGR **CONSTRUCTION MGR** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	714.0	79.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	714.0	793.8	793.8	793.8	793.8	793.8	793.8	793.8	793.8	793.8
Yr Total Cost:	44,275	5,209	0	0	0	0	0	0	0	0
Cum Total Cost:	44,275	49,484	49,484	49,484	49,484	49,484	49,484	49,484	49,484	49,484

INCLUDES ESCALATION COSTS

09/06/2001
3:12 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC3
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: DRFCAD **DRAFTER/CAD OPERATOR** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	269.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	269.0	269.0	269.0	269.0	269.0	269.0	269.0	269.0	269.0	269.0
Yr Total Cost:	8,391	0	0	0	0	0	0	0	0	0
Cum Total Cost:	8,391	8,391	8,391	8,391	8,391	8,391	8,391	8,391	8,391	8,391

Resource: ENGCVL **ENGINEER CIVIL** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	459.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	459.5	459.5	459.5	459.5	459.5	459.5	459.5	459.5	459.5	459.5
Yr Total Cost:	24,988	0	0	0	0	0	0	0	0	0
Cum Total Cost:	24,988	24,988	24,988	24,988	24,988	24,988	24,988	24,988	24,988	24,988

Resource: ENGELE **ENGINEER ELECTRICAL** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	60.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	60.6	60.6	60.6	60.6	60.6	60.6	60.6	60.6	60.6	60.6
Yr Total Cost:	3,172	0	0	0	0	0	0	0	0	0
Cum Total Cost:	3,172	3,172	3,172	3,172	3,172	3,172	3,172	3,172	3,172	3,172

Resource: ENGINR **ENGINEER** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,837.3	199.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	1,837.3	2,036.6	2,036.6	2,036.6	2,036.6	2,036.6	2,036.6	2,036.6	2,036.6	2,036.6
Yr Total Cost:	126,335	14,421	0	0	0	0	0	0	0	0
Cum Total Cost:	126,335	140,756	140,756	140,756	140,756	140,756	140,756	140,756	140,756	140,756

INCLUDES ESCALATION COSTS

09/06/2001
3:12 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC3
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: ENSREP **ENVIR SCIENCE REP** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	406.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	406.8	406.8	406.8	406.8	406.8	406.8	406.8	406.8	406.8	406.8
Yr Total Cost:	17,068	0	0	0	0	0	0	0	0	0
Cum Total Cost:	17,068	17,068	17,068	17,068	17,068	17,068	17,068	17,068	17,068	17,068

Resource: FIELDSUB **FIELD SUBS** **EOC:** SUBCONTRACTORS
Res Dept: 952 **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	926,865.1	427,084.9	0.0	0.0	0.0	821,450.0	0.0	0.0	0.0	0.0
Cum Units:	926,865.1	1,353,950.0	1,353,950.0	1,353,950.0	1,353,950.0	2,175,400.0	2,175,400.0	2,175,400.0	2,175,400.0	2,175,400.0
Yr Total Cost:	926,865	438,616	0	0	0	942,158	0	0	0	0
Cum Total Cost:	926,865	1,365,481	1,365,481	1,365,481	1,365,481	2,307,639	2,307,639	2,307,639	2,307,639	2,307,639

Resource: LABTEC **LAB TECH** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	51.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	51.5	51.5	51.5	51.5	51.5	51.5	51.5	51.5	51.5	51.5
Yr Total Cost:	1,430	0	0	0	0	0	0	0	0	0
Cum Total Cost:	1,430	1,430	1,430	1,430	1,430	1,430	1,430	1,430	1,430	1,430

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: 952 **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	14,842.0	3,976.0	0.0	0.0	0.0	18,846.0	0.0	0.0	0.0	0.0
Cum Units:	14,842.0	18,818.0	18,818.0	18,818.0	18,818.0	37,664.0	37,664.0	37,664.0	37,664.0	37,664.0
Yr Total Cost:	14,842	4,083	0	0	0	21,615	0	0	0	0
Cum Total Cost:	14,842	18,925	18,925	18,925	18,925	40,541	40,541	40,541	40,541	40,541

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC3
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: PJCEST **ESTIMATOR** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	38.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3	38.3
Yr Total Cost:	2,125	0	0	0	0	0	0	0	0	0
Cum Total Cost:	2,125	2,125	2,125	2,125	2,125	2,125	2,125	2,125	2,125	2,125

Resource: QACENG **QA ENGINEER** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	82.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	82.4	82.4	82.4	82.4	82.4	82.4	82.4	82.4	82.4	82.4
Yr Total Cost:	3,788	0	0	0	0	0	0	0	0	0
Cum Total Cost:	3,788	3,788	3,788	3,788	3,788	3,788	3,788	3,788	3,788	3,788

Resource: QACTEC **QA/QC TECH** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	57.9	80.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	57.9	138.6	138.6	138.6	138.6	138.6	138.6	138.6	138.6	138.6
Yr Total Cost:	1,789	2,621	0	0	0	0	0	0	0	0
Cum Total Cost:	1,789	4,410	4,410	4,410	4,410	4,410	4,410	4,410	4,410	4,410

Resource: RADTEC **RAD TECH** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	457.1	19.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	457.1	476.7	476.7	476.7	476.7	476.7	476.7	476.7	476.7	476.7
Yr Total Cost:	15,578	703	0	0	0	0	0	0	0	0
Cum Total Cost:	15,578	16,281	16,281	16,281	16,281	16,281	16,281	16,281	16,281	16,281

INCLUDES ESCALATION COSTS

09/06/2001
3:12 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC3
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: S&HTEC **SAFETY TECH** **EOC:** **LABOR**
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	228.1	80.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	228.1	308.8	308.8	308.8	308.8	308.8	308.8	308.8	308.8	308.8
Yr Total Cost:	6,596	2,454	0	0	0	0	0	0	0	0
Cum Total Cost:	6,596	9,050	9,050	9,050	9,050	9,050	9,050	9,050	9,050	9,050

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	5,575.1	866.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	5,575.1	6,441.1	6,441.1	6,441.1	6,441.1	6,441.1	6,441.1	6,441.1	6,441.1	6,441.1
Yr Total Cost:	1,228,235	486,505	0	0	0	963,773	0	0	0	0
Cum Total Cost:	1,228,235	1,714,740	1,714,740	1,714,740	1,714,740	2,678,513	2,678,513	2,678,513	2,678,513	2,678,513

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

FLUOR GLOBAL SERVICES

Memorandum

To:	Jack Hughes,MS52-5 Dick Butterfiled, MS52-5	Date:	April 24, 2001
Location:	Fernald	Reference:	N/A
From:	Ken Kepler, MS80-3	Fernald #:	M:OOTP:(PC/EST)2001-0021
Location:	Springdale	Client:	DOE DE-AC24-01OH20115
Extension:	648-6761	Subject:	WASTE STORAGE EXTRACTION SYSTEM

c: File Record Subject ESTIMATE C5010402
Tom Wagner, MS80-3

Attached are two (2) copies of the estimate for the Waste Storage Extraction System. To request any additional copies of this estimate or for any questions, please contact Tom Wagner on extension 6120.

KGK:TW:hmp
Attachment

Fluor Fernald, Inc.

PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: Waste Storage Extraction System
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010402

BASIS OF ESTIMATE

SUPPORTING DOCUMENTATION:

Verbal Scope	☒	P & ID's	☐	Work Plan	☐
Drawings	☐	Equipment List	☐	Site Walk	☐
Sketches	☐	Specifications	☐	Eng. Mtg.	☐
Flow Diagrams	☐	Written Scope	☒	Estimate	☐

TYPE OF ESTIMATE:

Change Proposal	☐	Government	☐
Plan/Feasibility	☐	Conceptual	☐
Construction	☐	Title I Design	☐
Budget	☒	Independent	☐

BASIS OF ESTIMATE:

Estimate the cost for construction of 6 new extraction wells.
Package #1 FY01/02 = 4EW
Package #2 FY04 = 2EW

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: Waste Storage Extraction System
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010402

ESTIMATE ASSUMPTIONS

EXECUTION:

- ☒ This project is to be performed on a 40-hour week, 10 hours a day.
- ☐ This project is to be performed on a 40-hour week, 8 hours a day.
- ☐ Premium time allowed.

WAGE RATES:

- ☒ Wage rates within this estimate are based on Project Labor Agreement rates, effective October 2000 and are considered FY01 dollars for estimating.
- ☐ Wage rates within this estimate are based on FF Support Contractor FSC 599 wage rates, effective October 1999 have been escalated 3% and are considered FY01 dollars for estimating.
- ☐ Wage rates within this estimate are based on FF FTE Planning Labor Rates FY01.

ENGINEERING:

- ☒ N/A
- ☐ Engineering dollars provided by the Project Engineer.
- ☐ Engineering dollars have been factored in at the standard 12% of the total direct and indirect field costs as per request of Project Engineer.

CONSTRUCTION MANAGEMENT:

- ☒ N/A
- ☐ Construction Management dollars provided by the Project Engineer.
- ☐ Construction Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

PROJECT MANAGEMENT:

- ☒ N/A
- ☐ Project Management dollars provided by the Project Engineer.
- ☐ Project Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

WASTE PROGRAM MANAGEMENT:

- ☒ N/A
- ☐ Waste Program Management dollars provided by the Project Engineer.

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: Waste Storage Extraction System
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010402

PRODUCTIVITY:

A productivity factor has been developed and applied to the unit man-hours derived from MEANS, Richardson, NECA, and or any other published estimating source. See attachment APPENDIX "A" and APPENDIX "B".

ESCALATION:

Escalation costs are excluded from the target estimate. The escalation costs are calculated within the Micro-Frame computer system according to the plan for rebaselining.

UNIT RATES:

Unit man-hours, equipment and material dollars are based on Richardson, MEANS, NECA, and or other published rates.

G & A (HO EXPENSE):

G & A are excluded from the target estimate. The G & A cost are calculated within the Micro-Frame computer system according to the plan for rebaselining.

HEALTH PHYSICS:

See attached APPENDIX "C".

RISK BUDGET:

N/A

Fluor Fernald, Inc.

PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: Waste Storage Extraction System
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010402

ESTIMATE INCLUSIONS & EXCLUSIONS

INCLUSIONS:

- Premobilization & Mobilization.
- Demobilization.
- Labor hours.
- Material dollars.
- Equipment dollars.

EXCLUSIONS:

- Premium time.
- Permits and fees.
- FF G & A (Home Office Expense).
- Construction Management.
- Any second tier subcontract costs.
- Project Management dollars.
- Waste Management dollars.

PROJECT: Waste Storage Extraction System
ESTIMATE #: C5010402
CLIENT: DOE
WBS #: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM DESCRIPTION	M/H	RATE	LABOR $	S/C $	MAT'L $	EQUIP. $	TOTAL $
Package #1 FY01/02	7,229		$168,570	$308,097	$356,110	$45,360	$878,137
Package #2 FY04	5,001		$116,990	$208,097	$176,440	$23,600	$525,127
DIRECT FIELD COSTS TOTAL	**12,230**	**$23.35**	**$285,560**	**$516,194**	**$532,550**	**$68,960**	**$1,403,264**
SUPERVISION - CONTRACTOR	2,354		$53,480				$53,480
SMALL TOOLS & CONSUMABLES	-	-	-		$17,100		$17,100
MISC. EQUIP. RENTAL	-	-	-			$42,800	$42,800
TEMPORARY FACILITIES		-					
TEMPORARY UTILITY HOOK-UP	238	-	$5,600		$3,000		$8,600
JOB CLEAN-UP	550	-	$12,900		$4,300		$17,200
PER DIEM / SUBSISTANCE	-	-	-				
HEALTH PHYS.	69	-	$1,600		$100		$1,700
ADDITIONAL AND JOB SPECIFIC TRAINING	50	-	$1,167				$1,167
GENERAL SITE WORKER TRAINING	161	-	$3,763				$3,763
PAYROLL BURDENS & BENEFITS	-	-	$207,500				$207,500
OVERHEAD & PROFIT	-	-	-	$351,300			$351,300
BOND	-	-	-	$27,400			$27,400
SALES TAX	-	-	-		$33,400	$6,700	$40,100
INDIRECT FIELD COSTS TOTAL	**3,423**		**$286,011**	**$378,700**	**$57,900**	**$49,500**	**$772,111**
DIRECT & INDIRECT FIELD COSTS TOTAL	**15,653**	**$36.51**	**$571,571**	**$894,894**	**$590,450**	**$118,460**	**$2,175,375**

TARGET ESTIMATE **(FY 01 DOLLARS)** **$2,175,375**

ESTIMATE PERFORMED BY ESTIMATING SERVICES

ESTIMATE SUMMARY SHEET

PROJECT: Waste Storage Extraction System

ESTIMATE NO. C5010402

CLIENT: DOE

WBS NO.: 1.1.E.F

FACTORS

DATE: 02-May-01

ESTIMATOR: Wagner

LOCATION: Fernald

TASK NO.: EFEC3

FIXED PRICE $	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
DFC DOLLARS	$285,560	$516,194	$532,550	$68,960	$100	$1,403,364
IFC COST FACTOR	2.0016	–	1.0458	1.6206	–	
BOND + OVERHEAD & PROFIT COST FACTOR	1.2108	1.2108	1.2108	1.2108	1.2108	
SALES TAX	-	-	1.0600	1.0600	1.0600	
DIRECT FIELD COST FACTOR =	**2.4235**	**1.2108**	**1.3422**	**2.0800**	**1.2834**	
BASE ESTIMATE $'s	$692,045	$624,997	$714,804	$143,436	$128	$2,175,409
BASE FACTOR W/ RISK	1.0000	1.0000	1.0000	1.0000	1.0000	
TARGET ESTIMATE FACTOR	**2.4235**	**1.2108**	**1.3422**	**2.0800**	**1.2834**	
FPS TARGET ESTIMATE (FY01 $)	$692,045	$624,997	$714,804	$143,436	$128	$2,175,409

NOTE:

If there are no DFC Equip. $, enter The IFC Equip. $'s into the direct field cost TOTAL and delete IFC Factor in G65.

ESTIMATE SUMMARY SHEET

PROJECT: Waste Storage Extraction System

DATE: 02-May-01

ESTIMATE NO. C5010402

Direct Field Cost w/FACTORS

ESTIMATOR: Wagner

CLIENT: DOE

YES	NO
X	

LOCATION: Fernald

WBS NO.: 1.1.E.F

TASK NO.: EFEC3

PAY ITEM NO.	DESCRIPTION	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
		(ASSIGN OR PRORATE PPE MAT'L.$'s)-->>				50	
	Package #1 FY01/02	168570	308097.0395	356110	45360	50	
		$408,520	$373,040	$477,980	$94,350	$60	$1,353,950
	Package #2 FY04	116990	208097	176440	23600	50	
		$283,520	$251,960	$236,820	$49,090	$60	$821,450
TOTAL DIRECT FIELD COSTS w/FACTORS		(FY01 DOLLARS)					$2,175,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	SUMMARY	QTY	UNIT	MAN-HOURS			COST / UNIT				LABOR	S/C	MAT'L	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C	Mat'l	Equip					
	Package #1 FY01/02				7,229						$168,570	$308,097	$356,110	$45,360	$878,137
	Package #2 FY04				5,001						$116,990	$208,097	$176,440	$23,600	$525,127
	Subtotal Direct Cost	1	LOT		12,230	$23.35					$285,560	$516,194	$532,550	$68,960	$1,403,264

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	Package #1 FY01/02	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION														
	Insurance Certificates, List of Sub-Tier Contractors Procurement Documents, Safe Work Plans, QA/QC Plan, Project Execution Plan, Construction and Engineering Documentation, Acceptable baseline Schedules														
	Duration 2 wks	1	LS	40.0	80	50.00					$4,000				$4,000
	MOBILIZATION														
	S/C Office Trailer	7	mo					300.00				$2,097			$2,097
	Survey and Engineering Controls	1	LS					3000.00	500.00	500.00		$3,000	$500	$500	$4,000
D	Install Utilities	1	LS	40.0	40	22.69			1000.00	500.00	$900		$1,000	$500	$2,400
D	Other misc. requirements as required.	1	LS	80.0	80	22.69			500.00	500.00	$1,800		$500	$500	$2,800
										6360.00					
	Total				120						$2,700	$5,097	$2,000	$1,500	$11,297
	DEMOBILIZATION														
D	Complete Punch List Items.	1	LS	20.0	20	22.69					$500				$500
D	Remove Trailer and Change Facilities.	1	LS	20.0	20	22.69					$500				$500
D	Remove all Utilities.	1	LS	20.0	20	22.69					$500				$500
mC	Decontaminate Equipment.	1	LS	10.0	10	22.69					$200				$200
D	Loadout contractors equipment.	1	LS	20.0	20	22.69					$500				$500
D	Other area requirements.	1	LS	10.0	10	22.69					$200				$200
	Total				100						$2,400				$2,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	Package #1 FY01/02	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Site Prep														
D	Survey (3) man team	1	ac					3000.00				$3,000			$3,000
D	Plastic warning tape & Safety Fencing	3000	lf	0.13	453	21.49			0.77		$9,730		$2,310		$12,040
D	Gravel erosion control allowance	35	cy	0.30	12	21.49			10.15	7.60	$260		$360	$270	$890
	Site Clearing														
D	Clear and grub	1	ac	48.0	55	21.49				1125.00	$1,180			$1,130	$2,310
	Grading & Excavation														
	Access Road(s) 700'EW														
D	Site grading	200	cy	0.10	23	21.49				2.31	$490			$460	$950
D	Excavation	311	cy	0.20	71	21.49				4.38	$1,530			$1,360	$2,890
D	Backfill	156	cy	0.20	36	21.49					$760				$760
D	Geotextile filter fabric	933	sy	0.01	11	21.49			1.35		$230		$1,260		$1,490
D	Gravel road	933	sy	0.08	83	21.49			1.20	0.35	$1,790		$1,120	$330	$3,240
D	Vibrating compaction	156	cy	0.10	18	21.49				0.26	$380			$40	$420
D	Prepare & roll sub-base	933	sy	0.05	53	21.49				0.44	$1,150			$410	$1,560
	Pipe Trench 2100' EW														
D	Trenching	875	cy	0.05	50	21.49				3.00	$1,080			$2,630	$3,710
D	Backfill	875	cy	0.15	150	21.49				3.00	$3,230			$2,630	$5,860
D	Compaction	875	cy	0.01	9	21.49				0.26	$190			$230	$420
	Well House(s)														
D	Excavate	180	cy	0.15	31	21.49				3.00	$660			$540	$1,200
D	Backfill	120	cy	0.25	34	21.49				4.00	$740			$480	$1,220
D	Dispose excess soil	60	cy	0.08	5	21.49				4.00	$120			$240	$360
D	Existing Road Repair allowance		ls	40.0		21.49			1500.00	500.00					
	Culvert Pipe														
D	Culvert pipes	250	lf	0.20	57	21.49			5.20		$1,230		$1,300		$2,530
D	Backfill culvert pipes	100	cy	1.50	172	21.49				1.07	$3,690			$110	$3,800
D	Catch Basin	4	ea	24.0	110	21.49			650.00	216.00	$2,360		$2,600	$860	$5,820
	Guard Rail														
D	Guard rail corrugated steel, galv. steel posts	500	lf	0.10	57	21.49			9.45	0.55	$1,230		$4,730	$280	$6,240
D	End sections, galv flared	6	ea	0.65	4	21.49			38.50	9.25	$100		$230	$60	$390
	Subtotal Direct Cost				1495						$32,130	$3,000	$13,910	$12,060	$61,100

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	Package #1 FY01/02	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	reinforcing	1	ls	38.0	43	22.43			1084.00	112.00	$980		$1,080	$110	$2,170
D	formwork	2000	sf	0.20	458	22.43			1.00	0.20	$10,270		$2,000	$400	$12,670
D	exjoint	80	lf	0.10	9	22.43			0.40		$210		$30		$240
D	water stop	108	lf	0.10	12	22.43			0.50		$280		$50		$330
D	concrete matl 4000#	60	cy	1.0	69	22.43			70.00	4.00	$1,540		$4,200	$240	$5,980
D	anchor bolts	1	ls	4.0	5	22.43			40.00		$100		$40		$140
D	grout	1	ls	8.0	9	22.43			50.00		$210		$50		$260
D	finish concrete	1100	sy	0.03	38	22.43				0.03	$850			$30	$880
D	precast concrete splash blocks	8	ea	0.25	2	22.43			20.00		$50		$160		$210
D	special coatings	292	sf	0.08	27	22.43			0.32	0.50	$600		$90	$150	$840
D	special sealant & b/rod	40	lf	0.20	9	22.43			4.00		$210		$160		$370
	Subtotal Direct Cost	1	LOT		681	$22.47					$15,300		$7,900	$900	$24,100

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	Package #1 FY01/02	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Auger Truck	100	hr	1.0	114	22.66				75.00	$2,590			$7,500	$10,090
D	Bucket Truck	80	hr	1.0	92	22.66				75.00	$2,070			$6,000	$8,070
D	45' Class II pole	4	ea	12.1	55	22.66			373.20		$1,250		$1,493		$2,743
D	#1/0 AL Power cable	4	clf	2.0	9	22.66			42.62		$210		$170		$380
D	Ground Cu wire	200	lf	0.05	11	22.66			0.44		$260		$88		$348
D	Messenger attachments	16	ea	3.3	60	22.66			69.75		$1,370		$1,116		$2,486
D	Guy wire typical	4	ea	5.0	23	22.66					$520				$520
D	Disconnect switch 480v 3ph	4	ea	8.0	37	22.66			250.00	50.00	$830		$1,000	$200	$2,030
D	Combo starter NEMA 1 enclosure	4	ea	10.0	46	22.66			600.00	50.00	$1,040		$2,400	$200	$3,640
D	Transformer 13.2KVA 480v IPH pole mounted	12	ea	20.0	275	22.66			900.00	100.00	$6,220		$10,800	$1,200	$18,220
D	Variable speed AC drive 40hp 480v 60Hz	4	ea	23.0	105	22.66			8000.00	50.00	$2,390		$32,000	$200	$34,590
D	Transformer Mini power 15KVA 480v 3ph	4	ea	16.0	73	22.66			3150.00	50.00	$1,660		$12,600	$200	$14,460
D	Fuses	16	ea	0.40	7	22.66			100.00		$170		$1,600		$1,770
D	3" conduit rgs	320	lf	0.25	92	22.66			4.50	0.50	$2,070		$1,440	$160	$3,670
D	3" conduit fittings	4	ls	10.0	46	22.66			400.00		$1,040		$1,600		$2,640
D	1 1/2" conduit rgs	200	lf	0.10	23	22.66			1.70	0.40	$520		$340	$80	$940
D	1 1/2" conduit fittings	4	ls	8.0	37	22.66			100.00		$830		$400		$1,230
D	3/4" conduit rgs	600	lf	0.06	41	22.66			0.70	0.10	$930		$420	$60	$1,410
D	3/4" conduit fittings	4	ls	20.0	92	22.66			190.00		$2,070		$760		$2,830
D	3/4" liquid tight	100	lf	0.08	9	22.66			2.50		$210		$250		$460
	INSTRUMENTATION														
D	Flowmeter, w/ element, transducer set, flow computer, analog cord, handheld programmer, & flow meter programming	4	ea	11.0	50	22.66			5765.00		$1,140		$23,060		$24,200
D	Pressure indicating transmitter	4	ea	0.50	2	22.66			205.00		$50		$620		$670
D	#16 awg contrl cable	300	lf	0.02	7	22.66			0.38		$160		$114		$274
D	6.25/125uM Fiber Optic Cable dual window(850/1300),loose buffer,gel fill	1200	lf	0.01	14	22.66			0.73		$310		$876		$1,186
D	DCS Components, incls, analog input, output modules, discrete input module, transnet term. interface board, contr. mod.., encl's sub panel programming etc.	4	ea	36.0	165	22.66			7338.00		$3,730		$29,352		$33,082
D	Instrument Calibration/Testing	4	ls	10.0	46	22.66			100.00		$1,040		$400		$1,440
D	Fiber optic cable bulk plenum	2.4	CLF	3.5	10	22.66			375.00		$220		$900		$1,120
D	Fiber optic jumper	4	LS	6.0	27	22.66			500.00		$620		$2,000		$2,620
D	Fiber optic pigtail	4	LS	6.0	27	22.66			425.00		$620		$1,700		$2,320
D	Fiber optic connector	4	LS	6.0	27	22.66			300.00		$620		$1,200		$1,820
D	Fiber optic finger splice	4	LS	6.0	27	22.66			500.00		$620		$2,000		$2,620
D	Transceiver	4	LS	10.0	46	22.66			800.00		$1,040		$3,200		$4,240
D	Multi-channel rack enclosure 10 mods.	4	LS	20.0	92	22.66			1200.00		$2,070		$4,800		$6,870
D	Fiber optic patch panel 12 ports	4	LS	12.0	55	22.66			1000.00		$1,240		$4,000		$5,240
	Subtotal Direct Cost	1	LOT		1,842	$22.64					41,700		142,900	15,800	$200,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	Package #1 FY01/02	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Piping Installation														
D	8" pipe HDPE	4200	lf	0.018	86	26.40			6.74		$2,280		$28,310		$30,590
D	8" flange adapter HDPE	16	ea	1.6	29	26.40			88.00	10.00	$770		$1,410	$160	$2,340
D	8" DI flanges w/ backup ring	16	ea	1.0	18	26.40			40.00	5.00	$480		$640	$80	$1,200
D	8" DI blind flanges	16	ea	1.0	18	26.40			50.00	5.00	$480		$800	$80	$1,360
D	Post Indicator Valve	8	ea	8.0	73	26.40			420.00	50.00	$1,930		$3,360	$400	$5,690
D	Connectioins allowance to existing headers	4	ls	40.0	183	26.40			1500.00	500.00	$4,830		$6,000	$2,000	$12,830
D	Pipe concrete thrust blocks	20	cy	1.0	23	26.40			65.00	10.00	$600		$1,300	$200	$2,100
D	10 ga stranded magnetic detectable wire & tapir	42	clf	0.80	38	26.40			8.40		$1,010		$350		$1,360
D	plastic warning tape indicating buried pipe	42	clf	0.053	2.5	26.40			3.70		$70		$160		$230
	MECHANICAL PIPING EW														
D	6" steel pipe	200	lf	0.774	177	26.40			22.00		$4,670		$4,400		$9,070
D	6" steel pipe insulate	75	lf	0.32	27	26.40			9.75		$720		$730		$1,450
D	3" pvc sch 40 drain & ck valves	2	lot	4.0	9	26.40			220.00	60.00	$240		$440	$120	$800
D	winged drain frame & grate 13"sq.	2	ea	2.0	5	26.40			100.00	20.00	$120		$200	$40	$360
D	6" flanged cast iron pipe (4ea @ 5')	40	lf	0.329	15	26.40			12.90		$400		$520		$920
D	6" flange cast iron 90d elbow	8	ea	1.412	13	26.40			29.00		$340		$230		$570
D	10" HDPE pipe		lf	0.02		26.40			10.47						
D	20" HDPE pipe		lf	0.03		26.40			36.24						
D	Subcontract Well Drilling/Developing allow.	3	ea					100,000				$300,000			$300,000
	Subtotal Direct Cost	1	LOT		719	$26.30					18,900	300,000	48,900	3,100	$370,900

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	Package #1 FY01/02	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Pre Engr. Bldg. EW	4	ea	60.0	275	22.43			5672.21	500.00	$6,160		$22,690	$2,000	$30,850
	HVAC														
D	electric heaters 400cfm 3.3kw	4	ea	4.0	18	22.66			600.00		$410		$2,400		$2,810
D	fan, intake louver, exhaust & cntrl.	4	ea	8.0	37	22.66			843.50		$830		$3,370		$4,200
	WELL PUMP														
D	pump submersed 40hp 400gpm, equip & assem	4	ea	80.0	366	26.40			28000.00	2500.00	$9,660		$112,000	$10,000	$131,660
D	HYDROSTATIC TESTING	1	ls	100.0	114	26.40					$3,020				$3,020
D	ELECTRICAL TESTING	1	ls	100.0	114	22.66					$2,590				$2,590
D	ACCEPTANCE TEST	1	ls	80.0	92	22.66					$2,070				$2,070
	Subtotal Direct Cost	1	LOT		1,016	$24.31					24,700		140,500	12,000	$177,200

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	Package #1 FY01/02		QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Project Staffing															
		Each														
	1. Project Manager			hr	1.0		45.19									
	2. Project Superintendent	0.25	294	hr	1.0	294	31.92					$9,390				$9,390
	3. Project Engineer	0.25	294	hr	1.0	294	20.71					$6,090				
	4. Safety Engineer	0.25	294	hr	1.0	294	19.75					$5,810				$5,810
	5. QA/QC Engineer	0.25	294	hr	1.0	294	18.51					$5,450				$5,450
	6. Office Administration			hr	1.0		15.75									
	7. Contract Administration/ Scheduler			hr	1.0		27.10									
	8. Clerical			hr	1.0		14.00									
	TOTAL					1,177	22.72					$26,740				$26,740

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	Package #2 FY04	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION														
	Insurance Certificates, List of Sub-Tier Contractors Procurement Documents, Safe Work Plans, QA/QC Plan, Project Execution Plan, Construction and Engineering Documentation, Acceptable baseline Schedules														
	Duration 2 wks	1	LS	40.0	80	50.00					$4,000				$4,000
	MOBILIZATION														
	S/C Office Trailer	7	mo					300.00				$2,097			$2,097
	Survey and Engineering Controls	1	LS					3000.00	500.00	500.00		$3,000	$500	$500	$4,000
D	Install Utilities	1	LS	40.0	40	22.69			1000.00	500.00	$900		$1,000	$500	$2,400
D	Other misc. requirements as required.	1	LS	80.0	80	22.69			500.00	500.00	$1,800		$500	$500	$2,800
										6360.00					
	Total				120						$2,700	$5,097	$2,000	$1,500	$11,297
	DEMOBILIZATION														
D	Complete Punch List Items.	1	LS	20.0	20	22.69					$500				$500
D	Remove Trailer and Change Facilities.	1	LS	20.0	20	22.69					$500				$500
D	Remove all Utilities.	1	LS	20.0	20	22.69					$500				$500
mC	Decontaminate Equipment.	1	LS	10.0	10	22.69					$200				$200
D	Loadout contractors equipment.	1	LS	20.0	20	22.69					$500				$500
D	Other area requirements.	1	LS	10.0	10	22.69					$200				$200
	Total				100						$2,400				$2,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	Package #2 FY04	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Site Prep														
D	Survey (3) man team	1	ac					3,000.00				$3,000			$3,000
D	Plastic warning tape & Safety Fencing	3000	lf	0.13	453	21.49			0.77		$9,730		$2,310		$12,040
D	Gravel erosion control allowance	35	cy	0.30	12	21.49			10.15	7.60	$260		$360	$270	$890
	Site Clearing														
D	Clear and grub	1	ac	48.0	55	21.49				1,125.00	$1,180			$1,130	$2,310
	Grading & Excavation														
	Access Road(s) 400'EW														
D	Site grading	125	cy	0.10	14	21.49				2.31	$310			$290	$600
D	Excavation	178	cy	0.20	41	21.49				4.38	$870			$780	$1,650
D	Backfill	89	cy	0.20	20	21.49					$440				$440
D	Geotextile filter fabric	533	sy	0.01	6	21.49			1.35		$130		$720		$850
D	Gravel road	533	sy	0.08	48	21.49			1.20	0.35	$1,020		$640	$190	$1,850
D	Vibrating compaction	89	cy	0.10	10	21.49				0.26	$220			$20	$240
D	Prepare & roll sub-base	533	sy	0.05	31	21.49				0.44	$660			$230	$890
	Pipe Trench 700' EW														
D	Trenching	292	cy	0.05	17	21.49				3.00	$360			$880	$1,240
D	Backfill	292	cy	0.15	50	21.49				3.00	$1,080			$880	$1,960
D	Compaction	292	cy	0.009	3	21.49				0.26	$60			$80	$140
	Well House(s)														
D	Excavate	90	cy	0.15	15	21.49				3.00	$330			$270	$600
D	Backfill	60	cy	0.25	17	21.49				4.00	$370			$240	$610
D	Dispose excess soil	30	cy	0.08	3	21.49				4.00	$60			$120	$180
D	**Existing Road Repair allowance**		ls	40.0		21.49			1,500.00	500.00					
	Culvert Pipe														
D	Culvert pipes	250	lf	0.20	57	21.49			5.20		$1,230		$1,300		$2,530
D	Backfill culvert pipes	100	cy	1.5	172	21.49				1.07	$3,690			$110	$3,800
D	Catch Basin	2	ea	24.0	55	21.49			650.00	216.00	$1,180		$1,300	$430	$2,910
	Guard Rail														
D	Guard rail corrugated steel, galv. steel posts	250	lf	0.10	29	21.49			9.45	0.55	$610		$2,360	$140	$3,110
D	End sections, galv flared	4	ea	0.65	3	21.49			38.50	9.25	$60		$150	$40	$250
	Subtotal Direct Cost				1110						$23,850	$3,000	$9,140	$6,100	$42,090

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	Package #2 FY04	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	reinforcing	1	ls	38.0	43	22.43			1,084.00	112.00	$960		$1,030	$110	$2,170
D	formwork	1000	sf	0.20	229	22.43			1.00	0.20	$5,130		$1,000	$200	$6,330
D	exjoint	40	lf	0.10	5	22.43			0.40		$100		$20		$120
D	water stop	54	lf	0.10	6	22.43			0.50		$140		$30		$170
D	concrete matl 4000#	30	cy	1.0	34	22.43			70.00	4.00	$770		$2,100	$120	$2,990
D	anchor bolts	1	ls	4.0	5	22.43			40.00		$100		$40		$140
D	grout	1	ls	8.0	9	22.43			50.00		$210		$50		$260
D	finish concrete	550	sy	0.03	19	22.43				0.03	$420			$20	$440
D	precast concrete splash blocks	4	ea	0.25	1	22.43			20.00		$30		$80		$110
D	special coatings	146	sf	0.08	13	22.43			0.32	0.50	$300		$50	$70	$420
D	special sealant & b/rod	20	lf	0.20	5	22.43			4.00		$100		$80		$180
	Subtotal Direct Cost	1	LOT		369	$22.49					$8,300		$4,500	$500	$13,300

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	Package #2 FY04	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Auger Truck	50	hr	1.0	57	22.66				75.00	$1,300			$3,750	$5,050
D	Bucket Truck	40	hr	1.0	46	22.66				75.00	$1,040			$3,000	$4,040
D	45' Class II pole	2	ea	12.1	28	22.66			373.20		$630		$746		$1,376
D	#1/0 AL Power cable	2	clf	2.0	5	22.66			42.62		$100		$85		$185
D	Ground Cu wire	100	lf	0.05	6	22.66			0.44		$130		$44		$174
D	Messenger attachments	8	ea	3.3	30	22.66			69.75		$680		$558		$1,238
D	Guy wire typical	2	ea	5.0	11	22.66					$260				$260
D	Disconnect switch 480v 3ph	2	ea	8.0	18	22.66			250.00	50.00	$410		$500	$100	$1,010
D	Combo starter NEMA 1 enclosure	2	ea	10.0	23	22.66			600.00	50.00	$520		$1,200	$100	$1,820
D	Transformer 13.2KVA 480v IPH pole mounted	6	ea	20.0	137	22.66			900.00	100.00	$3,110		$5,400	$600	$9,110
D	Variable speed AC drive 40hp 480v 60Hz	2	ea	23.0	53	22.66			8000.00	50.00	$1,190		$16,000	$100	$17,290
D	Transformer Mini power 15KVA 480v 3ph	2	ea	16.0	37	22.66			3150.00	50.00	$830		$6,300	$100	$7,230
D	Fuses	8	ea	0.40	4	22.66			100.00		$80		$800		$880
D	3" conduit rgs	160	lf	0.25	46	22.66			4.50	0.50	$1,040		$720	$80	$1,840
D	3" conduit fittings	2	ls	10.0	23	22.66			400.00		$520		$800		$1,320
D	1 1/2" conduit rgs	100	lf	0.10	11	22.66			1.70	0.40	$260		$170	$40	$470
D	1 1/2" conduit fittings	2	ls	8.0	18	22.66			100.00		$410		$200		$610
D	3/4" conduit rgs	300	lf	0.06	21	22.66			0.70	0.10	$470		$210	$30	$710
D	3/4" conduit fittings	2	ls	20.0	46	22.66			190.00		$1,040		$380		$1,420
D	3/4" liquid tight	50	lf	0.08	5	22.66			2.50		$100		$125		$225
	INSTRUMENTATION														
D	Flowmeter, w/ element, transducer set, flow computer, analog cord, handheld programmer, & flow meter programming	2	ea	11.0	25	22.66			5765.00		$570		$11,530		$12,100
D	Pressure indicating transmitter	2	ea	0.50	1	22.66			205.00		$30		$410		$440
D	#16 awg contrl cable	150	lf	0.02	3	22.66			0.38		$80		$57		$137
D	6.25/125uM Fiber Optic Cable dual window(850/1300),loose buffer,gel fill	2000	lf	0.01	23	22.66			0.73		$520		$1,460		$1,980
D	DCS Components, incls, analog input, output modules, discrete input module, transnet term. interface board, contr. mod.., encl's sub panel programming etc.	2	ea	36.0	82	22.66			7338.00		$1,870		$14,676		$16,546
D	Instrument Calibration/Testing	2	ls	10.0	23	22.66			100.00		$520		$200		$720
D	Fiber optic cable bulk plenum	1.2	CLF	3.5	5	22.66			375.00		$110		$450		$560
D	Fiber optic jumper	2	LS	6.0	14	22.66			500.00		$310		$1,000		$1,310
D	Fiber optic pigtail	2	LS	6.0	14	22.66			425.00		$310		$850		$1,160
D	Fiber optic connector	2	LS	6.0	14	22.66			300.00		$310		$600		$910
D	Fiber optic finger splice	2	LS	6.0	14	22.66			500.00		$310		$1,000		$1,310
D	Transceiver	2	LS	10.0	23	22.66			800.00		$520		$1,600		$2,120
D	Multi-channel rack enclosure 10 mods.	2	LS	20.0	46	22.66			1200.00		$1,040		$2,400		$3,440
D	Fiber optic patch panel 12 ports	2	LS	12.0	27	22.66			1000.00		$620		$2,000		$2,620
	Subtotal Direct Cost	1	LOT		937	$22.63					21,200		72,500	7,900	$101,600

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	Package #2 FY04	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Piping Installation														
D	8" pipe HDPE	700	lf	0.018	14	26.40			6.74		$380		$4,720		$5,100
D	8" flange adapter HDPE	8	ea	1.6	15	26.40			88.00	10.00	$390		$700	$80	$1,170
D	8" DI flanges w/ backup ring	8	ea	1.0	9	26.40			40.00	5.00	$240		$320	$40	$600
D	8" DI blind flanges	8	ea	1.0	9	26.40			50.00	5.00	$240		$400	$40	$680
D	Post Indicator Valve	4	ea	8.0	37	26.40			420.00	50.00	$970		$1,680	$200	$2,850
D	Connectioins allowance to existing headers	2	ls	40.0	92	26.40			1500.00	500.00	$2,420		$3,000	$1,000	$6,420
D	Pipe concrete thrust blocks	10	cy	1.0	11	26.40			65.00	10.00	$300		$650	$100	$1,050
D	10 ga stranded magnetic detectable wire & tapir	7	clf	0.80	6	26.40			8.40		$170		$60		$230
D	plastic warning tape indicating buried pipe	7	clf	0.053	0.4	26.40			3.70		$10		$30		$40
	MECHANICAL PIPING EW														
D	6" steel pipe	200	lf	0.77	177	26.40			22.00		$4,670		$4,400		$9,070
D	6" steel pipe insulate	75	lf	0.32	27	26.40			9.75		$720		$730		$1,450
D	3" pvc sch 40 drain & ck valves	2	lot	4.0	9	26.40			220.00	60.00	$240		$440	$120	$800
D	winged drain frame & grate 13"sq.	2	ea	2.0	5	26.40			100.00	20.00	$120		$200	$40	$360
D	6" flanged cast iron pipe (4ea @ 5')	40	lf	0.329	15	26.40			12.90		$400		$520		$920
D	6" flange cast iron 90d elbow	8	ea	1.412	13	26.40			29.00		$340		$230		$570
D	10" HDPE pipe		lf	0.02		26.40			10.47						
D	20" HDPE pipe		lf	0.03		26.40			36.24						
D	Subcontract Well Drilling/Developing allow.	2	ea					100,000				$200,000			$200,000
	Subtotal Direct Cost	1	LOT		440	$26.36					11,600	200,000	18,100	1,600	$231,300

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	Package #2 FY04	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Pre Engr. Bldg. EW	2	ea	60.0	137	22.43			5672.21	500.00	$3,080		$11,340	$1,000	$15,420
	HVAC														
D	electric heaters 400cfm 3.3kw	2	ea	4.0	9	22.66			600.00		$210		$1,200		$1,410
D	fan, intake louver, exhaust & cntrl.	2	ea	8.0	18	22.66			843.50		$410		$1,690		$2,100
	WELL PUMP														
D	pump submersed 40hp 400gpm, equip & assem	2	ea	80.0	183	26.40			28000.00	2500.00	$4,830		$56,000	$5,000	$65,830
D	HYDROSTATIC TESTING	1	ls	100.0	114	26.40					$3,020				$3,020
D	ELECTRICAL TESTING	1	ls	100.0	114	22.66					$2,590				$2,590
D	ACCEPTANCE TEST	1	ls	80.0	92	22.66					$2,070				$2,070
	Subtotal Direct Cost	1	LOT		668	$24.25					16,200		70,200	6,000	$92,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: Waste Storage Extraction System
ESTIMATE NO.: C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ITEM NO.	Package #2 FY04		QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Project Staffing															
		Each														
	1. Project Manager			hr	1.0		45.19									
	2. Project Superintendent	0.25	294	hr	1.0	294	31.92					$9,390				$9,390
	3. Project Engineer	0.25	294	hr	1.0	294	20.71					$6,090				
	4. Safety Engineer	0.25	294	hr	1.0	294	19.75					$5,810				$5,810
	5. QA/QC Engineer	0.25	294	hr	1.0	294	18.51					$5,450				$5,450
	6. Office Administration			hr	1.0		15.75									
	7. Contract Administration/ Scheduler			hr	1.0		27.10									
	8. Clerical			hr	1.0		14.00									
	TOTAL					1,177	22.72					$26,740				$26,740

APPENDIX " A"

PROJECT: Waste Storage Extraction System
ESTIMATE NC C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

SITE SPECIFIC

EFFICIENCY / MULTIPLIER ANALYSIS

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

PERCENT OF INFLUENCE ON CHART MANHOURS

	40%	50%	60%	70%	80%	90%	100%	105%	110%	% OF NFLUENCE	WT'D VALUE	PROD. RESULT
CRAFT SKILL (NOTE 1)	POOR			FAIR			STD	V.GOOD	EXCELLENT	100.0%	12.0%	0.12
CRAFT AVAIL.(NOTE 1)		POOR		FAIR			STD			100.0%	8.0%	0.08
CLIMATE (NOTE 2)	SEVERE	ICE/SNOW			RAIN		+40 TO +85			80.0%	20.0%	0.16
PLANT ELEVATION		OVER 10,000FT			5,000' TO 10,000 FT		UNDER 5,000 FT			100.0%	5.0%	0.05
WORK SPACE	<---- MULTIPLE SHIFTS-			200 SF	250 SF	300 SF	350 SF			100.0%	10.0%	0.1
WORK WEEK							4-10s / 5-8s			100.0%	15.0%	0.15
50 HOUR WORK WEEK	////////// //// MULTIPLE-SHIFT	//////////	//////////	OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS				0.0%	0.0%	0
60 HOUR WORK WEEK	////////// //////////	////////// //////////	OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS					0.0%	0.0%	0
SHIFTWORK 2ND SHIFT 3RD SHIFT			 3RD SHIFT		 2ND SHIFT		OR ONE SHIFT ONLY			 100.0% 100.0%	 3.0% 5.0%	 0.03 0.05
PROJECT SIZE					400M MH AND UP	300M TO 400M MH	200M TO 300M MH	200M MH OR LESS		100.0%	4.0%	0.04
PLANT TYPE				REVAMP ONLY	REVAMP & NEW	NEW IN EXIST PLT	GRASS ROOTS			90.0%	8.0%	0.072
AREA/UNION INFLUENCE	STRONG		MILD		SOME		NONE			60.0%	10.0%	0.06
											100.0%	91.2%

NOTES.....
1. TURNOVER HAS BEEN CONSIDERED
2. FOR EXTERIOR WORK ONLY

EFFICIENCY (AS A % OFF CHART MANHOURS) 91.2%

MULTIPLIER - (TO BE APPLIED TO CHART M.H.'S TO OBTAIN SITE M.H.'S) 1.10

EFFICIENCY FACTORS

PROJECT: Waste Storage Extraction System
ESTIMATE NO. C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

Fluor Fernald, Inc.

EXAMPLE:

STANDARD CHART MANHOURS =	NET	100
EFFICIENCY FACTORS:		
* SITE SPECIFIC (SEE APPENDIX A)	[redacted]	10.0
S/T = BASE UNIT MANHOURS		110
OVERTIME PRODUCTIVITY FACTOR (SEE DETAIL WORKSHEET BACK-UP)	0.00%	0
		110
* TASK SPECIFIC (confined space, high elevation, congestion, etc.)	0.0%	0
		110

* PPE SPECIFIC (Based on current data and estimating knowledge)

	PPE LEVEL									
	D		Mod.'D'		Mod. "C"		C		C+	
PRODUCTIVITY HOURS		MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's
(AS A %) / ADD MH's	4.00%	4	28.00%	31	66.00%	73	74.00%	81	96.00%	106
(AS A MULTIPLIER)/TOTAL HRS	1.04	114.4	1.28	140.8	1.66	182.6	1.74	191.4	1.96	215.6
TOTAL MULTIPLIER w/SITE PROD.	1.144		1.408		1.826		1.914		2.156	

NOTE : Use the Default Productivity Factor of 'mC' for working in a contaminated area if the Safety Level cannot be determined.

(SEE FD FERNALD ESTIMATING SERVICES REFERENCE MANUAL IM-6006 8.10)

Total hours worked in a specific PPE level divided by 10 hour working days = (PPE) ManDays to determine material cost of PPE's.
(SEE APPENDIX C - HEALTH PHYSICS)

11.0	Man Days	14.0	Man Days	18.0	Man Days	19.0	Man Days	22.0	Man Days

THESE EFFICIENCY FACTORS WERE APPLIED INDIVIDUALLY THROUGHOUT THE ESTIMATE AT A TASK SPECIFIC LEVEL, TO OBTAIN A MORE ACCURATE ACCOUNT OF OVERALL EFFICIENCY IMPACT DUE TO PPE REQUIREMENTS IN HANDLING CONTAMINATED AND HAZARDOUS WASTE.

EFFICIENCY FACTORS

PROJECT: Waste Storage Extraction System
ESTIMATE NO. C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

PPE MULTIPLIER DEVELOPEMENT

		D	mD	mC	C	C+
CREW SIZE & MAKE-UP	STANDARD	7	7	7	7	7
	WORKER-BUDDY	0	0	0	0	0
	SUPPORT TEAM	0	0	0	0	0
	TOTAL CREW	7	7	7	7	7
CREW SIZE RATIO		1.00	1.00	1.00	1.00	1.00
AVAILABLE WORK TIME FACTOR		0.96	0.78	0.7	0.7	0.68
PPE LABOR PRODUCTIVITY FACTOR		1	1	0.86	0.82	0.75
NET PRODUCTIVITY RATIO		0.96	0.78	0.602	0.574	0.51
NET PRODUCTIVITY MULTIPLIER		**1.04**	**1.28**	**1.66**	**1.74**	**1.96**

These factors were based on Tables 6.1 and 6.2, Moderate Work Efforts, 66F to 85F temperature of 'Hazardous Waste Cost Control' by R.A.Selg.
Modifications were made to reflect a 10 hour work day and no buddy system or support team for levels D, mC and C.
The worker-buddy and support team members, if required, may be covered under Construction Mgmt. (Rad Techs).

AVAILABLE WORK TIME FACTOR		D	mD	mC	C	C+
TOTAL WORK MINUTES per [4 - 10's		600	600	600	600	600
ADDITNL SITE SAFETY MEETINGS NOT INCLD. IN BAS	QUANTITY	1	1	1	1	1
	MINUTES	25	25	25	25	25
TOTAL		25	25	25	25	25
PPE DON & DOFFING	QUANTITY	0	0	3	3	3
(ADJUST LEVEL D per WORK PLAN)	MINUTES	0	0	15	15	20
TOTAL			0	45	45	60
WORK BREAKS	QUANTITY	N/A	2	2	2	2
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			30	30	30	30
MOBILIZATION - ROUND TRIPS	QUANTITY	N/A	4	4	4	4
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			60	60	60	60
COOLDOWNS PER DAY	QUANTITY	N/A	4	4	4	4
** (4 OUT OF 12 MONTHS) 33.33%	MINUTES	N/A	15	15	15	15
TOTAL			20	20	20	20
AIR TANK REPLACEMENT	QUANTITY	N/A	N/A	N/A	N/A	N/A
	MINUTES	N/A	N/A	N/A	N/A	N/A
TOTAL						
AVAILABLE WORK TIME		575	465	420	420	405
AVAILABLE WORK TIME FACTOR		**0.96**	**0.78**	**0.7**	**0.7**	**0.68**

NOTE: Adjust 'Work Minutes per Day' basis to: 5 - 8's, or leave as 4 - 10's. Any other circumstances, over-ride the minutes per day.

** Assumption based on work performed in May, June, July & August, pro-rating cost over one year. Adjust % to individual circumstances.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: Waste Storage Extraction System
ESTIMATE NO. C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

Fluor Fernald, Inc.

PPE"s - PERSONAL PROTECTIVE EQUIPMENT

DESCRIPTION	UNIT	UNIT COST	* NO. OF CHANGE OUTS PER WORKER PER DAY				
			Man Days (TOTAL HOURS worked in PPE's Div. by WORK HOURS / DAY)				
PPE LEVEL C / C+ / B : F/HF MASK w/RESP.&CART.			*	MAN DAYS	MAT'L.$'s	PPE LEVEL	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	0	$0	C / C+	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	0	$0	C / C+	(DOUBLE PPE)
GLOVE LINER - DISPOSABLE	PR	$0.24	3	0	$0	C / C+	
GLOVE, LASTEX - DISPOSABLE	PR	$0.26	3	0	$0	C / C+	
GLOVE, WORK - DISPOSABLE	PR	$1.02	3	0	$0	C / C+	
APR CARTRIDGES - DISPOSABLE	PR	$6.98	3	0	$0	C / C+	
SUB-TOTAL		$17.42	3		$0		
				$/MD =	$0.00		

PPE LEVEL mC : FULL DRESS w/ FACE SHIELD				MAN DAYS	MAT'L.$'s	PPE LEVEL
LT.WT. DISPOSABLE COVERALLS W/HOOD & BOOTIE	PR	$4.46	3	6	$80	mC
GLOVE LINER - DISPOSABLE	PR	$0.24	3	6	$4	mC
GLOVE, LASTEX - DISPOSABLE	PR	$0.26	3	6	$5	mC
GLOVE, WORK - DISPOSABLE	PR	$1.02	3	6	$18	mC
SUB-TOTAL		$5.98	3		$107	
				$/MD =	$17.83	

SUBCONTRACTOR REQUIRED PURCHASES			QTY. PER WKR.	NO. OF WORKERS	MAT'L.$'s	PPE LEVEL
RUBBER BOOT COVERS-(1)PR.PER WORKER	PR	$12.70	6	0	$0	D/C/B
APR w/HALF FACE MASK - (1) PER WORKER	EA	$22.30	6	0	$0	C
APR w/FULL FACE MASK - (1) PER WORKER	EA	$174.00	6	0	$0	C
SCBA	EA	$1,894.00	2	0	$0	B
COOL VESTS	EA	$137.50	6	0	$0	C/B
THERMO STEP	EA	$50.00	6	0	$0	C/B
SUB-TOTAL					$0	

TOTAL PPE's = MAT'L.$'s $100

(FORWARD TO PAGE 2 OF 2)

OTHER PPE's SUCH AS HARD HAT, SAFETY GLASSES/GOGGLES, STEEL TOED SAFETY SHOES, HEARING PROTECTION, ARE CONSIDERED THE SUBCONTRACTORS RESPONSIBILITY AND ARE COVERED IN HIS OVERHEAD EXPENSE.
COSTS OF FD FERNALD SUPPLIED PPE's, SUCH AS COTTON COVERALLS, EXCHANGE OF RUBBER BOOT COVERS AND RESPIRATORS FOR CHANGEOUTS AND CLEANING OF SAME IS INCURRED BY FD FERNALD AND COSTS ARE NOT INCLUDED AS PART OF PROJECT COSTS AT THIS TIME.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: Waste Storage Extraction System
ESTIMATE NO. C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

--MEDICAL MONITORING --

MEDICAL - PHYSICAL and IN-VIVO MONITORING - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION PHYSICAL (3hrs), IN-VIVO (1hr)	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BASELINE PHYSICALS	1	4	3.358	13	$23.35	$310
ANNUAL PHYSICALS	1	4	3.358	13	$23.35	$300
EXIT (TERMINATION) PHYSICALS (IN-VIVO)	1	1	3.358	3	$23.35	$80
SUB-TOTAL						$690

RADIATION IN-VITRO SURVEILLANCE - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BI-MONTHLY BIOASSAY	7	1	3.358	23	$23.35	$550
SUB-TOTAL						$550

RANDOM DRUG TESTING

	TESTS	HRS	TOTAL HOURS	AVG. RATE	LABOR $'s
	9	2	18	$23.35	$400

NO. OF WKRS. TESTED	TESTING DAYS PER YR.	AVG. NO. OF TESTS PER DAY	CHANCE/ DAY FOR TEST	NO. OF WKRS. FOR THIS ESTIMATE	CHANCES /DAY FOR TEST FOR PROJECT	CONSTR WORKING DAYS
2340	226	10	0.0042735	8	0.0342	264

		LABOR $'s THRU SAFETY	LABOR $'s
WORK DELAYS CAUSED BY MONITORING	0.0%	$357,540	$0
			LABOR $'s
WORK DELAYS CAUSED BY RAD CHECKING	0.0%	$357,540	$0

	TOTAL LABOR	TOTAL MAT'L.	GRAND TOTAL
TOTAL HEALTH PHYSICS	$1,600	$100	$1,700

(FORWARD TO ESTIMATE SUMMARY SHEET)

ACTIVITY DURATIONS

Fluor Fernald, Inc.

PROJECT: Waste Storage Extraction System
ESTIMATE NO. C5010402
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC3

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
Package #1	01-May-01	05-Jul-01	19-Oct-01	02/03/2002	7.0	MONTHS
Package #2	01-May-01	05-Apr-04	20-Jul-04	11/03/2004	7	MONTHS
TOTAL					14.0	MONTHS

	DATE of EST. to MID-POINT ACTIVITY DURATION	
a.	5.6	MONTHS
b.	39	MONTHS

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
OPERATIONS					0	MONTHS

DATE of EST. to MID-POINT ACTIVITY DURATION	
0	MONTHS

ACTIVITY DURATION IS USED IN DETERMINING NUMBER of WORKERS for CERCLA/SAT TRAINING HOURS and HEALTH PHYSICS COSTS.

TRAINING

PROJECT:	Waste Storage Extraction System	DATE:	02-May-01
ESTIMATE #:	C5010402	ESTIMATOR:	Wagner
CLIENT:	DOE	LOCATION:	Fernald
WBS #:	1.1.E.F	TASK #:	EFEC3

Fluor Fernald, Inc.

Site Access Training Requirements (RM-0055 Rev. 1 Effective: 09/30/99)

Training Requirements	Non-Hazardous	Occasional Site Worker	General Site Worker		
Access Area	Administrative Support Area	Controlled Area	Contamination Compound	Frequency	
	8 Hour	24 Hour Hazwoper	40 Hour Hazwoper		
General Employee Training	X	X	X	Annually	
Site Worker Training		X	X	One Time	
Rad. Worker I		X		Biennially	
Rad. Worker II			X	Biennially	
Respirator Training *			X	Annually	
Respirator Fit Testing *			X	Annually	
Supervised Field Experience	0 HR	8 HR	24 HR	One time →	*On the Job*
Site Worker Refresher		X	X	Annually ⇨	4 Hour
Rad. Worker I Retraining		X		Every 2 years ⇨	4 Hour
Rad. Worker II Retraining			X	Every 2 years ⇨	8 Hour

Additional Training	HRS	No. of Workers	Total Hours
Job Specific Training =	2	8	16
Fire Watch Training =	1	2	2
Lead Worker Training =	4	0	0
Lock out / Tag out Training =	8	4	32
Rigging Training =	24	0	0
Scaffold Training =	16	0	0

DURATION 14 Month(s)

Average Rate $ 23.35

Number of General Site Worker(s)	3	General Site Worker Training Cost	$3,763
Number of Occasional Site Worker(s)	0	Occasional Site Training Cost	$0
Number of Non-Hazardous Worker(s)		Non-Hazardous Training Cost	$0
		Additional Training Cost	$1,167
Total Training Hours	211	Total Training Cost =	$4,931

* = All employees classified as General Site Worker must initially take respirator training. The annual requirement for the repeat of training and the fit test frequency requirements are only needed by those employees that are required to wear a respirator.

COST IMPACT MATRIX SHEET

Estimate No.: C5010402
Project: Waste Storage Extraction System
Client: DOE
WBS: 1.1.E.F

Fluor Fernald, Inc.

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFEC3

Base Estimate Total	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	Package #1 FY01/02									
$2,175,400	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$408,520	Base $	$373,040	Base $	$477,980	Base $	$94,350	Base $	$60
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	25%							-1%	10%
Material Pricing					-5%	25%			-5%	10%
Equipment Rental							-5%	25%		
Subcontract $'s			-10%	15%						
Quantity Variation										
Contamination									-10%	50%
Environmental									-10%	50%
Schedule										
Project Definition									-30%	50%
Range - %	-5%	25%	-10%	15%	-5%	25%	-5%	25%	-56%	170%
Range - $	$388,094	$510,650	$335,736	$428,996	$454,081	$597,475	$89,633	$117,938	$26	$162
Distribution	T		T		T		T		T	
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	Package #2 FY04									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$283,520	Base $	$251,960	Base $	$236,820	Base $	$49,090	Base $	$60
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	25%								
Material Pricing					-5%	25%				
Equipment Rental							-5%	25%		
Subcontract $'s			-10%	15%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition										
Range - %	-5%	25%	-10%	15%	-5%	25%	-5%	25%	0%	0%
Range - $	$269,344	$354,400	$226,764	$289,754	$224,979	$296,025	$46,636	$61,363	$60	$60
Distribution	T		T		T		T			
Correlation Rank										

Analyst: _____

Client: _____

EFEC4

SFES, PHASE II

09/06/2001
3:12 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC4
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: FIELDSUB **FIELD SUBS** **EOC:** SUBCONTRACTORS
Res Dept: 952 **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	2,201,440.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	0.0	2,201,440.0	2,201,440.0	2,201,440.0	2,201,440.0	2,201,440.0	2,201,440.0	2,201,440.0	2,201,440.0	2,201,440.0
Yr Total Cost:	0	2,260,879	0	0	0	0	0	0	0	0
Cum Total Cost:	0	2,260,879	2,260,879	2,260,879	2,260,879	2,260,879	2,260,879	2,260,879	2,260,879	2,260,879

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: 952 **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	18,846.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	0.0	18,846.0	18,846.0	18,846.0	18,846.0	18,846.0	18,846.0	18,846.0	18,846.0	18,846.0
Yr Total Cost:	0	19,355	0	0	0	0	0	0	0	0
Cum Total Cost:	0	19,355	19,355	19,355	19,355	19,355	19,355	19,355	19,355	19,355

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Total Cost:	0	2,280,234	0	0	0	0	0	0	0	0
Cum Total Cost:	0	2,280,234	2,280,234	2,280,234	2,280,234	2,280,234	2,280,234	2,280,234	2,280,234	2,280,234

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

FLUOR GLOBAL SERVICES

Memorandum

To:	Jack Hughes,MS52-5 Dick Butterfiled, MS52-5	Date:	April 30, 2001
Location:	Fernald	Reference:	N/A
From:	Ken Kepler, MS80-3	Fernald #:	M:OOTP:(PC/EST)2001-0026
Location:	Springdale	Client:	DOE DE-AC24-01OH20115
Extension:	648-6761	Subject:	SFES PHASE II

c: File Record Subject ESTIMATE C5010403
Tom Wagner, MS80-3

Attached are two (2) copies of the estimate for the SFES PHASE II.
To request any additional copies of this estimate or for any questions, please contact Tom Wagner on extension 6120.

KGK:TW:hmp
Attachment

Fluor Fernald, Inc.

PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: SFES Phase II
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010403

BASIS OF ESTIMATE

SUPPORTING DOCUMENTATION:

Verbal Scope	☒	P & ID's	☐	Work Plan	☐
Drawings	☐	Equipment List	☐	Site Walk	☐
Sketches	☐	Specifications	☐	Eng. Mtg.	☐
Flow Diagrams	☐	Written Scope	☒	Estimate	☐

TYPE OF ESTIMATE:

Change Proposal	☐	Government	☐
Plan/Feasibility	☐	Conceptual	☐
Construction	☐	Title I Design	☐
Budget	☒	Independent	☐

BASIS OF ESTIMATE:

Estimate the cost for construction of 3 new extraction wells and 2 new injection wells and chlorinating system.

Fluor Fernald, Inc.

PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: SFES Phase II
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010403

ESTIMATE ASSUMPTIONS

EXECUTION:

- ☒ This project is to be performed on a 40-hour week, 10 hours a day.
- ☐ This project is to be performed on a 40-hour week, 8 hours a day.
- ☐ Premium time allowed.

WAGE RATES:

- ☒ Wage rates within this estimate are based on Project Labor Agreement rates, effective October 2000 and are considered FY01 dollars for estimating.
- ☐ Wage rates within this estimate are based on FF Support Contractor FSC 599 wage rates, effective October 1999 have been escalated 3% and are considered FY01 dollars for estimating.
- ☐ Wage rates within this estimate are based on FF FTE Planning Labor Rates FY01.

ENGINEERING:

- ☒ N/A
- ☐ Engineering dollars provided by the Project Engineer.
- ☐ Engineering dollars have been factored in at the standard 12% of the total direct and indirect field costs as per request of Project Engineer.

CONSTRUCTION MANAGEMENT:

- ☒ N/A
- ☐ Construction Management dollars provided by the Project Engineer.
- ☐ Construction Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

PROJECT MANAGEMENT:

- ☒ N/A
- ☐ Project Management dollars provided by the Project Engineer.
- ☐ Project Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

WASTE PROGRAM MANAGEMENT:

- ☒ N/A
- ☐ Waste Program Management dollars provided by the Project Engineer.

Fluor Fernald, Inc.

PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: SFES Phase II
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010403

PRODUCTIVITY:

A productivity factor has been developed and applied to the unit man-hours derived from MEANS, Richardson, NECA, and or any other published estimating source. See attachment APPENDIX "A" and APPENDIX "B".

ESCALATION:

Escalation costs are excluded from the target estimate. The escalation costs are calculated within the Micro-Frame computer system according to the plan for rebaselining.

UNIT RATES:

Unit man-hours, equipment and material dollars are based on Richardson, MEANS, NECA, and or other published rates.

G & A (HO EXPENSE):

G & A are excluded from the target estimate. The G & A cost are calculated within the Micro-Frame computer system according to the plan for rebaselining.

HEALTH PHYSICS:

See attached APPENDIX "C".

RISK BUDGET:

N/A

Fluor Fernald, Inc.

PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: SFES Phase II
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010403

ESTIMATE INCLUSIONS & EXCLUSIONS

INCLUSIONS:

- Premobilization & Mobilization.
- Demobilization.
- Labor hours.
- Material dollars.
- Equipment dollars.

EXCLUSIONS:

- Premium time.
- Permits and fees.
- FF G & A (Home Office Expense).
- Construction Management.
- Any second tier subcontract costs.
- Project Management dollars.
- Waste Management dollars.

ESTIMATE SUMMARY SHEET

PROJECT: SFES Phase II
ESTIMATE #: C5010403
CLIENT: DOE
WBS #: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4.

ITEM DESCRIPTION	M/H	RATE	LABOR $	S/C $	MAT'L $	EQUIP. $	TOTAL $
PREMOBILIZATION	120		$6,000				$6,000
MOBILIZATION	120		$2,700	$5,408	$2,000	$1,500	$11,608
CIVIL	2,004		$43,070	$22,500	$12,510	$26,240	$104,320
CONCRETE	639		$14,400		$8,500	$1,000	$23,900
ELEC. & INSTR.	2,031		$46,100		$149,600	$19,700	$215,400
PIPING	1,109		$29,300	$500,000	$70,500	$3,800	$603,600
WELL HOUSE	206		$4,600		$17,000	$1,500	$23,100
HVAC / WELL PUMP	1,231		$32,300		$368,300	$32,500	$433,100
IW	239		$5,900		$15,600		$21,500
CHLORINATOR SYSTEM	27		$700	$5,500	$22,500		$28,700
TESTING	320		$7,700				$7,700
DEMOBILIZATION	100		$2,400				$2,400
DIRECT FIELD COSTS TOTAL	**8,148**	**$23.95**	**$195,170**	**$533,408**	**$666,510**	**$86,240**	**$1,481,328**
SUPERVISION - CONTRACTOR	2,360		$62,920				$62,920
SMALL TOOLS & CONSUMABLES	-	-	-		$11,700		$11,700
MISC. EQUIP. RENTAL	-	-	-			$28,500	$28,500
TEMPORARY FACILITIES		-					
TEMPORARY UTILITY HOOK-UP	159	-	$3,800		$2,000		$5,800
JOB CLEAN-UP	367	-	$8,800		$2,900		$11,700
PER DIEM / SUBSISTANCE	-	-	-				
HEALTH PHYS.	83	-	$2,000				$2,000
ADDITIONAL AND JOB SPECIFIC TRAINING	16	-	$383				$383
GENERAL SITE WORKER TRAINING	312	-	$7,467				$7,467
PAYROLL BURDENS & BENEFITS	-	-	$159,900				$159,900
OVERHEAD & PROFIT	-	-	-	$354,300			$354,300
BOND	-	-	-	$27,600			$27,600
SALES TAX	-	-	-		$41,000	$6,900	$47,900
INDIRECT FIELD COSTS TOTAL	**3,296**		**$245,270**	**$381,900**	**$57,600**	**$35,400**	**$720,170**
DIRECT & INDIRECT FIELD COSTS TOTAL	**11,444**	**$38.49**	**$440,440**	**$915,308**	**$724,110**	**$121,640**	**$2,201,498**
TARGET ESTIMATE			**(FY 01 DOLLARS)**				**$2,201,498**

ESTIMATE PERFORMED BY ESTIMATING SERVICES

ESTIMATE SUMMARY SHEET

PROJECT: SFES Phase II
ESTIMATE NO. C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

F A C T O R S

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

FIXED PRICE $	LABOR $	S/C $	MAT'L: $	EQUIP. $	PPE $	TOTAL $
DFC DOLLARS	$195,170	$533,408	$666,510	$86,240		$1,481,328
IFC COST FACTOR	2.2567	–	1.0249	1.3305		
BOND + OVERHEAD & PROFIT COST FACTOR	1.2099	1.2099	1.2099	1.2099	1.2099	
SALES TAX	-	-	1.0600	1.0600	1.0600	
DIRECT FIELD COST FACTOR =	**2.7303**	**1.2099**	**1.3144**	**1.7063**	**1.2825**	
BASE ESTIMATE $'s	$532,880	$645,360	$876,071	$147,151		$2,201,463
BASE FACTOR W/ RISK	1.0000	1.0000	1.0000	1.0000	1.0000	
TARGET ESTIMATE FACTOR	**2.7303**	**1.2099**	**1.3144**	**1.7063**	**1.2825**	
FPS TARGET ESTIMATE (FY01 $)	$532,880	$645,360	$876,071	$147,151		$2,201,463

NOTE:

If there are no DFC Equip. $, enter The IFC Equip. $'s into the direct field cost TOTAL and delete IFC Factor in G65.

ESTIMATE SUMMARY SHEET

PROJECT: SFES Phase II
ESTIMATE NO. C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

Direct Field Cost w / FACTORS

YES	NO
X	

PAY ITEM NO.	DESCRIPTION	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
		(ASSIGN OR PRORATE PPE MAT'L.$'s)—>>					
	PREMOBILIZATION	6000					
		$16,380					$16,380
	MOBILIZATION	2700	5408	2000	1500		
		$7,370	$6,540	$2,630	$2,560		$19,100
	DEMOBILIZATION	2400					
		$6,550					$6,550
	CIVIL	43070	22500	12510	26240		
		$117,600	$27,220	$16,440	$44,770		$206,030
	CONCRETE	14400		8500	1000		
		$39,320		$11,170	$1,710		$52,200
	ELEC. & INSTR.	46100		149600	19700		
		$125,870		$196,640	$33,610		$356,120
	PIPING	29300	500000	70500	3800		
		$80,000	$604,940	$92,670	$6,480		$784,090
	WELL HOUSE	4600		17000	1500		
		$12,560		$22,350	$2,560		$37,470
	HVAC / WELL PUMP	32300		368300	32500		
		$88,190		$484,100	$55,450		$627,740
	IW	5900		15600			
		$16,110		$20,500			$36,610
	CHLORINATOR SYSTEM	700	5500	22500			
		$1,910	$6,650	$29,570			$38,130
	TESTING	7700					
		$21,020					$21,020
TOTAL DIRECT FIELD COSTS w/FACTORS		(FY01 DOLLARS)					$2,201,440

DETAIL ESTIMATE WORKSHEETS

PROJECT: SFES Phaso II
ESTIMATE NO.: C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

ITEM NO.	SUMMARY	QTY	UNIT	MAN-HOURS			COST / UNIT				LABOR	S/C	MAT'L	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C	Mat'l	Equip					
	PREMOBILIZATION				120						$6,000				$6,000
	MOBILIZATION				120						$2,700	$5,408	$2,000	$1,500	$11,608
	DEMOBILIZATION				100						$2,400				$2,400
	CIVIL				2,004						$43,070	$22,500	$12,510	$26,240	$104,320
	CONCRETE				639						$14,400		$8,500	$1,000	$23,900
	ELEC. & INSTR.				2,031						$46,100		$149,600	$19,700	$215,400
	PIPING				1,109						$29,300	$500,000	$70,500	$3,800	$603,600
	WELL HOUSE				206						$4,600		$17,000	$1,500	$23,100
	HVAC / WELL PUMP				1,231						$32,300		$368,300	$32,500	$433,100
	IW				239						$5,900		$15,600		$21,500
	CHLORINATOR SYSTEM				27						$700	$5,500	$22,500		$28,700
	TESTING				320						$7,700				$7,700
	Subtotal Direct Cost	1	LOT		8,148	$23.95					$195,170	$533,408	$666,510	$86,240	$1,481,328

DETAIL ESTIMATE WORKSHEETS

PROJECT: SFES Phase II
ESTIMATE NO.: C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

ITEM NO.		QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION														
	Insurance Certificates, List of Sub-Tier Contractors Procurement Documents, Safe Work Plans, QA/QC Plan, Project Execution Plan, Construction and Engineering Documentation, Acceptable baseline Schedules														
	Duration 3 wks	1	LS	40.0	120	50.00					$6,000				$6,000
	MOBILIZATION														
	S/C Office Trailer	8	mo					300.00				$2,408			$2,408
	Survey and Engineering Controls	1	LS					3,000.00	500.00	500.00		$3,000	$500	$500	$4,000
D	Install Utilities	1	LS	40.0	40	22.69			1,000.00	500.00	$900		$1,000	$500	$2,400
D	Other misc. requirements as required.	1	LS	80.0	80	22.69			500.00	500.00	$1,800		$500	$500	$2,800
										6,360.00					
	Total				120						$2,700	$5,408	$2,000	$1,500	$11,608
	DEMOBILIZATION														
D	Complete Punch List Items.	1	LS	20.0	20	22.69					$500				$500
D	Remove Trailer and Change Facilities.	1	LS	20.0	20	22.69					$500				$500
D	Remove all Utilities.	1	LS	20.0	20	22.69					$500				$500
mC	Decontaminate Equipment.	1	LS	10.0	10	22.69					$200				$200
D	Loadout contractors equipment.	1	LS	20.0	20	22.69					$500				$500
D	Other area requirements.	1	LS	10.0	10	22.69					$200				$200
	Total				100						$2,400				$2,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: SFES Phase II
ESTIMATE NO.: C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

ITEM NO.	CIVIL	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Site Prep														
D	Survey (3) man team	7.5	ac					3,000.00				$22,500			$22,500
D	Plastic warning tape & Safety Fencing	1000	lf	0.13	151	21.49			0.77		$3,240		$770		$4,010
D	Gravel erosion control allowance	37.5	cy	0.30	13	21.49			10.15	7.60	$280		$380	$290	$950
	Site Clearing														
D	Clear and grub	8	ac	48.0	412	21.49				1,125	$8,850			$8,440	$17,290
	Grading & Excavation														
	Access Road														
D	Site grading		cy	0.10		21.49				2.31					
D	Excavation 1600*12*1/27	711	cy	0.2	163	21.49				4.38	$3,500			$3,110	$6,610
D	Backfill 1600*12*.5/27	356	cy	0.20	81	21.49					$1,750				$1,750
D	Geotextile filter fabric 1600*12/9	2133	sy	0.01	24	21.49			1.35		$520		$2,880		$3,400
D	Gravel road 1600*12/9	2133	sy	0.08	190	21.49			1.20	0.35	$4,090		$2,560	$750	$7,400
D	Vibrating compaction	356	cy	0.10	41	21.49				0.26	$870			$90	$960
D	Prepare & roll sub-base	2133	sy	0.1	122	21.49				0.44	$2,620			$940	$3,560
	Pipe Trench 1200' EW & 2900' IW														
D	Trenching	1708	cy	0.05	98	21.49				3.00	$2,100			$5,130	$7,230
D	Backfill	1708	cy	0.15	293	21.49				3.00	$6,300			$5,130	$11,430
D	Compaction	1708	cy	0.009	18	21.49				0.26	$380			$440	$820
	Well Houses														
D	Excavate	135	cy	0.15	23	21.49				3.00	$500			$410	$910
D	Backfill	90	cy	0.25	26	21.49				4.00	$550			$360	$910
D	Dispose excess soil	45	cy	0.08	4	21.49				4.00	$90			$180	$270
D	**Existing Road Repair allowance**		ls	40.0		21.49			1,500.00	500.00					
	Culvert Pipe														
D	Culvert pipes	250	lf	0.20	57	21.49			5.20		$1,230		$1,300		$2,530
D	Backfill culvert pipes	100	cy	1.5	172	21.49				1.07	$3,690			$110	$3,800
D	**Catch Basin**	3	ea	24.0	82	21.49			650.00	216.00	$1,770		$1,950	$650	$4,370
	Guard Rail														
D	Guard rail corrugated steel, galv. steel posts	250	lf	0.10	29	21.49			9.45	0.55	$610		$2,360	$140	$3,110
D	End sections, galv flared	8	ea	0.65	6	21.49			38.50	9.25	$130		$310	$70	$510
1 D	Subtotal Direct Cost				2004						$43,070	$22,500	$12,510	$26,240	$104,320

DETAIL ESTIMATE WORKSHEETS

PROJECT: SFES Phase II
ESTIMATE NO.: C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

ITEM NO.	CONCRETE	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	reinforcing	3	ls	38.0	130	22.43			1084.00	112.00	$2,930		$3,250	$340	$6,520
D	formwork	1500	sf	0.20	343	22.43			1.00	0.20	$7,700		$1,500	$300	$9,500
D	exjoint	60	lf	0.10	7	22.43			0.40		$150		$20		$170
D	water stop	81	lf	0.10	9	22.43			0.50		$210		$40		$250
D	concrete matl 4000#	45	cy	1.0	51	22.43			70.00	4.00	$1,150		$3,150	$180	$4,480
D	anchor bolts	3	ls	4.0	14	22.43			40.00		$310		$120		$430
D	grout	3	ls	8.0	27	22.43			50.00		$620		$150		$770
D	finish concrete	825	sy	0.03	28	22.43				0.03	$640			$20	$660
D	precast concrete splash blocks	6	ea	0.25	2	22.43			20.00		$40		$120		$160
D	special coatings	219	sf	0.08	20	22.43			0.32	0.50	$450		$70	$110	$630
D	special sealant & b/rod	30	lf	0.20	7	22.43			4.00		$150		$120		$270
	Subtotal Direct Cost	1	LOT		639	$22.52					$14,400		$8,500	$1,000	$23,900

DETAIL ESTIMATE WORKSHEETS

PROJECT: SFES Phase II
ESTIMATE NO.: C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

ITEM NO.	ELEC. & INSTR.	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Auger Truck	125	hr	1.0	143	22.66				75.00	$3,240			$9,380	$12,620
D	Bucket Truck	100	hr	1.0	114	22.66				75.00	$2,590			$7,500	$10,090
D	45' Class II pole	5	ea	12.1	69	22.66			373.20		$1,570		$1,866		$3,436
D	#1/0 AL Power cable	16	clf	2.0	37	22.66			42.62		$830		$682		$1,512
D	Ground Cu wire	250	lf	0.05	14	22.66			0.44		$320		$110		$430
D	Messenger attachments	20	ea	3.3	75	22.66			69.75		$1,710		$1,395		$3,105
D	Guy wire typical	5	ea	5.0	29	22.66					$650				$650
D	Disconnect switch 480v 3ph	5	ea	8.0	46	22.66			250.00	50.00	$1,040		$1,250	$250	$2,540
D	Combo starter NEMA 1 enclosure	5	ea	10.0	57	22.66			600.00	50.00	$1,300		$3,000	$250	$4,550
D	Transformer 13.2KVA 480v IPH pole mounted	15	ea	20.0	343	22.66			900.00	100.00	$7,780		$13,500	$1,500	$22,780
D	Variable speed AC drive 40hp 480v 60Hz	3	ea	23.0	79	22.66			8000.00	50.00	$1,790		$24,000	$150	$25,940
D	Transformer Mini power 15KVA 480v 3ph	5	ea	16.0	92	22.66			3150.00	50.00	$2,070		$15,750	$250	$18,070
D	Fuses	20	ea	0.40	9	22.66			100.00		$210		$2,000		$2,210
D	3" conduit rgs	400	lf	0.25	114	22.66			4.50	0.50	$2,590		$1,800	$200	$4,590
D	3" conduit fittings	5	ls	10.0	57	22.66			400.00		$1,300		$2,000		$3,300
D	1 1/2" conduit rgs	250	lf	0.10	29	22.66			1.70	0.40	$650		$425	$100	$1,175
D	1 1/2" conduit fittings	5	ls	8.0	46	22.66			100.00		$1,040		$500		$1,540
D	3/4" conduit rgs	750	lf	0.06	51	22.66			0.70	0.10	$1,170		$525	$80	$1,775
D	3/4" conduit fittings	5	ls	20.0	114	22.66			190.00		$2,590		$950		$3,540
D	3/4" liquid tight	125	lf	0.08	11	22.66			2.50		$260		$313		$573
	INSTRUMENTATION														
D	Flowmeter, w/ element, transducer set, flow computer, analog cord, handhold programmer, & flow meter programming	5	ea	11.0	63	22.66			5765.00		$1,430		$28,825		$30,255
D	Pressure indicating transmitter	5	ea	0.50	3	22.66			205.00		$60		$1,025		$1,085
D	#16 awg contrl cable	375	lf	0.02	9	22.66			0.38		$190		$143		$333
D	6.25/125uM Fiber Optic Cable dual window(850/1300),loose buffer,gel fill	1700	lf	0.01	19	22.66			0.73		$440		$1,241		$1,681
D	DCS Components, incls, analog input, output modules, discrete input module, transnet term. interface board, contr. mod.., encl's sub panel programming etc.	5	ea	36.0	206	22.66			7338.00		$4,670		$36,690		$41,360
D	Instrument Calibration/Testing	5	ls	10.0	57	22.66			100.00		$1,300		$500		$1,800
D	Fiber optic cable bulk plenum	17	CLF	3.5	68	22.66			375.00		$1,540		$6,375		$7,915
D	Fiber optic jumper	1	LS	6.0	7	22.66			500.00		$160		$500		$660
D	Fiber optic pigtail	1	LS	6.0	7	22.66			425.00		$160		$425		$585
D	Fiber optic connector	1	LS	6.0	7	22.66			300.00		$160		$300		$460
D	Fiber optic finger splice	1	LS	6.0	7	22.66			500.00		$160		$500		$660
D	Transceiver	1	LS	10.0	11	22.66			800.00		$260		$800		$1,060
D	Multi-channel rack enclosure 10 mods	1	LS	20.0	23	22.66			1200.00		$520		$1,200		$1,720
D	Fiber optic patch panel 12 ports	1	LS	12.0	14	22.66			1000.00		$310		$1,000		$1,310
	Subtotal Direct Cost	1	LOT		2,031	$22.70					46,100		149,600	19,700	$215,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: SFES Phase II
ESTIMATE NO.: C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

ITEM NO.	PIPING	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Piping Installation 2400' EW & 2900' IW														
D	8" pipe HDPE	5300	lf	0.018	109	26.40			6.74		$2,880		$35,720		$38,600
D	Flange adapter HDPE 8"	20	ea	1.6	37	26.40			88.00	10.00	$970		$1,760	$200	$2,930
D	DI flanges w/ backup ring 8"	20	ea	1.0	23	26.40			40.00	5.00	$600		$800	$100	$1,500
D	8" 90d	1	ea	0.6	1	26.40			66.50	3.07	$20		$70		$90
D	Post Indicator Valve	10	ea	8.0	92	26.40			420.00	50.00	$2,420		$4,200	$500	$7,120
D	Connectioins allowance to existing headers	5	ls	40.0	229	26.40			1500.00	500.00	$6,040		$7,500	$2,500	$16,040
D	Pipe concrete thrust blocks	25	cy	1.0	29	26.40			65.00	10.00	$750		$1,630	$250	$2,630
D	10" pipe HDPE		lf	0.02		26.40			10.47						
D	10" HDPE end caps		ea	4.0		26.40			45.50	8.10					
D	12"x10" branch saddle		ea	1.6		26.40			340.00	8.60					
D	10"x10" HDPE branch		ea	1.1		26.40			249.00	5.75					
D	10 ga stranded magnetic detectable wire & tapir	53	clf	0.80	49	26.40			8.40		$1,280		$450		$1,730
D	plastic warning tape indicating buried pipe	53	clf	0.05	3	26.40			3.70		$80		$200		$280
D	10"x10"x6" HDPE tees		ea	1.1		26.40			249.00	5.75					
	MECHANICAL PIPING														
D	6" steel pipe	300	lf	0.77	266	26.40			22.00		$7,010		$6,600		$13,610
D	6" steel pipe insulate	113	lf	0.32	41	26.40			9.75		$1,090		$1,100		$2,190
D	3" pvc sch 40 drain & ck valves	3	lot	4.0	14	26.40			220.00	60.00	$360		$660	$180	$1,200
D	winged drain frame & grate 13"sq.	3	ea	2.0	7	26.40			100.00	20.00	$180		$300	$60	$540
D	6" flanged cast iron pipe (4ea @ 5')	60	lf	0.329	23	26.40			12.90		$600		$770		$1,370
D	6" flange cast iron 90d elbow	12	ea	1.4	19	26.40			29.00		$510		$350		$860
D	6" butterfly valve lug type	6	ea	4.8	33	26.40			285.00		$870		$1,710		$2,580
D	pitless adapter		ea	5.0		26.40			200.00						
D	6" check valve flanged	6	ea	8.0	55	26.40			505.00		$1,450		$3,030		$4,480
D	3" butterfly valve lug type	12	ea	2.0	27	26.40			227.00		$720		$2,720		$3,440
D	6" flange & gasket	28	ea	1.3	43	26.40			15.25		$1,130		$430		$1,560
D	Bolts & nuts	1	ls	10.0	11	26.40			500.00	50.00	$300		$500	$50	$850
D	Subcontract Well Drilling/Developing allow.	5	ea					100,000				$500,000			$500,000
	Subtotal Direct Cost	1	LOT		1,109	$26.43					29,300	500,000	70,500	3,800	$603,600

DETAIL ESTIMATE WORKSHEETS

PROJECT: SFES Phase II
ESTIMATE NO.: C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

ITEM NO.	IW	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	Dbl Swing Gate 10'w	1	ea	20.0	23	21.49			385.00		$490		$390		$880
D	Install Chain Link Fence 7'h, 9gage, w/ 3 strand	86	lf	0.15	15	21.49			11.50		$320		$990		$1,310
D	Ground rods (fence & gate)	2	ea	1.5	3	21.49			20.00		$70		$40		$110
D	#4 bare cu wire (fence & gate grounding)	88	lf	0.01	1	21.49			0.27		$20		$20		$40
D	Ground clamps	36	ea	0.15	6	21.49			4.00		$130		$140		$270
D	Concrete pad for well & pump	4	cy	4.7	20	21.49			151.00	1.61	$430		$560	$10	$1,000
D	Concrete pad for elect	1	cy	5.0	6	21.49			151.00	1.61	$120		$150		$270
D	Watt hour meter	1	ea	1.0	1	22.66			2350.00		$30		$2,350		$2,380
D	20A Duplex receptacles	1	ea	0.49	1	22.66			50.30		$10		$50		$60
D	1 5/8" Unistrut channel	50	lf	0.19	11	22.66			3.30		$250		$170		$420
D	Terminations #2	5	ea	0.33	2	22.66			3.40		$40		$20		$60
D	Terminations #6	1	ea	0.27	0	22.66			2.00		$10				$10
D	Terminations #8	2	ea	0.22	1	22.66			1.85		$10				$10
D	Terminations #12	2	ea	0.15	0	22.66			1.25		$10				$10
D	Terminations #2/0	2	ea	0.50	1	22.66			4.15		$30		$10		$40
D	Distribution Panel 100A	1	ea	8.0	9	22.66			138.00		$210		$140		$350
D	100w fixture w/ photocell	1	ea	1.5	2	22.66			632.50		$40		$630		$670
D	1 1/4" conduit stanchion	10	lf	0.18	2	22.66			1.55		$50		$20		$70
D	1/x #12 cu wire	100	lf	0.01	1	22.66			0.07		$30		$10		$40
D	1/c #12 terminations	2	ea	0.15	0	22.66			1.25		$10				$10
D	Heat tracing	100	lf	0.10	11	26.40			2.00		$300		$200		$500
D	4" flow control valve	1	ea	4.5	5	26.40			2850.00		$140		$2,850		$2,990
D	4" magnet flow meter	1	ea	4.0	5	26.40			4800.00		$120		$4,800		$4,920
D	Surge arrestors	8	ea	1.1	10	26.40			100.00		$270		$800		$1,070
D	3" orifice plast 316 stl.	1	ea	1.9	2	26.40			124.00		$60		$120		$180
D	4" pipe cs	6	lf	0.17	1	26.40			0.50		$30		$40		$70
D	3" pipe cs	6	lf	0.13	1	26.40			4.61		$20		$30		$50
D	4" pipe pvc	70	lf	0.16	13	26.40			2.10		$340		$150		$490
D	3" pipe pvc	80	lf	0.13	12	26.40			1.45		$310		$120		$430
D	2" pipe pvc	80	lf	0.11	10	26.40			0.70		$270		$60		$330
D	4" 90 degree ell cs sch 40	2	ea	2.7	6	26.40			9.63		$160		$20		$180
D	3" 90 degree ell cs sch 40	2	ea	1.6	4	26.40			5.75		$90		$10		$100
D	3" 45 degree ell cs sch 40	1	ea	1.6	2	26.40			4.54		$50		$5		$55
D	4" tee cs shd 40	1	ea	4.1	5	26.40			15.72		$120		$20		$140
D	4"x3" weldolet	1	ea	2.6	3	26.40			14.87		$80		$10		$90
D	4" cap cs	1	ea	1.3	1	26.40			8.00		$40		$10		$50
D	1/2" sockolet 3000# cs	5	ea	0.56	3	26.40			2.65		$80		$10		$90
D	1/4" sockolet 3000# cs	1	ea	0.23	0.3	26.40			1.50		$10		$2		$12
D	1" sockolet 3000# cs	1	ea	0.06	0.1	26.40			3.45				$3		$3
D	4" adapter cs to pvc	1	ea	0.70	1	26.40			11.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.50	1	26.40			9.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.33	0.4	26.40			4.50		$10		$5		$15
	Subtotal Direct Cost	1	LOT		201	#DIV/0!					4,900		15,000		$19,900

DETAIL ESTIMATE WORKSHEETS

PROJECT: SFES Phase II
ESTIMATE NO.: C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

ITEM NO.	IW	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	1"x3" pipe nipples	1	ea	0.80	1	26.40			4.12		$20		$4		$24
D	1"x6" pipe nipples	1	ea	0.80	1	26.40			5.60		$20		$10		$30
D	1/2"x6" pipe nipples	1	ea	0.80	1	26.40			3.75		$20		$4		$24
D	1/2"x3" pipe nipples	3	ea	0.70	2	26.40			3.75		$60		$11		$71
D	1/4"x3" pipe nipples	1	ea	0.70	1	26.40			2.12		$20		$2		$22
D	1/2" sockegtweld 90 degree ell	1	ea	0.80	1	26.40			8.35		$20		$8		$28
D	4" 150# flange	9	ea	1.6	17	26.40			11.83		$450		$106		$556
D	4" 150# flange	3	ea	1.6	6	26.40			9.17		$150		$28		$178
D	3" pvc she 80 caps	1	ea	0.29	0.3	26.40			3.20		$10		$3		$13
D	4" pvc she 80 caps	1	ea	0.38	0.4	26.40			3.70		$10		$4		$14
D	4" 150# butterfly valve wafer	1	ea	1.54	2	26.40			54.00		$50		$54		$104
D	3" 150# butterfly valve wafer	1	ea	1.33	2	26.40			54.00		$40		$54		$94
D	1" ball valve	2	ea	0.84	2	26.40			81.60		$50		$163		$213
D	1/2" ball valve	1	ea	0.84	1	26.40			51.00		$30		$51		$81
D	1/4" gate valve	2	ea	0.84	2	26.40			56.00		$50		$112		$162
	Subtotal Direct Cost	1	LOT		38	#DIV/0!					1,000		600		$1,600

DETAIL ESTIMATE WORKSHEETS

PROJECT: SFES Phase II
ESTIMATE NO.: C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

ITEM NO.	WELL HOUSE	QTY	UNIT	MAN-HOURS			COST/UNIT				LABOR	S/C	MAT'L	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C	Mat'l	Equip					
D	Pre Engr. Bldg.	3	ea	60.0	206	22.43			5672.21	500.00	$4,620		$17,020	$1,500	$23,140
	Subtotal Direct Cost	1	LOT		206	$22.34					4,600		17,000	1,500	$23,100

DETAIL ESTIMATE WORKSHEETS

PROJECT: SFES Phaso II
ESTIMATE NO.: C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

ITEM NO.	HVAC / WELL PUMP	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	HVAC														
D	electric heaters 400cfm 3.3kw	3	ea	4.0	14	22.66			600.00		$310		$1,800		$2,110
D	fan, intake louver, exhaust & cntrl.	3	ea	8.0	27	22.66			843.50		$620		$2,530		$3,150
	WELL PUMP														
D	pump submersed 40hp 400gpm, equip & assem	13	ea	80.0	1190	26.40			28,000	2,500.00	$31,400		$364,000	$32,500	$427,900
	Subtotal Direct Cost	1	LOT		1,231	$26.24					32,300		368,300	32,500	$433,100

DETAIL ESTIMATE WORKSHEETS

PROJECT: SFES Phase II
ESTIMATE NO.: C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

ITEM NO.	CHLORINATOR SYSTEM	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Chlorinator Model 40x6c, 10,000ppd	1	ea	24.0	27	$26.40			9692.00		$720		$9,690		$10,410
D	Control system compound loop	1	ea						8730.00				$8,730		$8,730
D	Gas detector	1	ea						1531.00				$1,530		$1,530
D	Booster pump 3hp, 250gpm	1	ea						1590.00				$1,590		$1,590
D	Sample pump	1	ea						998.00				$1,000		$1,000
D	Factor Representative Set-up & service	1	ls					5500.00				$5,500			$5,500
	Subtotal Direct Cost	1	LOT		27	$25.50					700	5,500	22,500		$28,700

DETAIL ESTIMATE WORKSHEETS

PROJECT: SFES Phase II
ESTIMATE NO.: C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

ITEM NO.	TESTING	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	HYDROSTATIC TESTING	1	ls	100.0	114	$26.40					$3,020				$3,020
D	ELECTRICAL TESTING	1	ls	100.0	114	$22.66					$2,590				$2,590
D	ACCEPTANCE TEST	1	ls	80.0	92	$22.66					$2,070				$2,070
	Subtotal Direct Cost	1	LOT		320	$24.04					7,700				$7,700

DETAIL ESTIMATE WORKSHEETS

PROJECT: SFES Phase II
ESTIMATE NO.: C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

ITEM NO.			QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Project Staffing															
		Each														
	1. Project Manager			hr	1.0		45.19									
	2. Project Superintendent	1	1348	hr	1.0	1348	31.92					$43,040				$43,040
	3. Project Engineer	0.25	337	hr	1.0	337	20.71					$6,980				
	4. Safety Engineer	0.25	337	hr	1.0	337	19.75					$6,660				$6,660
	5. QA/QC Engineer	0.25	337	hr	1.0	337	18.51					$6,240				$6,240
	6. Office Administration			hr	1.0		15.75									
	7. Contract Administration/ Scheduler			hr	1.0		27.10									
	8. Clerical			hr	1.0		14.00									
	TOTAL					2,360	26.66					$62,920				$62,920

APPENDIX " A"

PROJECT: SFES Phase II
ESTIMATE NC C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

SITE SPECIFIC

EFFICIENCY / MULTIPLIER ANALYSIS

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

PERCENT OF INFLUENCE ON CHART MANHOURS

	40%	50%	60%	70%	80%	90%	100%	105%	110%	% OF NFLUENCE	WT'D VALUE	PROD. RESULT
CRAFT SKILL (NOTE 1)	POOR			FAIR			STD	V.GOOD	EXCELLENT	100.0%	12.0%	0.12
CRAFT AVAIL.(NOTE 1)		POOR		FAIR			STD			100.0%	8.0%	0.08
CLIMATE (NOTE 2)	SEVERE	ICE/SNOW			RAIN		+40 TO +85			80.0%	20.0%	0.16
PLANT ELEVATION		OVER 10,000FT			5,000' TO 10,000 FT		UNDER 5,000 FT			100.0%	5.0%	0.05
WORK SPACE				200 SF	250 SF	300 SF	350 SF			100.0%	10.0%	0.1
WORK WEEK	<---- MULTIPLE SHIFTS-											
50 HOUR WORK WEEK	//////////	//////////	//////////	OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS	4-10s / 5-8s			100.0%	15.0%	0.15
	//// MULTIPLE-SHIFT ////////									0.0%	0.0%	0
60 HOUR WORK WEEK	//////////	//////////	OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS					0.0%	0.0%	0
	//////////	//////////										
SHIFTWORK												
2ND SHIFT					2ND SHIFT		OR ONE SHIFT ONLY			100.0%	3.0%	0.03
3RD SHIFT			3RD SHIFT							100.0%	5.0%	0.05
PROJECT SIZE					400M MH AND UP	300M TO 400M MH	200M TO 300M MH	200M MH OR LESS		100.0%	4.0%	0.04
PLANT TYPE				REVAMP ONLY	REVAMP & NEW	NEW IN EXIST PLT	GRASS ROOTS			90.0%	8.0%	0.072
AREA/UNION INFLUENCE	STRONG		MILD		SOME		NONE			60.0%	10.0%	0.06
											100.0%	91.2%

NOTES.....
1. TURNOVER HAS BEEN CONSIDERED
2. FOR EXTERIOR WORK ONLY

EFFICIENCY (AS A % OFF CHART MANHOURS) 91.2%

MULTIPLIER - (TO BE APPLIED TO CHART M.H.'S TO OBTAIN SITE M.H.'S) 1.10

EFFICIENCY FACTORS

PROJECT: SFES Phase II
ESTIMATE NO. C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

Fluor Fernald, Inc.

EXAMPLE:

STANDARD CHART MANHOURS =	NET	100
EFFICIENCY FACTORS:		
* SITE SPECIFIC (SEE APPENDIX A)	10%	10.0
S/T = BASE UNIT MANHOURS		110
OVERTIME PRODUCTIVITY FACTOR (SEE DETAIL WORKSHEET BACK-UP)	0.00%	0
		110
* TASK SPECIFIC (confined space, high elevation, congestion, etc.)	0.0%	0
		110

* PPE SPECIFIC (Based on current data and estimating knowledge)

	PPE LEVEL									
	D		Mod.'D'		Mod. "C"		C		C+	
PRODUCTIVITY HOURS		MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's
(AS A %) / ADD MH's	4.00%	4	28.00%	31	66.00%	73	74.00%	81	96.00%	106
(AS A MULTIPLIER)/TOTAL HRS	1.04	114.4	1.28	140.8	1.66	182.6	1.74	191.4	1.96	215.6
TOTAL MULTIPLIER w/SITE PROD.	1.144		1.408		1.826		1.914		2.156	

NOTE : Use the Default Productivity Factor of 'mC' for working in a contaminated area if the Safety Level cannot be determined.

(SEE FD FERNALD ESTIMATING SERVICES REFERENCE MANUAL IM-6006 8.10)

Total hours worked in a specific PPE level divided by 10 hour working days = (PPE) ManDays to determine material cost of PPE's.
(SEE APPENDIX C - HEALTH PHYSICS)

11.0	Man Days	14.0	Man Days	18.0	Man Days	19.0	Man Days	22.0	Man Days

THESE EFFICIENCY FACTORS WERE APPLIED INDIVIDUALLY THROUGHOUT THE ESTIMATE AT A TASK SPECIFIC LEVEL, TO OBTAIN A MORE ACCURATE ACCOUNT OF OVERALL EFFICIENCY IMPACT DUE TO PPE REQUIREMENTS IN HANDLING CONTAMINATED AND HAZARDOUS WASTE.

EFFICIENCY FACTORS

PROJECT: SFES Phase II
ESTIMATE NO. C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

PPE MULTIPLIER DEVELOPEMENT

		D	mD	mC	C	C+
CREW SIZE & MAKE-UP	STANDARD	7	7	7	7	7
	WORKER-BUDDY	0	0	0	0	0
	SUPPORT TEAM	0	0	0	0	0
	TOTAL CREW	7	7	7	7	7
CREW SIZE RATIO		1.00	1.00	1.00	1.00	1.00
AVAILABLE WORK TIME FACTOR		0.96	0.78	0.7	0.7	0.68
PPE LABOR PRODUCTIVITY FACTOR		1	1	0.86	0.82	0.75
NET PRODUCTIVITY RATIO		0.96	0.78	0.602	0.574	0.51
NET PRODUCTIVITY MULTIPLIER		**1.04**	**1.28**	**1.66**	**1.74**	**1.96**

These factors were based on Tables 6.1 and 6.2, Moderate Work Efforts, 66F to 85F temperature of 'Hazardous Waste Cost Control' by R.A.Selg.
Modifications were made to reflect a 10 hour work day and no buddy system or support team for levels D, mC and C.
The worker-buddy and support team members, if required, may be covered under Construction Mgmt. (Rad Techs).

AVAILABLE WORK TIME FACTOR		D	mD	mC	C	C+
TOTAL WORK MINUTES per [4 - 10's		600	600	600	600	600
ADDITN'L SITE SAFETY MEETINGS NOT INCLD. IN BAS	QUANTITY	1	1	1	1	1
	MINUTES	25	25	25	25	25
TOTAL		25	25	25	25	25
PPE DON & DOFFING	QUANTITY	0	0	3	3	3
(ADJUST LEVEL D per WORK PLAN)	MINUTES	0	0	15	15	20
TOTAL			0	45	45	60
WORK BREAKS	QUANTITY	N/A	2	2	2	2
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			30	30	30	30
MOBILIZATION - ROUND TRIPS	QUANTITY	N/A	4	4	4	4
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			60	60	60	60
COOLDOWNS PER DAY	QUANTITY	N/A	4	4	4	4
** (4 OUT OF 12 MONTHS) 33.33%	MINUTES	N/A	15	15	15	15
TOTAL			20	20	20	20
AIR TANK REPLACEMENT	QUANTITY	N/A	N/A	N/A	N/A	N/A
	MINUTES	N/A	N/A	N/A	N/A	N/A
TOTAL						
AVAILABLE WORK TIME		575	465	420	420	405
AVAILABLE WORK TIME FACTOR		**0.96**	**0.78**	**0.7**	**0.7**	**0.68**

NOTE: Adjust 'Work Minutes per Day' basis to: 5 - 8's, or leave as 4 - 10's. Any other circumstances, over-ride the minutes per day.

** Assumption based on work performed in May, June, July & August, pro-rating cost over one year. Adjust % to individual circumstances.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: SFES Phase II
ESTIMATE NO. C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

Fluor Fernald, Inc.

PPE"s - PERSONAL PROTECTIVE EQUIPMENT

DESCRIPTION	UNIT	UNIT COST	* NO. OF CHANGE OUTS PER WORKER PER DAY				
			Man Days (TOTAL HOURS worked in PPE's Div. by WORK HOURS / DAY)				
PPE LEVEL C / C+ / B : F/HF MASK w/RESP.&CART.			*	MAN DAYS	MAT'L.$'s	PPE LEVEL	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	0	$0	C / C+	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	0	$0	C / C+	(DOUBLE PPE)
GLOVE LINER - DISPOSABLE	PR	$0.24	3	0	$0	C / C+	
GLOVE LASTEX - DISPOSABLE	PR	$0.26	3	0	$0	C / C+	
GLOVE, WORK - DISPOSABLE	PR	$1.02	3	0	$0	C / C+	
APR CARTRIDGES - DISPOSABLE	PR	$6.98	3	0	$0	C / C+	
SUB-TOTAL		$17.42	3		$0		
				$/MD =	$0.00		

PPE LEVEL mC : FULL DRESS w/ FACE SHIELD				MAN DAYS	MAT'L.$'s	PPE LEVEL
LT.WT. DISPOSABLE COVERALLS W/HOOD & BOOTIE	PR	$4.46	3	1	$13	mC
GLOVE LINER - DISPOSABLE	PR	$0.24	3	1	$1	mC
GLOVE, LASTEX - DISPOSABLE	PR	$0.26	3	1	$1	mC
GLOVE, WORK - DISPOSABLE	PR	$1.02	3	1	$3	mC
SUB-TOTAL		$5.98	3		$18	
				$/MD =	$18.00	

SUBCONTRACTOR REQUIRED PURCHASES			QTY. PER WKR.	NO. OF WORKERS	MAT'L.$'s	PPE LEVEL
RUBBER BOOT COVERS-(1)PR.PER WORKER	PR	$12.70	6	0	$0	D/C/B
APR w/HALF FACE MASK - (1) PER WORKER	EA	$22.30	6	0	$0	C
APR w/FULL FACE MASK - (1) PER WORKER	EA	$174.00	6	0	$0	C
SCBA	EA	$1,894.00	2	0	$0	B
COOL VESTS	EA	$137.50	6	0	$0	C/B
THERMO STRIPS	EA	$50.00	6	0	$0	C/B
SUB-TOTAL					$0	

TOTAL PPE's = MAT'L.$'s $0

(FORWARD TO PAGE 2 OF 2)

OTHER PPE's SUCH AS HARD HAT, SAFETY GLASSES/GOGGLES, STEEL TOED SAFETY SHOES, HEARING PROTECTION, ARE CONSIDERED THE SUBCONTRACTORS RESPONSIBILITY AND ARE COVERED IN HIS OVERHEAD EXPENSE.
COSTS OF FD FERNALD SUPPLIED PPE's, SUCH AS COTTON COVERALLS, EXCHANGE OF RUBBER BOOT COVERS AND RESPIRATORS FOR CHANGEOUTS AND CLEANING OF SAME IS INCURRED BY FD FERNALD AND COSTS ARE NOT INCLUDED AS PART OF PROJECT COSTS AT THIS TIME.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: SFES Phase II
ESTIMATE NO. C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

--MEDICAL MONITORING --

MEDICAL - PHYSICAL and IN-VIVO MONITORING - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION PHYSICAL (3hrs), IN-VIVO (1hr)	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BASELINE PHYSICALS	1	4	7.793	31	$23.95	$750
ANNUAL PHYSICALS	0	4	7.793	0	$23.95	$0
EXIT (TERMINATION) PHYSICALS (IN-VIVO)	1	1	7.793	8	$23.95	$190
SUB-TOTAL						$940

RADIATION IN-VITRO SURVEILLANCE - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BI-MONTHLY BIOASSAY	4	1	7.793	31	$23.95	$750
SUB-TOTAL						$750

RANDOM DRUG TESTING

	TESTS	HRS	TOTAL HOURS	AVG. RATE	LABOR $'s
	6	2	12	$23.95	$300

NO. OF WKRS. TESTED	TESTING DAYS PER YR.	AVG. NO. OF TESTS PER DAY	CHANCE/ DAY FOR TEST	NO. OF WKRS. FOR THIS ESTIMATE	CHANCES /DAY FOR TEST FOR PROJECT	CONSTR WORKING DAYS
2340	226	10	0.0042735	10	0.0427	152

		LABOR $'s THRU SAFETY	LABOR $'s
WORK DELAYS CAUSED BY MONITORING	0.0%	$270,690	$0
			LABOR $'s
WORK DELAYS CAUSED BY RAD CHECKING	0.0%	$270,690	$0

	TOTAL LABOR	TOTAL MAT'L.	GRAND TOTAL
TOTAL HEALTH PHYSICS	$2,000	$0	$2,000

(FORWARD TO ESTIMATE SUMMARY SHEET)

ACTIVITY DURATIONS

Fluor Fernald, Inc.

PROJECT: SFES Phase II
ESTIMATE NO. C5010403
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC4

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
CONSTRUCTION:	01-May-01	01-Apr-02	01-Aug-02	01-Dec-02	8.0	MONTHS
					0	MONTHS
TOTAL					8.0	MONTHS

	DATE of EST. to MID-POINT ACTIVITY DURATION	
a.	15.0	MONTHS
b.	0	MONTHS

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
OPERATIONS					0	MONTHS

DATE of EST. to MID-POINT ACTIVITY DURATION	
0	MONTHS

ACTIVITY DURATION IS USED IN DETERMINING NUMBER of WORKERS for CERCLA/SAT TRAINING HOURS and HEALTH PHYSICS COSTS.

TRAINING

PROJECT:	SFES Phase II	DATE:	02-May-01
ESTIMATE #:	C5010403	ESTIMATOR:	Wagner
CLIENT:	DOE	LOCATION:	Fernald
WBS #:	1.1.E.F	TASK #:	EFEC4

Fluor Fernald, Inc.

Site Access Training Requirements (RM-0055 Rev. 1 Effective: 09/30/99)

Training Requirements	Non-Hazardous	Occasional Site Worker	General Site Worker		
Access Area	**Administrative Support Area**	**Controlled Area**	**Contamination Compound**	**Frequency**	
	8 Hour	24 Hour Hazwoper	40 Hour Hazwoper		
General Employee Training	X	X	X	Annually	
Site Worker Training		X	X	One Time	
Rad. Worker I		X		Biennially	
Rad. Worker II			X	Biennially	
Respirator Training *			X	Annually	
Respirator Fit Testing *			X	Annually	
Supervised Field Experience	0 HR	8 HR	24 HR	One time →	*On the Job*
Site Worker Refresher		X	X	Annually ⇨	4 Hour
Rad. Worker I Retraining		X		Every 2 years ⇨	4 Hour
Rad. Worker II Retraining			X	Every 2 years ⇨	8 Hour

Additional Training	HRS	No. of Workers	Total Hours
Job Specific Training =	2	7	14
Fire Watch Training =	1	2	2
Lead Worker Training =	4	0	0
Lock out / Tag out Training =	8	0	0
Rigging Training =	24	0	0
Scaffold Training =	16	0	0

DURATION 8 Month(s)

Average Rate $ 23.95

Number of General Site Worker(s)	8	General Site Worker Training Cost	$7,467
Number of Occasional Site Worker(s)	0	Occasional Site Training Cost	$0
Number of Non-Hazardous Worker(s)		Non-Hazardous Training Cost	$0
		Additional Training Cost	$383
Total Training Hours	328	Total Training Cost =	$7,850

* = All employees classified as General Site Worker must initially take respirator training. The annual requirement for the repeat of training and the fit test frequency requirements are only needed by those employees that are required to wear a respirator.

COST IMPACT MATRIX SHEET

Estimate No.: C5010403
Project: SFES Phase II
Client: DOE
WBS: 1.1.E.F

Fluor Fernald, Inc.

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFEC4

Base Estimate Total	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					PREMOBILIZATION					
$2,201,440	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$16,380	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-30%	50%								
Range - %	-30%	50%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$11,466	$24,570	$0	$0	$0	$0	$0	$0	$0	$0
Distribution	U									
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					MOBILIZATION					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$7,370	Base $	$6,640	Base $	$2,630	Base $	$2,560	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-20%	50%	-20%	50%	-20%	50%	-20%	50%		
Range - %	-20%	50%	-20%	50%	-20%	50%	-20%	50%	0%	0%
Range - $	$5,896	$11,055	$5,232	$9,810	$2,104	$3,945	$2,048	$3,840	$0	$0
Distribution	U		U		U		U			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010403
Project: SFES Phase II
Client: DOE
WBS: 1.1.E.F

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFEC4

Fluor Fernald, Inc.

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					DEMOBILIZATION					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$6,550	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-40%	60%	-40%	60%						
Range - %	-40%	60%	-40%	60%	0%	0%	0%	0%	0%	0%
Range - $	$3,930	$10,480	$0	$0	$0	$0	$0	$0	$0	$0
Distribution	U		U							
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					CIVIL					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$117,600	Base $	$27,220	Base $	$16,440	Base $	$44,770	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-10%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s			-10%	20%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-10%	25%			-10%	25%	-10%	25%		
Range - %	-20%	50%	-10%	20%	-20%	50%	-20%	50%	0%	0%
Range - $	$94,080	$176,400	$24,408	$32,664	$13,152	$24,660	$36,816	$67,155	$0	$0
Distribution	T		T		T		T			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010403
Project: SFES Phase II
Client: DOE
WBS: 1.1.E.F

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFEC4

Fluor Fernald, Inc.

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					CONCRETE					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost	Base $	$39,320	Base $	$0	Base $	$11,170	Base $	$1,710	Base $	$0
Drivers	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%			-10%	25%	-10%	25%		
Range - %	-10%	50%	0%	0%	-20%	50%	-20%	50%	0%	0%
Range - $	$35,388	$58,980	$0	$0	$8,936	$16,755	$1,368	$2,565	$0	$0
Distribution	T				T		T			
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					ELEC. & INSTR.					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost	Base $	$125,870	Base $	$0	Base $	$196,640	Base $	$33,610	Base $	$0
Drivers	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%			-10%	25%	-10%	25%		
Range - %	-10%	50%	0%	0%	-20%	50%	-20%	50%	0%	0%
Range - $	$113,283	$188,805	$0	$0	$157,312	$294,960	$26,888	$50,415	$0	$0
Distribution	T				T		T			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010403
Project: SFES Phase II
Client: DOE
WBS: 1.1.E.F

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFEC4

Fluor Fernald, Inc.

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					PIPING					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$80,000	Base $	$604,940	Base $	$92,670	Base $	$6,480	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	25%								
Material Pricing					-5%	10%				
Equipment Rental							-5%	10%		
Subcontract $'s			-5%	10%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%	-5%	25%	-5%	25%	-5%	25%		
Range - %	-10%	50%	-10%	35%	-10%	35%	-10%	35%	0%	0%
Range - $	$72,000	$120,000	$544,446	$816,669	$83,403	$125,105	$5,832	$8,748	$0	$0
Distribution	T		T		T		T			
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					WELL HOUSE					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$12,560	Base $	$0	Base $	$22,350	Base $	$2,560	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	15%								
Material Pricing					-5%	10%				
Equipment Rental			-5%	10%			-5%	10%		
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%			-5%	25%	-5%	25%		
Range - %	-10%	40%	-5%	10%	-10%	35%	-10%	35%	0%	0%
Range - $	$11,304	$17,584	$0	$0	$20,115	$30,173	$2,304	$3,456	$0	$0
Distribution	T				T		T			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010403
Project: SFES Phase II
Client: DOE
WBS: 1.1.E.F

Fluor Fernald, Inc.

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFEC4

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					HVAC / WELL PUMP					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$88,190	Base $	$0	Base $	$484,100	Base $	$55,450	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	10%								
Material Pricing					-5%	10%				
Equipment Rental							-5%	10%		
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%			-5%	25%	-5%	25%		
Range - %	-10%	35%	0%	0%	-10%	35%	-10%	35%	0%	0%
Range - $	$79,371	$119,057	$0	$0	$435,690	$653,535	$49,905	$74,858	$0	$0
Distribution	T				T		T			
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					IW					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$16,110	Base $		Base $		Base $	$20,500	Base $	
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	10%								
Material Pricing					-5%	10%				
Equipment Rental							-5%	10%		
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%			-5%	25%	-5%	25%		
Range - %	-10%	35%	0%	0%	-10%	35%	-10%	35%	0%	0%
Range - $	$14,499	$21,749	$0	$0	$0	$0	$18,450	$27,675	$0	$0
Distribution	T						T			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010403
Project: SFES Phase II
Client: DOE
WBS: 1.1.E.F

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFEC4

Fluor Fernald, Inc.

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	CHLORINATOR SYSTEM									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$1,910	Base $	$6,650	Base $	$29,570	Base $	$0	Base $	
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	15%								
Material Pricing					-5%	25%				
Equipment Rental										
Subcontract $'s			-5%	15%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%	-5%	25%	-5%	25%				
Range - %	-10%	40%	-10%	40%	-10%	50%	0%	0%	0%	0%
Range - $	$1,719	$2,674	$5,985	$9,310	$26,613	$44,355	$0	$0	$0	$0
Distribution	T		T		T					
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	TESTING									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$21,020	Base $		Base $		Base $		Base $	
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%								
Range - %	-5%	25%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$19,969	$26,275	$0	$0	$0	$0	$0	$0	$0	$0
Distribution	T									
Correlation Rank										

Analyst: _____

Client: _____

EFEC5

REPLACE VACUUM TRUCK

09/06/2001
3:11 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC5
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	0.0	264,258.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	0.0	0.0	264,258.0	264,258.0	264,258.0	264,258.0	264,258.0	264,258.0	264,258.0	264,258.0
Yr Total Cost:	0	0	278,721	0	0	0	0	0	0	0
Cum Total Cost:	0	0	278,721	278,721	278,721	278,721	278,721	278,721	278,721	278,721

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Total Cost:	0	0	278,721	0	0	0	0	0	0	0
Cum Total Cost:	0	0	278,721	278,721	278,721	278,721	278,721	278,721	278,721	278,721

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

EFEC6

AWWT PROCESS IMPROVEMENTS

09/06/2001
2:30 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC6
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: FIELDSUB **FIELD SUBS** **EOC:** SUBCONTRACTORS
Res Dept: 952 **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	431,770.0	601,050.0	119,810.0	281,960.0	0.0	281,360.0	0.0	0.0	0.0
Cum Units:	0.0	431,770.0	1,032,820.0	1,152,630.0	1,434,590.0	1,434,590.0	1,715,950.0	1,715,950.0	1,715,950.0	1,715,950.0
Yr Total Cost:	0	443,428	633,945	129,905	314,278	0	332,063	0	0	0
Cum Total Cost:	0	443,428	1,077,373	1,207,278	1,521,556	1,521,556	1,853,619	1,853,619	1,853,619	1,853,619

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: 952 **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	2,913.0	2,913.0	2,913.0	2,913.0	0.0	2,913.0	0.0	0.0	0.0
Cum Units:	0.0	2,913.0	5,826.0	8,739.0	11,652.0	11,652.0	14,565.0	14,565.0	14,565.0	14,565.0
Yr Total Cost:	0	2,992	3,072	3,158	3,247	0	3,438	0	0	0
Cum Total Cost:	0	2,992	6,064	9,223	12,469	12,469	15,907	15,907	15,907	15,907

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Total Cost:	0	446,419	637,017	133,064	317,525	0	335,501	0	0	0
Cum Total Cost:	0	446,419	1,083,437	1,216,501	1,534,026	1,534,026	1,869,527	1,869,527	1,869,527	1,869,527

CAM_____ for MJ_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

FLUOR GLOBAL SERVICES

Memorandum

To:	Jack Hughes,MS52-5 Rob Kneip, MS52-5	Date:	April 30, 2001
Location:	Fernald	Reference:	N/A
From:	Ken Kepler, MS80-3	Fernald #:	M:OOTP:(PC/EST)2001-0025
Location:	Springdale	Client:	DOE DE-AC24-01OH20115
Extension:	648-6761	Subject:	AWWT PROCESS IMPROVEMENTS

c: File Record Subject ESTIMATE C5010409
Tom Wagner, MS80-3

Attached are two (2) copies of the estimate for the AWWT PROCESS IMPROVEMENTS. To request any additional copies of this estimate or for any questions, please contact Tom Wagner on extension 6120.

KGK:TW:hmp
Attachment

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 3, 2001

PROJECT DESCRIPTION: AWWT Process Improvements
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010409

BASIS OF ESTIMATE

SUPPORTING DOCUMENTATION:

Verbal Scope	☒	P & ID's	☐	Work Plan	☐
Drawings	☐	Equipment List	☐	Site Walk	☐
Sketches	☒	Specifications	☐	Eng. Mtg.	☒
Flow Diagrams	☐	Written Scope	☒	Estimate	☐

TYPE OF ESTIMATE:

Change Proposal	☐	Government	☐
Plan/Feasibility	☐	Conceptual	☐
Construction	☐	Title I Design	☐
Budget	☒	Independent	☐

BASIS OF ESTIMATE:

Estimate the cost for construction of AWWT process improvements.
Package #1 FY02: Replacement of metering pumps, worn components, pumps, valves & instrumentation; piping rerouting of BSL away from K65 trench 600lf of HDPE piping & trenching; new clarifier pumps, controllers & piping; replace pumps on tanks 361 & 701.
Package #2 FY03: Tank repairs & refurbishment; replace stainless steel brine piping with pvc; replacement of worn components, pumps, valves, instrumentation; & install inlet well screens on IX vessels.
Package #3 FY04: Replacement of worn components pumps valves, instrumentation; separte source of low-pressure air for filter air scour.
Package #4 FY05: Replacement of worn components pumps valves, instrumentation; tank repairs and refurbishment.
Package #5 FY07: Replacement of worn components pumps valves, instrumentation; tank repairs and refurbishment.

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 3, 2001

PROJECT DESCRIPTION: AWWT Process Improvements
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010409

ESTIMATE ASSUMPTIONS

EXECUTION:

- ☒ This project is to be performed on a 40-hour week, 10 hours a day.
- ☐ This project is to be performed on a 40-hour week, 8 hours a day.
- ☐ Premium time allowed.

WAGE RATES:

- ☒ Wage rates within this estimate are based on Project Labor Agreement rates, effective October 2000 and are considered FY01 dollars for estimating.
- ☐ Wage rates within this estimate are based on FF Support Contractor FSC 599 wage rates, effective October 1999 have been escalated 3% and are considered FY01 dollars for estimating.
- ☐ Wage rates within this estimate are based on FF FTE Planning Labor Rates FY01.

ENGINEERING:

- ☒ N/A
- ☐ Engineering dollars provided by the Project Engineer.
- ☐ Engineering dollars have been factored in at the standard 12% of the total direct and indirect field costs as per request of Project Engineer.

CONSTRUCTION MANAGEMENT:

- ☒ N/A
- ☐ Construction Management dollars provided by the Project Engineer.
- ☐ Construction Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

PROJECT MANAGEMENT:

- ☒ N/A
- ☐ Project Management dollars provided by the Project Engineer.
- ☐ Project Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

WASTE PROGRAM MANAGEMENT:

- ☒ N/A
- ☐ Waste Program Management dollars provided by the Project Engineer.

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 3, 2001

PROJECT DESCRIPTION: AWWT Process Improvements
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010409

PRODUCTIVITY:

A productivity factor has been developed and applied to the unit man-hours derived from MEANS, Richardson, NECA, and or any other published estimating source. See attachment APPENDIX "A" and APPENDIX "B".

ESCALATION:

Escalation costs are excluded from the target estimate. The escalation costs are calculated within the Micro-Frame computer system according to the plan for rebaselining.

UNIT RATES:

Unit man-hours, equipment and material dollars are based on Richardson, MEANS, NECA, and or other published rates.

G & A (HO EXPENSE):

G & A are excluded from the target estimate. The G & A cost are calculated within the Micro-Frame computer system according to the plan for rebaselining.

HEALTH PHYSICS:

See attached APPENDIX "C".

RISK BUDGET:

N/A

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 3, 2001

PROJECT DESCRIPTION: AWWT Process Improvements
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010409

ESTIMATE INCLUSIONS & EXCLUSIONS

INCLUSIONS:

- Premobilization & Mobilization.
- Demobilization.
- Labor hours.
- Material dollars.
- Equipment dollars.

EXCLUSIONS:

- Fire protection.
- Dust control.
- Premium time.
- Permits and fees.
- FF G & A (Home Office Expense).
- Construction Management.
- Any second tier subcontract costs.
- Project Management dollars.
- Waste Management dollars.

ESTIMATE SUMMARY SHEET

PROJECT: AWWT Process Improvements
ESTIMATE #: C5010409
CLIENT: DOE
WBS #: 1.1.E.F

Fluor Fernald, Inc.

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

ITEM DESCRIPTION	M/H	RATE	LABOR $	S/C $	MAT'L $	EQUIP. $	TOTAL $
PACKAGE #1 FY02	2,302		$59,210	$3,900	$193,609	$4,350	$261,069
PACKAGE #2 FY03	3,171		$84,800	$3,900	$205,600	$60,500	$354,800
PACKAGE #3 FY04	880		$24,400	$3,900	$34,400	$2,200	$64,900
PACKAGE #4 FY05	1,611		$43,700	$3,900	$51,000	$60,500	$159,100
PACKAGE #5 FY07	1,611		$43,700	$3,900	$51,000	$60,100	$158,700
DIRECT FIELD COSTS TOTAL	**9,574**	**$26.72**	**$255,810**	**$19,500**	**$535,609**	**$187,650**	**$998,569**
SUPERVISION - CONTRACTOR	1,628		$48,370				$48,370
SMALL TOOLS & CONSUMABLES	-	-	-		$15,300		$15,300
MISC. EQUIP. RENTAL	-	-	-			$33,500	$33,500
TEMPORARY FACILITIES	287		$7,700		$7,700		$15,400
TEMPORARY UTILITY HOOK-UP	187		$5,000		$2,700		$7,700
JOB CLEAN-UP	431		$11,500		$3,800		$15,300
PER DIEM / SUBSISTANCE	-	-	-				
HEALTH PHYS.	296	-	$7,900		$20,100		$28,000
ADDITIONAL AND JOB SPECIFIC TRAINING	188	-	$5,023				$5,023
GENERAL SITE WORKER TRAINING	240	-	$6,405				$6,405
PAYROLL BURDENS & BENEFITS	-	-	$198,200				$198,200
OVERHEAD & PROFIT	-	-	-	$274,400			$274,400
BOND	-	-	-	$21,400			$21,400
SALES TAX	-	-	-		$35,100	$13,300	$48,400
INDIRECT FIELD COSTS TOTAL	**3,256**		**$290,099**	**$295,800**	**$84,700**	**$46,800**	**$717,399**
DIRECT & INDIRECT FIELD COSTS TOTAL	**12,829**	**$42.55**	**$545,909**	**$315,300**	**$620,309**	**$234,450**	**$1,715,968**
TARGET ESTIMATE				**(FY 01 DOLLARS)**			**$1,715,968**

ESTIMATE PERFORMED BY ESTIMATING SERVICES

ESTIMATE SUMMARY SHEET

PROJECT: AWWT Process Improvements
ESTIMATE NO. C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

F A C T O R S

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

FIXED PRICE $	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
DFC DOLLARS	$255,810	$19,500	$535,609	$187,650	$20,100	$1,018,669
IFC COST FACTOR	2.1340	--	1.0551	1.1785		
BOND + OVERHEAD & PROFIT COST FACTOR	1.2083	1.2083	1.2083	1.2083	1.2083	
SALES TAX	-	-	1.0600	1.0600	1.0600	
DIRECT FIELD COST FACTOR =	**2.5785**	**1.2083**	**1.3513**	**1.5094**	**1.2808**	
BASE ESTIMATE $'s	$659,613	$23,562	$723,782	$283,245	$25,744	$1,715,945
BASE FACTOR	1.0000	1.0000	1.0000	1.0000	1.0000	
TARGET ESTIMATE FACTOR	**2.5785**	**1.2083**	**1.3513**	**1.5094**	**1.2808**	
FPS TARGET ESTIMATE (FY00 $)	$659,613	$23,562	$723,782	$283,245	$25,744	$1,715,945

NOTE:

If there are no DFC Equip. $, enter The IFC Equip. $'s into the direct field cost TOTAL and delete IFC Factor in G65.

ESTIMATE SUMMARY SHEET

PROJECT: AWWT Process Improvements
ESTIMATE NO. C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

Direct Field Cost w/FACTORS

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

PAY ITEM NO.	DESCRIPTION		LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
			(ASSIGN OR PRORATE PPE MAT'L.$'s)-->>					
		PPE %						
	PACKAGE #1 FY02	24.04%	59210	3900	193609	4350	4832	
			$152,670	$4,710	$261,630	$6,570	$6,190	$431,770
	PACKAGE #2 FY03	33.12%	84800	3900	205600	60500	6657	
			$218,660	$4,710	$277,830	$91,320	$8,530	$601,050
	PACKAGE #3 FY04	9.19%	24400	3900	34400	2200	1847	
			$62,920	$4,710	$46,490	$3,320	$2,370	$119,810
	PACKAGE #4 FY05	16.83%	43700	3900	51000	60500	3382	
			$112,680	$4,710	$68,920	$91,320	$4,330	$281,960
	PACKAGE #5 FY07	16.83%	43700	3900	51000	60100	3382	
			$112,680	$4,710	$68,920	$90,720	$4,330	$281,360
TOTAL DIRECT FIELD COSTS w/FACTORS			(FY01 DOLLARS)					$1,715,950

DETAIL ESTIMATE WORKSHEETS

FLUOR FERNALD

PROJECT: AWWT Process Improvements
ESTIMATE NO.: C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

ITEM NO.	SUMMARY	QTY	UNIT	MAN-HOURS			COST / UNIT				LABOR	S/C	MAT'L	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C	Mat'l	Equip					
	PACKAGE #1 FY02				2,302						$59,210	$3,900	$193,609	$4,350	$261,069
	PACKAGE #2 FY03				3,171						$84,800	$3,900	$205,600	$60,500	$354,800
	PACKAGE #3 FY04				880						$24,400	$3,900	$34,400	$2,200	$64,900
	PACKAGE #4 FY05				1,611						$43,700	$3,900	$51,000	$60,500	$159,100
	PACKAGE #5 FY07				1,611						$43,700	$3,900	$51,000	$60,100	$158,700
	Each package includes Pre., Mob., & Demob.														
	Subtotal Direct Cost	1	LOT		9,574	$26.72					$255,810	$19,500	$535,609	$187,650	$998,569

DETAIL ESTIMATE WORKSHEETS

FLUOR FERNALD

PROJECT: AWWT Process Improvements
ESTIMATE NO.: C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

PPE LVL	PRE., MOB., & DEMOB	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION														
	A. Insurance Certificates, List of Sub-Tier Contractors Procurement Documents, Safe Work Plans, QA/QC Plan, Project Execution Plan, Construction and Engineering Documentation, Acceptable baseline Schedules														
	Duration 2 wks	1	LS	40.0	80	50.00					$4,000				$4,000
	MOBILIZATION														
	S/C Office Trailer	3	mo					300.00				$900			$900
	Survey and Engineering Controls	1	LS					3,000.00	500.00	500.00		$3,000	$500	$500	$4,000
D	Install Utilities	1	LS	40.0	40	22.69			1,000.00	500.00	$900		$1,100	$500	$2,500
D	Other misc. requirements as required.	1	LS	80.0	80	22.69			500.00	500.00	$1,800		$500	$500	$2,800
D			mo							6,360.00					
	DEMOBILIZATION														
D	Complete Punch List Items.	1	LS	20.0	20	22.69					$500				$500
D	Remove Trailer and Change Facilities.	1	LS	20.0	20	22.69					$500				$500
D	Remove all Utilities.	1	LS	20.0	20	22.69					$500				$500
mC	Decontaminate Equipment.	1	LS	10.0	10	22.69					$200				$200
D	Loadout contractors equipment.	1	LS	20.0	20	22.69					$500				$500
D	Other area requirements.	1	LS	10.0	10	22.69					$200				$200
	Typical for each Package #1 thru #5				300						0,100	3,900	2,100	1,500	$16,600

DETAIL ESTIMA._ WORKSHEETS

PROJECT: AWWT Process Improvements
ESTIMATE NO.: C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

FLUOR FERNALD

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

PPE LVL	PACKAGE #1 FY02	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	1														
mC	Remove & Replace metering pumps	2	ea	20.0	76	26.40			2,000.00		$2,020		$4,360		$6,380
	2														
D	Turbidity meter	11	ea	8.0	105	26.40			1,500.00		$2,780		$17,990		$20,770
D	6.25/125uM Fiber Optic Cable dual window(850/1300),loose buffer,gel fill	200	lf	0.010	2	22.66			0.73		$50		$160		$210
D	DCS Components, incls, analog input, output modules, discrete input module, transnet term. interface board, contr. mod.., encl's sub panel programming etc.	1	ea	36.0	43	22.66			7,338.00		$980		$8,000		$8,980
D	Instrument Calibration/Testing	1	ls	10.0	12	22.66			100.00		$270		$110		$380
D	4" pipe	200	lf	0.43	103	26.40			47.50	1.25	$2,730		$10,360	$270	$13,360
D	Heat trace system	100	lf	0.02	2	22.66			7.35	0.50	$40		$800	$50	$890
D	Thermostat/contactor combination	1	ea	3.6	4	22.66			525.00		$100		$570		$670
D	Snap band, clamp	10	ea	0.08	1	22.66					$20				$20
D	end seal kit	1	ea	0.50	1	26.40			9.00		$20		$10		$30
D	tee kit w/ junction	1	ea	1.5	2	26.40			82.00		$50		$90		$140
D	splice kit	1	ea	0.90	1	26.40			51.00		$30		$60		$90
D	Gate valves 4"	4	ea	5.3	25	26.40			435.00		$670		$1,900		$2,570
	3														
D	Trenching 33 % HAND DIGGING	222	cy	0.71	189	21.49				3.41	$4,070			$830	$4,900
D	Backfill	222	cy	0.15	40	21.49				3.00	$860			$730	$1,590
D	Compaction	222	cy	0.009	2	21.49				0.26	$50			$60	$110
D	Sawcut, 4" thk	50	lf	0.025	1	21.49			0.30	0.17	$30		$20	$10	$60
D	Excavate	13	cy	0.48	8	21.49				1.14	$160			$20	$180
D	Backfill & compact	9	cy	0.30	3	21.49				0.97	$70			$10	$80
D	Stockpile excess	5	cy	1.0	5	21.49					$120				$120
D	Repair asphalt, 4"thk	133	sf	0.69	109	21.49			6.45	2.18	$2,350		$940	$320	$3,610
D	6" pipe HDPE	600	lf	0.018	13	26.40			6.74		$340		$4,410		$4,750
D	Heat trace system	50	lf	0.02	1	22.66			7.35	0.50	$20		$400	$30	$450
D	Thermostat/contactor combination	1	ea	3.6	4	22.66			525.00		$100		$570		$670
D	Snap band, clamp	10	ea	0.08	1	22.66					$20				$20
D	end seal kit	2	ea	0.50	1	26.40			9.00		$30		$20		$50
D	tee kit w/ junction	4	ea	1.5	7	26.40			82.00		$190		$360		$550
D	splice kit	4	ea	0.90	4	26.40			51.00		$110		$220		$330
D	power connection kit	2	ea	1.0	2	26.40			69.00		$60		$150		$210
D	Pipe insulation	50	lf	0.20	12	26.40			6.55		$320		$360		$680
D	Remove HNT pumps	2	ea	16.2	39	26.40					$1,020				$1,020
D	HNT pumps replace 50gpm	2	ea	54.0	129	26.40			2,437.00		$3,410		$5,310		$8,720
D	HNT level monitor	1	ea	4.60	6	26.40			1,500.00		$150		$1,640		$1,790
D	6.25/125uM Fiber Optic Cable dual window(850/1300),loose buffer,gel fill	200	lf	0.010	2	22.66			0.73		$50		$146		$196
D	DCS Components, incls, analog input, output modules, discrete input module, transnet term. interface board, contr. Mod., encl's sub panel, programming etc.	1	ea	36.0	43	22.66			7,338.00		$980		$7,338		$8,318
D	Instrument Calibration/Testing	1	ls	10.0	12	22.66			100.00		$270		$100		$370
D	Fiber optic cable bulk plenum	2	clf	3.5	8	22.66			375.00		$190		$750		$940
D	Fiber optic jumper	1	LS	6.0	7	22.66			500.00		$160		$500		$660
D	Fiber optic pigtail	1	LS	6.0	7	22.66			425.00		$160		$425		$585
D	Fiber optic connector	1	LS	6.0	7	22.66			300.00		$160		$300		$460
D	Fiber optic finger splice	1	LS	6.0	7	22.66			500.00		$160		$500		$660
D	Transceiver	1	LS	10.0	12	22.66			800.00		$270		$800		$1,070
D	Multi-channel rack enclosure 10 mods.	1	LS	20.0	24	22.66			1,200.00		$540		$1,200		$1,740
D	Fiber optic patch panel 12 ports	1	LS	12.0	14	22.66			1,000.00		$330		$1,000		$1,330
D	3" pipe cs to BSL discharge line	100	lf	0.13	16	26.40			14.00		$410		$500		$910

DETAIL ESTIMATE WORKSHEETS

FLUOR FERNALD

PROJECT: AWWT Process Improvements
ESTIMATE NO.: C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

PPE LVL	PACKAGE #1 FY02 cont'd	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	4														
mC	Remove & Replace metering pumps	2	ea	20.0	76	26.40			2,000.00		$2,020		$4,360		$6,380
D	Tank 1000 gal. Plastic	1	ea	40.0	48	26.40			1,787.00		$1,260		$1,950		$3,210
D	1" pipe cs	50	lf	0.18	11	26.40			10.50	0.51	$280		$570	$30	$880
D	2" pipe cs	50	lf	0.28	17	26.40			20.50	0.79	$440		$1,120	$40	$1,600
D	Heat trace system	100	lf	0.02	2	22.66			7.35	0.50	$40		$800	$50	$890
D	Thermostat/contactor combination	1	ea	3.6	4	22.66			525.00		$100		$570		$670
D	Snap band, clamp	20	ea	0.08	2	22.66					$40				$40
D	end seal kit	8	ea	0.50	5	26.40			9.00		$130		$80		$210
D	tee kit w/ junction	8	ea	1.5	14	26.40			82.00		$380		$720		$1,100
D	splice kit	8	ea	0.90	9	26.40			51.00		$230		$440		$670
D	power connection kit	2	ea	1.0	2	26.40			69.00		$60		$150		$210
D	Pipe insulation	50	lf	0.20	12	26.40			6.55		$320		$360		$680
	5														
D	Pump 400 gpm 3550rpm API -610 single stage	5	ea	24.0	144	26.40			12,498		$3,790		$68,110		$71,900
D	4" pipe (3runs @25'ea)	75	lf	0.43	39	26.40			47.50	1.25	$1,020		$3,880	$100	$5,000
D	Heat trace system	75	lf	0.02	1	22.66			7.35	0.50	$30		$600	$40	$670
D	Thermostat/contactor combination	1	ea	3.6	4	22.66			525.00		$100		$570		$670
D	Snap band, clamp	15	ea	0.08	1	22.66					$30				$30
D	end seal kit	6	ea	0.50	4	26.40			9.00		$90		$60		$150
D	tee kit w/ junction	6	ea	1.5	11	26.40			82.00		$280		$540		$820
D	splice kit	6	ea	0.90	6	26.40			51.00		$170		$330		$500
D	power connection kit	2	ea	1.0	2	26.40			69.00		$60		$150		$210
D	Pipe insulation	50	lf	0.20	12	26.40			6.55		$320		$360		$680
D	4" pipe for pump discharge	200	lf	0.432	103	26.40			47.50		$2,730		$10,360		$13,090
D	Long elbows 4"	4	ea	2.7	13	26.40			131.00		$340		$570		$910
D	Clean out	2	ea	2.4	6	26.40			108.00		$150		$240		$390
D															
D	Heat trace system	200	lf	0.02	4	22.66			7.35	0.50	$80		$1,600	$110	$1,790
D	Thermostat/contactor combination	2	ea	3.6	9	22.66			525.00		$200		$1,140		$1,340
D	Snap band, clamp	40	ea	0.08	4	22.66					$90				$90
D	end seal kit	16	ea	0.50	10	26.40			9.00		$250		$160		$410
D	tee kit w/ junction	16	ea	1.5	29	26.40			82.00		$760		$1,430		$2,190
D	splice kit	16	ea	0.90	17	26.40			51.00		$450		$890		$1,340
D	power connection kit	3	ea	1.0	4	26.40			69.00		$90		$230		$320
D	Pipe insulation	200	lf	0.20	48	26.40			6.55		$1,260		$1,430		$2,690

DETAIL ESTIMATE WORKSHEETS

FLUOR FERNALD

PROJECT: AWWT Process Improvements
ESTIMATE NO.: C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

PPE LVL	PACKAGE #1 FY02 cont'd	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	6														
mC	Remove & Replace metering pumps	2	ea	20.0	76	26.40			2,000.00		$2,020		$4,360		$6,380
	7														
D	Pipe 6" cs to tank 302	75	lf	0.65	58	26.40			79.50	1.32	$1,540		$6,500	$110	$8,150
D	Butterfly Valves 6"	2	ea	4.8	11	26.40			285.00		$300		$620		$920
D	Swing Valves 6"	2	ea	8.0	19	26.40			505.00		$510		$1,100		$1,610
D	Heat trace system	75	lf	0.02	1	22.66			7.35	0.50	$30		$600	$40	$670
D	Thermostat/contactor combination	1	ea	3.6	4	22.66			525.00		$100		$570		$670
D	Snap band, clamp	15	ea	0.08	1	22.66					$30				$30
D	end seal kit	6	ea	0.50	4	26.40			9.00		$90		$60		$150
D	tee kit w/ junction	6	ea	1.5	11	26.40			82.00		$280		$540		$820
D	splice kit	6	ea	0.90	6	26.40			51.00		$170		$330		$500
D	power connection kit	2	ea	1.0	2	26.40			69.00		$60		$150		$210
D	Pipe insulation	75	lf	0.20	18	26.40			6.55		$470		$540		$1,010
	Subtotal Direct Cost	1	LOT		2,002	$25.04					50,110		191,509	2,850	$244,469

DETAIL ESTIMATE WORKSHEETS

FLUOR FERNALD

PROJECT: AWWT Process Improvements
ESTIMATE NO.: C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

PPE LVL	PACKAGE #2 FY03	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	1														
	Tank repairs & refurbishment														
C+	Vacuum blast cleaning interior	10000	sf	0.0048	107	26.40			0.24		$2,830		$2,400		$5,230
C+	Vacuum blasting machine w/ hose, etc.	4	wk							3,360.00				$13,440	$13,440
C+	Air Cooler/Dry Package	4	wk							#######				$44,440	$44,440
C+	HEPA kit w/ filters	4	wk							90.00				$360	$360
C+	Dust separator	4	wk							100.00				$400	$400
C+	Primer spray	10000	sf	0.003	68	26.40			0.10		$1,780		$1,000		$2,780
C+	Epoxy = 2 coats	20000	sf	0.02	676	26.40			0.96		$17,850		$19,200		$37,050
C+	Decontamination allowance	1	ls	40.0	90	26.40					$2,380				$2,380
C+	Tank inspection allowance	9	ea	5.0	101	26.40					$2,680				$2,680
	2														
mC	Remove 4" piping	200	lf	0.10	39	26.40					$1,030				$1,030
mC	Replace w/ 4" cpvc piping	200	ls	0.34	130	26.40			17.50		$3,430		$3,500		$6,930
	3														
D	Remove & Install Feed pumps ~2000gpm	2	ea	80.0	191	26.40			9,220.00		$5,050		$18,440		$23,490
D	Remove & Install PhI&II pumps ~800gpm	6	ea	60.0	431	26.40			4,415.00		$11,360		$26,490		$37,850
D	Remove & Install PhI&II pumps ~500gpm	6	ea	50.0	359	26.40			3,818.00		$9,470		$22,908		$32,378
	4														
mC	4" pipe	200	lf	0.43	165	26.40			47.50	1.25	$4,350		$10,360	$270	$14,980
mC	Heat trace system	100	lf	0.02	3	22.66			7.35	0.50	$60		$800	$50	$910
mC	Thermostat/contactor combination	1	ea	3.6	7	22.66			525.00		$160		$570		$730
mC	Snap band, clamp	10	ea	0.08	2	22.66					$30				$30
mC	end seal kit	1	ea	0.50	1	26.40			9.00		$30		$10		$40
mC	tee kit w/ junction	1	ea	1.5	3	26.40			82.00		$80		$90		$170
mC	splice kit	1	ea	0.90	2	26.40			51.00		$50		$60		$110
mC	Gate valves 4"	4	ea	5.3	41	26.40			435.00		$1,070		$1,900		$2,970
mC	Remove & replace 400 gpm pump	1	ea	24.0	46	26.40			12,498		$1,210		$12,498		$13,708
	5														
D	Remove & replace recycler pump	2	ea			$26.40									
mC	Remove 4" piping	100	lf	1.4	275	26.40					$7,260				$7,260
D	Butterfly Valves 4"	2	ea	4.8	11	$26.40			285.00		$300		$620		$920
D	Swing Valves 4"	2	ea	8.0	19	$26.40			505.00		$510		$1,100		$1,610
D	Heat trace system	100	lf	0.02	2	22.66			7.35	0.50	$40		$800	$50	$890
D	Thermostat/contactor combination	1	ea	3.6	4	22.66			525.00		$100		$570		$670
D	Snap band, clamp	10	ea	0.08	1	22.66					$20				$20
D	end seal kit	4	ea	0.50	2	26.40			9.00		$60		$40		$100
D	tee kit w/ junction	4	ea	1.5	7	26.40			82.00		$190		$360		$550
D	splice kit	4	ea	0.90	4	26.40			51.00		$110		$220		$330
D	power connection kit	2	ea	1.0	2	26.40			69.00		$60		$150		$210
D	Pipe insulation	100	lf	0.20	24	26.40			6.55		$630		$710		$1,340
	6														
D	Duplex strainer 4"	9	ea	5.3	57	26.40			8,025.00		$1,520		$78,730		$80,250
	Subtotal Direct Cost	1	LOT		2,871	26.37					75,700		203,500	59,000	$338,200

DETAIL ESTIMATE WORKSHEETS

FLUOR *FERNALD*

PROJECT: AWWT Process Improvements
ESTIMATE NO.: C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

PPE LVL	PACKAGE #3 FY04	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	1														
mC	4" pipe	200	lf	0.43	165	26.40			47.50	1.25	$4,350		$10,360	$270	$14,980
mC	Heat trace system	100	lf	0.02	3	22.66			7.35	0.50	$60		$800	$50	$910
mC	Thermostat/contactor combination	1	ea	3.6	7	22.66			525.00		$160		$570		$730
mC	Snap band, clamp	10	ea	0.08	2	22.66					$30				$30
mC	end seal kit	1	ea	0.50	1	26.40			9.00		$30		$10		$40
mC	tee kit w/ junction	1	ea	1.5	3	26.40			82.00		$80		$90		$170
mC	splice kit	1	ea	0.90	2	26.40			51.00		$50		$60		$110
mC	Gate valves 4"	4	ea	5.3	41	26.40			435.00		$1,070		$1,900		$2,970
	2														
mC	Airline 2"	200	lf	0.26	98	26.40			9.55		$2,580		$1,910		$4,490
mC	Stl. tank ~750 gal	1	ea	6.4	12	26.40			1,025.00		$320		$1,025		$1,345
mC	Airline 4" stl.	300	lf	0.43	247	26.40			47.50	1.25	$6,530		$15,530	$410	$22,470
	Subtotal Direct Cost	1	LOT		580	$26.39					15,300		32,300	700	$48,300

DETAIL ESTIMATE WORKSHEETS

FLUOR FERNALD

PROJECT: AWWT Process Improvements
ESTIMATE NO.: C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

PPE LVL	PACKAGE #4 FY05	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	1														
mC	4" pipe	200	lf	0.43	165	26.40			47.50	1.25	$4,350		$10,360	$270	$14,980
mC	Heat trace system	100	lf	0.02	3	22.66			7.35	0.50	$60		$800	$50	$910
mC	Thermostat/contactor combination	1	ea	3.6	7	22.66			525.00		$160		$570		$730
mC	Snap band, clamp	10	ea	0.08	2	22.66					$30				$30
mC	end seal kit	1	ea	0.50	1	26.40			9.00		$30		$10		$40
mC	tee kit w/ junction	1	ea	1.5	3	26.40			82.00		$80		$90		$170
mC	splice kit	1	ea	0.90	2	26.40			51.00		$50		$60		$110
mC	Gate valves 4"	4	ea	5.3	41	26.40			435.00		$1,070		$1,900		$2,970
mC	Remove & replace 400 gpm pump	1	ea	24.0	46	26.40			12,498		$1,210		$12,498		$13,708
	2														
	Tank repairs & refurbishment														
C+	Vacuum blast cleaning interior	10000	sf	0.0048	107	26.40			0.24		$2,830		$2,400		$5,230
C+	Vacuum blasting machine w/ hose, etc.	4	wk							3,360.00				$13,440	$13,440
C+	Air Cooler/Dry Package	4	wk							#######				$44,440	$44,440
C+	HEPA kit w/ filters	4	wk							90.00				$360	$360
C+	Dust separator	4	wk							100.00				$400	$400
C+	Primer spray	10000	sf	0.003	68	26.40			0.10		$1,780		$1,000		$2,780
C+	Epoxy = 2 coats	20000	sf	0.02	676	26.40			0.96		$17,850		$19,200		$37,050
C+	Decontamination allowance	1	ls	40.0	90	26.40					$2,380				$2,380
C+	Tank inspection allowance	9	ea	5.0	101	26.40					$2,680				$2,680
	Subtotal Direct Cost	1	LOT		1,311	$26.39					34,600		48,900	59,000	$142,500

DETAIL ESTIMATE WORKSHEETS

FLUOR FERNALD

PROJECT: AWWT Process Improvements
ESTIMATE NO.: C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

PPE LVL	PACKAGE #6 FY07	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	1														
mC	4" pipe	200	lf	0.43	165	26.40			47.50	1.25	$4,350		$10,360	$270	$14,980
mC	Heat trace system	100	lf	0.02	3	22.66			7.35	0.50	$60		$800	$50	$910
mC	Thermostat/contactor combination	1	ea	3.6	7	22.66			525.00		$160		$570		$730
mC	Snap band, clamp	10	ea	0.08	2	22.66					$30				$30
mC	end seal kit	1	ea	0.50	1	26.40			9.00		$30		$10		$40
mC	tee kit w/ junction	1	ea	1.5	3	26.40			82.00		$80		$90		$170
mC	splice kit	1	ea	0.90	2	26.40			51.00		$50		$60		$110
mC	Gate valves 4"	4	ea	5.3	41	26.40			435.00		$1,070		$1,900		$2,970
mC	Remove & replace 400 gpm pump	1	ea	24.0	46	26.40			12,498		$1,210		$12,498		$13,708
	2														
	Tank repairs & refurbishment														
C+	Vacuum blast cleaning interior	10000	sf	0.0048	107	26.40			0.24		$2,830		$2,400		$5,230
C+	Vacuum blasting machine w/ hose, etc.	4	wk							3,360.00				$13,440	$13,440
C+	Air Cooler/Dry Package	4	wk							########				$44,440	$44,440
C+	HEPA kit w/ filters	4	wk							90.00				$360	$360
C+	Dust separator	4	wk							100.00				$400	$400
C+	Primer spray	10000	sf	0.003	68	26.40			0.10		$1,780		$1,000		$2,780
C+	Epoxy = 2 coats	20000	sf	0.02	676	26.40			0.96		$17,850		$19,200		$37,050
C+	Decontamination allowance	1	ls	40.0	90	26.40					$2,380				$2,380
C+	Tank inspection allowance	9	ea	5.0	101	26.40					$2,680				$2,680
	Subtotal Direct Cost	1	LOT		1,311	$26.39					34,600		48,900	58,600	$142,100

APPENDIX " A"

PROJECT: AWWT Process Improvements
ESTIMATE NOC5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

SITE SPECIFIC

EFFICIENCY / MULTIPLIER ANALYSIS

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

PERCENT OF INFLUENCE ON CHART MANHOURS

	40%	50%	60%	70%	80%	90%	100%	105%	110%	% OF INFLUENCE	WT'D VALUE	PROD. RESULT
CRAFT SKILL (NOTE 1)	POOR			FAIR			STD	V.GOOD	XCELLENT	100.0%	12.0%	0.12
CRAFT AVAIL.(NOTE 1)		POOR		FAIR			STD			100.0%	8.0%	0.08
CLIMATE (NOTE 2)	SEVERE	ICE/SNOW			RAIN		+40 TO +85			90.0%	20.0%	0.18
PLANT ELEVATION		OVER 10,000FT			5,000' TO 10,000 FT		UNDER 5,000 FT			100.0%	5.0%	0.05
WORK SPACE				200 SF	250 SF	300 SF	350 SF			70.0%	10.0%	0.07
WORK WEEK	<---- MULTIPLE SHIFTS-											
50 HOUR WORK WEEK	//////////	//////////	//////////	OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS	4-10s / 5-8s			100.0%	15.0%	0.15
	//// MULTIPLE-SHIFT ////////									0.0%	0.0%	0
60 HOUR WORK WEEK	//////////	//////////	OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS					0.0%	0.0%	0
	//////////	//////////										
SHIFTWORK												
2ND SHIFT					2ND SHIFT		OR ONE SHIFT ONLY			100.0%	3.0%	0.03
3RD SHIFT			3RD SHIFT							100.0%	5.0%	0.05
PROJECT SIZE					400M MH AND UP	300M TO 400M MH	200M TO 300M MH	200M MH OR LESS		100.0%	4.0%	0.04
PLANT TYPE				REVAMP ONLY	REVAMP & NEW	NEW IN EXIST PLT	GRASS ROOTS			70.0%	8.0%	0.056
AREA/UNION INFLUENCE	STRONG		MILD		SOME		NONE			40.0%	10.0%	0.04
											100.0%	86.6%

NOTES.....
1. TURNOVER HAS BEEN CONSIDERED
2. FOR EXTERIOR WORK ONLY

EFFICIENCY (AS A % OFF CHART MANHOURS) 86.6%

MULTIPLIER - (TO BE APPLIED TO CHART M.H.'S TO OBTAIN SITE M.H.'S) 1.15

EFFICIENCY FACTORS

PROJECT: AWWT Process Improvements
ESTIMATE NO. C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

FLUOR FERNALD

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

EXAMPLE:

STANDARD CHART MANHOURS =	NET	100
EFFICIENCY FACTORS:		
• SITE SPECIFIC (SEE APPENDIX A)	[redacted]	15.0
S/T = BASE UNIT MANHOURS		115
OVERTIME PRODUCTIVITY FACTOR (SEE DETAIL WORKSHEET BACK-UP)	0.00%	0
		115
• TASK SPECIFIC (confined space, high elevation, congestion, etc.)	0.0%	0
		115
• PPE SPECIFIC (Based on current data and estimating knowledge)		

	PPE LEVEL									
	D		Mod.'D'		Mod. "C"		C		C+	
PRODUCTIVITY HOURS		MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's
(AS A %) / ADD MH's	4.00%	5	28.00%	32	66.00%	76	74.00%	85	96.00%	110
(AS A MULTIPLIER)/TOTAL HRS	1.04	119.6	1.28	147.2	1.66	190.9	1.74	200.1	1.96	225.4
TOTAL MULTIPLIER w/SITE PROD.	1.196		1.472		1.909		2.001		2.254	

NOTE : Use the Default Productivity Factor of 'mC' for working in a contaminated area if the Safety Level cannot be determined.

(SEE FD FERNALD ESTIMATING SERVICES REFERENCE MANUAL IM-6006 8.10)

Total hours worked in a specific PPE level divided by 10 hour working days = (PPE) ManDays to determine material cost of PPE's.
(SEE APPENDIX C - HEALTH PHYSICS)

	12.0	Man Days	15.0	Man Days	19.0	Man Days	20.0	Man Days	23.0	Man Days

THESE EFFICIENCY FACTORS WERE APPLIED INDIVIDUALLY THROUGHOUT THE ESTIMATE AT A TASK SPECIFIC LEVEL, TO OBTAIN A MORE ACCURATE ACCOUNT OF OVERALL EFFICIENCY IMPACT DUE TO PPE REQUIREMENTS IN HANDLING CONTAMINATED AND HAZARDOUS WASTE.

EFFICIENCY FACTORS

PROJECT: AWWT Process Improvements
ESTIMATE NO. C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

PPE MULTIPLIER DEVELOPEMENT

		D	mD	mC	C	C+
CREW SIZE & MAKE-UP	STANDARD	7	7	7	7	7
	WORKER-BUDDY	0	0	0	0	0
	SUPPORT TEAM	0	0	0	0	0
	TOTAL CREW	7	7	7	7	7
CREW SIZE RATIO		1.00	1.00	1.00	1.00	1.00
AVAILABLE WORK TIME FACTOR		0.96	0.78	0.7	0.7	0.68
PPE LABOR PRODUCTIVITY FACTOR		1	1	0.86	0.82	0.75
NET PRODUCTIVITY RATIO		0.96	0.78	0.602	0.574	0.51
NET PRODUCTIVITY MULTIPLIER		**1.04**	**1.28**	**1.66**	**1.74**	**1.96**

These factors were based on Tables 6.1 and 6.2, Moderate Work Efforts, 66F to 85F temperature of 'Hazardous Waste Cost Control' by R.A.Selg.
Modifications were made to reflect a 10 hour work day and no buddy system or support team for levels D, mC and C.
The worker-buddy and support team members, if required, may be covered under Construction Mgmt. (Rad Techs).

AVAILABLE WORK TIME FACTOR		D	mD	mC	C	C+
TOTAL WORK MINUTES per D 4 - 10's		600	600	600	600	600
ADDITN'L.SITE SAFETY MEETINGS NOT INCLD. IN BA	QUANTITY	1	1	1	1	1
	MINUTES	25	25	25	25	25
TOTAL		25	25	25	25	25
PPE DON & DOFFING	QUANTITY	0	0	3	3	3
(ADJUST LEVEL D per WORK PLAN)	MINUTES	0	0	15	15	20
TOTAL			0	45	45	60
WORK BREAKS	QUANTITY	N/A	2	2	2	2
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			30	30	30	30
MOBILIZATION - ROUND TRIPS	QUANTITY	N/A	4	4	4	4
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			60	60	60	60
COOLDOWNS PER DAY	QUANTITY	N/A	4	4	4	4
** (4 OUT OF 12 MONTHS) 33.33%	MINUTES	N/A	15	15	15	15
TOTAL			20	20	20	20
AIR TANK REPLACEMENT	QUANTITY	N/A	N/A	N/A	N/A	N/A
	MINUTES	N/A	N/A	N/A	N/A	N/A
TOTAL						
AVAILABLE WORK TIME		575	465	420	420	405
AVAILABLE WORK TIME FACTOR		**0.96**	**0.78**	**0.7**	**0.7**	**0.68**

NOTE: Adjust 'Work Minutes per Day' basis to: 5 - 8's, or leave as 4 - 10's. Any other circumstances, over-ride the minutes per day.

** Assumption based on work performed in May, June, July & August, pro-rating cost over one year. Adjust % to individual circumstances.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: AWWT Process Improvements
ESTIMATE NO. C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

FLUOR FERNALD

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

PPE"s - PERSONAL PROTECTIVE EQUIPMENT

DESCRIPTION	UNIT	UNIT COST	* NO. OF CHANGE OUTS PER WORKER PER DAY				
			Man Days (TOTAL HOURS worked in PPE's Div. by WORK HOURS / DAY)				
PPE LEVEL C / C+ / B : F/HF MASK w/RESP.&CART.			*	MAN DAYS	MAT'L.$'s	PPE LEVEL	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	313	$4,185	C / C+	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	313	$4,185	C / C+	(DOUBLE PPE)
GLOVE LINER - DISPOSABLE	PR	$0.24	3	313	$225	C / C+	
GLOVE, LASTEX - DISPOSABLE	PR	$0.26	3	313	$244	C / C+	
GLOVE, WORK - DISPOSABLE	PR	$1.02	3	313	$957	C / C+	
APR CARTRIDGES - DISPOSABLE	PR	$6.98	3	313	$6,550	C / C+	
SUB-TOTAL		$17.42	3		$16,346		
				$/MD =	$52.26		

PPE LEVEL mC : FULL DRESS w/ FACE SHIELD				MAN DAYS	MAT'L.$'s	PPE LEVEL
LT.WT. DISPOSABLE COVERALLS W/HOOD & BOOTIES	PR	$4.46	3	207	$2,766	mC
GLOVE LINER - DISPOSABLE	PR	$0.24	3	207	$149	mC
GLOVE, LASTEX - DISPOSABLE	PR	$0.26	3	207	$161	mC
GLOVE, WORK - DISPOSABLE	PR	$1.02	3	207	$633	mC
SUB-TOTAL		$5.98	3		$3,709	
				$/MD =	$17.94	

SUBCONTRACTOR REQUIRED PURCHASES			QTY. PER WKR.	NO. OF WORKERS	MAT'L.$'s	PPE LEVEL
RUBBER BOOT COVERS-(1)PR.PER WORKER	PR	$12.70	6	0	$0	D/C/B
APR w/HALF FACE MASK - (1) PER WORKER	EA	$22.30	6	0	$0	C
APR w/FULL FACE MASK - (1) PER WORKER	EA	$174.00	6	0	$0	C
SCBA	EA	$1,894.00	2	0	$0	B
COOL VESTS	EA	$137.50	6	0	$0	C/B
THERMO STRIPS	EA	$50.00	6	0	$0	C/B
SUB-TOTAL					$0	

	MAT'L.$'s
TOTAL PPE's =	$20,100

(FORWARD TO PAGE 2 OF 2)

OTHER PPE's SUCH AS HARD HAT, SAFETY GLASSES/GOGGLES, STEEL TOED SAFETY SHOES, HEARING PROTECTION, ARE CONSIDERED THE SUBCONTRACTORS RESPONSIBILITY AND ARE COVERED IN HIS OVERHEAD EXPENSE.
COSTS OF FD FERNALD SUPPLIED PPE's, SUCH AS COTTON COVERALLS, EXCHANGE OF RUBBER BOOT COVERS AND RESPIRATORS FOR CHANGEOUTS AND CLEANING OF SAME IS INCURRED BY FD FERNALD AND COSTS ARE NOT INCLUDED AS PART OF PROJECT COSTS AT THIS TIME.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: AWWT Process Improvements
ESTIMATE NO. C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

--MEDICAL MONITORING --

MEDICAL - PHYSICAL and IN-VIVO MONITORING - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION PHYSICAL (3hrs), IN-VIVO (1hr)	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BASELINE PHYSICALS	1	4	2	8	$26.72	$210
ANNUAL PHYSICALS	1	4	2	8	$26.72	$210
EXIT (TERMINATION) PHYSICALS (IN-VIVO)	1	1	2	2	$26.72	$50
SUB-TOTAL						$470

RADIATION IN-VITRO SURVEILLANCE - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BI-MONTHLY BIOASSAY	8	1	2	15	$26.72	$400
SUB-TOTAL						$400

RANDOM DRUG TESTING

	TESTS	HRS	TOTAL HOURS	AVG. RATE	LABOR $'s
	7	2	14	$26.72	$400

NO. OF WKRS. TESTED	TESTING DAYS PER YR.	AVG. NO. OF TESTS PER DAY	CHANCE/ DAY FOR TEST	NO. OF WKRS. FOR THIS ESTIMATE	CHANCES /DAY FOR TEST FOR PROJECT	CONSTR WORKING DAYS
2340	226	10	0.0042735	6	0.0256	286

		LABOR $'s THRU SAFETY	LABOR $'s
WORK DELAYS CAUSED BY MONITORING	0.0%	$328,380	$0
			LABOR $'s
WORK DELAYS CAUSED BY RAD CHECKING	2.0%	$328,380	$6,600

	TOTAL LABOR	TOTAL MAT'L	GRAND TOTAL
TOTAL HEALTH PHYSICS	$7,900	$20,100	$28,000

(FORWARD TO ESTIMATE SUMMARY SHEET)

ACTIVITY DURATIONS

FLUOR FERNALD

PROJECT: AWWT Process Improvements
ESTIMATE NO.: C5010409
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 03-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC6

CONSTRUCTION ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
Package # 1	01-May-01	01-Jun-02	17-Jul-02	01-Sep-02	3	MONTHS
Package # 2	01-May-01	01-Jun-03	17-Jul-03	01-Sep-03	3	MONTHS
Package # 3	01-May-01	01-Jun-04	17-Jul-04	01-Sep-04	3	MONTHS
Package # 4	01-May-01	01-Jun-05	17-Jul-05	01-Sep-05	3	MONTHS
Package # 5	01-May-01	01-Jun-07	17-Jul-07	01-Sep-07	3	MONTHS
TOTAL					15	MONTHS

	DATE of EST. to MID-POINT ACTIVITY DURATION	
a.	14.5	MONTHS
b.	75	MONTHS

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
OPERATIONS					0	MONTHS

DATE of EST. to MID-POINT ACTIVITY DURATION	
0	MONTHS

ACTIVITY DURATION IS USED IN DETERMINING NUMBER of WORKERS for CERCLA/SAT TRAINING HOURS and HEALTH PHYSICS COSTS.

APPENDIX "E"

TRAINING

PROJECT:	AWWT Process Improvements	DATE:	03-May-01
ESTIMATE #:	C5010409	ESTIMATOR:	Wagner
CLIENT:	DOE	LOCATION:	Fernald
WBS #:	1.1.E.F	TASK #:	EFECS

FLUOR FERNALD

Site Access Training Requirements (RM-0055 Rev. 1 Effective: 09/30/99)

Training Requirements	Non-Hazardous	Occasional Site Worker	General Site Worker		
Access Area	**Administrative Support Area**	**Controlled Area**	**Contamination Compound**	**Frequency**	
	8 Hour	24 Hour Hazwoper	40 Hour Hazwoper		
General Employee Training	X	X	X	Annually	
Site Worker Training		X	X	One Time	
Rad. Worker I		X		Biennially	
Rad. Worker II			X	Biennially	
Respirator Training *			X	Annually	
Respirator Fit Testing *			X	Annually	
Supervised Field Experience	0 HR	8 HR	24 HR	One time →	*On the Job*
Site Worker Refresher		X	X	Annually ⇨	4 Hour
Rad. Worker I Retraining		X		Every 2 years ⇨	4 Hour
Rad. Worker II Retraining			X	Every 2 years ⇨	8 Hour

Additional Training	HRS	No. of Workers	Total Hours
Job Specific Training =	2	5	10
Fire Watch Training =	1	2	2
Lead Worker Training =	4	0	0
Lock out / Tag out Training =	8	2	16
Rigging Training =	24	4	96
Scaffold Training =	16	4	64

DURATION 15 Month(s)

Average Rate $ 26.72

Number of General Site Worker(s)	5	General Site Worker Training Cost	$6,405
Number of Occasional Site Worker(s)	0	Occasional Site Training Cost	$0
Number of Non-Hazardous Worker(s)	0	Non-Hazardous Training Cost	$0
		Additional Training Cost	$5,023
Total Training Hours	428	Total Training Cost =	$11,428

* = All employees classified as General Site Worker must initially take respirator training. The annual requirement for the repeat of training and the fit test frequency requirements are only needed by those employees that are required to wear a respirator.

COST IMPACT MATRIX SHEET

FLUOR FERNALD

Estimate No.:	C5010409
Project:	AWWT Process Improvements
Client:	DOE
WBS:	1.1.E.F

Date:	03-May-01
Estimator:	Wagner
Location:	Fernald
TASK NO.:	EFEC6

Base Estimate Total	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					0.00					
$1,715,427	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$0	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination									-40%	80%
Environmental										
Schedule										
Project Definition									-20%	40%
Range - %	0%	0%	0%	0%	0%	0%	0%	0%	-60%	120%
Range - $	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Distribution										
Correlation Rank										

[illegible]	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					0.00					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$0	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition										
Range - %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Distribution										
Correlation Rank										

Analyst: _____

Client: Approval Signature on File

COST IMPACT MATRIX SHEET

FLUOR FERNALD

Estimate No.:	C5010409
Project:	AWWT Process Improvements
Client:	DOE
WBS:	1.1.E.F

Date:	03-May-01
Estimator:	Wagner
Location:	Fernald
TASK NO.:	EFEC6

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					0.00					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$0	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition										
Range - %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Distribution										
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					0.00					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$0	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition										
Range - %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Distribution										
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

FLUOR FERNALD

Estimate No.:	C5010409	Date:	03-May-01
Project:	AWWT Process Improvements	Estimator:	Wagner
Client:	DOE	Location:	Fernald
WBS:	1.1.E.F	TASK NO.:	EFEC6

[redacted]	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	PACKAGE #1 FY02									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$152,670	Base $	$4,710	Base $	$261,630	Base $	$6,570	Base $	$6,190
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-10%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s			-30%	80%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-10%	25%			-10%	25%	-10%	25%		
Range - %	-20%	50%	-30%	80%	-20%	50%	-20%	50%	0%	0%
Range - $	$122,136	$229,005	$3,297	$8,478	$209,304	$392,445	$5,256	$9,855	$6,190	$6,190
Distribution	T		T		T		T			
Correlation Rank										

[redacted]	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	PACKAGE #2 FY03									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$218,660	Base $	$4,710	Base $	$277,830	Base $	$91,320	Base $	$8,530
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-10%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s			-30%	80%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-10%	25%			-10%	25%	-10%	25%		
Range - %	-20%	50%	-30%	80%	-20%	50%	-20%	50%	0%	0%
Range - $	$174,928	$327,990	$3,297	$8,478	$222,264	$416,745	$73,056	$136,980	$8,530	$8,530
Distribution	T		T		T		T			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

FLUOR FERNALD

Estimate No.:	C5010409
Project:	AWWT Process Improvements
Client:	DOE
WBS:	1.1.E.F

Date:	03-May-01
Estimator:	Wagner
Location:	Fernald
TASK NO.:	EFEC6

[redacted]	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	PACKAGE #3 FY04									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$62,920	Base $	$4,710	Base $	$46,490	Base $	$3,320	Base $	$1,847
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-10%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s			-30%	80%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-10%	25%			-10%	25%	-10%	25%		
Range - %	-20%	50%	-30%	80%	-20%	50%	-20%	50%	0%	0%
Range - $	$50,336	$94,380	$3,297	$8,478	$37,192	$69,735	$2,656	$4,980	$1,847	$1,847
Distribution	T		T		T		T			
Correlation Rank										

[redacted]	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	PACKAGE #4 FY05									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$112,680	Base $	$4,710	Base $	$68,920	Base $	$91,320	Base $	$4,330
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-10%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s			-30%	80%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-10%	25%			-10%	25%	-10%	25%		
Range - %	-20%	50%	-30%	80%	-20%	50%	-20%	50%	0%	0%
Range - $	$90,144	$169,020	$3,297	$8,478	$55,136	$103,380	$73,056	$136,980	$4,330	$4,330
Distribution	T		T		T		T			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

FLUOR FERNALD

Estimate No.:	C5010409	Date:	03-May-01
Project:	AWWT Process Improvements	Estimator:	Wagner
Client:	DOE	Location:	Fernald
WBS:	1.1.E.F	TASK NO.:	EFEC6

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	PACKAGE #5 FY07									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$112,680	Base $	$4,710	Base $	$68,920	Base $	$90,720	Base $	$4,330
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-10%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s			-30%	80%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-10%	25%			-10%	25%	-10%	25%		
Range - %	-20%	50%	-30%	80%	-20%	50%	-20%	50%	0%	0%
Range - $	$90,144	$169,020	$3,297	$8,478	$55,136	$103,380	$72,576	$136,080	$4,330	$4,330
Distribution	T		T		T		T			
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $		Base $		Base $		Base $		Base $	
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition										
Range - %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Distribution										
Correlation Rank										

Analyst: _____

EFEC7

DCS EQUIPMENT/SOFTWARE UPGRADES

09/06/2001
2:40 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC7
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: 952 **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	36,570.0	0.0	0.0	36,570.0	0.0	36,570.0	0.0	0.0	0.0
Cum Units:	0.0	36,570.0	36,570.0	36,570.0	73,140.0	73,140.0	109,710.0	109,710.0	109,710.0	109,710.0
Yr Total Cost:	0	37,557	0	0	40,762	0	43,160	0	0	0
Cum Total Cost:	0	37,557	37,557	37,557	78,319	78,319	121,479	121,479	121,479	121,479

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Total Cost:	0	37,557	0	0	40,762	0	43,160	0	0	0
Cum Total Cost:	0	37,557	37,557	37,557	78,319	78,319	121,479	121,479	121,479	121,479

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

EFEC8

SWRB/BSL LINER TESTING

09/06/2001
2:37 PM

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC8
COMMENT NO:

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: SERVSUB SUBS **EOC:** SUBCONTRACTORS
Res Dept: 952 **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	0.0	42,000.0	0.0	0.0	42,000.0	0.0	0.0	0.0	0.0
Cum Units:	0.0	0.0	42,000.0	42,000.0	42,000.0	84,000.0	84,000.0	84,000.0	84,000.0	84,000.0
Yr Total Cost:	0	0	44,299	0	0	48,172	0	0	0	0
Cum Total Cost:	0	0	44,299	44,299	44,299	92,470	92,470	92,470	92,470	92,470

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Total Cost:	0	0	44,299	0	0	48,172	0	0	0	0
Cum Total Cost:	0	0	44,299	44,299	44,299	92,470	92,470	92,470	92,470	92,470

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

EFEC9

SOUTH PLUME OPTIMIZATION PHASE II

09/06/2001
2:43 PM

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFEC9
COMMENT NO:

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: FIELDSUB **FIELD SUBS** **EOC:** **SUBCONTRACTORS**
Res Dept: 952 **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	0.0	840,770.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	0.0	0.0	840,770.0	840,770.0	840,770.0	840,770.0	840,770.0	840,770.0	840,770.0	840,770.0
Yr Total Cost:	0	0	886,785	0	0	0	0	0	0	0
Cum Total Cost:	0	0	886,785	886,785	886,785	886,785	886,785	886,785	886,785	886,785

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** **MATERIAL**
Res Dept: 952 **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	0.0	18,846.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	0.0	0.0	18,846.0	18,846.0	18,846.0	18,846.0	18,846.0	18,846.0	18,846.0	18,846.0
Yr Total Cost:	0	0	19,877	0	0	0	0	0	0	0
Cum Total Cost:	0	0	19,877	19,877	19,877	19,877	19,877	19,877	19,877	19,877

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Total Cost:	0	0	906,662	0	0	0	0	0	0	0
Cum Total Cost:	0	0	906,662	906,662	906,662	906,662	906,662	906,662	906,662	906,662

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

FLUOR GLOBAL SERVICES

Memorandum

To:	Jack Hughes,MS52-5 Dick Butterfiled, MS52-5	Date:	April 30, 2001
Location:	Fernald	Reference:	N/A
From:	Ken Kepler, MS80-3	Fernald #:	M:OOTP:(PC/EST)2001-0027
Location:	Springdale	Client:	DOE DE-AC24-01OH20115
Extension:	648-6761	Subject:	SOUTH PLUME OPTIMIZATION PHASE II

c: File Record Subject ESTIMATE C5010404
Tom Wagner, MS80-3

Attached are two (2) copies of the estimate for the SOUTH PLUME OPTIMIZATION PHASE II.
To request any additional copies of this estimate or for any questions, please contact Tom Wagner on extension 6120.

KGK:TW:hmp
Attachment

Fluor Fernald, Inc.

PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: South Plume Optimization Phase II
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010404

BASIS OF ESTIMATE

SUPPORTING DOCUMENTATION:

Verbal Scope	☒	P & ID's	☐	Work Plan	☐
Drawings	☐	Equipment List	☐	Site Walk	☐
Sketches	☐	Specifications	☐	Eng. Mtg.	☐
Flow Diagrams	☐	Written Scope	☒	Estimate	☐

TYPE OF ESTIMATE:

Change Proposal	☐	Government	☐
Plan/Feasibility	☐	Conceptual	☐
Construction	☐	Title I Design	☐
Budget	☒	Independent	☐

BASIS OF ESTIMATE:

Estimate the cost for construction of 1 new extraction well off-site and 1 new injection well.

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: South Plume Optimization Phase II
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010404

ESTIMATE ASSUMPTIONS

EXECUTION:

- ☒ This project is to be performed on a 40-hour week, 10 hours a day.
- ☐ This project is to be performed on a 40-hour week, 8 hours a day.
- ☐ Premium time allowed.

WAGE RATES:

- ☒ Wage rates within this estimate are based on Project Labor Agreement rates, effective October 2000 and are considered FY01 dollars for estimating.
- ☐ Wage rates within this estimate are based on FF Support Contractor FSC 599 wage rates, effective October 1999 have been escalated 3% and are considered FY01 dollars for estimating.
- ☐ Wage rates within this estimate are based on FF FTE Planning Labor Rates FY01.

ENGINEERING:

- ☒ N/A
- ☐ Engineering dollars provided by the Project Engineer.
- ☐ Engineering dollars have been factored in at the standard 12% of the total direct and indirect field costs as per request of Project Engineer.

CONSTRUCTION MANAGEMENT:

- ☒ N/A
- ☐ Construction Management dollars provided by the Project Engineer.
- ☐ Construction Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

PROJECT MANAGEMENT:

- ☒ N/A
- ☐ Project Management dollars provided by the Project Engineer.
- ☐ Project Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

WASTE PROGRAM MANAGEMENT:

- ☒ N/A
- ☐ Waste Program Management dollars provided by the Project Engineer.

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: South Plume Optimization Phase II
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010404

PRODUCTIVITY:

A productivity factor has been developed and applied to the unit man-hours derived from MEANS, Richardson, NECA, and or any other published estimating source. See attachment APPENDIX "A" and APPENDIX "B".

ESCALATION:

Escalation costs are excluded from the target estimate. The escalation costs are calculated within the Micro-Frame computer system according to the plan for rebaselining.

UNIT RATES:

Unit man-hours, equipment and material dollars are based on Richardson, MEANS, NECA, and or other published rates.

G & A (NO EXPENSE):

G & A are excluded from the target estimate. The G & A cost are calculated within the Micro-Frame computer system according to the plan for rebaselining.

HEALTH PHYSICS:

See attached APPENDIX "C".

RISK BUDGET:

N/A

Fluor Fernald, Inc.

PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: South Plume Optimization Phase II
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010404

ESTIMATE INCLUSIONS & EXCLUSIONS

INCLUSIONS:

- Premobilization & Mobilization.
- Demobilization.
- Labor hours.
- Material dollars.
- Equipment dollars.

EXCLUSIONS:

- Premium time.
- Permits and fees.
- FF G & A (Home Office Expense).
- Construction Management.
- Any second tier subcontract costs.
- Project Management dollars.
- Waste Management dollars.

ESTIMATE SUMMARY SHEET

PROJECT: South Plume Optimization Phase II
ESTIMATE #: C5010404
CLIENT: DOE
WBS #: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

ITEM DESCRIPTION	M/H	RATE	LABOR $	S/C $	MAT'L $	EQUIP. $	TOTAL $
PREMOBILIZATION	80		$4,000				$4,000
MOBILIZATION	120		$2,700	$5,092	$2,000	$1,500	$11,292
CIVIL	731		$15,700	$3,000	$5,120	$8,500	$32,320
CONCRETE	213		$4,800		$2,800	$300	$7,900
ELEC. & INSTR.	1,022		$23,200		$57,200	$14,600	$95,000
PIPING	464		$12,200	$200,000	$83,600	$1,700	$297,500
WELL HOUSE	25		$600		$4,300		$4,900
HVAC / WELL PUMP	197		$5,100		$57,400	$5,000	$67,500
IW	239		$5,900		$15,600		$21,500
TESTING	320		$7,700				$7,700
DEMOBILIZATION	100		$2,400				$2,400
DIRECT FIELD COSTS TOTAL	**3,512**	**$24.00**	**$84,300**	**$208,092**	**$228,020**	**$31,600**	**$552,012**
SUPERVISION - CONTRACTOR	1,172		$26,620				$26,620
SMALL TOOLS & CONSUMABLES	-	-	-		$5,100		$5,100
MISC. EQUIP. RENTAL	-	-	-			$12,300	$12,300
TEMPORARY FACILITIES		-					
TEMPORARY UTILITY HOOK-UP	68	-	$1,600		$900		$2,500
JOB CLEAN-UP	158	-	$3,800		$1,300		$5,100
PER DIEM / SUBSISTANCE	-	-	-				
HEALTH PHYS.	37	-	$900				$900
ADDITIONAL AND JOB SPECIFIC TRAINING	16	-	$384				$384
GENERAL SITE WORKER TRAINING	155	-	$3,712				$3,712
PAYROLL BURDENS & BENEFITS	-	-	$69,200				$69,200
OVERHEAD & PROFIT	-	-	-	$135,600			$135,600
BOND	-	-	-	$10,600			$10,600
SALES TAX	-	-	-		$14,100	$2,600	$16,700
INDIRECT FIELD COSTS TOTAL	**1,606**		**$106,216**	**$146,200**	**$21,400**	**$14,900**	**$288,716**
DIRECT & INDIRECT FIELD COSTS TOTAL	**5,118**	**$37.22**	**$190,516**	**$354,292**	**$249,420**	**$46,500**	**$840,728**
TARGET ESTIMATE			**(FY 01 DOLLARS)**				**$840,728**

ESTIMATE PERFORMED BY ESTIMATING SERVICES

ESTIMATE SUMMARY SHEET

PROJECT: South Plume Optimization Phase II

ESTIMATE NO. C5010404

CLIENT: DOE

WBS NO.: 1.1.E.F

FACTORS

DATE: 02-May-01

ESTIMATOR: Wagner

LOCATION: Fernald

TASK NO.: EFEC9

FIXED PRICE $	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
DFC DOLLARS	$84,300	$208,092	$228,020	$31,600		$552,012
IFC COST FACTOR	2.2600	–	1.0320	1.3892	–	
BOND + OVERHEAD & PROFIT COST FACTOR	1.2105	1.2105	1.2105	1.2105	1.2105	
SALES TAX	-	-	1.0600	1.0600	1.0600	
DIRECT FIELD COST FACTOR =	**2.7357**	**1.2105**	**1.3242**	**1.7826**	**1.2831**	
BASE ESTIMATE $'s	$230,620	$251,896	$301,947	$56,330		$840,792
BASE FACTOR W/ RISK	1.0000	1.0000	1.0000	1.0000	1.0000	
TARGET ESTIMATE FACTOR	**2.7357**	**1.2105**	**1.3242**	**1.7826**	**1.2831**	
FPS TARGET ESTIMATE (FY01 $)	$230,620	$251,896	$301,947	$56,330		$840,792

NOTE:

If there are no DFC Equip. $, enter The IFC Equip. $'s into the direct field cost TOTAL and delete IFC Factor in G65.

ESTIMATE SUMMARY SHEET

PROJECT: South Plume Optimization Phase II
ESTIMATE NO. C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

Direct Field Cost w/FACTORS

YES	NO
X	

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

PAY ITEM NO.	DESCRIPTION	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
		(ASSIGN OR PRORATE PPE MAT'L.$'s)–>>					
	PREMOBILIZATION	4000					
		$10,940					$10,940
	MOBILIZATION	2700	5092	2000	1500		
		$7,390	$6,160	$2,650	$2,670		$18,870
	DEMOBILIZATION	2400					
		$6,570					$6,570
	CIVIL	15700	3000	5120	8500		
		$42,950	$3,630	$6,780	$15,150		$68,510
	CONCRETE	4800		2800	300		
		$13,130		$3,710	$530		$17,370
	ELEC. & INSTR.	23200		57200	14600		
		$63,470		$75,740	$26,030		$165,240
	PIPING	12200	200000	83600	1700		
		$33,380	$242,100	$110,700	$3,030		$389,210
	WELL HOUSE	600		4300			
		$1,640		$5,690			$7,330
	HVAC / WELL PUMP	5100		57400	5000		
		$13,950		$76,010	$8,910		$98,870
	[illegible]	5900		15600			
		$16,140		$20,660			$36,800
	TESTING	7700					
		$21,060					$21,060
TOTAL DIRECT FIELD COSTS w/FACTORS		**(FY01 DOLLARS)**					**$840,770**

DETAIL ESTIMATE WORKSHEETS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO.: C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

ITEM NO.	SUMMARY	QTY	UNIT	MAN-HOURS			COST / UNIT				LABOR	S/C	MAT'L	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C	Mat'l	Equip					
	PREMOBILIZATION				80						$4,000				$4,000
	MOBILIZATION				120						$2,700	$5,092	$2,000	$1,500	$11,292
	DEMOBILIZATION				100						$2,400				$2,400
	CIVIL				731						$15,700	$3,000	$5,120	$8,500	$32,320
	CONCRETE				213						$4,800		$2,800	$300	$7,900
	ELEC. & INSTR.				1,022						$23,200		$57,200	$14,600	$95,000
	PIPING				464						$12,200	$200,000	$83,600	$1,700	$297,500
	WELL HOUSE				25						$600		$4,300		$4,900
	HVAC / WELL PUMP				197						$5,100		$57,400	$5,000	$67,500
	IW				239						$5,900		$15,600		$21,500
	TESTING				320						$7,700				$7,700
	Subtotal Direct Cost	1	LOT		3,512	$24.00					$84,300	$208,092	$228,020	$31,600	$552,012

DETAIL ESTIMATE WORKSHEETS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO.: C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

ITEM NO.		QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION														
	Insurance Certificates, List of Sub-Tier Contractors Procurement Documents, Safe Work Plans, QA/QC Plan, Project Execution Plan, Construction and Engineering Documentation, Acceptable baseline Schedules														
	Duration 2 wks	1	LS	40.0	80	50.00					$4,000				$4,000
	MOBILIZATION														
	S/C Office Trailer	7	mo					300.00				$2,092			$2,092
	Survey and Engineering Controls	1	LS					3,000.00	500.00	500.00		$3,000	$500	$500	$4,000
D	Install Utilities	1	LS	40.0	40	22.69			1,000.00	500.00	$900		$1,000	$500	$2,400
D	Other misc. requirements as required.	1	LS	80.0	80	22.69			500.00	500.00	$1,800		$500	$500	$2,800
										6,360.00					
	Total				120						$2,700	$5,092	$2,000	$1,500	$11,292
	DEMOBILIZATION														
D	Complete Punch List Items.	1	LS	20.0	20	22.69					$500				$500
D	Remove Trailer and Change Facilities.	1	LS	20.0	20	22.69					$500				$500
D	Remove all Utilities.	1	LS	20.0	20	22.69					$500				$500
mC	Decontaminate Equipment.	1	LS	10.0	10	22.69					$200				$200
D	Loadout contractors equipment.	1	LS	20.0	20	22.69					$500				$500
D	Other area requirements.	1	LS	10.0	10	22.69					$200				$200
	Total				100						$2,400				$2,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO.: C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

ITEM NO.	CIVIL	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Site Prep														
D	Survey (3) man team	1	ac					3000.00				$3,000			$3,000
D	Plastic warning tape & Safety Fencing	400	lf	0.13	60	21.49			0.77		$1,300		$310		$1,610
D	Gravel erosion control allowance	37.5	cy	0.30	13	21.49			10.15	7.60	$280		$380	$290	$950
	Site Clearing														
D	Clear and grub	1	ac	48.0	55	21.49				1125.00	$1,180			$1,130	$2,310
	Grading & Excavation														
	Access Road														
D	Site grading	200	cy	0.10	23	21.49				2.31	$490			$460	$950
D	Excavation 900*12*1/27	400	cy	0.2	92	21.49				4.38	$1,970			$1,750	$3,720
D	Backfill 900*12*.5/27	200	cy	0.20	46	21.49					$980				$980
D	Geotextile filter fabric 900*12/9	1200	sy	0.01	14	21.49			1.35		$290		$1,620		$1,910
D	Gravel road 900*12/9	1200	sy	0.08	107	21.49			1.20	0.35	$2,300		$1,440	$420	$4,160
D	Vibrating compaction	200	cy	0.10	23	21.49				0.26	$490			$50	$540
D	Prepare & roll sub-base	1200	sy	0.1	69	21.49				0.44	$1,470			$530	$2,000
	Pipe Trench 450' EW & 800' IW														
D	Trenching	521	cy	0.05	30	21.49				3.00	$640			$1,560	$2,200
D	Backfill	521	cy	0.15	89	21.49				3.00	$1,920			$1,560	$3,480
D	Compaction	521	cy	0.009	5	21.49				0.26	$120			$140	$260
	Well House Expansion														
D	Excavate	45	cy	0.15	8	21.49				3.00	$170			$140	$310
D	Backfill	30	cy	0.25	9	21.49				4.00	$180			$120	$300
D	Dispose excess soil	15	cy	0.08	1	21.49				4.00	$30			$60	$90
D	**Existing Road Repair allowance**		ls	40.0		21.49			1500.00	500.00					
	Culvert Pipe														
D	Culvert pipes	50	lf	0.20	11	21.49			5.20		$250		$260		$510
D	Backfill culvert pipes	25	cy	1.5	43	21.49				1.07	$920			$30	$950
D	**Catch Basin**	1	ea	24.0	27	21.49			650.00	216.00	$590		$650	$220	$1,460
	Guard Rail														
D	Guard rail corrugated steel, galv. steel posts	40	lf	0.10	5	21.49			9.45	0.55	$100		$380	$20	$500
D	End sections, galv flared	2	ea	0.65	1	21.49			38.50	9.25	$30		$80	$20	$130
D	Subtotal Direct Cost				731						$15,700	$3,000	$5,120	$8,500	$32,320

DETAIL ESTIMATE WORKSHEETS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO.: C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TAG NO.: EFEC9

ITEM NO.	CONCRETE	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	reinforcing	1	ls	38.0	43	22.43			1,084.00	112.00	$980		$1,080	$110	$2,170
D	formwork	500	sf	0.20	114	22.43			1.00	0.20	$2,570		$500	$100	$3,170
D	exjoint	20	lf	0.10	2	22.43			0.40		$50		$10		$60
D	water stop	27	lf	0.10	3	22.43			0.50		$70		$10		$80
D	concrete matl 4000#	15	cy	1.0	17	22.43			70.00	4.00	$380		$1,050	$60	$1,490
D	anchor bolts	1	ls	4.0	5	22.43			40.00		$100		$40		$140
D	grout	1	ls	8.0	9	22.43			50.00		$210		$50		$260
D	finish concrete	275	sy	0.03	9	22.43				0.03	$210			$10	$220
D	precast concrete splash blocks	2	ea	0.25	1	22.43			20.00		$10		$40		$50
D	special coatings	73	sf	0.08	7	22.43			0.32	0.50	$150		$20	$40	$210
D	special sealant & b/rod	10	lf	0.20	2	22.43			4.00		$50		$40		$90
	Subtotal Direct Cost	1	LOT		213	$22.52					$4,800		$2,800	$300	$7,900

DETAIL ESTIMATE WORKSHEETS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO.: C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

ITEM NO.	ELEC. & INSTR.	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Auger Truck	100	hr	1.0	114	22.66				75.00	$2,590			$7,500	$10,090
D	Bucket Truck	80	hr	1.0	92	22.66				75.00	$2,070			$6,000	$8,070
D	45' Class II polo	4	ea	12.1	55	22.66			373.20		$1,250		$1,493		$2,743
D	#1/0 AL Power cable	8	clf	2.0	18	22.66			42.62		$410		$341		$751
D	Ground Cu wire	200	lf	0.05	11	22.66			0.44		$260		$88		$348
D	Messenger attachments	4	ea	3.3	15	22.66			69.75		$340		$279		$619
D	Guy wire typical	1	ea	5.0	6	22.66					$130				$130
D	Trenching of underground cable	1200	lf	0.02	27	22.66				0.23	$620			$280	$900
D	Underground utility duct w/ cable	12	clf	4.5	62	22.66			117.62		$1,400		$1,411		$2,811
D	Red concrete encasement	4	cy	0.30	1	22.66			80.00		$30		$302		$332
D	Backfill including compaction	1200	lf	0.02	21	22.66				0.13	$470			$160	$630
D	Disconnect switch 480v 3ph	2	ea	8.0	18	22.66			260.00	50.00	$410		$500	$100	$1,010
D	Combo starter NEMA 1 enclosure	2	ea	10.0	23	22.66			600.00	50.00	$520		$1,200	$100	$1,820
D	Transformer 13.2KVA 480v IPH pole mounted	3	ea	20.0	69	22.66			900.00	100.00	$1,560		$2,700	$300	$4,560
D	Variable speed AC drive 40hp 480v 60Hz		ea	23.0		22.66			8000.00	50.00					
D	Transformer Mini power 15KVA 480v 3ph	1	ea	16	18	22.66			3150.00	50.00	$410		$3,150	$50	$3,610
D	Fuses	8	ea	0.40	4	22.66			100.00		$80		$800		$880
D	3" conduit rgs	160	lf	0.25	46	22.66			4.50	0.50	$1,040		$720	$80	$1,840
D	3" conduit fittings	2	ls	10.0	23	22.66			400.00		$520		$800		$1,320
D	1 1/2" conduit rgs	100	lf	0.10	11	22.66			1.70	0.40	$260		$170	$40	$470
D	1 1/2" conduit fittings	2	ls	8.0	18	22.66			100.00		$410		$200		$610
D	3/4" conduit rgs	300	lf	0.06	21	22.66			0.70	0.10	$470		$210	$30	$710
D	3/4" conduit fittings	2	ls	20.0	46	22.66			190.00		$1,040		$380		$1,420
D	3/4" liquid tight	50	lf	0.08	5	22.66			2.50		$100		$125		$225
	INSTRUMENTATION														
D	Flow control valve 4"	1	ea	4.5	5	22.66			3563.00		$120		$3,563		$3,683
D	Flowmeter, w/ element, transducer set, flow computer, analog cord, handheld programmer, & flow meter programming	2	ea	11.0	25	22.66			5765.00		$570		$11,530		$12,100
D	Pressure indicating transmitter	2	ea	0.50	1	22.66			205.00		$30		$410		$440
D	#16 awg contrl cable	150	lf	0.02	3	22.66			0.38		$80		$57		$137
D	6.25/125uM Fiber Optic Cable dual window(850/1300),loose buffer,gel fill	1600	lf	0.010	18	22.66			0.73		$410		$1,168		$1,578
D	DCS Components, incls, analog input, output modules, discrete input module, transnet term. interface board, contr. mod.., encl's sub panel programming etc.	2	ea	36.0	82	22.66			7338.00		$1,870		$14,676		$16,546
D	Instrument Calibration/Testing	2	ls	10.0	23	22.66			100.00		$520		$200		$720
D	Fiber optic cable bulk plenum	16	CLF	3.5	64	22.66			375.00		$1,450		$6,000		$7,450
D	Fiber optic jumper	1	LS	6.0	7	22.66			500.00		$160		$500		$660
D	Fiber optic pigtail	1	LS	6.0	7	22.66			425.00		$160		$425		$585
D	Fiber optic connector	1	LS	6.0	7	22.66			300.00		$160		$300		$460
D	Fiber optic finger splice	1	LS	6.0	7	22.66			500.00		$160		$500		$660
D	Transceiver	1	LS	10.0	11	22.66			800.00		$260		$800		$1,060
D	Multi-channel rack enclosure 10 mods.	1	LS	20.0	23	22.66			1200.00		$520		$1,200		$1,720
D	Fiber optic patch panel 12 ports	1	LS	12.0	14	22.66			1000.00		$310		$1,000		$1,310
	Subtotal Direct Cost	1	LOT		1,022	$22.70					23,200		57,200	14,600	$95,000

CONTRACTOR - Stated in FY01 DOLLARS

DETAIL ESTIMATE WORKSHEETS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO.: C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

ITEM NO.	PIPING	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Piping Installation 1250'														
D	8" pipe HDPE	1250	lf	0.018	26	26.40			6.74		$680		$8,430		$9,110
D	8" flange adapter HDPE	4	ea	1.6	7	26.40			88.00	10.00	$190		$350	$40	$580
D	8" DI flanges w/ backup ring	4	ea	1.0	5	26.40			40.00	5.00	$120		$160	$20	$300
D	8" DI blind flanges	4	ea	1.0	5	26.40			50.00	5.00	$120		$200	$20	$340
D	Post Indicator Valve	2	ea	8.0	18	26.40			420.00	50.00	$480		$840	$100	$1,420
D	Connectioins allowance to existing headers	2	ls	40.0	92	26.40			1500.00	500.00	$2,420		$3,000	$1,000	$6,420
D	Pipe concrete thrust blocks	5	cy	1.0	6	26.40			65.00	10.00	$150		$330	$50	$530
D	10 ga stranded magnetic detectable wire & tapi	12.5	clf	0.80	11	26.40			8.40		$300		$110		$410
D	plastic warning tape indicating buried pipe	13	clf	0.053	0.8	26.40			3.70		$20		$50		$70
						26.40									
	MECHANICAL PIPING - 1 EW														
D	6" steel pipe	100	lf	0.77	89	26.40			22.00		$2,340		$2,200		$4,540
D	6" steel pipe insulate	38	lf	0.32	14	26.40			9.75		$360		$370		$730
D	3" pvc sch 40 drain & ck valves	1	lot	4.0	5	26.40			220.00	60.00	$120		$220	$60	$400
D	winged drain frame & grate 13"sq.	1	ea	2.0	2	26.40			100.00	20.00	$60		$100	$20	$180
D	6" flanged cast iron pipe (4ea @ 5')	20	lf	0.329	8	26.40			12.90		$200		$260		$460
D	6" flange cast iron 90d elbow	4	ea	1.4	6	26.40			29.00		$170		$120		$290
D	Subcontract Well Drilling/Developing allow.	1	ls					100,000				$100,000			$100,000
D	8" HDPE pipe	450	lf	0.018	9	26.40			6.74		$240		$3,030		$3,270
D	10" HDPE pipe	1500	lf	0.03	51	26.40			36.24		$1,360		$54,360		$55,720
D	Pitless adapter	1	ea			26.40									
	MECHANICAL PIPING - 1 IW														
D	8" PIPE HDPE	500	LF	0.018	10	26.40			6.74		$270		$3,370		$3,640
D	10" PIPE HDPE		LF	0.03		26.40			36.24						
D	4" PIPE HDPE		LF	0.014		26.40			1.82						
D	8" FLANGE ADAPTER HDPE	10	EA	1.6	18	26.40			88.00	10.00	$480		$880	$100	$1,460
D	10" FLANGE ADAPTER HDPE	10	EA	2.0	23	26.40			95.00	10.00	$600		$950	$100	$1,650
D	4" FLANGE ADAPTER HDPE	10	EA	1.0	11	26.40			55.00	10.00	$300		$550	$100	$950
D	10" TO 8" REDUCING TEE HDPE	3	EA	5.0	17	26.40			460.00	10.00	$450		$1,380	$30	$1,860
D	10" X 8" CONCENTRIC REDUCER HDPE	3	EA	3.1	11	26.40			300.00	10.00	$280		$900	$30	$1,210
D	10" X 6" CONCENTRIC REDUCER HDPE	3	EA	3.1	11	26.40			300.00	10.00	$280		$900	$30	$1,210
D	8" X 6" CONCENTRIC REDUCER HDPE	3	EA	2.7	9	26.40			170.00	10.00	$240		$510	$30	$780
D	Subcontract Well Drilling/Developing allow.	1	ls					100,000				$100,000			$100,000
	Subtotal Direct Cost	1	LOT		464	$26.27					12,200	200,000	83,600	1,700	$297,500

DETAIL ESTIMATE WORKSHEETS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO.: C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

ITEM NO.	WELL HOUSE	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Expand exiting well house shelter	1	ls	22.0	25	22.43			4250.00		$560		$4,250		$4,810
	Subtotal Direct Cost	1	LOT		25	$23.84					600		4,300		$4,900

DETAIL ESTIMATE WORKSHEETS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO.: C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

ITEM NO.	IW	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	Dbl Swing Gate 10'w	1	ea	20.0	23	21.49			385.00		$490		$390		$880
D	Install Chain Link Fence 7'h, 9gage, w/ 3 strand	86	lf	0.150	15	21.49			11.50		$320		$990		$1,310
D	Ground rods (fence & gate)	2	ea	1.5	3	21.49			20.00		$70		$40		$110
D	#4 bare cu wire (fence & gate grounding)	88	lf	0.010	1	21.49			0.27		$20		$20		$40
D	Ground clamps	36	ea	0.15	6	21.49			4.00		$130		$140		$270
D	Concrete pad for well & pump	4	cy	4.7	20	21.49			151.00	1.61	$430		$560	$10	$1,000
D	Concrete pad for elect	1	cy	5.0	6	21.49			151.00	1.61	$120		$150		$270
D	Watt hour meter	1	ea	1.0	1	22.66			2350.00		$30		$2,350		$2,380
D	20A Duplex receptacles	1	ea	0.49	1	22.66			50.30		$10		$50		$60
D	1 5/8" Unistrut channel	50	lf	0.19	11	22.66			3.30		$250		$170		$420
D	Terminations #2	5	ea	0.330	2	22.66			3.40		$40		$20		$60
D	Terminations #6	1	ea	0.270	0.3	22.66			2.00		$10				$10
D	Terminations #8	2	ea	0.220	1	22.66			1.85		$10				$10
D	Terminations #12	2	ea	0.15	0.3	22.66			1.25		$10				$10
D	Terminations #2/0	2	ea	0.5	1	22.66			4.15		$30		$10		$40
D	Distribution Panel 100A	1	ea	8.0	9	22.66			138.00		$210		$140		$350
D	100w fixture w/ photocell	1	ea	1.5	2	22.66			632.50		$40		$630		$670
D	1 1/4" conduit stanchion	10	lf	0.18	2	22.66			1.55		$50		$20		$70
D	1/x #12 cu wire	100	lf	0.01	1	22.66			0.07		$30		$10		$40
D	1/c #12 terminations	2	ea	0.15	0.3	22.66			1.25		$10				$10
D	Heat tracing	100	lf	0.10	11	26.40			2.00		$300		$200		$500
D	4" flow control valve	1	ea	4.5	5	26.40			2,850		$140		$2,850		$2,990
D	4" magnet flow meter	1	ea	4.0	5	26.40			4,800		$120		$4,800		$4,920
D	Surge arrestors	8	ea	1.1	10	26.40			100.00		$270		$800		$1,070
D	3" orifice plast 316 stl.	1	ea	1.9	2	26.40			124.00		$60		$120		$180
D	4" pipe cs	6	lf	0.17	1	26.40			6.56		$30		$40		$70
D	3" pipe cs	6	lf	0.13	1	26.40			4.61		$20		$30		$50
D	4" pipe pvc	70	lf	0.16	13	26.40			2.10		$340		$150		$490
D	3" pipe pvc	80	lf	0.13	12	26.40			1.45		$310		$120		$430
D	2" pipe pvc	80	lf	0.11	10	26.40			0.70		$270		$60		$330
D	4" 90 degree ell cs sch 40	2	ea	2.7	6	26.40			9.63		$160		$20		$180
D	3" 90 degree ell cs sch 40	2	ea	1.6	4	26.40			5.75		$90		$10		$100
D	3" 45 degree ell cs sch 40	1	ea	1.6	2	26.40			4.54		$50		$5		$55
D	4" tee cs shd 40	1	ea	4.1	5	26.40			15.72		$120		$20		$140
D	4"x3" weldolet	1	ea	2.6	3	26.40			14.87		$80		$10		$90
D	4" cap cs	1	ea	1.3	1	26.40			8.00		$40		$10		$50
D	1/2" sockolet 3000# cs	5	ea	0.56	3	26.40			2.65		$80		$10		$90
D	1/4" sockolet 3000# cs	1	ea	0.23	0.3	26.40			1.50		$10		$2		$12
D	1" sockolet 3000# cs	1	ea	0.06	0.1	26.40			3.45				$3		$3
D	4" adapter cs to pvc	1	ea	0.70	1	26.40			11.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.50	1	26.40			9.00		$20		$10		$30
D	4" adapter cs to pvc	1	ea	0.33	0.4	26.40			4.50		$10		$5		$15
	Subtotal Direct Cost	1	LOT		201	$24.35					4,900		15,000		$19,900

DETAIL ESTIMATE WORKSHEETS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO.: C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

ITEM NO.	IW	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Additional IW detail														
D	1"x3" pipe nipples	1	ea	0.80	1	26.40			4.12		$20		$4		$24
D	1"x6" pipe nipples	1	ea	0.80	1	26.40			5.60		$20		$10		$30
D	1/2"x6" pipe nipples	1	ea	0.80	1	26.40			3.75		$20		$4		$24
D	1/2"x3" pipe nipples	3	ea	0.70	2	26.40			3.75		$60		$11		$71
D	1/4"x3" pipe nipples	1	ea	0.70	1	26.40			2.12		$20		$2		$22
D	1/2" sockegtweld 90 degree ell	1	ea	0.80	1	26.40			8.35		$20		$8		$28
D	4" 150# flange	9	ea	1.6	17	26.40			11.83		$450		$106		$556
D	4" 150# flange	3	ea	1.6	6	26.40			9.17		$150		$28		$178
D	3" pvc she 80 caps	1	ea	0.29	0.3	26.40			3.20		$10		$3		$13
D	4" pvc she 80 caps	1	ea	0.38	0.4	26.40			3.70		$10		$4		$14
D	4" 150# butterfly valve wafer	1	ea	1.5	2	26.40			54.00		$50		$54		$104
D	3" 150# butterfly valve wafer	1	ea	1.3	2	26.40			54.00		$40		$54		$94
D	1" ball valve	2	ea	0.84	2	26.40			81.60		$50		$163		$213
D	1/2" ball valve	1	ea	0.84	1	26.40			51.00		$30		$51		$81
D	1/4" gate valve	2	ea	0.84	2	26.40			56.00		$50		$112		$162
D	Level transmitter		ea	4.6		26.40			1500.00						
D	Pressure Indicator transmitter		ea	7.9		26.40			950.00						
D	Flow Indicating Controller		ea	13.0		26.40			1800.00						
	Subtotal Direct Cost	1	LOT		38	$26.16					1,000		600		$1,600

DETAIL ESTIMATE WORKSHEETS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO.: C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

ITEM NO.	HVAC / WELL PUMP	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	HVAC														
D	electric heaters 400cfm 3.3kw	1	ea	4.0	5	22.66			600.00		$100		$600		$700
D	fan, intake louver, exhaust & cntrl.	1	ea	8.0	9	22.66			843.50		$210		$840		$1,050
	WELL PUMP														
D	pump submersed 40hp 400gpm, equip & assem	2	ea	80.0	183	26.40			28,000	2,500.00	$4,830		$56,000	$5,000	$65,830
	Subtotal Direct Cost	1	LOT		197	$25.92					5,100		57,400	5,000	$67,500

DETAIL ESTIMATE WORKSHEETS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO.: C5010401
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

ITEM NO.	TESTING	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	HYDROSTATIC TESTING	1	ls	100.0	114	$26.40					$3,020				$3,020
D	ELECTRICAL TESTING	1	ls	100.0	114	$22.66					$2,590				$2,590
D	ACCEPTANCE TEST	1	ls	80.0	92	$22.66					$2,070				$2,070
	Subtotal Direct Cost	1	LOT		320	$24.04					7,700				$7,700

DETAIL ESTIMATE WORKSHEETS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO.: C501040:
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

ITEM NO.			QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Project Staffing															
		Each														
	1. Project Manager			hr	1.0		45.19									
	2. Project Superintendent	0.25	293	hr	1.0	293	31.92					$9,350				$9,350
	3. Project Engineer	0.25	293	hr	1.0	293	20.71					$6,070				$6,070
	4. Safety Engineer	0.25	293	hr	1.0	293	19.75					$5,780				$5,780
	5. QA/QC Engineer	0.25	293	hr	1.0	293	18.51					$5,420				$5,420
	6. Office Administration			hr	1.0		15.75									
	7. Contract Administration/ Scheduler			hr	1.0		27.10									
	8. Clerical			hr	1.0		14.00									
	TOTAL					1,172	22.72					$26,620				$26,620
			1	LOT		2,343	$22.70					53,200				$53,200

APPENDIX " A"

PROJECT: South Plume Optimization Phase II
ESTIMATE NO: C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

SITE SPECIFIC

EFFICIENCY / MULTIPLIER ANALYSIS

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

PERCENT OF INFLUENCE ON CHART MANHOURS

	40%	50%	60%	70%	80%	90%	100%	105%	110%	% OF INFLUENCE	WT'D VALUE	PROD. RESULT
CRAFT SKILL (NOTE 1)	POOR			FAIR			STD	V.GOOD	EXCELLENT	100.0%	12.0%	0.12
CRAFT AVAIL.(NOTE 1)		POOR		FAIR			STD			100.0%	8.0%	0.08
CLIMATE (NOTE 2)	SEVERE	ICE/SNOW			RAIN		+40 TO +85			80.0%	20.0%	0.16
PLANT ELEVATION		OVER 10,000FT			5,000' TO 10,000 FT		UNDER 5,000 FT			100.0%	5.0%	0.05
WORK SPACE				200 SF	250 SF	300 SF	350 SF			100.0%	10.0%	0.1
WORK WEEK	<---- MULTIPLE SHIFTS-											
50 HOUR WORK WEEK	//////////	//////////	//////////				4-10s / 5-8s			100.0%	15.0%	0.15
	//// MULTIPLE-SHIFT //////////			OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS				0.0%	0.0%	0
60 HOUR WORK WEEK	//////////	//////////	OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS					0.0%	0.0%	0
SHIFTWORK 2ND SHIFT 3RD SHIFT			3RD SHIFT		2ND SHIFT		OR ONE SHIFT ONLY			100.0% 100.0%	3.0% 5.0%	0.03 0.05
PROJECT SIZE					400M MH AND UP	300M TO 400M MH	200M TO 300M MH	200M MH OR LESS		100.0%	4.0%	0.04
PLANT TYPE				REVAMP ONLY	REVAMP & NEW	NEW IN EXIST PLT	GRASS ROOTS			90.0%	8.0%	0.072
AREA/UNION INFLUENCE	STRONG		MILD		SOME		NONE			60.0%	10.0%	0.06
											100.0%	91.2%

NOTES.....
1. TURNOVER HAS BEEN CONSIDERED
2. FOR EXTERIOR WORK ONLY

EFFICIENCY (AS A % OFF CHART MANHOURS) 91.2%

MULTIPLIER - (TO BE APPLIED TO CHART M.H.'S TO OBTAIN SITE M.H.'S) 1.10

EFFICIENCY FACTORS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO. C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

Fluor Fernald, Inc.

EXAMPLE:

STANDARD CHART MANHOURS =	NET	100
EFFICIENCY FACTORS:		
* SITE SPECIFIC (SEE APPENDIX A)	10%	10.0
S/T = BASE UNIT MANHOURS		110
OVERTIME PRODUCTIVITY FACTOR (SEE DETAIL WORKSHEET BACK-UP)	0.00%	0
		110
* TASK SPECIFIC (confined space, high elevation, congestion, etc.)	0.0%	0
		110

* PPE SPECIFIC (Based on current data and estimating knowledge)

	PPE LEVEL									
	D		Mod.'D'		Mod. "C"		C		C+	
PRODUCTIVITY HOURS		MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's
(AS A %) / ADD MH's	4.00%	4	28.00%	31	66.00%	73	74.00%	81	96.00%	106
(AS A MULTIPLIER)/TOTAL HRS	1.04	114.4	1.28	140.8	1.66	182.6	1.74	191.4	1.96	215.6
TOTAL MULTIPLIER w/SITE PROD.	1.144		1.408		1.826		1.914		2.156	

NOTE : Use the Default Productivity Factor of 'mC' for working in a contaminated area if the Safety Level cannot be determined.

(SEE FD FERNALD ESTIMATING SERVICES REFERENCE MANUAL IM-6006 8.10)

Total hours worked in a specific PPE level divided by 10 hour working days = (PPE) ManDays to determine material cost of PPE's.
(SEE APPENDIX C - HEALTH PHYSICS)

11.0	Man Days	14.0	Man Days	18.0	Man Days	19.0	Man Days	22.0	Man Days

THESE EFFICIENCY FACTORS WERE APPLIED INDIVIDUALLY THROUGHOUT THE ESTIMATE AT A TASK SPECIFIC LEVEL, TO OBTAIN A MORE ACCURATE ACCOUNT OF OVERALL EFFICIENCY IMPACT DUE TO PPE REQUIREMENTS IN HANDLING CONTAMINATED AND HAZARDOUS WASTE.

EFFICIENCY FACTORS

PROJECT: South Plume Optimization Phase I
ESTIMATE NO. C5010404
CLIENT: DOE
WBS NO.: 1.1.E F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

PPE MULTIPLIER DEVELOPEMENT

		D	mD	mC	C	C+
CREW SIZE & MAKE-UP	STANDARD	7	7	7	7	7
	WORKER-BUDDY	0	0	0	0	0
	SUPPORT TEAM	0	0	0	0	0
	TOTAL CREW	7	7	7	7	7
CREW SIZE RATIO		1.00	1.00	1.00	1.00	1.00
AVAILABLE WORK TIME FACTOR		0.96	0.78	0.7	0.7	0.68
PPE LABOR PRODUCTIVITY FACTOR		1	1	0.86	0.82	0.75
NET PRODUCTIVITY RATIO		0.96	0.78	0.602	0.574	0.51
NET PRODUCTIVITY MULTIPLIER		**1.04**	**1.28**	**1.66**	**1.74**	**1.96**

These factors were based on Tables 6.1 and 6.2, Moderate Work Efforts, 66F to 85F temperature of 'Hazardous Waste Cost Control' by R.A.Selg. Modifications were made to reflect a 10 hour work day and no buddy system or support team for levels D, mC and C. The worker-buddy and support team members, if required, may be covered under Construction Mgmt. (Rad Techs).

AVAILABLE WORK TIME FACTOR		D	mD	mC	C	C+
TOTAL WORK MINUTES per [4 - 10's		600	600	600	600	600
ADDITN'L SITE SAFETY MEETINGS NOT INCLD. IN BAS	QUANTITY	1	1	1	1	1
	MINUTES	25	25	25	25	25
TOTAL		25	25	25	25	25
PPE DON & DOFFING	QUANTITY	0	0	3	3	3
(ADJUST LEVEL D per WORK PLAN)	MINUTES	0	0	15	15	20
TOTAL			0	45	45	60
WORK BREAKS	QUANTITY	N/A	2	2	2	2
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			30	30	30	30
MOBILIZATION - ROUND TRIPS	QUANTITY	N/A	4	4	4	4
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			60	60	60	60
COOLDOWNS PER DAY	QUANTITY	N/A	4	4	4	4
** (4 OUT OF 12 MONTHS) 33.33%	MINUTES	N/A	15	15	15	15
TOTAL			20	20	20	20
AIR TANK REPLACEMENT	QUANTITY	N/A	N/A	N/A	N/A	N/A
	MINUTES	N/A	N/A	N/A	N/A	N/A
TOTAL						
AVAILABLE WORK TIME		575	465	420	420	405
AVAILABLE WORK TIME FACTOR		**0.96**	**0.78**	**0.7**	**0.7**	**0.68**

NOTE: Adjust 'Work Minutes per Day' basis to: 5 - 8's, or leave as 4 - 10's. Any other circumstances, over-ride the minutes per day.

** Assumption based on work performed in May, June, July & August, pro-rating cost over one year. Adjust % to individual circumstances.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO. C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

Fluor Fernald, Inc.

PPE"s - PERSONAL PROTECTIVE EQUIPMENT

DESCRIPTION	UNIT	UNIT COST	* NO. OF CHANGE OUTS PER WORKER PER DAY				
			Man Days (TOTAL HOURS worked in PPE's Div. by WORK HOURS / DAY)				
PPE LEVEL C / C+ / B : F/HF MASK w/RESP.&CART.			*	MAN DAYS	MAT'L.$'s	PPE LEVEL	
TYVEK COVERALL W/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	0	$0	C / C+	
TYVEK COVERALL W/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	0	$0	C / C+	(DOUBLE PPE)
GLOVE LINER - DISPOSABLE	PR	$0.24	3	0	$0	C / C+	
GLOVE, LATEX - DISPOSABLE	PR	$0.26	3	0	$0	C / C+	
GLOVE, WORK - DISPOSABLE	PR	$1.02	3	0	$0	C / C+	
APR CARTRIDGES - DISPOSABLE	PR	$6.98	3	0	$0	C / C+	
SUB-TOTAL		$17.42	3		$0		
				$/MD =	$0.00		

PPE LEVEL mC : FULL DRESS w/ FACE SHIELD				MAN DAYS	MAT'L.$'s	PPE LEVEL
TYVEK DISPOSABLE COVERALLS W/HOOD & BOOTIE	PR	$4.46	3	1	$13	mC
GLOVE LINER - DISPOSABLE	PR	$0.24	3	1	$1	mC
GLOVE, LASTEX - DISPOSABLE	PR	$0.26	3	1	$1	mC
GLOVE, WORK - DISPOSABLE	PR	$1.02	3	1	$3	mC
SUB-TOTAL		$5.98	3		$18	
				$/MD =	$18.00	

SUBCONTRACTOR REQUIRED PURCHASES			QTY. PER WKR.	NO. OF WORKERS	MAT'L.$'s	PPE LEVEL
RUBBER BOOT COVERS-(1)PR.PER WORKER	PR	$12.70	6	0	$0	D/C/B
APR w/HALF FACE MASK - (1) PER WORKER	EA	$22.30	6	0	$0	C
APR w/FULL FACE MASK - (1) PER WORKER	EA	$174.00	6	0	$0	C
SCBA	EA	$1,894.00	2	0	$0	B
COOL VEST	EA	$137.50	6	0	$0	C/B
THERMAL STRESS	EA	$50.00	6	0	$0	C/B
SUB-TOTAL					$0	

TOTAL PPE's = MAT'L.$'s $0

(FORWARD TO PAGE 2 OF 2)

OTHER PPE's SUCH AS HARD HAT, SAFETY GLASSES/GOGGLES, STEEL TOED SAFETY SHOES, HEARING PROTECTION, ARE CONSIDERED THE SUBCONTRACTORS RESPONSIBILITY AND ARE COVERED IN HIS OVERHEAD EXPENSE.
COSTS OF FD FERNALD SUPPLIED PPE's, SUCH AS COTTON COVERALLS, EXCHANGE OF RUBBER BOOT COVERS AND RESPIRATORS FOR CHANGEOUTS AND CLEANING OF SAME IS INCURRED BY FD FERNALD AND COSTS ARE NOT INCLUDED AS PART OF PROJECT COSTS AT THIS TIME.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: South Plume Optimization Phase II
ESTIMATE NO. C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

--MEDICAL MONITORING --

MEDICAL - PHYSICAL and IN-VIVO MONITORING - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION PHYSICAL (3hrs), IN-VIVO (1hr)	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BASELINE PHYSICALS	1	4	3.866	15	$24.00	$370
ANNUAL PHYSICALS	0	4	3.866	0	$24.00	$0
EXIT (TERMINATION) PHYSICALS (IN-VIVO)	1	1	3.866	4	$24.00	$90
SUB TOTAL						$460

RADIATION IN-VITRO SURVEILLANCE - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BI-MONTHLY BIOASSAY	3	1	3.866	13	$24.00	$320
SUB TOTAL						$320

RANDOM DRUG TESTING

	TESTS	HRS	TOTAL HOURS	AVG. RATE	LABOR $'s
	3	2	6	$24.00	$100

NO. OF WKRS. TESTED	TESTING DAYS PER YR.	AVG. NO. OF TESTS PER DAY	CHANCE/ DAY FOR TEST	NO. OF WKRS. FOR THIS ESTIMATE	CHANCES /DAY FOR TEST FOR PROJECT	CONSTR WORKING DAYS
2340	226	10	0.0042735	5	0.0214	132

		LABOR $'s THRU SAFETY	LABOR $'s
WORK DELAYS CAUSED BY MONITORING	0.0%	$116,320	$0
			LABOR $'s
WORK DELAYS CAUSED BY RAD CHECKING	0.0%	$116,320	$0

	TOTAL LABOR	TOTAL MAT'L.	GRAND TOTAL
TOTAL HEALTH PHYSICS	$900	$0	$900

(FORWARD TO ESTIMATE SUMMARY SHEET)

ACTIVITY DURATIONS

Fluor Fernald, Inc.

PROJECT: South Plume Optimization Phase II
ESTIMATE NO. C5010404
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFEC9

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
CONSTRUCTION:	01-May-01	01-Feb-03	18-May-03	01-Sep-03	7.0	MONTHS
					0	MONTHS
TOTAL					7.0	MONTHS

	DATE of EST. to MID-POINT ACTIVITY DURATION	
a.	24.6	MONTHS
b.	0	MONTHS

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
OPERATIONS					0	MONTHS

DATE of EST. to MID-POINT ACTIVITY DURATION	
0	MONTHS

ACTIVITY DURATION IS USED IN DETERMINING NUMBER of WORKERS for CERCLA/SAT TRAINING HOURS and HEALTH PHYSICS COSTS.

TRAINING

PROJECT: South Plume Optimization Phase II
ESTIMATE #: C5010404
CLIENT: DOE
WBS #: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK #: EFEC9

Fluor Fernald, Inc.

Site Access Training Requirements (RM-0055 Rev. 1 Effective: 09/30/99)

Training Requirements	Non-Hazardous	Occasional Site Worker	General Site Worker		
Access Area	Administrative Support Area	Controlled Area	Contamination Compound	Frequency	
	8 Hour	24 Hour Hazwoper	40 Hour Hazwoper		
General Employee Training	X	X	X	Annually	
Site Worker Training		X	X	One Time	
Rad. Worker I		X		Biennially	
Rad. Worker II			X	Biennially	
Respirator Training *			X	Annually	
Respirator Fit Testing *			X	Annually	
Supervised Field Experience	0 HR	8 HR	24 HR	One time →	*On the Job*
Site Worker Refresher		X	X	Annually ⇨	4 Hour
Rad. Worker I Retraining		X		Every 2 years ⇨	4 Hour
Rad. Worker II Retraining			X	Every 2 years ⇨	8 Hour

Additional Training	HRS	No. of Workers	Total Hours
Job Specific Training =	2	7	14
Fire Watch Training =	1	2	2
Lead Worker Training =	4	0	0
Lock out / Tag out Training =	8	0	0
Rigging Training =	24	0	0
Scaffold Training =	16	0	0

DURATION 7 Month(s)

Average Rate $ 24.00

Number of General Site Worker(s) 4

Number of Occasional Site Worker(s) 0

Number of Non-Hazardous Worker(s)

Total Training Hours 171

General Site Worker Training Cost	$3,712
Occasional Site Training Cost	$0
Non-Hazardous Training Cost	$0
Additional Training Cost	$384
Total Training Cost =	$4,096

* = All employees classified as General Site Worker must initially take respirator training. The annual requirement for the repeat of training and the fit test frequency requirements are only needed by those employees that are required to wear a respirator.

COST IMPACT MATRIX SHEET

Estimate No.: C5010404
Project: South Plume Optimization Phase II
Client: DOE
WBS: 1.1.E.F

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFEC9

Fluor Fernald, Inc.

Base Estimate Total	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	PREMOBILIZATION									
$840,770	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$10,940	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-30%	50%								
Range - %	-30%	50%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$7,658	$16,410	$0	$0	$0	$0	$0	$0	$0	$0
Distribution	U									
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	MOBILIZATION									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$7,390	Base $	$6,160	Base $	$2,650	Base $	$2,670	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-20%	50%	-20%	50%	-20%	50%	-20%	50%		
Range - %	-20%	50%	-20%	50%	-20%	50%	-20%	50%	0%	0%
Range - $	$5,912	$11,085	$4,928	$9,240	$2,120	$3,975	$2,136	$4,005	$0	$0
Distribution	U		U		U		U			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010404
Project: South Plume Optimization Phase II
Client: DOE
WBS: 1.1.E.F

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFEC9

Fluor Fernald, Inc.

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	LABOR $		S/C $		DEMOBILIZATION MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$6,570	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-40%	60%								
Range - %	-40%	60%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$3,942	$10,512	$0	$0	$0	$0	$0	$0	$0	$0
Distribution	U									
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	LABOR $		S/C $		CIVIL MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$42,950	Base $	$3,630	Base $	$6,780	Base $	$15,150	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-10%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s			-10%	20%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-10%	25%			-10%	25%	-10%	25%		
Range - %	-20%	50%	-10%	20%	-20%	50%	-20%	50%	0%	0%
Range - $	$34,360	$64,425	$3,267	$4,356	$5,424	$10,170	$12,120	$22,725	$0	$0
Distribution	T		T		T		T			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010404
Project: South Plume Optimization Phase II
Client: DOE
WBS: 1.1.E.F

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFEC9

Fluor Fernald, Inc.

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	LABOR $		S/C $		CONCRETE MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$13,130	Base $	$0	Base $	$3,710	Base $	$530	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%			-10%	25%	-10%	25%		
Range - %	-10%	50%	0%	0%	-20%	50%	-20%	50%	0%	0%
Range - $	$11,817	$19,695	$0	$0	$2,968	$5,565	$424	$795	$0	$0
Distribution	T				T		T			
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	LABOR $		S/C $		ELEC. & INSTR. MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$63,470	Base $	$0	Base $	$75,740	Base $	$26,030	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%			-10%	25%	-10%	25%		
Range - %	-10%	50%	0%	0%	-20%	50%	-20%	50%	0%	0%
Range - $	$57,123	$95,205	$0	$0	$60,592	$113,610	$20,824	$39,045	$0	$0
Distribution	T				T		T			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010404
Project: South Plume Optimization Phase II
Client: DOE
WBS: 1.1.E.F

Fluor Fernald, Inc.

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFEC9

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					PIPING					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost	Base $	$33,380	Base $	$242,100	Base $	$110,700	Base $	$3,030	Base $	$0
Drivers	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	25%								
Material Pricing					-5%	10%				
Equipment Rental										
Subcontract $'s			-5%	15%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%			-10%	25%	-10%	25%		
Range - %	-10%	50%	-5%	15%	-15%	35%	-10%	25%	0%	0%
Range - $	$30,042	$50,070	$229,995	$278,415	$94,095	$149,445	$2,727	$3,788	$0	$0
Distribution	T		T		T					
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					WELL HOUSE					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost	Base $	$1,640	Base $	$0	Base $	$5,690	Base $	$0	Base $	$0
Drivers	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	25%								
Material Pricing					-5%	10%				
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%			-10%	25%				
Range - %	-10%	50%	0%	0%	-15%	35%	0%	0%	0%	0%
Range - $	$1,476	$2,460	$0	$0	$4,837	$7,682	$0	$0	$0	$0
Distribution	T				T					
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010404
Project: South Plume Optimization Phase II
Client: DOE
WBS: 1.2.2.5

Fluor Fernald, Inc.

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFEC9

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	HVAC / WELL PUMP									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$13,950	Base $	$0	Base $	$76,010	Base $	$8,910	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	10%								
Material Pricing					-5%	15%				
Equipment Rental							-5%	10%		
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%			-10%	25%	-10%	25%		
Range - %	-10%	35%	0%	0%	-15%	40%	-15%	35%	0%	0%
Range - $	$12,555	$18,833	$0	$0	$64,609	$106,414	$7,574	$12,029	$0	$0
Distribution	T				T		T			
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	IW									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$16,140	Base $	$0	Base $	$20,660	Base $	$0	Base $	
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	10%								
Material Pricing					-5%	15%				
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%			-10%	25%				
Range - %	-10%	35%	0%	0%	-15%	40%	0%	0%	0%	0%
Range - $	$14,526	$21,789	$0	$0	$17,561	$28,924	$0	$0	$0	$0
Distribution	T				T					
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010404
Project: South Plume Optimization Phase II
Client: DOE
WBS: 1.1.E.F

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFEC9

Fluor Fernald, Inc.

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	LABOR $		S/C $		TESTING MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$21,060	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-10%	25%								
Range - %	-10%	25%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$18,954	$26,325	$0	$0	$0	$0	$0	$0	$0	$0
Distribution	T									
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $		Base $		Base $		Base $		Base $	
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition										
Range - %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Distribution										
Correlation Rank										

Analyst: _____

Client: _____

EFECA

AWWT STEAM HEAT REPLACEMENT

09/06/2001
2:57 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFECA
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: FIELDSUB **FIELD SUBS** **EOC:** **SUBCONTRACTORS**
Res Dept: **Overtime:** **Class:** **SUB**

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	0.0	0.0	237,120.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	0.0	0.0	0.0	237,120.0	237,120.0	237,120.0	237,120.0	237,120.0	237,120.0	237,120.0
Yr Total Cost:	0	0	0	257,100	0	0	0	0	0	0
Cum Total Cost:	0	0	0	257,100	257,100	257,100	257,100	257,100	257,100	257,100

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Total Cost:	0	0	0	257,100	0	0	0	0	0	0
Cum Total Cost:	0	0	0	257,100	257,100	257,100	257,100	257,100	257,100	257,100

CAM_____ for MJ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

FLUOR GLOBAL SERVICES

Memorandum

To:	Jack Hughes,MS52-5 Dick Butterfiled, MS52-5	Date:	April 24, 2001
Location:	Fernald	Reference:	N/A
From:	Ken Kepler, MS80-3	Fernald #:	M:OOTP:(PC/EST)2001-0022
Location:	Springdale	Client:	DOE DE-AC24-01OH20115
Extension:	648-6761	Subject:	AWWT STEAM HEAT RECONFIGURATION

c: File Record Subject ESTIMATE C5010405
Tom Wagner, MS80-3

Attached are two (2) copies of the estimate for the AWWT Steam Heat Reconfiguration. To request any additional copies of this estimate or for any questions, please contact Tom Wagner on extension 6120.

KGK:TW:hmp
Attachment

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: AWWT Steam Heat Reconfiguration
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010405

BASIS OF ESTIMATE

SUPPORTING DOCUMENTATION:

Verbal Scope	☒	P & ID's	☐	Work Plan	☐
Drawings	☐	Equipment List	☐	Site Walk	☐
Sketches	☐	Specifications	☐	Eng. Mtg.	☐
Flow Diagrams	☐	Written Scope	☒	Estimate	☐

TYPE OF ESTIMATE:

Change Proposal	☐	Government	☐
Plan/Feasibility	☐	Conceptual	☐
Construction	☐	Title I Design	☐
Budget	☒	Independent	☐

BASIS OF ESTIMATE:

Estimate the cost for construction of natural gas heat in 33,000 sf building, 30'-75' ceiling height, 40 degree Fahrenheit or warmer.

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: AWWT Steam Heat Reconfiguration
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010405

ESTIMATE ASSUMPTIONS

EXECUTION:

- ☒ This project is to be performed on a 40-hour week, 10 hours a day.
- ☐ This project is to be performed on a 40-hour week, 8 hours a day.
- ☐ Premium time allowed.

WAGE RATES:

- ☒ Wage rates within this estimate are based on Project Labor Agreement rates, effective October 2000 and are considered FY01 dollars for estimating.
- ☐ Wage rates within this estimate are based on FF Support Contractor FSC 599 wage rates, effective October 1999 have been escalated 3% and are considered FY01 dollars for estimating.
- ☐ Wage rates within this estimate are based on FF FTE Planning Labor Rates FY01.

ENGINEERING:

- ☒ N/A
- ☐ Engineering dollars provided by the Project Engineer.
- ☐ Engineering dollars have been factored in at the standard 12% of the total direct and indirect field costs as per request of Project Engineer.

CONSTRUCTION MANAGEMENT:

- ☒ N/A
- ☐ Construction Management dollars provided by the Project Engineer.
- ☐ Construction Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

PROJECT MANAGEMENT:

- ☒ N/A
- ☐ Project Management dollars provided by the Project Engineer.
- ☐ Project Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

WASTE PROGRAM MANAGEMENT:

- ☒ N/A
- ☐ Waste Program Management dollars provided by the Project Engineer.

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: AWWT Steam Heat Reconfiguration
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010405

PRODUCTIVITY:

A productivity factor has been developed and applied to the unit man-hours derived from MEANS, Richardson, NECA, and or any other published estimating source. See attachment APPENDIX "A" and APPENDIX "B".

ESCALATION:

Escalation costs are excluded from the target estimate. The escalation costs are calculated within the Micro-Frame computer system according to the plan for rebaselining.

UNIT RATES:

Unit man-hours, equipment and material dollars are based on Richardson, MEANS, NECA, and or other published rates.

G & A (HO EXPENSE):

G & A are excluded from the target estimate. The G & A cost are calculated within the Micro-Frame computer system according to the plan for rebaselining.

HEALTH PHYSICS:

See attached APPENDIX "C".

RISK BUDGET:

N/A

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: AWWT Steam Heat Reconfiguration
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010405

ESTIMATE INCLUSIONS & EXCLUSIONS

INCLUSIONS:

- Premobilization & Mobilization.
- Demobilization.
- Labor hours.
- Material dollars.
- Equipment dollars.

EXCLUSIONS:

- Premium time.
- Permits and fees.
- FF G & A (Home Office Expense).
- Construction Management.
- Any second tier subcontract costs.
- Project Management dollars.
- Waste Management dollars.
- Air cooling

ESTIMATE SUMMARY SHEET

PROJECT: AWWT Steam Heat Reconfiguration
ESTIMATE #: C5010405
CLIENT: DOE
WBS #: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECA

ITEM DESCRIPTION	M/H	RATE	LABOR $	S/C $	MAT'L $	EQUIP. $	TOTAL $
PREMOBILIZATION	80		$4,000		$500	$500	$5,000
MOBILIZATION	120		$2,700	$4,510	$2,000	$1,500	$10,710
HEATING SYSTEM				$80,860	$77,220		$158,080
DEMOBILIZATION	100		$2,400				$2,400
DIRECT FIELD COSTS TOTAL	**300**	**$30.33**	**$9,100**	**$85,370**	**$79,720**	**$2,000**	**$176,190**
SUPERVISION - CONTRACTOR	51		$1,550				$1,550
SMALL TOOLS & CONSUMABLES	-	-	-		$500		$500
MISC. EQUIP. RENTAL	-	-	-			$1,100	$1,100
TEMPORARY FACILITIES	9		$300		$300		$600
TEMPORARY UTILITY HOOK-UP	6		$200		$100		$300
JOB CLEAN-UP	14		$400		$100		$500
PER DIEM / SUBSISTANCE	-	-	-				
HEALTH PHYSICS S/C	3		$100				$100
ADDITIONAL TRAINING	52		$1,577				$1,577
REGULAR TRAINING	19		$571				$571
PAYROLL BURDENS & BENEFITS	-	-	$7,900				$7,900
OVERHEAD & PROFIT	-	-	-	$38,200			$38,200
BOND	-	-	-	$3,000			$3,000
SALES TAX	-	-	-		$4,800	$200	$5,000
INDIRECT FIELD COSTS TOTAL	**153**		**$12,598**	**$41,200**	**$5,800**	**$1,300**	**$60,898**
DIRECT & INDIRECT FIELD COSTS TOTAL	**453**	**$47.85**	**$21,698**	**$126,570**	**$85,520**	**$3,300**	**$237,088**
TARGET ESTIMATE			**(FY 01 DOLLARS)**				**$237,088**

ESTIMATE PERFORMED BY ESTIMATING SERVICES

ESTIMATE SUMMARY SHEET

PROJECT: AWWT Steam Heat Reconfiguration

ESTIMATE NO. C5010405

CLIENT: DOE

WBS NO.: 1.1.E.F

FACTORS

DATE: 02-May-01

ESTIMATOR: Wagner

LOCATION: Fernald

TASK NO.: EFECA

FIXED PRICE $	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
DFC DOLLARS	$9,100	$85,370	$79,720	$2,000		$176,190
IFC COST FACTOR	2.3844	–	1.0125	1.5500	–	
BOND + OVERHEAD & PROFIT COST FACTOR	1.2103	1.2103	1.2103	1.2103	1.2103	
SALES TAX	-	-	1.0600	1.0600	1.0600	
DIRECT FIELD COST FACTOR =	**2.8859**	**1.2103**	**1.2990**	**1.9886**	**1.2829**	
BASE ESTIMATE $'s	$26,262	$103,325	$103,559	$3,977		$237,123
BASE FACTOR W/ RISK	1.0000	1.0000	1.0000	1.0000	1.0000	
TARGET ESTIMATE FACTOR	**2.8859**	**1.2103**	**1.2990**	**1.9886**	**1.2829**	
FPS TARGET ESTIMATE (FY01 $)	$26,262	$103,325	$103,559	$3,977		$237,123

NOTE:

If there are no DFC Equip. $, enter The IFC Equip. $'s into the direct field cost TOTAL and delete IFC Factor in G65.

ESTIMATE SUMMARY SHEET

PROJECT: AWWT Steam Heat Reconfiguration
ESTIMATE NO. C5010405
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECA

Direct Field Cost w/FACTORS

YES	NO
X	

PAY ITEM NO.	DESCRIPTION	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
		(ASSIGN OR PRORATE PPE MAT'L.$'s)–>>					
	PREMOBILIZATION	4000		500	500		
		$11,540		$650	$990		$13,180
	MOBILIZATION	2700	4510	2000	1500		
		$7,790	$5,460	$2,600	$2,980		$18,830
	DEMOBILIZATION	2400					
		$6,930					$6,930
	HEATING SYSTEM		80860	77220			
			$97,870	$100,310			$198,180
TOTAL DIRECT FIELD COSTS w/FACTORS		(FY01 DOLLARS)					$237,120

DETAIL ESTIMATE WORKSHEETS

PROJECT: AWWT Steam Heat Reconfiguration
ESTIMATE NO.: C5010405
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECA

ITEM NO.	SUMMARY	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST / UNIT Labor	COST / UNIT S/C	COST / UNIT Mat'l	COST / UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION				80						$4,000		$500	$500	$5,000
	MOBILIZATION				120						$2,700	$4,510	$2,000	$1,500	$10,710
	DEMOBILIZATION				100						$2,400				$2,400
	HEATING SYSTEM											$80,860	$77,220		$158,080
	Subtotal Direct Cost	**1**	**LOT**		**300**	**$30.33**					**$9,100**	**$85,370**	**$79,720**	**$2,000**	**$176,190**

DETAIL ESTIMATE WORKSHEETS

PROJECT: AWWT Steam Heat Reconfiguration
ESTIMATE NO.: C5010405
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECA

ITEM NO.		QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION														
	Insurance Certificates, List of Sub-Tier Contractors Procurement Documents, Safe Work Plans, QA/QC Plan, Project Execution Plan, Construction and Engineering Documentation, Acceptable baseline Schedules														
	Duration 2 wks	1	LS	40.0	80	50.00					$4,000				$4,000
	MOBILIZATION														
	S/C Office Trailer	5	mo					300.00				$1,510			$1,510
	Survey and Engineering Controls	1	LS					3,000.00	500.00	500.00		$3,000	$500	$500	$4,000
D	Install Utilities	1	LS	40.0	40	22.69			1,000.00	500.00	$900		$1,000	$500	$2,400
D	Other misc. requirements as required.	1	LS	80.0	80	22.69			500.00	500.00	$1,800		$500	$500	$2,800
										6,360.00					
	Total				120						$2,700	$4,510	$2,000	$1,500	$10,710
	DEMOBILIZATION														
D	Complete Punch List Items.	1	LS	20.0	20	22.69					$500				$500
D	Remove Trailer and Change Facilities.	1	LS	20.0	20	22.69					$500				$500
D	Remove all Utilities.	1	LS	20.0	20	22.69					$500				$500
mC	Decontaminate Equipment.	1	LS	10.0	10	22.69					$200				$200
D	Loadout contractors equipment.	1	LS	20.0	20	22.69					$500				$500
D	Other area requirements.	1	LS	10.0	10	22.69					$200				$200
	Total				100						$2,400				$2,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: AWWT Steam Heat Reconfiguration
ESTIMATE NO.: C5010405
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECA

ITEM NO.	HEATING SYSTEM	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	8.3-141-2080														
	Commercial Building Heating														
	Heating Systems, Unit Heaters gas, stl boiler	33000	sf					2.29	2.34			$75,570	$77,220		$152,790
	Productivity factor 1.07							0.16				$5,290			$5,290
	Subtotal Direct Cost											$80,860	$77,220		$158,080

APPENDIX " A"

PROJECT: AWWT Steam Heat Reconfiguration
ESTIMATE NC C5010405
CLIENT: DOE
WBS NO.: 1.1.E.F

SITE SPECIFIC

EFFICIENCY / MULTIPLIER ANALYSIS

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECA

PERCENT OF INFLUENCE ON CHART MANHOURS

	40%	50%	60%	70%	80%	90%	100%	105%	110%	% OF INFLUENCE	WT'D VALUE	PROD. RESULT
CRAFT SKILL (NOTE 1)	POOR			FAIR			STD	V.GOOD	EXCELLENT	100.0%	12.0%	0.12
CRAFT AVAIL.(NOTE 1)		POOR		FAIR			STD			100.0%	8.0%	0.08
CLIMATE (NOTE 2)	SEVERE	ICE/SNOW			RAIN		+40 TO +85			100.0%	20.0%	0.2
PLANT ELEVATION		OVER 10,000FT			5,000' TO 10,000 FT		UNDER 5,000 FT			100.0%	5.0%	0.05
WORK SPACE				200 SF	250 SF	300 SF	350 SF			100.0%	10.0%	0.1
WORK WEEK	<---- MULTIPLE SHIFTS-											
50 HOUR WORK WEEK	//////////	//////////	//////////	OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS	4-10s / 5-8s			100.0%	15.0%	0.15
	//// MULTIPLE-SHIFT ////////									0.0%	0.0%	0
60 HOUR WORK WEEK	//////////	//////////	OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS					0.0%	0.0%	0
SHIFTWORK 2ND SHIFT 3RD SHIFT			3RD SHIFT		2ND SHIFT		OR ONE SHIFT ONLY			100.0% 100.0%	3.0% 5.0%	0.03 0.05
PROJECT SIZE					400M MH AND UP	300M TO 400M MH	200M TO 300M MH	200M MH OR LESS		100.0%	4.0%	0.04
PLANT TYPE				REVAMP ONLY	REVAMP & NEW	NEW IN EXIST PLT	GRASS ROOTS			70.0%	8.0%	0.056
AREA/UNION INFLUENCE	STRONG		MILD		SOME		NONE			60.0%	10.0%	0.06
											100.0%	93.6%

NOTES.....
1. TURNOVER HAS BEEN CONSIDERED
2. FOR EXTERIOR WORK ONLY

EFFICIENCY (AS A % OFF CHART MANHOURS) 93.6%

MULTIPLIER - (TO BE APPLIED TO CHART M.H.'S TO OBTAIN SITE M.H.'S) 1.07

EFFICIENCY FACTORS

PROJECT: AWWT Steam Heat Reconfiguration
ESTIMATE NO. C5010405
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECA

Fluor Fernald, Inc.

EXAMPLE:

STANDARD CHART MANHOURS =	NET	100
EFFICIENCY FACTORS:		
• SITE SPECIFIC (SEE APPENDIX A)	[redacted]	7.0
S/T = BASE UNIT MANHOURS		107
OVERTIME PRODUCTIVITY FACTOR (SEE DETAIL WORKSHEET BACK-UP)	0.00%	0 / 107
• TASK SPECIFIC (confined space, high elevation, congestion, etc.)	0.0%	0 / 107

• PPE SPECIFIC (Based on current data and estimating knowledge)

	PPE LEVEL									
	D		Mod.'D'		Mod. "C"		C		C+	
PRODUCTIVITY HOURS		MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's
(AS A %)/ADD MH's	4.00%	4	28.00%	30	66.00%	71	74.00%	79	96.00%	103
(AS A MULTIPLIER)/TOTAL HRS	1.04	111.3	1.28	137	1.66	177.6	1.74	186.2	1.96	209.7
TOTAL MULTIPLIER w/SITE PROD.	1.1128		1.3696		1.7762		1.8618		2.0972	

NOTE : Use the Default Productivity Factor of 'mC' for working in a contaminated area if the Safety Level cannot be determined.

(SEE FD FERNALD ESTIMATING SERVICES REFERENCE MANUAL IM-6006 8.10)

Total hours worked in a specific PPE level divided by 10 hour working days = (PPE) ManDays to determine material cost of PPE's.
(SEE APPENDIX C - HEALTH PHYSICS)

11.0	Man Days	14.0	Man Days	18.0	Man Days	19.0	Man Days	21.0	Man Days

THESE EFFICIENCY FACTORS WERE APPLIED INDIVIDUALLY THROUGHOUT THE ESTIMATE AT A TASK SPECIFIC LEVEL, TO OBTAIN A MORE ACCURATE ACCOUNT OF OVERALL EFFICIENCY IMPACT DUE TO PPE REQUIREMENTS IN HANDLING CONTAMINATED AND HAZARDOUS WASTE.

EFFICIENCY FACTORS

PROJECT: AWWT Steam Heat Reconfiguration
ESTIMATE NO. C5010405
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECA

PPE MULTIPLIER DEVELOPEMENT

		D	mD	mC	C	C+
CREW SIZE & MAKE-UP	STANDARD	7	7	7	7	7
	WORKER-BUDDY	0	0	0	0	0
	SUPPORT TEAM	0	0	0	0	0
	TOTAL CREW	7	7	7	7	7
CREW SIZE RATIO		1.00	1.00	1.00	1.00	1.00
AVAILABLE WORK TIME FACTOR		0.96	0.78	0.7	0.7	0.68
PPE LABOR PRODUCTIVITY FACTOR		1	1	0.86	0.82	0.75
NET PRODUCTIVITY RATIO		0.96	0.78	0.602	0.574	0.51
NET PRODUCTIVITY MULTIPLIER		**1.04**	**1.28**	**1.66**	**1.74**	**1.96**

These factors were based on Tables 6.1 and 6.2, Moderate Work Efforts, 66F to 85F temperature of 'Hazardous Waste Cost Control' by R.A.Selg. Modifications were made to reflect a 10 hour work day and no buddy system or support team for levels D, mC and C.
The worker-buddy and support team members, if required, may be covered under Construction Mgmt. (Rad Techs).

AVAILABLE WORK TIME FACTOR		D	mD	mC	C	C+
TOTAL WORK MINUTES per [4 - 10's		600	600	600	600	600
ADDITIONSITE SAFETY MEETINGS NOT INCLD. IN BAS	QUANTITY	1	1	1	1	1
	MINUTES	25	25	25	25	25
TOTAL		25	25	25	25	25
PPE DON & DOFFING	QUANTITY	0	0	3	3	3
(ADJUST LEVEL D per WORK PLAN)	MINUTES	0	0	15	15	20
TOTAL			0	45	45	60
WORK BREAKS	QUANTITY	N/A	2	2	2	2
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			30	30	30	30
MOBILIZATION - ROUND TRIPS	QUANTITY	N/A	4	4	4	4
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			60	60	60	60
COOLDOWNS PER DAY	QUANTITY	N/A	4	4	4	4
** (4 OUT OF 12 MONTHS) 33.33%	MINUTES	N/A	15	15	15	15
TOTAL			20	20	20	20
AIR TANK REPLACEMENT	QUANTITY	N/A	N/A	N/A	N/A	N/A
	MINUTES	N/A	N/A	N/A	N/A	N/A
TOTAL						
AVAILABLE WORK TIME		575	465	420	420	405
AVAILABLE WORK TIME FACTOR		**0.96**	**0.78**	**0.7**	**0.7**	**0.68**

NOTE: Adjust 'Work Minutes per Day' basis to: 5 - 8's, or leave as 4 - 10's . Any other circumstances, over-ride the minutes per day.

** Assumption based on work performed in May, June, July & August, pro-rating cost over one year. Adjust % to individual circumstances.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: AWWT Steam Heat Reconfiguration
ESTIMATE NO. C5010405
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECA

Fluor Fernald, Inc.

PPE"s - PERSONAL PROTECTIVE EQUIPMENT

DESCRIPTION	UNIT	UNIT COST	* NO. OF CHANGE OUTS PER WORKER PER DAY Man Days (TOTAL HOURS worked in PPE's Div. by WORK HOURS / DAY)				
PPE LEVEL C / C+ / B : F/HF MASK w/RESP.&CART.			*	MAN DAYS	MAT'L.$'s	PPE LEVEL	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	0	$0	C / C+	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	0	$0	C / C+	(DOUBLE PPE)
GLOVE LINER - DISPOSABLE	PR	$0.24	3	0	$0	C / C+	
GLOVE, LASTEX - DISPOSABLE	PR	$0.26	3	0	$0	C / C+	
GLOVE, WORK - DISPOSABLE	PR	$1.02	3	0	$0	C / C+	
APR CARTRIDGES - DISPOSABLE	PR	$6.98	3	0	$0	C / C+	
SUB-TOTAL		$17.42	3		$0		
				$/MD =	$0.00		
PPE LEVEL mC : FULL DRESS w/ FACE SHIELD				MAN DAYS	MAT'L.$'s	PPE LEVEL	
LT.WT. DISPOSABLE COVERALLS W/HOOD & BOOTIE	PR	$4.46	3	1	$13	mC	
GLOVE LINER - DISPOSABLE	PR	$0.24	3	1	$1	mC	
GLOVE, LASTEX - DISPOSABLE	PR	$0.26	3	1	$1	mC	
GLOVE, WORK - DISPOSABLE	PR	$1.02	3	1	$3	mC	
SUB-TOTAL		$5.98	3		$18		
				$/MD =	$18.00		
SUBCONTRACTOR REQUIRED PURCHASES			QTY. PER WKR.	NO. OF WORKERS	MAT'L.$'s	PPE LEVEL	
RUBBER BOOT COVERS-(1)PR.PER WORKER	PR	$12.70	6	0	$0	D/C/B	
APR w/HALF FACE MASK - (1) PER WORKER	EA	$22.30	6	0	$0	C	
APR w/FULL FACE MASK - (1) PER WORKER	EA	$174.00	6	0	$0	C	
SCBA	EA	$1,894.00	2	0	$0	B	
COOL VESTS	EA	$137.50	6	0	$0	C/B	
THERMO STRIPS	EA	$50.00	6	0	$0	C/B	
SUB-TOTAL					$0		

TOTAL PPE's = MAT'L.$'s $0

(FORWARD TO PAGE 2 OF 2)

OTHER PPE's SUCH AS HARD HAT, SAFETY GLASSES/GOGGLES, STEEL TOED SAFETY SHOES, HEARING PROTECTION, ARE CONSIDERED THE SUBCONTRACTORS RESPONSIBILITY AND ARE COVERED IN HIS OVERHEAD EXPENSE.
COSTS OF FD FERNALD SUPPLIED PPE's, SUCH AS COTTON COVERALLS, EXCHANGE OF RUBBER BOOT COVERS AND RESPIRATORS FOR CHANGEOUTS AND CLEANING OF SAME IS INCURRED BY FD FERNALD AND COSTS ARE NOT INCLUDED AS PART OF PROJECT COSTS AT THIS TIME.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: AWWT Steam Heat Reconfiguration
ESTIMATE NO. C5010405
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECA

--MEDICAL MONITORING --

MEDICAL - PHYSICAL and IN-VIVO MONITORING - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION PHYSICAL (3hrs), IN-VIVO (1hr)	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BASELINE PHYSICALS	1	4	0.47	2	$30.33	$60
ANNUAL PHYSICALS	0	4	0.47	0	$30.33	$0
EXIT (TERMINATION) PHYSICALS (IN-VIVO)	1	1	0.47	0	$30.33	$10
SUB-TOTAL						$70

RADIATION IN-VITRO SURVEILLANCE - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BI-MONTHLY BIOASSAY	3	1	0.47	1	$30.33	$40
SUB-TOTAL						$40

RANDOM DRUG TESTING

	TESTS	HRS	TOTAL HOURS	AVG. RATE	LABOR $'s
	0	2	0	$30.33	$0

NO. OF WKRS. TESTED	TESTING DAYS PER YR.	AVG. NO. OF TESTS PER DAY	CHANCE/ DAY FOR TEST	NO. OF WKRS. FOR THIS ESTIMATE	CHANCES /DAY FOR TEST FOR PROJECT	CONSTR WORKING DAYS
2340	226	10	0.0042735	1	0.0043	96

		LABOR $'s THRU SAFETY	LABOR $'s
WORK DELAYS CAUSED BY MONITORING	0.0%	$11,550	$0
			LABOR $'s
WORK DELAYS CAUSED BY RAD CHECKING	0.0%	$11,550	$0

	TOTAL LABOR	TOTAL MAT'L.	GRAND TOTAL
TOTAL HEALTH PHYSICS	$100	$0	$100

(FORWARD TO ESTIMATE SUMMARY SHEET)

ACTIVITY DURATIONS

Fluor Fernald, Inc.

PROJECT: AWWT Steam Heat Reconfiguration
ESTIMATE NO. C5010405
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECA

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
CONSTRUCTION:	01-May-01	01-Apr-04	16-Jun-04	01-Sep-04	5.0	MONTHS
					0	MONTHS
TOTAL					5.0	MONTHS

	DATE of EST. to MID-POINT ACTIVITY DURATION	
a.	37.6	MONTHS
b.	0	MONTHS

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
OPERATIONS					0	MONTHS

DATE of EST. to MID-POINT ACTIVITY DURATION	
0	MONTHS

ACTIVITY DURATION IS USED IN DETERMINING NUMBER of WORKERS for CERCLA/SAT TRAINING HOURS and HEALTH PHYSICS COSTS.

TRAINING

PROJECT:	AWWT Steam Heat Reconfiguration	DATE:	02-May-01
ESTIMATE #:	C5010405	ESTIMATOR:	Wagner
CLIENT:	DOE	LOCATION:	Fernald
WBS #:	1.1.E.F	TASK #:	EFECA

Fluor Fernald, Inc.

Site Access Training Requirements (RM-0055 Rev. 1 Effective: 09/30/99)

Training Requirements	Non-Hazardous	Occasional Site Worker	General Site Worker		
Access Area	Administrative Support Area	Controlled Area	Contamination Compound	Frequency	
	8 Hour	24 Hour Hazwoper	40 Hour Hazwoper		
General Employee Training	X	X	X	Annually	
Site Worker Training		X	X	One Time	
Rad. Worker I		X		Biennially	
Rad. Worker II			X	Biennially	
Respirator Training *			X	Annually	
Respirator Fit Testing *			X	Annually	
Supervised Field Experience	0 HR	8 HR	24 HR	One time →	*On the Job*
Site Worker Refresher		X	X	Annually ⇨	4 Hour
Rad. Worker I Retraining		X		Every 2 years ⇨	4 Hour
Rad. Worker II Retraining			X	Every 2 years ⇨	8 Hour

Additional Training	HRS	No. of Workers	Total Hours
Job Specific Training =	2	2	4
Fire Watch Training =	1	0	0
Lead Worker Training =	4	0	0
Lock out / Tag out Training =	8	2	16
Rigging Training =	24	0	0
Scaffold Training =	16	2	32

DURATION 5 Month(s)

Average Rate $ 30.33

Number of General Site Worker(s) 0

Number of Occasional Site Worker(s) 0

Number of Non-Hazardous Worker(s)

Total Training Hours 71

General Site Worker Training Cost	$571
Occasional Site Training Cost	$0
Non-Hazardous Training Cost	$0
Additional Training Cost	$1,577
Total Training Cost =	**$2,148**

* = All employees classified as General Site Worker must initially take respirator training. The annual requirement for the repeat of training and the fit test frequency requirements are only needed by those employees that are required to wear a respirator.

COST IMPACT MATRIX SHEET

Estimate No.: C5010405
Project: AWWT Steam Heat Reconfiguration
Client: DOE
WBS: 1.1.C.F

Fernald

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFECA

Base Estimate Total	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					PREMOBILIZATION					
$237,120	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$11,540	Base $	$0	Base $	$650	Base $	$990	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-30%	50%			-30%	50%	-30%	-50%		
Range - %	-30%	50%	0%	0%	-30%	50%	-30%	-50%	0%	0%
Range - $	$8,078	$17,310	$0	$0	$455	$975	$693	$495	$0	$0
Distribution	U				U		U			
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					MOBILIZATION					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$7,790	Base $	$5,460	Base $	$2,600	Base $	$2,980	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-20%	50%	-20%	50%	-20%	50%	-20%	50%		
Range - %	-20%	50%	-20%	50%	-20%	50%	-20%	50%	0%	0%
Range - $	$6,232	$11,685	$4,368	$8,190	$2,080	$3,900	$2,384	$4,470	$0	$0
Distribution	U		U		U		U			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010405
Project: AWWT Steam Heat Reconfiguration
Client: DOE
WBS: 1.1.E.F

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFECA

Fernald, Inc.

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	DEMOBILIZATION									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$6,930	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-40%	60%								
Range - %	-40%	60%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$4,158	$11,088	$0	$0	$0	$0	$0	$0	$0	$0
Distribution	U									
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	HEATING SYSTEM									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$0	Base $	$97,870	Base $	$100,310	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing					-10%	25%				
Equipment Rental										
Subcontract $'s			-10%	25%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition			-10%	25%	-10%	25%				
Range - %	0%	0%	-20%	50%	-20%	50%	0%	0%	0%	0%
Range - $	$0	$0	$78,296	$146,805	$80,248	$150,465	$0	$0	$0	$0
Distribution			T		T					
Correlation Rank										

Analyst: _____

Client: _____

EFECC

LEACHATE REROUTE

09/06/2001
3:01 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFECC
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: FIELDSUB **FIELD SUBS** **EOC:** **SUBCONTRACTORS**
Res Dept: **Overtime:** **Class:** **SUB**

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	0.0	0.0	0.0	0.0	58,076.6	59,013.4	0.0	0.0	0.0
Cum Units:	0.0	0.0	0.0	0.0	0.0	58,076.6	117,090.0	117,090.0	117,090.0	117,090.0
Yr Total Cost:	0	0	0	0	0	66,611	69,648	0	0	0
Cum Total Cost:	0	0	0	0	0	66,611	136,259	136,259	136,259	136,259

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Total Cost:	0	0	0	0	0	66,611	69,648	0	0	0
Cum Total Cost:	0	0	0	0	0	66,611	136,259	136,259	136,259	136,259

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

FLUOR GLOBAL SERVICES

Memorandum

To:	Jack Hughes,MS52-5 Dick Butterfiled, MS52-5	Date:	April 24, 2001
Location:	Fernald	Reference:	N/A
From:	Ken Kepler, MS80-3	Fernald #:	M:OOTP:(PC/EST)2001-0023
Location:	Springdale	Client:	DOE DE-AC24-01OH20115
Extension:	648-6761	Subject:	LEACHATE REROUTE

c: File Record Subject ESTIMATE C5010407
Tom Wagner, MS80-3

Attached are two (2) copies of the estimate for the Leachate Reroute.
To request any additional copies of this estimate or for any questions, please contact Tom Wagner on extension 6120.

KGK:TW:hmp
Attachment

Fluor Fernald, Inc.

PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: Leachate Reroute
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010407

BASIS OF ESTIMATE

SUPPORTING DOCUMENTATION:

Verbal Scope	☒	P & ID's	☐	Work Plan	☐
Drawings	☐	Equipment List	☐	Site Walk	☐
Sketches	☐	Specifications	☐	Eng. Mtg.	☐
Flow Diagrams	☐	Written Scope	☒	Estimate	☐

TYPE OF ESTIMATE:

Change Proposal	☐	Government	☐
Plan/Feasibility	☐	Conceptual	☐
Construction	☐	Title I Design	☐
Budget	☒	Independent	☐

BASIS OF ESTIMATE:

Estimate the cost for construction of 250lf 6"cs pipe, heat trace, insulation with valves. Intercept leachate pipe and excavate down to line, bring up existing pipe bridges to Tank 155.

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: Leachate Reroute
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010407

ESTIMATE ASSUMPTIONS

EXECUTION:

- ☒ This project is to be performed on a 40-hour week, 10 hours a day.
- ☐ This project is to be performed on a 40-hour week, 8 hours a day.
- ☐ Premium time allowed.

WAGE RATES:

- ☒ Wage rates within this estimate are based on Project Labor Agreement rates, effective October 2000 and are considered FY01 dollars for estimating.
- ☐ Wage rates within this estimate are based on FF Support Contractor FSC 599 wage rates, effective October 1999 have been escalated 3% and are considered FY01 dollars for estimating.
- ☐ Wage rates within this estimate are based on FF FTE Planning Labor Rates FY01.

ENGINEERING:

- ☒ N/A
- ☐ Engineering dollars provided by the Project Engineer.
- ☐ Engineering dollars have been factored in at the standard 12% of the total direct and indirect field costs as per request of Project Engineer.

CONSTRUCTION MANAGEMENT:

- ☒ N/A
- ☐ Construction Management dollars provided by the Project Engineer.
- ☐ Construction Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

PROJECT MANAGEMENT:

- ☒ N/A
- ☐ Project Management dollars provided by the Project Engineer.
- ☐ Project Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

WASTE PROGRAM MANAGEMENT:

- ☒ N/A
- ☐ Waste Program Management dollars provided by the Project Engineer.

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: Leachate Reroute
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010407

PRODUCTIVITY:

A productivity factor has been developed and applied to the unit man-hours derived from MEANS, Richardson, NECA, and or any other published estimating source. See attachment APPENDIX "A" and APPENDIX "B".

ESCALATION:

Escalation costs are excluded from the target estimate. The escalation costs are calculated within the Micro-Frame computer system according to the plan for rebaselining.

UNIT RATES:

Unit man-hours, equipment and material dollars are based on Richardson, MEANS, NECA, and or other published rates.

G & A (HO EXPENSE):

G & A are excluded from the target estimate. The G & A cost are calculated within the Micro-Frame computer system according to the plan for rebaselining.

HEALTH PHYSICS:

See attached APPENDIX "C".

RISK BUDGET:

N/A

Fluor Fernald, Inc.

PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: Leachate Reroute
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010407

ESTIMATE INCLUSIONS & EXCLUSIONS

INCLUSIONS:

- Premobilization & Mobilization.
- Demobilization.
- Labor hours.
- Material dollars.
- Equipment dollars.

EXCLUSIONS:

- Fire protection
- Dust control
- Premium time.
- Permits and fees.
- FF G & A (Home Office Expense).
- Construction Management.
- Any second tier subcontract costs.
- Project Management dollars.
- Waste Management dollars.

ESTIMATE SUMMARY SHEET

Fluor Fernald, Inc.

PROJECT: Leachate Reroute
ESTIMATE #: C5010407
CLIENT: DOE
WBS #: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECC.

ITEM DESCRIPTION	M/H	RATE	LABOR $	S/C $	MAT'L $	EQUIP. $	TOTAL $
PREMOBILIZATION	80		$4,000				$4,000
MOBILIZATION	120		$2,700	$4,510	$2,100	$1,500	$10,810
PIPING	419		$11,020	$4,000	$19,160	$3,270	$37,450
DEMOBILIZATION	100		$2,400				$2,400
DIRECT FIELD COSTS TOTAL	**719**	**$27.99**	**$20,120**	**$8,510**	**$21,260**	**$4,770**	**$54,660**
SUPERVISION - CONTRACTOR	122		$3,423				$3,423
SMALL TOOLS & CONSUMABLES	-	-	-				
MISC. EQUIP. RENTAL	-	-	-				
TEMPORARY FACILITIES							
TEMPORARY UTILITY HOOK-UP	14		$400		$200		$600
JOB CLEAN-UP	32		$900		$300		$1,200
PER DIEM / SUBSISTANCE	-	-	-				
HEALTH PHYS.	46	-	$1,300		$100		$1,400
ADDITIONAL AND JOB SPECIFIC TRAINING	185	-	$5,178				$5,178
GENERAL SITE WORKER TRAINING	244	-	$6,825				$6,825
PAYROLL BURDENS & BENEFITS	-	-	$21,700				$21,700
OVERHEAD & PROFIT	-	-	-	$19,000			$19,000
BOND	-	-	-	$1,500			$1,500
SALES TAX	-	-	-		$1,300	$300	$1,600
INDIRECT FIELD COSTS TOTAL	**644**		**$39,726**	**$20,500**	**$1,900**	**$300**	**$62,426**
DIRECT & INDIRECT FIELD COSTS TOTAL	**1,363**	**$43.92**	**$59,846**	**$29,010**	**$23,160**	**$5,070**	**$117,086**
TARGET ESTIMATE			**(FY 01 DOLLARS)**				**$117,086**

ESTIMATE PERFORMED BY ESTIMATING SERVICES

ESTIMATE SUMMARY SHEET

FACTORS

PROJECT: Leachate Reroute
ESTIMATE NO. C5010407
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECC

FIXED PRICE $	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
DFC DOLLARS	$20,120	$8,510	$21,260	$4,770	$100	$54,760
IFC COST FACTOR	2.9745	–	1.0235	1.0000	–	
BOND + OVERHEAD & PROFIT COST FACTOR	1.2122	1.2122	1.2122	1.2122	1.2122	
SALES TAX	-	-	1.0600	1.0600	1.0600	
DIRECT FIELD COST FACTOR =	**3.6058**	**1.2122**	**1.3152**	**1.2850**	**1.2850**	
BASE ESTIMATE $'s	$72,548	$10,316	$27,961	$6,129	$128	$117,084
BASE FACTOR W/ RISK	1.0000	1.0000	1.0000	1.0000	1.0000	
TARGET ESTIMATE FACTOR	**3.6058**	**1.2122**	**1.3152**	**1.2850**	**1.2850**	
FPS TARGET ESTIMATE (FY01 $)	$72,548	$10,316	$27,961	$6,129	$128	$117,084

NOTE:

If there are no DFC Equip. $, enter The IFC Equip. $'s into the direct field cost TOTAL and delete IFC Factor in G55.

ESTIMATE SUMMARY SHEET

PROJECT: Leachate Reroute
ESTIMATE NO. C5010407
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECC

Direct Field Cost w/FACTORS

YES	NO
X	

PAY ITEM NO.	DESCRIPTION	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
		(ASSIGN OR PRORATE PPE MAT'L.$'s)-->>				100	
	PREMOBILIZATION	4000				100	
		$14,420				$130	$14,550
	MOBILIZATION	2700	4510	2100	1500		
		$9,740	$5,470	$2,760	$1,930		$19,900
	DEMOBILIZATION	2400					
		$8,650					$8,650
	PIPING	11020	4000	19160	3270		
		$39,740	$4,850	$25,200	$4,200		$73,990
TOTAL DIRECT FIELD COSTS w/FACTORS		(FY01 DOLLARS)					$117,090

DETAIL ESTIMATE WORKSHEETS

PROJECT: Leachato Rorouto
ESTIMATE NO.: C5010407
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECC

ITEM NO.	SUMMARY	QTY	UNIT	MAN-HOURS			COST / UNIT				LABOR	S/C	MAT'L	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C	Mat'l	Equip					
	PREMOBILIZATION				80						$4,000				$4,000
	MOBILIZATION				120						$2,700	$4,510	$2,100	$1,500	$10,810
	DEMOBILIZATION				100						$2,400				$2,400
	PIPING				419						$11,020	$4,000	$19,160	$3,270	$37,450
	Subtotal Direct Cost	1	LOT		719	$27.99					$20,120	$8,510	$21,260	$4,770	$54,660

DETAIL ESTIMATE WORKSHEETS

PROJECT: Leachate Reroute
ESTIMATE NO.: C5010407
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECC

ITEM NO.		QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION														
	Insurance Certificates, List of Sub-Tier Contractors Procurement Documents, Safe Work Plans, QA/QC Plan, Project Execution Plan, Construction and Engineering Documentation, Acceptable baseline Schedules														
	Duration 2 wks	1	LS	40.0	80	50.00					$4,000				$4,000
	MOBILIZATION														
	S/C Office Trailer	5	mo					300.00				$1,510			$1,510
	Survey and Engineering Controls	1	LS					3,000.00	500.00	500.00		$3,000	$500	$500	$4,000
D	Install Utilities	1	LS	40.0	40	22.69			1,000.00	500.00	$900		$1,100	$500	$2,500
D	Other misc. requirements as required.	1	LS	80.0	80	22.69			500.00	500.00	$1,800		$500	$500	$2,800
										6,360.00					
	Total				120						$2,700	$4,510	$2,100	$1,500	$10,810
	DEMOBILIZATION														
D	Complete Punch List Items.	1	LS	20.0	20	22.69					$500				$500
D	Remove Trailer and Change Facilities.	1	LS	20.0	20	22.69					$500				$500
D	Remove all Utilities.	1	LS	20.0	20	22.69					$500				$500
mC	Decontaminate Equipment.	1	LS	10.0	10	22.69					$200				$200
D	Loadout contractors equipment.	1	LS	20.0	20	22.69					$500				$500
D	Other area requirements.	1	LS	10.0	10	22.69					$200				$200
	Total				100						$2,400				$2,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: Leachate Rerouto
ESTIMATE NO.: C5010407
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECC

ITEM NO.	PIPING	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	6" piping cs	250	lf	0.6	170	26.40			19.80		$4,480		$5,250		$9,730
D	Butterfly valve 6" c.s.	1	ea	10.9	12	26.40			372.00		$310		$390		$700
D	Chain wheel operators	1	ea	4.0	4	26.40			200.00		$120		$210		$330
D	Heat trace system	250	lf	0.02	4	22.66			7.35	0.50	$90		$1,950	$130	$2,170
D	Thermostat/contactor combination	1	ea	3.6	4	22.66			525.00		$90		$560		$650
D	Snap band, clamp	15	ea	0.08	1	22.66					$30				$30
D	end seal kit	1	ea	0.50	1	26.40			9.00		$10		$10		$20
D	tee kit w/ junction	1	ea	1.5	2	26.40			82.00		$40		$90		$130
D	splice kit	1	ea	0.90	1	26.40			51.00		$30		$50		$80
D	Insulation	250	lf	0.20	55	26.40			26.64		$1,440		$7,060		$8,500
D	Tee 6" w/ 3 buttwelds	1	ea	12.0	13	26.40			186.00	25.00	$350		$200	$30	$580
D	90d Elbow 6" w/ 2 buttwelds	4	ea	9.6	42	26.40			206.00	20.00	$1,110		$870	$80	$2,060
D	Check valve 6"	1	ea	10.9	12	26.40			1475.00		$310		$1,560		$1,870
D	Supports add v-braces to existing rack	1	ls	20.0	22	26.40			400.00	100.00	$580		$420	$110	$1,110
mC	Hot Tap, Tie In, excavate	1	ea	20.0	35	26.40			250.00	100.00	$920		$270	$110	$1,300
D	Scaffolding rental, setup & inspection 3mn, 8hr	1	ls	24.0	26	26.40			250.00		$690		$270		$960
D	Inspection of scaffolding 1 man 1/2hr a day for w	1	ls	2.5	3	26.40					$70				$70
D	Breakdown scaffolding 3 men 4 hr.	1	ls	12.0	13	26.40					$350				$350
D	Rental HDPE Fusion Machine	1	mo							2650.00				$2,810	$2,810
D	Fabricate add'l channel on rack allowance	1	ls					4000.00				$4,000			$4,000
	Subtotal Direct Cost				419						$11,020	$4,000	$19,160	$3,270	$37,450

APPENDIX " A"

PROJECT: Leachate Reroute
ESTIMATE NC C5010407
CLIENT: DOE
WBS NO.: 1.1.E.F

SITE SPECIFIC

EFFICIENCY / MULTIPLIER ANALYSIS

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECC

PERCENT OF INFLUENCE ON CHART MANHOURS

	40%	50%	60%	70%	80%	90%	100%	105%	110%	% OF NFLUENCE	WT'D VALUE	PROD. RESULT
CRAFT SKILL (NOTE 1)	POOR			FAIR			STD	V.GOOD	EXCELLENT	100.0%	12.0%	0.12
CRAFT AVAIL.(NOTE 1)		POOR		FAIR			STD			100.0%	8.0%	0.08
CLIMATE (NOTE 2)	SEVERE	ICE/SNOW			RAIN		+40 TO +85			90.0%	20.0%	0.18
PLANT ELEVATION		OVER 10,000FT			5,000' TO 10,000 FT		UNDER 5,000 FT			100.0%	5.0%	0.05
WORK SPACE				200 SF	250 SF	300 SF	350 SF			100.0%	10.0%	0.1
WORK WEEK	<---- MULTIPLE SHIFTS-						4-10s / 5-8s			100.0%	15.0%	0.15
50 HOUR WORK WEEK	////////// ////// MULTIPLE-SHIFT //////////	//////////	//////////	OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS				0.0%	0.0%	0
60 HOUR WORK WEEK	////////// //////////	////////// //////////	OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS					0.0%	0.0%	0
SHIFTWORK 2ND SHIFT 3RD SHIFT			3RD SHIFT		2ND SHIFT		OR ONE SHIFT ONLY			100.0% 100.0%	3.0% 5.0%	0.03 0.05
PROJECT SIZE					400M MH AND UP	300M TO 400M MH	200M TO 300M MH	200M MH OR LESS		100.0%	4.0%	0.04
PLANT TYPE				REVAMP ONLY	REVAMP & NEW	NEW IN EXIST PLT	GRASS ROOTS			90.0%	8.0%	0.072
AREA/UNION INFLUENCE	STRONG		MILD		SOME		NONE			80.0%	10.0%	0.08
											100.0%	95.2%

NOTES.....
1. TURNOVER HAS BEEN CONSIDERED
2. FOR EXTERIOR WORK ONLY

EFFICIENCY (AS A % OFF CHART MANHOURS) 95.2%

MULTIPLIER - (TO BE APPLIED TO CHART M.H.'S TO OBTAIN SITE M.H.'S) 1.05

EFFICIENCY FACTORS

PROJECT: Leachate Reroute
ESTIMATE NO. C5010407
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECC

Fluor Fernald, Inc.

EXAMPLE:

STANDARD CHART MANHOURS =	NET	100
EFFICIENCY FACTORS:		
* SITE SPECIFIC (SEE APPENDIX A)	[redacted]	5.0
S/T = BASE UNIT MANHOURS		105
OVERTIME PRODUCTIVITY FACTOR (SEE DETAIL WORKSHEET BACK-UP)	0.00%	0
		105
* TASK SPECIFIC (confined space, high elevation, congestion, etc.)	0.0%	0
		105

* PPE SPECIFIC (Based on current data and estimating knowledge)

	PPE LEVEL									
	D		Mod.'D'		Mod. "C"		C		C+	
PRODUCTIVITY HOURS		MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's
(AS A %) / ADD MH's	4.00%	4	28.00%	29	66.00%	69	74.00%	78	96.00%	101
(AS A MULTIPLIER)/TOTAL HRS	1.04	109.2	1.28	134.4	1.66	174.3	1.74	182.7	1.96	205.8
TOTAL MULTIPLIER w/SITE PROD.	1.092		1.344		1.743		1.827		2.058	

NOTE : Use the Default Productivity Factor of 'mC' for working in a contaminated area if the Safety Level cannot be determined.

(SEE FD FERNALD ESTIMATING SERVICES REFERENCE MANUAL IM-6006 8.10)

Total hours worked in a specific PPE level divided by 10 hour working days = (PPE) ManDays to determine material cost of PPE's.
(SEE APPENDIX C - HEALTH PHYSICS)

11.0	Man Days	13.0	Man Days	17.0	Man Days	18.0	Man Days	21.0	Man Days

THESE EFFICIENCY FACTORS WERE APPLIED INDIVIDUALLY THROUGHOUT THE ESTIMATE AT A TASK SPECIFIC LEVEL, TO OBTAIN A MORE ACCURATE ACCOUNT OF OVERALL EFFICIENCY IMPACT DUE TO PPE REQUIREMENTS IN HANDLING CONTAMINATED AND HAZARDOUS WASTE.

EFFICIENCY FACTORS

PROJECT: Leachate Reroute
ESTIMATE NO. C5010407
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECC

PPE MULTIPLIER DEVELOPEMENT

		D	mD	mC	C	C+
CREW SIZE & MAKE-UP	STANDARD	7	7	7	7	7
	WORKER-BUDDY	0	0	0	0	0
	SUPPORT TEAM	0	0	0	0	0
	TOTAL CREW	7	7	7	7	7
CREW SIZE RATIO		1.00	1.00	1.00	1.00	1.00
AVAILABLE WORK TIME FACTOR		0.96	0.78	0.7	0.7	0.68
PPE LABOR PRODUCTIVITY FACTOR		1	1	0.86	0.82	0.75
NET PRODUCTIVITY RATIO		0.96	0.78	0.602	0.574	0.51
NET PRODUCTIVITY MULTIPLIER		**1.04**	**1.28**	**1.66**	**1.74**	**1.96**

These factors were based on Tables 6.1 and 6.2, Moderate Work Efforts, 66F to 85F temperature of 'Hazardous Waste Cost Control' by R.A.Selg.
Modifications were made to reflect a 10 hour work day and no buddy system or support team for levels D, mC and C.
The worker-buddy and support team members, if required, may be covered under Construction Mgmt. (Rad Techs).

AVAILABLE WORK TIME FACTOR		D	mD	mC	C	C+
TOTAL WORK MINUTES per [4 - 10's		600	600	600	600	600
ADDITN'L SITE SAFETY MEETINGS NOT INCLD. IN BAS	QUANTITY	1	1	1	1	1
	MINUTES	25	25	25	25	25
TOTAL		25	25	25	25	25
PPE DON & DOFFING	QUANTITY	0	0	3	3	3
(ADJUST LEVEL D per WORK PLAN)	MINUTES	0	0	15	15	20
TOTAL			0	45	45	60
WORK BREAKS	QUANTITY	N/A	2	2	2	2
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			30	30	30	30
MOBILIZATION - ROUND TRIPS	QUANTITY	N/A	4	4	4	4
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			60	60	60	60
COOLDOWNS PER DAY	QUANTITY	N/A	4	4	4	4
** (4 OUT OF 12 MONTHS) 33.33%	MINUTES	N/A	15	15	15	15
TOTAL			20	20	20	20
AIR TANK REPLACEMENT	QUANTITY	N/A	N/A	N/A	N/A	N/A
	MINUTES	N/A	N/A	N/A	N/A	N/A
TOTAL						
AVAILABLE WORK TIME		575	465	420	420	405
AVAILABLE WORK TIME FACTOR		**0.96**	**0.78**	**0.7**	**0.7**	**0.68**

NOTE: Adjust 'Work Minutes per Day' basis to: 5 - 8's, or leave as 4 - 10's. Any other circumstances, over-ride the minutes per day.

** Assumption based on work performed in May, June, July & August, pro-rating cost over one year. Adjust % to individual circumstances.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: Leachate Reroute
ESTIMATE NO. C5010407
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECC

Fluor Fernald, Inc.

PPE"s - PERSONAL PROTECTIVE EQUIPMENT

DESCRIPTION	UNIT	UNIT COST	* NO. OF CHANGE OUTS PER WORKER PER DAY				
			Man Days (TOTAL HOURS worked in PPE's Div. by WORK HOURS / DAY)				
PPE LEVEL C / C+ / B : F/HF MASK w/RESP.&CART.			*	MAN DAYS	MAT'L.$'s	PPE LEVEL	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	0	$0	C / C+	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	0	$0	C / C+	(DOUBLE PPE)
GLOVE LINER - DISPOSABLE	PR	$0.24	3	0	$0	C / C+	
GLOVE. LASTEX - DISPOSABLE	PR	$0.26	3	0	$0	C / C+	
GLOVE. WORK - DISPOSABLE	PR	$1.02	3	0	$0	C / C+	
APR CARTRIDGES - DISPOSABLE	PR	$6.98	3	0	$0	C / C+	
SUB-TOTAL		$17.42	3		$0		
				$/MD =	$0.00		

PPE LEVEL mC : FULL DRESS w/ FACE SHIELD				MAN DAYS	MAT'L.$'s	PPE LEVEL
LT.WT DISPOSABLE COVERALLS W/HOOD & BOOTIE	PR	$4.46	3	5	$60	mC
GLOVE LINER - DISPOSABLE	PR	$0.24	3	5	$3	mC
GLOVE. LASTEX - DISPOSABLE	PR	$0.26	3	5	$4	mC
GLOVE. WORK - DISPOSABLE	PR	$1.02	3	5	$14	mC
SUB-TOTAL		$5.98	3		$81	
				$/MD =	$18.00	

SUBCONTRACTOR REQUIRED PURCHASES			QTY. PER WKR.	NO. OF WORKERS	MAT'L.$'s	PPE LEVEL
RUBBER BOOT COVERS-(1)PR.PER WORKER	PR	$12.70	6	0	$0	D/C/B
APR w/HALF FACE MASK - (1) PER WORKER	EA	$22.30	6	0	$0	C
APR w/FULL FACE MASK - (1) PER WORKER	EA	$174.00	6	0	$0	C
SCBA	EA	$1,894.00	2	0	$0	B
COOL VESTS	EA	$137.50	6	0	$0	C/B
THERMO STRIPS	EA	$50.00	6	0	$0	C/B
SUB-TOTAL					$0	

TOTAL PPE's = MAT'L.$'s $100

(FORWARD TO PAGE 2 OF 2)

OTHER PPE's SUCH AS HARD HAT, SAFETY GLASSES/GOGGLES, STEEL TOED SAFETY SHOES, HEARING PROTECTION, ARE CONSIDERED THE SUBCONTRACTORS RESPONSIBILITY AND ARE COVERED IN HIS OVERHEAD EXPENSE.
COSTS OF FD FERNALD SUPPLIED PPE's, SUCH AS COTTON COVERALLS, EXCHANGE OF RUBBER BOOT COVERS AND RESPIRATORS FOR CHANGEOUTS AND CLEANING OF SAME IS INCURRED BY FD FERNALD AND COSTS ARE NOT INCLUDED AS PART OF PROJECT COSTS AT THIS TIME.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: Leachate Reroute
ESTIMATE NO. C5010407
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECC

--MEDICAL MONITORING --

MEDICAL - PHYSICAL and IN-VIVO MONITORING - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION PHYSICAL (3hrs), IN-VIVO (1hr)	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BASELINE PHYSICALS	1	4	6.097	24	$27.99	$680
ANNUAL PHYSICALS	0	4	6.097	0	$27.99	$0
EXIT (TERMINATION) PHYSICALS (IN-VIVO)	1	1	6.097	6	$27.99	$170
SUB-TOTAL						$850

RADIATION IN-VITRO SURVEILLANCE - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BI-MONTHLY BIOASSAY	3	1	6.097	15	$27.99	$430
SUB-TOTAL						$430

RANDOM DRUG TESTING

	TESTS	HRS	TOTAL HOURS	AVG. RATE	LABOR $'s	
	0	2	0	$27.99	$0	
NO. OF WKRS. TESTED	TESTING DAYS PER YR.	AVG. NO. OF TESTS PER DAY	CHANCE/ DAY FOR TEST	NO. OF WKRS. FOR THIS ESTIMATE	CHANCES /DAY FOR TEST FOR PROJECT	CONSTR WORKING DAYS
2340	226	10	0.0042735	1	0.0043	96

		LABOR $'s THRU SAFETY	LABOR $'s
WORK DELAYS CAUSED BY MONITORING	0.0%	$24,843	$0
			LABOR $'s
WORK DELAYS CAUSED BY RAD CHECKING	0.0%	$24,843	$0

	TOTAL LABOR	TOTAL MAT'L.	GRAND TOTAL
TOTAL HEALTH PHYSICS	$1,300	$100	$1,400

(FORWARD TO ESTIMATE SUMMARY SHEET)

ACTIVITY DURATIONS

Fluor Fernald, Inc.

PROJECT: Leachate Reroute
ESTIMATE NO. C5010407
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECC

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
CONSTRUCTION:	01-May-01	01-Jun-01	16-Aug-01	01-Nov-01	5.0	MONTHS
					0	MONTHS
TOTAL					5.0	MONTHS

	DATE of EST. to MID-POINT ACTIVITY DURATION	
a.	3.5	MONTHS
b.	0	MONTHS

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
OPERATIONS					0	MONTHS

DATE of EST. to MID-POINT ACTIVITY DURATION	
0	MONTHS

ACTIVITY DURATION IS USED IN DETERMINING NUMBER of WORKERS for CERCLA/SAT TRAINING HOURS and HEALTH PHYSICS COSTS.

TRAINING

PROJECT:	Leachate Reroute	DATE:	02-May-01
ESTIMATE #:	C5010407	ESTIMATOR:	Wagner
CLIENT:	DOE	LOCATION:	Fernald
WBS #:	1.1.E.F	TASK #:	EFECC

Fluor Fernald, Inc.

Site Access Training Requirements (RM-0055 Rev. 1 Effective: 09/30/99)

Training Requirements	Non-Hazardous	Occasional Site Worker	General Site Worker		
Access Area	Administrative Support Area	Controlled Area	Contamination Compound	Frequency	
	8 Hour	24 Hour Hazwoper	40 Hour Hazwoper		
General Employee Training	X	X	X	Annually	
Site Worker Training		X	X	One Time	
Rad. Worker I		X		Biennially	
Rad. Worker II			X	Biennially	
Respirator Training *			X	Annually	
Respirator Fit Testing *			X	Annually	
Supervised Field Experience	0 HR	8 HR	24 HR	One time →	*On the Job*
Site Worker Refresher		X	X	Annually ⇨	4 Hour
Rad. Worker I Retraining		X		Every 2 years ⇨	4 Hour
Rad. Worker II Retraining			X	Every 2 years ⇨	8 Hour

Additional Training	HRS	No. of Workers	Total Hours
Job Specific Training =	2	4	8
Fire Watch Training =	1	1	1
Lead Worker Training =	4	0	0
Lock out / Tag out Training =	8	2	16
Rigging Training =	24	4	96
Scaffold Training =	16	4	64

DURATION 5 Month(s)

Average Rate $ 27.99

Number of General Site Worker(s)	6	General Site Worker Training Cost	$6,825
Number of Occasional Site Worker(s)	0	Occasional Site Training Cost	$0
Number of Non-Hazardous Worker(s)		Non-Hazardous Training Cost	$0
		Additional Training Cost	$5,178
Total Training Hours	429	Total Training Cost =	$12,003

* = All employees classified as General Site Worker must initially take respirator training. The annual requirement for the repeat of training and the fit test frequency requirements are only needed by those employees that are required to wear a respirator.

COST IMPACT MATRIX SHEET

Estimate No.: C5010407
Project: Leachate Reroute
Client: DOE
WBS: 1.1.E.F

Fluor Fernald, Inc.

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFECC

Base Estimate Total	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	PREMOBILIZATION									
$117,090	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$14,420	Base $	$0	Base $	$0	Base $	$0	Base $	$130
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-30%	50%							-30%	50%
Range - %	-30%	50%	0%	0%	0%	0%	0%	0%	-30%	50%
Range - $	$10,094	$21,630	$0	$0	$0	$0	$0	$0	$91	$195
Distribution	U								U	
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	MOBILIZATION									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$9,740	Base $	$5,470	Base $	$2,760	Base $	$1,930	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-20%	50%	-20%	50%	-20%	40%	-20%	40%		
Range - %	-20%	50%	-20%	50%	-20%	40%	-20%	40%	0%	0%
Range - $	$7,792	$14,610	$4,376	$8,205	$2,208	$3,864	$1,544	$2,702	$0	$0
Distribution	U		U		U		U			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010407
Project: Leachate Reroute
Client: DOE
WBS: 1.1.E.F

Fluor Fernald, Inc.

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFECC

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	DEMOBILIZATION									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$8,650	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-40%	60%								
Range - %	-40%	60%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$5,190	$13,840	$0	$0	$0	$0	$0	$0	$0	$0
Distribution	U									
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	PIPING									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$39,740	Base $	$4,850	Base $	$25,200	Base $	$4,200	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-10%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s			-10%	25%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-10%	25%	-10%	25%	-10%	25%	-10%	25%		
Range - %	-20%	50%	-20%	50%	-20%	50%	-20%	50%	0%	0%
Range - $	$31,792	$59,610	$3,880	$7,275	$20,160	$37,800	$3,360	$6,300	$0	$0
Distribution	T		T		T		T			
Correlation Rank										

Analyst: _____

Client: _____

EFECD

OSDF EPLTS VALVE HOUSE #7

09/06/2001
3:05 PM

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EFEC
CHARGE NO: EFECD
COMMENT NO:

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: J. HUGHES
FISCAL YEAR: 2001-2010

Resource: FIELDSUB **FIELD SUBS** **EOC:** SUBCONTRACTORS
Res Dept: 952 **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	0.0	0.0	0.0	0.0	362,570.0	0.0	0.0	0.0	0.0
Cum Units:	0.0	0.0	0.0	0.0	0.0	362,570.0	362,570.0	362,570.0	362,570.0	362,570.0
Yr Total Cost:	0	0	0	0	0	415,848	0	0	0	0
Cum Total Cost:	0	0	0	0	0	415,848	415,848	415,848	415,848	415,848

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: 952 **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	0.0	0.0	0.0	0.0	18,802.0	0.0	0.0	0.0	0.0
Cum Units:	0.0	0.0	0.0	0.0	0.0	18,802.0	18,802.0	18,802.0	18,802.0	18,802.0
Yr Total Cost:	0	0	0	0	0	21,565	0	0	0	0
Cum Total Cost:	0	0	0	0	0	21,565	21,565	21,565	21,565	21,565

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Total Cost:	0	0	0	0	0	437,413	0	0	0	0
Cum Total Cost:	0	0	0	0	0	437,413	437,413	437,413	437,413	437,413

CAM _____ for MJ _____ CONTROL TEAM _____

INCLUDES ESCALATION COSTS

FLUOR GLOBAL SERVICES

Memorandum

To:	Jack Hughes,MS52-5 Dick Butterfiled, MS52-5	Date:	April 24, 2001
Location:	Fernald	Reference:	N/A
From:	Ken Kepler, MS80-3	Fernald #:	M:OOTP:(PC/EST)2001-0024
Location:	Springdale	Client:	DOE DE-AC24-01OH20115
Extension:	648-6761	Subject:	OSDF EPLTS VALVE HOUSE 7

c: File Record Subject ESTIMATE C5010408
Tom Wagner, MS80-3

Attached are two (2) copies of the estimate for the OSDF EPLTS Valve House 7.
To request any additional copies of this estimate or for any questions, please contact Tom Wagner on extension 6120.

KGK:TW:hmp
Attachment

Fluor Fernald, Inc.

PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: OSDF EPLTS Valve House 7
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010408

BASIS OF ESTIMATE

SUPPORTING DOCUMENTATION:

Verbal Scope	☒	P & ID's	☐	Work Plan	☐
Drawings	☐	Equipment List	☐	Site Walk	☐
Sketches	☐	Specifications	☐	Eng. Mtg.	☐
Flow Diagrams	☐	Written Scope	☒	Estimate	☐

TYPE OF ESTIMATE:

Change Proposal	☐	Government	☐
Plan/Feasibility	☐	Conceptual	☐
Construction	☐	Title I Design	☐
Budget	☒	Independent	☐

BASIS OF ESTIMATE:

Estimate the cost for construction of 1 new OSDF EPLTS valve house #7.

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: OSDF EPLTS Valve House 7
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010408

ESTIMATE ASSUMPTIONS

EXECUTION:

- ☒ This project is to be performed on a 40-hour week, 10 hours a day.
- ☐ This project is to be performed on a 40-hour week, 8 hours a day.
- ☐ Premium time allowed.

WAGE RATES:

- ☒ Wage rates within this estimate are based on Project Labor Agreement rates, effective October 2000 and are considered FY01 dollars for estimating.
- ☐ Wage rates within this estimate are based on FF Support Contractor FSC 599 wage rates, effective October 1999 have been escalated 3% and are considered FY01 dollars for estimating.
- ☐ Wage rates within this estimate are based on FF FTE Planning Labor Rates FY01.

ENGINEERING:

- ☒ N/A
- ☐ Engineering dollars provided by the Project Engineer.
- ☐ Engineering dollars have been factored in at the standard 12% of the total direct and indirect field costs as per request of Project Engineer.

CONSTRUCTION MANAGEMENT:

- ☒ N/A
- ☐ Construction Management dollars provided by the Project Engineer.
- ☐ Construction Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

PROJECT MANAGEMENT:

- ☒ N/A
- ☐ Project Management dollars provided by the Project Engineer.
- ☐ Project Management dollars have been factored in at the standard 30% of the total direct and indirect field costs as per request of Project Engineer.

WASTE PROGRAM MANAGEMENT:

- ☒ N/A
- ☐ Waste Program Management dollars provided by the Project Engineer.

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: OSDF EPLTS Valve House 7
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010408

PRODUCTIVITY:

A productivity factor has been developed and applied to the unit man-hours derived from MEANS, Richardson, NECA, and or any other published estimating source. See attachment APPENDIX "A" and APPENDIX "B".

ESCALATION:

Escalation costs are excluded from the target estimate. The escalation costs are calculated within the Micro-Frame computer system according to the plan for rebaselining.

UNIT RATES:

Unit man-hours, equipment and material dollars are based on Richardson, MEANS, NECA, and or other published rates.

G & A (HO EXPENSE):

G & A are excluded from the target estimate. The G & A cost are calculated within the Micro-Frame computer system according to the plan for rebaselining.

HEALTH PHYSICS:

See attached APPENDIX "C".

RISK BUDGET:

N/A

Fluor Fernald, Inc.
PROJECTS CONTROLS
ESTIMATING SERVICES

May 2, 2001

PROJECT DESCRIPTION: OSDF EPLTS Valve House 7
WBS NUMBER: 1.1.E.F
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C5010408

ESTIMATE INCLUSIONS & EXCLUSIONS

INCLUSIONS:

- Premobilization & Mobilization.
- Demobilization.
- Labor hours.
- Material dollars.
- Equipment dollars.

EXCLUSIONS:

- Premium time.
- Permits and fees.
- FF G & A (Home Office Expense).
- Construction Management.
- Any second tier subcontract costs.
- Project Management dollars.
- Waste Management dollars.

ESTIMATE SUMMARY SHEET

Fluor Fernald, Inc.

PROJECT: OSDF EPLTS Valve House 7
ESTIMATE #: C5010408
CLIENT: DOE
WBS #: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECD.

ITEM DESCRIPTION	M/H	RATE	LABOR $	S/C $	MAT'L $	EQUIP. $	TOTAL $
PREMOBILIZATION	120		$6,000				$6,000
MOBILIZATION	120		$2,700	$4,510	$2,000	$1,500	$10,710
CIVIL/PIPING	379		$8,400	$4,500	$3,250	$6,050	$22,200
VALVE HOUSE	932		$22,900	$32,000	$54,200	$800	$109,900
ELECTRICAL	571		$12,900		$21,800	$4,200	$38,900
TESTING	323		$7,800				$7,800
DEMOBILIZATION	100		$2,400				$2,400
DIRECT FIELD COSTS TOTAL	**2,545**	**$24.80**	**$63,100**	**$41,010**	**$81,250**	**$12,550**	**$197,910**
SUPERVISION - CONTRACTOR	846		$19,210				$19,210
SMALL TOOLS & CONSUMABLES	-	-	-		$3,800		$3,800
MISC. EQUIP. RENTAL	-	-	-			$8,900	$8,900
TEMPORARY FACILITIES							
TEMPORARY UTILITY HOOK-UP	50		$1,200		$700		$1,900
JOB CLEAN-UP	115		$2,800		$900		$3,700
PER DIEM / SUBSISTANCE	-	-	-				
HEALTH PHYS.	32	-	$800				$800
ADDITIONAL AND JOB SPECIFIC TRAINING	25	-	$620				$620
GENERAL SITE WORKER TRAINING	155	-	$3,850				$3,850
PAYROLL BURDENS & BENEFITS	-	-	$52,200				$52,200
OVERHEAD & PROFIT	-	-	-	$58,600			$58,600
BOND	-	-	-	$4,600			$4,600
SALES TAX	-	-	-		$5,200	$1,300	$6,500
INDIRECT FIELD COSTS TOTAL	**1,222**		**$80,680**	**$63,200**	**$10,600**	**$10,200**	**$164,680**
DIRECT & INDIRECT FIELD COSTS TOTAL	**3,767**	**$38.17**	**$143,780**	**$104,210**	**$91,850**	**$22,750**	**$362,590**
TARGET ESTIMATE			**(FY 01 DOLLARS)**				**$362,590**

ESTIMATE PERFORMED BY ESTIMATING SERVICES

ESTIMATE SUMMARY SHEET

PROJECT: OSDF EPLTS Valve House 7

DATE: 02-May-01

ESTIMATE NO. C5010408

FACTORS

ESTIMATOR: Wagner

CLIENT: DOE

LOCATION: Fernald

WBS NO.: 1.1.E.F

TASK NO.: EFECD

FIXED PRICE $	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
DFC DOLLARS	$63,100	$41,010	$81,250	$12,550		$197,910
IFC COST FACTOR	2.2786	–	1.0665	1.7092	–	
BOND + OVERHEAD & PROFIT COST FACTOR	1.2111	1.2111	1.2111	1.2111	1.2111	
SALES TAX	-	-	1.0600	1.0600	1.0600	
DIRECT FIELD COST FACTOR =	2.7596	1.2111	1.3691	2.1942	1.2838	
BASE ESTIMATE $'s	$174,131	$49,667	$111,238	$27,537		$362,573
BASE FACTOR W/ RISK	1.0000	1.0000	1.0000	1.0000	1.0000	
TARGET ESTIMATE FACTOR	2.7596	1.2111	1.3691	2.1942	1.2838	
FPS TARGET ESTIMATE (FY01 $)	$174,131	$49,667	$111,238	$27,537		$362,573

NOTE:

If there are no DFC Equip. $, enter The IFC Equip. $'s into the direct field cost TOTAL and delete IFC Factor in G65.

ESTIMATE SUMMARY SHEET

PROJECT: OSDF EPLTS Valve House 7 | DATE: 02-May-01

ESTIMATE NO. C5010408 | ESTIMATOR: Wagner

CLIENT: DOE | LOCATION: Fernald

WBS NO.: 1.1.E.F | TASK NO.: EFECD

Direct Field Cost w/FACTORS

YES	NO
X	

PAY ITEM NO.	DESCRIPTION	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
		(ASSIGN OR PRORATE PPE MAT'L.$'s)-->>					
	PREMOBILIZATION	6000					
		$16,560					$16,560
	MOBILIZATION	2700	4510	2000	1500		
		$7,450	$5,460	$2,740	$3,290		$18,940
	DEMOBILIZATION	2400					
		$6,620					$6,620
	CIVIL/PIPING	8400	4500	3250	6050		
		$23,180	$5,450	$4,450	$13,270		$46,350
	VALVE HOUSE	22900	32000	54200	800		
		$63,190	$38,760	$74,200	$1,760		$177,910
	ELECTRICAL	12900		21800	4200		
		$35,600		$29,850	$9,220		$74,670
	TESTING	7800					
		$21,520					$21,520
TOTAL DIRECT FIELD COSTS w/FACTORS		(FY01 DOLLARS)					$362,570

DETAIL ESTIMATE WORKSHEETS

PROJECT: OSDF EPLTS Valve House 7
ESTIMATE NO.: C5010408
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECD

ITEM NO.	SUMMARY	QTY	UNIT	MAN-HOURS			COST / UNIT				LABOR	S/C	MAT'L	EQUIP	TOTAL
				Unit	Total	Rate	Labor	S/C	Mat'l	Equip					
	PREMOBILIZATION				120						$6,000				$6,000
	MOBILIZATION				120						$2,700	$4,510	$2,000	$1,500	$10,710
	DEMOBILIZATION				100						$2,400				$2,400
	CIVIL/PIPING				379						$8,400	$4,500	$3,250	$6,050	$22,200
	VALVE HOUSE				932						$22,900	$32,000	$54,200	$800	$109,900
	ELECTRICAL				571						$12,900		$21,800	$4,200	$38,900
	TESTING				323						$7,800				$7,800
	Subtotal Direct Cost	1	LOT		2,545	$24.80					$63,100	$41,010	$81,250	$12,550	$197,910

DETAIL ESTIMATE WORKSHEETS

PROJECT: OSDF EPLTS Valve House 7
ESTIMATE NO.: C5010408
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECD

ITEM NO.		QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	PREMOBILIZATION														
	Insurance Certificates, List of Sub-Tier Contractors Procurement Documents, Safe Work Plans, QA/QC Plan, Project Execution Plan, Construction and Engineering Documentation, Acceptable baseline Schedules Duration 3 wks	1	LS	40.0	120	50.00					$6,000				$6,000
	MOBILIZATION														
	S/C Office Trailer	5	mo					300.00				$1,510			$1,510
	Survey and Engineering Controls	1	LS					3,000.00	500.00	500.00		$3,000	$500	$500	$4,000
D	Install Utilities	1	LS	40.0	40	22.69			1,000.00	500.00	$900		$1,000	$500	$2,400
D	Other misc. requirements as required.	1	LS	80.0	80	22.69			500.00	500.00	$1,800		$500	$500	$2,800
										6,360.00					
	Total				120						$2,700	$4,510	$2,000	$1,500	$10,710
	DEMOBILIZATION														
D	Complete Punch List items.	1	LS	20.0	20	22.69					$500				$500
D	Remove Trailer and Change Facilities.	1	LS	20.0	20	22.69					$500				$500
D	Remove all Utilities.	1	LS	20.0	20	22.69					$500				$500
mC	Decontaminate Equipment.	1	LS	10.0	10	22.69					$200				$200
D	Loadout contractors equipment.	1	LS	20.0	20	22.69					$500				$500
D	Other area requirements.	1	LS	10.0	10	22.69					$200				$200
	Total				100						$2,400				$2,400

DETAIL ESTIMATE WORKSHEETS

PROJECT: OSDF EPLTS Valve House 7
ESTIMATE NO.: C5010408
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECD

ITEM NO.	CIVIL/PIPING	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Site Prep														
D	Survey (3) man team	1	ac					3000.00				$3,000			$3,000
D	Plastic warning tape & Safety Fencing	200	lf	0.13	30	21.49			0.77		$650		$150		$800
D	Gravel erosion control allowance	15	cy	0.30	5	21.49			10.15	7.60	$110		$150	$110	$370
	Site Clearing					21.49									
D	Clear and grub	1	ac	48.0	55	21.49				1,125.00	$1,190			$1,130	$2,320
	Grading & Excavation														
	Access Road														
D	Site grading	222	cy	0.10	26	21.49				2.31	$550			$510	$1,060
D	Excavation 500*12*1/27	222	cy	0.20	51	21.49				4.38	$1,100			$970	$2,070
D	Backfill 500*12*.5/27	111	cy	0.20	26	21.49					$550				$550
D	Geotextile filter fabric 500*12/9	667	sy	0.01	8	21.49			1.35		$170		$900		$1,070
D	Gravel road 500*12/9	667	sy	0.08	60	21.49			1.20	0.35	$1,290		$800	$230	$2,320
D	Vibrating compaction	111	cy	0.10	13	21.49				0.26	$280			$30	$310
D	Prepare & roll sub-base	667	sy	0.05	38	21.49				0.44	$830			$290	$1,120
D	Excavation (40LF back)	100	cy	0.10	12	21.49				4.45	$250			$450	$700
D	6" HDPE pipe	120	lf			26.40			2.94				$350		$350
D	10" HDPE pipe	120	lf			26.40			7.36				$880		$880
D	Place 6" HDPE inside 10" HDPE pipe	120	lf	0.04	6	26.40					$150				$150
D	Welds: 6" HDPE pipe: connect to cell pipe	3	ea	2.9	10	26.40			1.62		$260				$260
D	Welds: 10"HDPE pipe: connect to cell pipe	3	ea	3.5	12	26.40			5.70	0.29	$320		$20		$340
D	Set 6"/10" HDPE pipe in excavation	120	lf	0.01	1	26.40					$20				$20
D	Detection tape	1.2	clf	1.0	1	26.40			3.30		$40				$40
D	Welding equipment	1	wk			26.40				1,500.00				$1,500	$1,500
D	Lifting equipment	1	wk			26.40				814.00				$810	$810
D	Test pipe	1	ea	15.0	17	26.40					$460				$460
D	Pipe bed (6" below to ToP) w/ compaction	10	tn	0.15	2	26.40					$50				$50
D	Backfill & Compact	100	cy	0.05	6	21.49					$120				$120
D	Spread excess soil incl. Trench	25	cy	0.01	0.35	21.49				0.86	$10			$20	$30
D	Hydroseed	1	ac					1500.00				$1,500			$1,500
D	Subtotal Direct Cost				379						$8,400	$4,500	$3,250	$6,050	$22,200

DETAIL ESTIMATE WORKSHEETS

PROJECT: OSDF EPLTS Valve House 7
ESTIMATE NO.: C5010408
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECD

ITEM NO.	VALVE HOUSE	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Excavation	100	cy	0.48	55	23.60				1.14	$1,310			$110	$1,420
D	Sub-base drainage piping	100	lf	0.17	19	21.49			3.02	0.75	$410		$300	$80	$790
D	Gravel sub-base	15	cy	0.10	2	22.43			19.00		$40		$290		$330
D	Concrete footing	18	cy	1.4	28	22.43			82.50	0.46	$640		$1,470	$10	$2,120
D	Pour Concrete floor (including sump)	11	cy	2.0	26	22.43			73.50	0.62	$580		$820	$10	$1,410
D	Concrete walls	26	cy	5.0	150	22.43			99.50	17.10	$3,360		$2,580	$440	$6,380
D	Grout floor/walls & install HDPE liner	1	ea					32,000				$32,000			$32,000
D	Fusion weld HDPE liner joints & testing	50	hr	1.0	58	22.43					$1,290				$1,290
D	Platform	60	sf	0.15	10	22.43			3.72	0.13	$230		$220	$10	$460
D	Stairs	1	set	10.0	12	22.43			1,560.00		$260		$1,560		$1,820
D	Handrails	40	lf	0.25	12	22.43			13.70	0.32	$260		$550	$10	$820
D	Pre-engineering superstructure	300	sf	0.20	69	22.43			40.00		$1,550		$12,000		$13,550
D	3x3 access cover	2	ea	5.5	13	21.49			675.00		$270		$1,350		$1,620
D	Double doors	1	set	10.6	12	22.66			640.00		$280		$640		$920
D	Plastic tank 300gal./4 nozzels & 1 vent	2	ea	20.0	46	22.66			1,200.00		$1,050		$2,400		$3,450
D	Piping Sch 40 6" steel pipe w/ support	30	lf	0.67	23	26.40			16.20	1.38	$610		$490	$40	$1,140
D	Piping Sch 40 4" steel pipe w/ support	40	lf	0.43	20	26.40			6.65	1.34	$530		$270	$50	$850
D	Paint pipe, spray	100	lf	0.03	3	23.66			0.21		$70		$20		$90
D	Gasket & bolt set 4"	16	ea	1.0	18	26.40			9.80		$490		$160		$650
D	Gasket & bolt set 6"	20	ea	1.3	31	26.40			15.25		$810		$310		$1,120
D	Tee 6"- 4"	2	ea	4.0	9	26.40			231.00	16.55	$240		$460	$30	$730
D	Cross 4"	1	ea	5.5	6	26.40			290.00		$170		$290		$460
D	90d elbow 4"	8	ea	2.0	18	26.40			105.00		$490		$840		$1,330
D	Wye lateral	4	ea	5.0	23	26.40			282.00		$610		$1,130		$1,740
D	Ball valve 4"	6	ea	5.3	37	26.40			1,250.00		$970		$7,500		$8,470
D	Check valve 4"	2	ea	5.3	12	26.40			875.00		$320		$1,750		$2,070
D	Cleanout 6"	5	ea	3.2	18	26.40			291.00		$490		$1,460		$1,950
D	Concentric reducer 6" - 4"	4	ea	4.0	18	26.40			231.00		$490		$920		$1,410
D	Drum Pump 20gpm	2	ea	5.0	12	26.40			425.00		$300		$850		$1,150
D	Instrumentation Level	2	ea	6.9	16	26.40			2,190.00		$420		$4,380		$4,800
D	Instrumentation Flow meter	2	ea	4.4	10	26.40			2,440.00		$270		$4,880		$5,150
D	Heater elec. 400cfm 3.3kw	2	ea	4.0	9	26.40			600.00		$240		$1,200		$1,440
D	3" Conduit RGS	200	lf	0.25	58	26.40			4.50	0.50	$1,520		$900	$100	$2,520
D	3/4" Conduit RGS	200	lf	0.06	14	26.40			0.70	0.10	$370		$140	$20	$530
D	3/4" Liquid tight	100	lf	0.08	9	26.40			2.50		$240		$250		$490
D	Conv. Recep. & lighting allow.	1	ls	60.0	69	26.40			500.00		$1,830		$500		$2,330
D	Sample tap & hose connections allow.	1	ls	40.0	46	26.40			300.00		$1,220		$300		$1,520
D	Backfill & compact	33.33	cy	0.049	2	26.40				0.97	$50			$30	$80
D	Pipe bollards, conc filled/paint 8'lx4'd hole, 6"dia	8	ea	1.2	11	26.40			165.00	10.95	$290		$1,320	$90	$1,700
	Subtotal Direct Cost	1	LOT		932	$24.58					22,900	32,000	54,200	800	$109,900

DETAIL ESTIMATE WORKSHEETS

PROJECT: OSDF EPLTS Valve House 7
ESTIMATE NO.: C5010408
CLIENT: DOE
WBS NO.: 1.1.E.F

Fluor Fernald, Inc.

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECD

ITEM NO.	ELECTRICAL	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	Auger Truck	25	hr	1.0	29	22.66				75.00	$650			$1,880	$2,530
D	Bucket Truck	20	hr	1.0	23	22.66				75.00	$520			$1,500	$2,020
D	45' Class II pole	1	ea	12.1	14	22.66			373.20		$320		$373		$693
D	#1/0 AL Power cable	3	clf	2.0	7	22.66			42.62		$160		$128		$288
D	Ground Cu wire	50	lf	0.05	3	22.66			0.44		$70		$22		$92
D	Messenger attachments	4	ea	3.3	15	22.66			69.75		$350		$279		$629
D	Guy wire typical	1	ea	5.0	6	22.66					$130				$130
D	Disconnect switch 480v 3ph	2	ea	8.0	18	22.66			250.00	50.00	$420		$500	$100	$1,020
D	Combo starter NEMA 1 enclosure	2	ea	10.0	23	22.66			600.00	50.00	$520		$1,200	$100	$1,820
D	Transformer 13.2KVA 480v IPH pole mounted	3	ea	20.0	69	22.66			900.00	100.00	$1,570		$2,700	$300	$4,570
D	Variable speed AC drive 40hp 480v 60Hz	1	ea	23.0	27	22.66			8,000.00	50.00	$600		$8,000	$50	$8,650
D	Transformer Mini power 15KVA 480v 3ph	1	ea	16.0	18	22.66			3,150.00	50.00	$420		$3,150	$50	$3,620
D	Fuses	4	ea	0.40	2	22.66			100.00		$40		$400		$440
D	3" conduit rgs	80	lf	0.25	23	22.66			4.50	0.50	$520		$360	$40	$920
D	3" conduit fittings	1	ls	10.0	12	22.66			400.00		$260		$400		$660
D	1 1/2" conduit rgs	50	lf	0.10	6	22.66			1.70	0.40	$130		$85	$20	$235
D	1 1/2" conduit fittings	1	ls	8.0	9	22.66			100.00		$210		$100		$310
D	3/4" conduit rgs	150	lf	0.06	10	22.66			0.70	0.10	$240		$105	$20	$365
D	3/4" conduit fittings	1	ls	20.0	23	22.66			190.00		$520		$190		$710
D	3/4" liquid tight	25	lf	0.08	2	22.66			2.50		$50		$63		$113
D	Fluorescent fixtures, lamps, mounting hdware	6	ea	1.5	10	22.66			90.00		$240		$540		$780
D	Ceiling Fan	1	ea	2.0	2	22.66			305.00		$50		$305		$355
D	Blower 650cfm	1	ea	2.0	2	22.66			233.00		$50		$233		$283
D	#4/0 Quad Plex Stl Messgr		lf	0.02					0.80	0.30					
D	#4Awg Cu Cond. Quadruplex Str O / Head		lf	0.01					1.20	0.30					
D	Termination Hardware	1	ls	100	115	22.66			1200.00		$2,620		$1,200		$3,820
D	Lighting Mercury vapor, 1000w	1	ea	4	5	22.66			430.00		$100		$430		$530
D	Poles		ea	31					1740.00	25.00					
D	Testing allowance	1	ls	70	81	22.66				100.00	$1,830			$100	$1,930
D	Circuit panel, 24'SE-AL cable, service eye, sock panel board, breaker, ground rod, 20amp 1-pole circuit breaker, & misc. hardware, 150amp with RGS conduit & wire	1	ea	12.903	15	22.66			1050.00	35.00	$340		$1,050	$40	$1,430
D	Single Phase transformer 20KVA		ea												
	Subtotal Direct Cost	1	LOT		571	$22.61					12,900		21,800	4,200	$38,900

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

PROJECT: OSDF EPLTS Valve House 7
ESTIMATE NO.: C5010408
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECD

ITEM NO.	TESTING	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
D	HYDROSTATIC TESTING	1	ls	100.0	115	$26.40					$3,050				$3,050
D	ELECTRICAL TESTING	1	ls	100.0	115	$22.66					$2,620				$2,620
D	ACCEPTANCE TEST	1	ls	80.0	92	$22.66					$2,090				$2,090
	Subtotal Direct Cost	1	LOT		323	$24.13					7,800				$7,800

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

PROJECT: OSDF EPLTS Valve House 7
ESTIMATE NO.: C5010408
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECD

ITEM NO.			QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	Project Staffing															
		Each														
	1. Project Manager			hr	1.0		45.19									
	2. Project Superintendent	0.25	211	hr	1.0	211	31.92					$6,750				$6,750
	3. Project Engineer	0.25	211	hr	1.0	211	20.71					$4,380				$4,380
	4. Safety Engineer	0.25	211	hr	1.0	211	19.75					$4,170				$4,170
	5. QA/QC Engineer	0.25	211	hr	1.0	211	18.51					$3,910				$3,910
	6. Office Administration			hr	1.0		15.75									
	7. Contract Administration/ Scheduler			hr	1.0		27.10									
	8. Clerical			hr	1.0		14.00									
	TOTAL					846	22.72					$19,210				$19,210

APPENDIX " A"

PROJECT: OSDF EPLTS Valve House 7
ESTIMATE NC C5010408
CLIENT: DOE
WBS NO.: 1.1.E.F

SITE SPECIFIC

EFFICIENCY / MULTIPLIER ANALYSIS

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Femald
TASK NO.: EFECD

PERCENT OF INFLUENCE ON CHART MANHOURS

	40%	50%	60%	70%	80%	90%	100%	105%	110%	% OF NFLUENCE	WT'D VALUE	PROD. RESULT
CRAFT SKILL (NOTE 1)	POOR			FAIR			STD	V.GOOD	EXCELLENT	100.0%	12.0%	0.12
CRAFT AVAIL.(NOTE 1)		POOR		FAIR			STD			100.0%	8.0%	0.08
CLIMATE (NOTE 2)	SEVERE	ICE/SNOW			RAIN		+40 TO +85			80.0%	20.0%	0.16
PLANT ELEVATION		OVER 10,000FT			5,000' TO 10,000 FT		UNDER 5,000 FT			100.0%	5.0%	0.05
WORK SPACE				200 SF	250 SF	300 SF	350 SF			100.0%	10.0%	0.1
WORK WEEK	<---- MULTIPLE SHIFTS-						4-10s / 5-8s			100.0%	15.0%	0.15
60 HOUR WORK WEEK	////////// //// MULTIPLE-SHIFT ////	//////////	//////////	OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS				0.0%	0.0%	0
60 HOUR WORK WEEK	//////////	//////////	OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS					0.0%	0.0%	0
SHIFTWORK 2ND SHIFT 3RD SHIFT			3RD SHIFT		2ND SHIFT		OR ONE SHIFT ONLY			100.0% 100.0%	3.0% 5.0%	0.03 0.05
PROJECT SIZE					400M MH AND UP	300M TO 400M MH	200M TO 300M MH	200M MH OR LESS		100.0%	4.0%	0.04
PLANT TYPE				REVAMP ONLY	REVAMP & NEW	NEW IN EXIST PLT	GRASS ROOTS			80.0%	8.0%	0.064
AREA/UNION INFLUENCE	STRONG		MILD		SOME		NONE			60.0%	10.0%	0.06
											100.0%	90.4%

NOTES.....
1. TURNOVER HAS BEEN CONSIDERED

2. FOR EXTERIOR WORK ONLY

EFFICIENCY (AS A % OFF CHART MANHOURS) 90.4%

MULTIPLIER - (TO BE APPLIED TO CHART M.H.'S TO OBTAIN SITE M.H.'S) 1.11

EFFICIENCY FACTORS

PROJECT: OSDF EPLTS Valve House 7
ESTIMATE NO. C5010408
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECD

Fluor Fernald, Inc.

EXAMPLE:

STANDARD CHART MANHOURS =	NET	100
EFFICIENCY FACTORS:		
• SITE SPECIFIC (SEE APPENDIX A)	[redacted]	11.0
S/T = BASE UNIT MANHOURS		111
OVERTIME PRODUCTIVITY FACTOR (SEE DETAIL WORKSHEET BACK-UP)	0.00%	0
		111
• TASK SPECIFIC (confined space, high elevation, congestion, etc.)	0.0%	0
		111

• PPE SPECIFIC (Based on current data and estimating knowledge)

	PPE LEVEL									
	D		Mod.'D'		Mod. "C"		C		C+	
PRODUCTIVITY HOURS		MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's
(AS A %) / ADD MH's	4.00%	4	28.00%	31	66.00%	73	74.00%	82	96.00%	107
(AS A MULTIPLIER)/TOTAL HRS	1.04	115.4	1.28	142.1	1.66	184.3	1.74	193.1	1.96	217.6
TOTAL MULTIPLIER w/SITE PROD.	1.1544		1.4208		1.8426		1.9314		2.1756	

NOTE : Use the Default Productivity Factor of 'mC' for working in a contaminated area if the Safety Level cannot be determined.

(SEE FD FERNALD ESTIMATING SERVICES REFERENCE MANUAL IM-6006 8.10)

Total hours worked in a specific PPE level divided by 10 hour working days = (PPE) ManDays to determine material cost of PPE's.
(SEE APPENDIX C - HEALTH PHYSICS)

12.0	Man Days	14.0	Man Days	18.0	Man Days	19.0	Man Days	22.0	Man Days

THESE EFFICIENCY FACTORS WERE APPLIED INDIVIDUALLY THROUGHOUT THE ESTIMATE AT A TASK SPECIFIC LEVEL, TO OBTAIN A MORE ACCURATE ACCOUNT OF OVERALL EFFICIENCY IMPACT DUE TO PPE REQUIREMENTS IN HANDLING CONTAMINATED AND HAZARDOUS WASTE.

EFFICIENCY FACTORS

PROJECT: OSDF EPLTS Valve House 7
ESTIMATE NO. C5010408
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECD

PPE MULTIPLIER DEVELOPEMENT

		D	mD	mC	C	C+
CREW SIZE & MAKE-UP	STANDARD	7	7	7	7	7
	WORKER-BUDDY	0	0	0	0	0
	SUPPORT TEAM	0	0	0	0	0
	TOTAL CREW	7	7	7	7	7
CREW SIZE RATIO		1.00	1.00	1.00	1.00	1.00
AVAILABLE WORK TIME FACTOR		0.96	0.78	0.7	0.7	0.68
PPE LABOR PRODUCTIVITY FACTOR		1	1	0.86	0.82	0.75
NET PRODUCTIVITY RATIO		0.96	0.78	0.602	0.574	0.51
NET PRODUCTIVITY MULTIPLIER		**1.04**	**1.28**	**1.66**	**1.74**	**1.96**

These factors were based on Tables 6.1 and 6.2, Moderate Work Efforts, 66F to 85F temperature of 'Hazardous Waste Cost Control' by R.A.Selg.
Modifications were made to reflect a 10 hour work day and no buddy system or support team for levels D, mC and C.
The worker-buddy and support team members, if required, may be covered under Construction Mgmt. (Rad Techs).

AVAILABLE WORK TIME FACTOR		D	mD	mC	C	C+
TOTAL WORK MINUTES per [4 - 10's		600	600	600	600	600
ADDITN'L.SITE SAFETY MEETINGS NOT INCLD. IN BAS	QUANTITY	1	1	1	1	1
	MINUTES	25	25	25	25	25
TOTAL		25	25	25	25	25
PPE DON & DOFFING	QUANTITY	0	0	3	3	3
(ADJUST LEVEL D per WORK PLAN)	MINUTES	0	0	15	15	20
TOTAL			0	45	45	60
WORK BREAKS	QUANTITY	N/A	2	2	2	2
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			30	30	30	30
MOBILIZATION - ROUND TRIPS	QUANTITY	N/A	4	4	4	4
(ADJUST LEVEL D per WORK PLAN)	MINUTES	N/A	15	15	15	15
TOTAL			60	60	60	60
COOLDOWNS PER DAY	QUANTITY	N/A	4	4	4	4
** (4 OUT OF 12 MONTHS) 33.33%	MINUTES	N/A	15	15	15	15
TOTAL			20	20	20	20
AIR TANK REPLACEMENT	QUANTITY	N/A	N/A	N/A	N/A	N/A
	MINUTES	N/A	N/A	N/A	N/A	N/A
TOTAL						
AVAILABLE WORK TIME		575	465	420	420	405
AVAILABLE WORK TIME FACTOR		**0.96**	**0.78**	**0.7**	**0.7**	**0.68**

NOTE: Adjust 'Work Minutes per Day' basis to: 5 - 8's, or leave as 4 - 10's. Any other circumstances, over-ride the minutes per day.

** Assumption based on work performed in May, June, July & August, pro-rating cost over one year. Adjust % to individual circumstances.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: OSDF EPLTS Valve House 7
ESTIMATE NO. C5010408
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECD

Fluor Fernald, Inc.

PPE"s - PERSONAL PROTECTIVE EQUIPMENT

DESCRIPTION	UNIT	UNIT COST	* NO. OF CHANGE OUTS PER WORKER PER DAY				
			Man Days (TOTAL HOURS worked in PPE's Div. by WORK HOURS / DAY)				
PPE LEVEL C / C+ / B : F/HF MASK w/RESP.&CART.			*	MAN DAYS	MAT'L.$'s	PPE LEVEL	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	0	$0	C / C+	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	$4.46	3	0	$0	C / C+	(DOUBLE PPE)
GLOVE LINER - DISPOSABLE	PR	$0.24	3	0	$0	C / C+	
GLOVE, LASTEX - DISPOSABLE	PR	$0.26	3	0	$0	C / C+	
GLOVE, WORK - DISPOSABLE	PR	$1.02	3	0	$0	C / C+	
APR CARTRIDGES - DISPOSABLE	PR	$6.98	3	0	$0	C / C+	
SUB-TOTAL		$17.42	3		$0		
				$/MD =	$0.00		
PPE LEVEL mC : FULL DRESS w/ FACE SHIELD				MAN DAYS	MAT'L.$'s	PPE LEVEL	
LT.WT. DISPOSABLE COVERALLS W/HOOD & BOOTIE	PR	$4.46	3	1	$13	mC	
GLOVE LINER - DISPOSABLE	PR	$0.24	3	1	$1	mC	
GLOVE, LASTEX - DISPOSABLE	PR	$0.26	3	1	$1	mC	
GLOVE, WORK - DISPOSABLE	PR	$1.02	3	1	$3	mC	
SUB-TOTAL		$5.98	3		$18		
				$/MD =	$18.00		
SUBCONTRACTOR REQUIRED PURCHASES			QTY. PER WKR.	NO. OF WORKERS	MAT'L.$'s	PPE LEVEL	
RUBBER BOOT COVERS-(1)PR.PER WORKER	PR	$12.70	6	0	$0	D/C/B	
APR w/HALF FACE MASK - (1) PER WORKER	EA	$22.30	6	0	$0	C	
APR w/FULL FACE MASK - (1) PER WORKER	EA	$174.00	6	0	$0	C	
SCBA	EA	$1,894.00	2	0	$0	B	
COOL VESTS	EA	$137.50	6	0	$0	C/B	
THERMO STRIPS	EA	$50.00	6	0	$0	C/B	
SUB-TOTAL					$0		

TOTAL PPE's = MAT'L.$'s $0

(FORWARD TO PAGE 2 OF 2)

OTHER PPE's SUCH AS HARD HAT, SAFETY GLASSES/GOGGLES, STEEL TOED SAFETY SHOES, HEARING PROTECTION, ARE CONSIDERED THE SUBCONTRACTORS RESPONSIBILITY AND ARE COVERED IN HIS OVERHEAD EXPENSE.
COSTS OF FD FERNALD SUPPLIED PPE's, SUCH AS COTTON COVERALLS, EXCHANGE OF RUBBER BOOT COVERS AND RESPIRATORS FOR CHANGEOUTS AND CLEANING OF SAME IS INCURRED BY FD FERNALD AND COSTS ARE NOT INCLUDED AS PART OF PROJECT COSTS AT THIS TIME.

APPENDIX "C"

HEALTH PHYSICS

PROJECT: OSDF EPLTS Valve House 7
ESTIMATE NO. C5010408
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECD

--MEDICAL MONITORING --

MEDICAL - PHYSICAL and IN-VIVO MONITORING - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION PHYSICAL (3hrs), IN-VIVO (1hr)	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BASELINE PHYSICALS	1	4	3.881	16	$24.80	$390
ANNUAL PHYSICALS	0	4	3.881	0	$24.80	$0
EXIT (TERMINATION) PHYSICALS (IN-VIVO)	1	1	3.881	4	$24.80	$100
SUB-TOTAL						$490

RADIATION IN-VITRO SURVEILLANCE - LOST WORKER TIME for RAD II WORKERS ONLY

DESCRIPTION	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BI-MONTHLY BIOASSAY	3	1	3.881	10	$24.80	$240
SUB-TOTAL						$240

RANDOM DRUG TESTING

	TESTS	HRS	TOTAL HOURS	AVG. RATE	LABOR $'s
	2	2	4	$24.80	$100

NO. OF WKRS. TESTED	TESTING DAYS PER YR.	AVG. NO. OF TESTS PER DAY	CHANCE/ DAY FOR TEST	NO. OF WKRS. FOR THIS ESTIMATE	CHANCES /DAY FOR TEST FOR PROJECT	CONSTR WORKING DAYS
2340	226	10	0.0042735	5	0.0214	96

		LABOR $'s THRU SAFETY	LABOR $'s
WORK DELAYS CAUSED BY MONITORING	0.0%	$86,310	$0
			LABOR $'s
WORK DELAYS CAUSED BY RAD CHECKING	0.0%	$86,310	$0

	TOTAL LABOR	TOTAL MAT'L.	GRAND TOTAL
TOTAL HEALTH PHYSICS	$800	$0	$800

(FORWARD TO ESTIMATE SUMMARY SHEET)

ACTIVITY DURATIONS

Fluor Fernald, Inc.

PROJECT: OSDF EPLTS Valve House 7
ESTIMATE NO. C5010408
CLIENT: DOE
WBS NO.: 1.1.E.F

DATE: 02-May-01
ESTIMATOR: Wagner
LOCATION: Fernald
TASK NO.: EFECD

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
CONSTRUCTION:	01-May-01	01-Apr-06	16-Jun-06	01-Sep-06	5.0	MONTHS
					0	MONTHS
TOTAL					5.0	MONTHS

	DATE of EST. to MID-POINT ACTIVITY DURATION	
a.	61.6	MONTHS
b.	0	MONTHS

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
OPERATIONS					0	MONTHS

DATE of EST. to MID-POINT ACTIVITY DURATION	
0	MONTHS

ACTIVITY DURATION IS USED IN DETERMINING NUMBER of WORKERS for CERCLA/SAT TRAINING HOURS and HEALTH PHYSICS COSTS.

TRAINING

PROJECT:	OSDF EPLTS Valve House 7	DATE:	02-May-01
ESTIMATE #:	C5010408	ESTIMATOR:	Wagner
CLIENT:	DOE	LOCATION:	Fernald
WBS #:	1.1.E.F	TASK #:	EFECD

Fluor Fernald, Inc.

Site Access Training Requirements (RM-0055 Rev. 1 Effective: 09/30/99)

Training Requirements	Non-Hazardous	Occasional Site Worker	General Site Worker		
Access Area	Administrative Support Area	Controlled Area	Contamination Compound	Frequency	
	8 Hour	24 Hour Hazwoper	40 Hour Hazwoper		
General Employee Training	X	X	X	Annually	
Site Worker Training		X	X	One Time	
Rad. Worker I		X		Biennially	
Rad. Worker II			X	Biennially	
Respirator Training *			X	Annually	
Respirator Fit Testing *			X	Annually	
Supervised Field Experience	0 HR	8 HR	24 HR	One time →	*On the Job*
Site Worker Refresher		X	X	Annually ⇨	4 Hour
Rad. Worker I Retraining		X		Every 2 years ⇨	4 Hour
Rad. Worker II Retraining			X	Every 2 years ⇨	8 Hour

Additional Training	HRS	No. of Workers	Total Hours
Job Specific Training =	2	4	8
Fire Watch Training =	1	1	1
Lead Worker Training =	4	0	0
Lock out / Tag out Training =	8	2	16
Rigging Training =	24	0	0
Scaffold Training =	16	0	0

DURATION 5 Month(s)

Average Rate $ 24.80

Number of General Site Worker(s)	4	General Site Worker Training Cost	$3,850
Number of Occasional Site Worker(s)		Occasional Site Training Cost	$0
Number of Non-Hazardous Worker(s)		Non-Hazardous Training Cost	$0
		Additional Training Cost	$620
Total Training Hours	180	Total Training Cost =	$4,470

* = All employees classified as General Site Worker must initially take respirator training. The annual requirement for the repeat of training and the fit test frequency requirements are only needed by those employees that are required to wear a respirator.

COST IMPACT MATRIX SHEET

Estimate No.: C5010408
Project: OSDF EPLTS Valve House 7
Client: DOE
WBS: 1.1.E.F

Fluor Fernald, Inc.

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFECD

Base Estimate Total	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	PREMOBILIZATION									
$362,570	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$16,560	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-30%	50%								
Range - %	-30%	50%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$11,592	$24,840	$0	$0	$0	$0	$0	$0	$0	$0
Distribution	U								U	
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	MOBILIZATION									
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$7,450	Base $	$5,460	Base $	$2,740	Base $	$3,290	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-20%	50%	-20%	50%	-20%	50%	-20%	50%		
Range - %	-20%	50%	-20%	50%	-20%	50%	-20%	50%	0%	0%
Range - $	$5,960	$11,175	$4,368	$8,190	$2,192	$4,110	$2,632	$4,935	$0	$0
Distribution	U		u		U		u			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010408
Project: OSDF EPLTS Valve House 7
Client: DOE
WBS: 1.1.E.F

Fluor Fernald, Inc.

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFECD

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					DEMOBILIZATION					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$6,620	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-40%	60%								
Range - %	-40%	60%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$3,972	$10,592	$0	$0	$0	$0	$0	$0	$0	$0
Distribution	U									
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					CIVIL/PIPING					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$23,180	Base $	$5,450	Base $	$4,450	Base $	$13,270	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-10%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s			-10%	20%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-10%	25%			-10%	25%	-10%	25%		
Range - %	-20%	50%	-10%	20%	-20%	50%	-20%	50%	0%	0%
Range - $	$18,544	$34,770	$4,905	$6,540	$3,560	$6,675	$10,616	$19,905	$0	$0
Distribution	T		T		T		T			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010408
Project: OSDF EPLTS Valve House 7
Client: DOE
WBS: 1.1.E.F

Fluor Fernald, Inc.

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFECD

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					VALVE HOUSE					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost	Base $	$63,190	Base $	$38,760	Base $	$74,200	Base $	$1,760	Base $	$0
Drivers	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s			-30%	50%						
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%			-10%	25%	-10%	25%		
Range - %	-10%	50%	-30%	50%	-20%	50%	-20%	50%	0%	0%
Range - $	$56,871	$94,785	$27,132	$58,140	$59,360	$111,300	$1,408	$2,640	$0	$0
Distribution	T		T		T		T			
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
					ELECTRICAL					
	LABOR $		S/C $		MAT'L. $		EQUIP. $		PPE $	
Cost	Base $	$35,600	Base $	$0	Base $	$29,850	Base $	$9,220	Base $	$0
Drivers	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	25%								
Material Pricing					-10%	25%				
Equipment Rental							-10%	25%		
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%			-10%	25%	-10%	25%		
Range - %	-10%	50%	0%	0%	-20%	50%	-20%	50%	0%	0%
Range - $	$32,040	$53,400	$0	$0	$23,880	$44,775	$7,376	$13,830	$0	$0
Distribution	T				T		T			
Correlation Rank										

Analyst: _____

Client: _____

COST IMPACT MATRIX SHEET

Estimate No.: C5010408
Project: OSDF EPLTS Valve House 7
Client: DOE
WBS: 1.1.E.F

Fluor Fernald, Inc.

Date: 02-May-01
Estimator: Wagner
Location: Fernald
TASK NO.: EFECD

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	LABOR $		S/C $		TESTING MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$21,520	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor	-5%	25%								
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition	-5%	25%								
Range - %	-10%	50%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$19,368	$32,280	$0	$0	$0	$0	$0	$0	$0	$0
Distribution	T									
Correlation Rank										

	Cost Element		Cost Element		Cost Element		Cost Element		Cost Element	
	LABOR $		S/C $		0.00 MAT'L. $		EQUIP. $		PPE $	
Cost Drivers	Base $	$0	Base $	$0	Base $	$0	Base $	$0	Base $	$0
	Low	High	Low	High	Low	High	Low	High	Low	High
Productivity/labor										
Material Pricing										
Equipment Rental										
Subcontract $'s										
Quantity Variation										
Contamination										
Environmental										
Schedule										
Project Definition										
Range - %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Range - $	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Distribution										
Correlation Rank										

Analyst: _____

Client: _____

SECTION 3

5.0 RISK PLAN

Risk/Opportunity Identification and Analysis Form

Project:	Aquifer Restoration	PBS Number: 04			Total Baseline Dollars (Minimum Case):			$22,595,632		
Evaluator: Jack Hughes	Date: 3/28/01	WBS Number: 1.1.E.F								
CAM: Jack Hughes	Date: 3/28/01	Control Account Number: EFEC								
Project Task	Risk and/or Opportunity	Potential Impact	Internal Or External Driver	Impact Cost (Maximum Case)	Risk Impact Level	Risk Probability %	Risk Probability Level	Probable Cost $ (Likeliest Case)	Risk Critical Value	Risk Handling Strategy
Additional Wells	Unusual weather delays, drilling cost higher, subcontract labor rates increase	Work activities are delayed	Internal	$250,000	2	50	3	$125,000	3	Accept
Waste Storage Area Phase I	Unusual weather delays, drilling cost higher, subcontract labor rates increase	Work activities are delayed	Internal	$25,000	1	50	3	$12,500	1	Accept
Waste Storage Area Phase II	Additional wells are required	Place additional wells	Internal	$750,000	2	30	2	$225,000	1	Accept
SFES Phase II	Additional well are required, weather delays and increased subcontact labor costs	Place additional wells	Internal	$500,000	2	30	3	$150,000	3	Accept
DCS Upgrades	Additional equipment is required due to major changes in equipment requirements	Implement improved equipment	Internal	$100,000	4	25	2	$25,000	5	Accept
SWRB/Liner Testing	Testing results indicate replacement is required	Replace liner	Internal	$750,000	2	35	3	$262,500	5	Accept
AWWT Heat	Unusual weather delays, unforeseen equipment failures, subcontract cost are higher when bid	Short delays and extra equipment repair or replacements	Internal	$50,000	1	30	3	$15,000	7	Accept
Leachate Reroute	Unusual weather delays, unforeseen equipment failures, subcontract cost are higher when bid	Short delays and extra equipment repair or replacements	Internal	$25,000	1	30	2	$7,500	2	Accept
OSDF EPLTS VH#7	Unusual weather delays, unforeseen equipment failures, subcontract cost are higher when bid	Short delays and extra equipment repair or replacements	Internal	$200,000	2	30	2	$60,000	5	Accept
			Total:	$2,650,000			Total:	$882,500		
AWWT Process Improvements	Additional process improvements are required to meet EPA requirements	Implement Process improvements	External	$1,500,000	3	25	2	$375,000	5	

ARRWP Monitoring and Reporting

WBS DICTIONARY
CONTROL ACCOUNT/CHARGE NUMBER

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	40

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E.G	ARWWP MONITORING & REPORTING

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Subcontracts
Materials
ODCs

b. TECHNICAL CONTENT:

The WBS element for ARWWP Monitoring and Reporting provides support for meeting the site's monitoring requirements for:
- The groundwater remedy performance monitoring specified in Section 3 of the Integrated Environmental Monitoring Plan (IEMP)
- The On-Site Disposal Facility's (OSDF) leak detection program specified in the Groundwater/Leak Detection and Leachate Monitoring Plan (GW/LD & LMP) for the OSDF and the Systems Plan for the OSDF.

This element also provides for data reporting to fulfill requirements of:
- The IEMP Section3 and portions of Section 4,
- National Pollutants Discharge and Elimination System (NPDES),
- Spill Prevention, Control and Countermeasures Plan (SPCC),
- Storm Water Pollution Prevention Plan (SWPPP),
- Ohio Department of Natural Resources Water Withdrawal, and;
- The Operations and Maintenance Master Plan (OMMP) for the Aquifer Restoration and Wastewater Project
- The OSDF GW/LD & LMP and the OSDF Systems Plan

This element also provides for required addenda to the Remedial Action Work Plan for Operable Unit 5 Aquifer Restoration and periodic revisions to: the IEMP (Section 3), the OMMP and the GW/LD & LMP.

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	40

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E.G	ARWWP MONITORING & REPORTING

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

c. SCOPE OF WORK:

Clean Water Act Scope:

1) Provide programs for surveillance and self-assessment to ensure compliance with regulatory requirements and FEMP procedures pertaining to wastewater and storm water
2) Maintain program management for Spill Prevention, Control and Countermeasure Plan (SPCC), Storm Water Pollution Prevention Plan (SWPPP), and other activities mandated by the Clean Water Act (CWA)
3) Compile effluent discharge data for inclusion in the FEMP site Integrated Environmental Monitoring Plan (IEMP) reports (Quarterly and Annual)
4) Prepare monthly NPDES Discharge Monitoring Reports (DMRs) and other reports required for wastewater and storm water
5) Implement programs to ensure compliance with water related requirements of DOE Order 5400.5 ARadiation Protection of the Public and Environment@ including environmental ALARA
6) Provide program management to ensure the quality of data documentation for NPDES compliance. This includes but is not limited to; monthly DMRs, NPDES permit renewal, and non-compliance reports

CERCLA Documentation Scope:

1) Complete revisions of the Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Treatment Project as necessary
2) Complete annual updates to the Groundwater section of the Integrated Environmental Monitoring Plan (IEMP)
3) Complete biennial revisions of the Groundwater section of the Integrated Environmental Monitoring Plan (IEMP)
4) Complete Remedial Action Work Plan Addenda as necessary to establish schedules for groundwater remediation module construction and commencement of operations

Groundwater Remedy Performance Monitoring Scope:

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	40

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E.G	ARWWP MONITORING & REPORTING

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

Groundwater monitoring is/will be conducted to address 5 different aquifer restoration activities:

1) Routine groundwater remedy performance monitoring
2) Remedial design of the aquifer restoration modules
3) Monitoring network upgrades
4) Extraction/reinjection well startup monitoring
5) Uranium partitioning in the aquifer

Groundwater Remedy Performance Reporting/Technical Support Scope:

Groundwater reporting and technical support will be completed as follows:

1) Prepare groundwater section of weekly report to US EPA and Ohio EPA
2) Prepare groundwater section for four quarterly reports and one annual report per year on progress of the aquifer remedy.
3) Provide groundwater modeling for the site as required by Fluor Fernald groundwater personnel, other site project personnel, DOE, and other site stakeholders.
4) Provide for improvements in the groundwater modeling technology at the site.
5) Provide for groundwater technical support to surface water sampling and reporting activities to ensure integration across media boundaries.
6) Provide for general groundwater technical support across the site for other FEMP projects and stakeholders.

OSDF Leak Detection Monitoring and Reporting Scope:

OSDF Leak Detection Monitoring will be conducted as specified in the GW/LD & LMP for the OSDF. In general, four horizons will be monitored for each cell:

1) The Leachate Collection System (LCS)
2) The Leak Detection System (LDS)
3) Horizontal Till Wells (HTW)
4) Up - and Down- gradient monitoring wells in the Great Miami Aquifer

OSDF Leak Detection Monitoring also includes any required revisions to the governing plan the Groundwater/Leak Detection and Leachate Monitoring Plan for

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	40

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E.G	ARWWP MONITORING & REPORTING

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

the OSDF.

OSDF Reporting will be as follows:

1) Prepare OSDF leak detection input for weekly report to US EPA and Ohio EPA
2) Prepare OSDF Leak Detection section for four quarterly reports and one annual report per year
3) Prepare a Primary Liner Performance Evaluation Report on an annual basis beginning in 2002. This report will include all cells where waste placement has begun and leak detection data was collected in the previous year.
4) Prepare Technical Memoranda which define baseline conditions for the HTWs and the Great Miami Aquifer Wells by cell

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 1

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.G	ARWWP MONITORING & REPORTING

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	B. HERTEL/3894	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
EGMR	ARWWP MONITORING & REPORTING

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Material
Subcontractors
ODCs

b. TECHNICAL CONTENT:

The WBS element for ARWWP Monitoring and Reporting provides support for meeting the site's monitoring requirements for:
* The groundwater remedy performance monitoring specified in Section 3 of the Integrated Environmental Monitoring Plan (IEMP)
* The On-Site Disposal Facility's (OSDF) leak detection program specified in the Groundwater/Leak Detection and Leachate Monitoring Plan (GW/LD & LMP) for the OSDF and the Systems Plan for the OSDF.

This element also provides for data reporting to fulfill requirements of:
* The IEMP Section3 and portions of Section 4,
* National Pollutants Discharge and Elimination System (NPDES),
* Spill Prevention, Control and Countermeasures Plan (SPCC),
* Storm Water Pollution Prevention Plan (SWPPP),
* Ohio Department of Natural Resources Water Withdrawal, and;
* The Operations and Maintenance Master Plan (OMMP) for the Aquifer Restoration and Wastewater Project
* The OSDF GW/LD & LMP and the OSDF Systems Plan

This element also provides for required addenda to the Remedial Action Work Plan for Operable Unit 5 Aquifer Restoration and periodic revisions to: the IEMP (Section 3), the OMMP and the GW/LD & LMP.

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.G	ARWWP MONITORING & REPORTING	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	B. HERTEL/3894	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		**11. ESTIMATED START / COMPLETION DATE**
NEW PER CP# FY01-0115-0004-00		12/01/00 - 12/27/09
12. TASK IDENTIFICATION (CONTROL ACCOUNT)	**13. TASK DESCRIPTION (ONE LINE)**	
EGMR	ARWWP MONITORING & REPORTING	

14. ELEMENT TASK DESCRIPTION

c. SCOPE OF WORK:

Clean Water Act Scope:

1) Provide programs for surveillance and self-assessment to ensure compliance with regulatory requirements and FEMP procedures pertaining to wastewater and storm water
2) Maintain program management for Spill Prevention, Control and Countermeasure Plan (SPCC), Storm water Pollution Prevention Plan (SWPPP), and other activities mandated by the Clean Water Act (CWA)
3) Compile effluent discharge data for inclusion in the FEMP site Integrated Environmental Monitoring Plan (IEMP) reports (Quarterly and Annual)
4) Prepare monthly NPDES Discharge Monitoring Reports (DMRs) and other reports required for wastewater and storm water
5) Implement programs to ensure compliance with water related requirements of DOE Order 5400.5 ARadiation Protection of the Public and Environment@ including environmental ALARA
6) Provide program management to ensure the quality of data documentation for NPDES compliance. This includes but is not limited to ; monthly DMRs, NPDES permit renewal, and non-compliance reports

CERCLA Documentation Scope:

1) Complete revisions of the Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Treatment Project as necessary
2) Complete annual updates to the Groundwater section of the Integrated Environmental Monitoring Plan (IEMP)
3) Complete biennial revisions of the Groundwater section of the Integrated Environmental Monitoring Plan (IEMP)
4) Complete Remedial Action Work Plan Addenda as necessary to establish schedules for groundwater remediation module construction and commencement of operations

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 3

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.G	ARWWP MONITORING & REPORTING	
5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	B. HERTEL/3894	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00		12/01/00 - 12/27/09
12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)	
EGMR	ARWWP MONITORING & REPORTING	

14. ELEMENT TASK DESCRIPTION

Groundwater Remedy Performance Monitoring

Groundwater monitoring is/will be conducted to address 5 different aquifer restoration activities:

1) Routine groundwater remedy performance monitoring
2) Remedial design of the aquifer restoration modules
3) Monitoring network upgrades
4) Extraction/reinjection well startup monitoring
5) Uranium partitioning in the aquifer

Groundwater Remedy Performance Reporting/Technical Support

Groundwater reporting and technical support will be completed as follows:

1) Prepare groundwater section of weekly report to US EPA and Ohio EPA
2) Prepare groundwater section for four quarterly reports and one annual report per year on progress of the aquifer remedy.
3) Provide groundwater modeling for the site as required by Fluor Fernald groundwater personnel, other site project personnel, DOE, and other site stakeholders.
4) Provide for improvements in the groundwater modeling technology at the site.
5) Provide for groundwater technical support to surface water sampling and reporting activities to ensure integration across media boundaries.
6) Provide for general groundwater technical support across the site for other FEMP projects and stakeholders.

OSDF Leak Detection Monitoring and Reporting

OSDF Leak Detection Monitoring will be conducted as specified in the GW/LD & LMP for the OSDF. In general, four horizons will be monitored for each cell:

1) The Leachate Collection System (LCS)
2) The Leak Detection System (LDS)

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 4

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.G	ARWWP MONITORING & REPORTING	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	B. HERTEL/3894	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		**11. ESTIMATED START / COMPLETION DATE**
NEW PER CP# FY01-0115-0004-00		12/01/00 - 12/27/09
12. TASK IDENTIFICATION (CONTROL ACCOUNT)	**13. TASK DESCRIPTION (ONE LINE)**	
EGMR	ARWWP MONITORING & REPORTING	

14. ELEMENT TASK DESCRIPTION

3) Horizontal Till Wells (HTW)
4) Up - and Down- gradient monitoring wells in the Great Miami Aquifer

OSDF Leak Detection Monitoring also includes any required revisions to the governing plan the Groundwater/Leak Detection and Leachate Monitoring Plan for the OSDF.

OSDF Reporting will be as follows:

1) Prepare OSDF leak detection input for weekly report to US EPA and Ohio EPA
2) Prepare OSDF Leak Detection section for four quarterly reports and one annual report per year
3) Prepare a Primary Liner Performance Evaluation Report on an annual basis beginning in 2002. This report will include all cells where waste placement has begun and leak detection data was collected in the previous year.
4) Prepare Technical Memoranda which define baseline conditions for the HTWs and the Great Miami Aquifer Wells by cell

d. WORK SPECIFICALLY EXCLUDED:

ARWWP Monitoring and Reporting Exclusions:
· Sampling and analysis costs associated with the NPDES permit are excluded.
· All labor and materials provided by a centralized organization are excluded from this account beginning in FY02.
· Perched groundwater sampling, analysis, and remediation.
· Overtime and premium labor costs.
· Scope and costs associated with final certification that the groundwater remedy is complete in any of the affected areas.
· Sampling of extraction wells is excluded as it is covered in a separate well field operations control account.
· Filtering of groundwater samples collected via the direct push method through a 0.45 micron filter prior to analysis.
· Revisions to the aquifer restoration strategy such that the baseline remedial strategy report will need to be revised.

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 5

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.G	ARWWP MONITORING & REPORTING

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	B. HERTEL/3894	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
EGMR	ARWWP MONITORING & REPORTING

14. ELEMENT TASK DESCRIPTION

· Additional, separate contaminant plumes in the aquifer above and beyond those defined as of November 20, 2000.
· All surface water modeling activities.
· Changes to sampling, analysis and reporting requirements precipitated by new regulatory requirements beyond those in place on November 20, 2000.

OSDF Monitoring Exclusions:
1) All labor and materials provided by centralized organizations are excluded from this account beginning in FY02.
2) Monitoring well chemical rehabilitation will be required not more than once every 5 years and is covered in a separate, sitewide well maintenance account.
3) Monitoring well redevelopment will be required not more than once every 5 years and is covered in a separate, sitewide well maintenance account.
All groundwater sampling activities conducted in support of the aquifer remedy are specifically excluded from this task as they are provided for under the Groundwater Remedy Performance Monitoring task.

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 1

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.G	ARWWP MONITORING & REPORTING

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	B. HERTEL/648-3894	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EGMR1	ARWWP MONITORING & REPORTING

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Subcontracts
Materials
ODCs

b. TECHNICAL CONTENT:

The WBS element for ARWWP Monitoring and Reporting provides support for meeting the site's monitoring requirements for:
* The groundwater remedy performance monitoring specified in Section 3 of the Integrated Environmental Monitoring Plan (IEMP)
* The On-Site Disposal Facility's (OSDF) leak detection program specified in the Groundwater/Leak Detection and Leachate Monitoring Plan (GW/LD & LMP) for the OSDF and the Systems Plan for the OSDF.

This element also provides for data reporting to fulfill requirements of:
* The IEMP Section3 and portions of Section 4,
* National Pollutants Discharge and Elimination System (NPDES),
* Spill Prevention, Control and Countermeasures Plan (SPCC),
* Storm Water Pollution Prevention Plan (SWPPP),
* Ohio Department of Natural Resources Water Withdrawal, and;
* The Operations and Maintenance Master Plan (OMMP) for the Aquifer Restoration and Wastewater Project
* The OSDF GW/LD & LMP and the OSDF Systems Plan

This element also provides for required addenda to the Remedial Action Work Plan for Operable Unit 5 Aquifer Restoration and periodic revisions to: the IEMP (Section 3), the OMMP and the GW/LD & LMP.

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.G	ARWWP MONITORING & REPORTING

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	B. HERTEL/648-3894	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EGMR1	ARWWP MONITORING & REPORTING

14. ELEMENT TASK DESCRIPTION

c. SCOPE OF WORK:

1) Compile effluent discharge data for inclusion in the FEMP site Integrated Environmental Monitoring Plan (IEMP) reports (Quarterly and Annual)
2) Prepare monthly NPDES Discharge Monitoring Reports (DMRs) and other reports required for wastewater and storm water
3) Implement programs to ensure compliance with water related requirements of DOE Order 5400.5 ARadiation Protection of the Public and Environment@ including environmental ALARA
4) Provide program management to ensure the quality of data documentation for NPDES compliance. This includes but is not limited to ; monthly DMRs, NPDES permit renewal, and non-compliance reports

CERCLA Documentation Scope:

1) Complete revisions of the Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Treatment Project as necessary
2) Complete annual updates to the Groundwater section of the Integrated Environmental Monitoring Plan (IEMP)
3) Complete biennial revisions of the Groundwater section of the Integrated Environmental Monitoring Plan (IEMP)
4) Complete Remedial Action Work Plan Addenda as necessary to establish schedules for groundwater remediation module construction and commencement of operations

Groundwater Remedy Performance Monitoring

Groundwater monitoring is/will be conducted to address 5 different aquifer restoration activities:

1) Routine groundwater remedy performance monitoring
2) Remedial design of the aquifer restoration modules

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 3

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.G	ARWWP MONITORING & REPORTING	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	B. HERTEL/648-3894	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EGMR1	ARWWP MONITORING & REPORTING

14. ELEMENT TASK DESCRIPTION

3) Monitoring network upgrades
4) Extraction/reinjection well startup monitoring
5) Uranium partitioning in the aquifer

Groundwater Remedy Performance Reporting/Technical Support

Groundwater reporting and technical support will be completed as follows:

1) Prepare groundwater section of weekly report to US EPA and Ohio EPA
2) Prepare groundwater section for four quarterly reports and one annual report per year on progress of the aquifer remedy.
3) Provide groundwater modeling for the site as required by Fluor Fernald groundwater personnel, other site project personnel, DOE, and other site stakeholders.
4) Provide for improvements in the groundwater modeling technology at the site.
5) Provide for groundwater technical support to surface water sampling and reporting activities to ensure integration across media boundaries.
6) Provide for general groundwater technical support across the site for other FEMP projects and stakeholders.

OSDF Leak Detection Monitoring and Reporting

OSDF Leak Detection Monitoring will be conducted as specified in the GW/LD & LMP for the OSDF. In general, four horizons will be monitored for each cell:

1) The Leachate Collection System (LCS)
2) The Leak Detection System (LDS)
3) Horizontal Till Wells (HTW)
4) Up - and Down- gradient monitoring wells in the Great Miami Aquifer

OSDF Leak Detection Monitoring also includes any required revisions to the governing plan the Groundwater/Leak Detection and Leachate Monitoring Plan for the OSDF.

OSDF Reporting will be as follows:

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 4

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.G	ARWWP MONITORING & REPORTING	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	B. HERTEL/648-3894	MARC JEWETT
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EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		**11. ESTIMATED START / COMPLETION DATE**
NEW PER CP# FY01-0115-0004-00		12/01/00 - 12/27/09
12. TASK IDENTIFICATION (WORK PACKAGE)	**13. TASK DESCRIPTION (ONE LINE)**	
EGMR1	ARWWP MONITORING & REPORTING	

14. ELEMENT TASK DESCRIPTION

1) Prepare OSDF leak detection input for weekly report to US EPA and Ohio EPA
2) Prepare OSDF Leak Detection section for four quarterly reports and one annual report per year
3) Prepare a Primary Liner Performance Evaluation Report on an annual basis beginning in 2002. This report will include all cells where waste placement has begun and leak detection data was collected in the previous year.
4) Prepare Technical Memoranda which define baseline conditions for the HTWs and the Great Miami Aquifer Wells by cell

d. WORK SPECIFICALLY EXCLUDED:

ARWWP Monitoring and Reporting Exclusions:
· Sampling and analysis costs associated with the NPDES permit are excluded.
· All labor and materials provided by a centralized organization are excluded from this account beginning in FY02.
· Perched groundwater sampling, analysis, and remediation.
· Overtime and premium labor costs.
· Scope and costs associated with final certification that the groundwater remedy is complete in any of the affected areas.
· Sampling of extraction wells is excluded as it is covered in a separate well field operations control account.
· Filtering of groundwater samples collected via the direct push method through a 0.45 micron filter prior to analysis.
· Revisions to the aquifer restoration strategy such that the baseline remedial strategy report will need to be revised.
· Additional, separate contaminant plumes in the aquifer above and beyond those defined as of November 20, 2000.
· All surface water modeling activities.
· Changes to sampling, analysis and reporting requirements precipitated by new regulatory requirements beyond those in place on November 20, 2000.

OSDF Monitoring Exclusions:
1) All labor and materials provided by centralized organizations are excluded

SECTION 4

1.0 NARRATIVE

1. PROJECT TITLE: AQUIFER RESTORATION PROJECT	2. DATE: 09/10/01	3. PBS#: 04
4. WBS ELEMENT CODE: 1.1.E.G.	5. WBS ELEMENT TITLE: ARWWP MONITORING/REPORTING	
6. CAM NAME/ PHONE: DAVE BRETTSCHNEIDER	7. CAM SIGNATURE:	
8. ORIGINAL/ CHANGE SCOPE/ PER CP#:	9.CONTROL ACCOUNT: EGMR	

SECTION 4: EGMR – ARWWP MONITORING AND REPORTING

1.0 NARRATIVE

1.1 OVERVIEW

The activities covered in this control account include the following monitoring and reporting areas under one charge number (EGMR1):

1) Clean Water Act; formerly control account EFCW
2) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Documentation; formerly control account ECRW
3) Groundwater Remedy Performance Monitoring; formerly control account EFGM
4) Groundwater Remedy Performance Reporting; formerly control account EFGP
5) On-Site Disposal Facility Leak Detection Monitoring and Reporting; formerly portions of charge number CFP13 and CFP12 respectively

The Clean Water Act task consists of program management to ensure compliance with the Site's:

- National Pollutant Discharge Elimination System (NPDES) permit,
- Storm Water Pollution Prevention Plan (SWPPP), and;
- Spill Prevention Control and Countermeasure Plan

The CERCLA documentation task consists of maintaining the:

- The Operations and Maintenance Master Plan (OMMP) for the Aquifer Restoration and Wastewater Project,
- Section 3 of Integrated Environmental Monitoring Plan (IEMP), and;
- Preparation of Remedial Action work plan Addenda.

The groundwater remedy performance monitoring task consists of:

- Routine Groundwater Remedy Performance Monitoring as specified in the Site's Integrated Environmental Monitoring plan (IEMP)
- Direct Push Sampling to Support Design of the Restoration Modules
- Monitoring Well Network Upgrades
- Extraction/Re-Injection Well Start-up Monitoring, and
- Quantifying aquifer geochemical properties (Kd work).

The groundwater remedy performance reporting task consists of:

- Prepare reports on progress of the aquifer remedy,
- Provide groundwater modeling for the site,
- Provide for groundwater technical support to surface water sampling and reporting,
- Maintain the site's aquifer restoration strategy and provide groundwater remedial design support,
- Provide sitewide groundwater support,
- Performing administrative functions.

The On-Site Disposal Facility Leak Detection Monitoring and Reporting task consists of:

- Leachate collection System (LCS) and Leak Detection System (LDS) Flow Data Collection and Evaluation
- Sample Collection and Analysis
- Program Management
- Reporting
- Monitoring Well Installation

1.2 ASSUMPTIONS/EXCLUSIONS

1.2.1 Clean Water Act Assumptions and Exclusions

1.2.1.1 National Pollutant Discharge Elimination System (NPDES) Permit

A. Assumptions

1) The scope of the NPDES program is based on the permit issued by the Ohio EPA on January 28, 2000, effective March 1, 2000. The permit expires October 31, 2002.
2) No change in regulatory requirements from those specified in the existing permit.
3) Sampling of all the required monitoring points will be completed on the specified schedule for the specified constituents.
4) Analysis, and provision of the data for all required samples will be completed in a manner such that reporting schedules can be met.

R1-D-183

5) ~~An application to renew the permit must be submitted 180 days prior to the expiration date.~~
6) Renewal of the NPDES permit will occur every five years.
7) Labor and material costs are based on actual labor hours and materials charged to account 5FCW in FY99 and FY00.
8) Work will be completed by Fluor Fernald, Inc. personnel (not outsourced).
9) Monthly discharge monitoring reports will be required at least until the end of the contract.
10) Completion of work was based on a 40-hour work week with no overtime.
11) Data required for reporting purposes will be provided in desired format and in accordance with established schedules from centralized groups.

12) The annual water discharge fee will remain at the current level of $16,600.

B. Exclusions

1) Sampling and analysis costs associated with the NPDES permit are excluded from this task.
2) All labor and materials provided by a centralized organization are excluded from this account beginning in FY02.

C. Government Services and Equipment

None

1.2.1.2 Stormwater Pollution Prevention Plan (SWPPP)

A. Assumptions

1) No change in regulatory requirements from those specified in the existing NPDES permit.
2) The scope of the SWPPP is based on the NPDES permit issued by the Ohio EPA on January 28, 2000, effective March 1, 2000. The permit expires October 31, 2002.
3) Labor and material costs are based on actual labor hours and materials charged to account 5FCW in FY99 and FY00.
4) Work will be completed by Fluor Fernald, Inc. personnel (not outsourced).
5) Completion of work is based on a 40-hour work week with no overtime.
6) Annual assessments of the SWPPP will be conducted and revisions will be made as necessary based on the results of the assessment.

B. Exclusions

1) All labor and materials provided by centralized organizations are excluded from this account beginning in FY02.
2) Sampling and analysis costs are excluded from this task.

C. Government Services and Equipment

None

1.2.1.3 Spill Prevention Control and Countermeasure (SPCC) Plan

A. Assumptions

1) No change in regulatory requirements from those existing on November 20, 2000
2) The scope of the SPCC program is based on promulgated Section 311 and non-promulgated Section 151 of the Clean Water Act.
3) Labor costs are based on actual labor hours charged to account 5FCW in FY99 and FY00.
4) Work will be completed by Fluor Fernald, Inc. personnel (not outsourced).
5) Completion of work is based on a 40-hour work week with no overtime.
6) Annual revision of the SPCCC Plan is required.

B. Exclusions

1) All labor and materials provided by centralized organizations are excluded from this account beginning in FY02.
2) Sampling and analysis costs are excluded from this task.

C. Government Services and Equipment

None

1.2.2 CERCLA Documentation Assumptions and Exclusions

A. Assumptions

1) No change in regulatory requirements from those existing on November 20, 2000.
2) Planned schedule, scope, and effort do not change.
3) IEMP revisions are to be completed annually as updates and biennially as full-scale revisions.
4) OMMP revisions are to be completed annually as updates and biennially as full-scale revisions, similar to the IEMP.
5) For both the OMMP and IEMP, it is assumed that annual updates and biennial revisions will occur every other calendar year, i.e.:

   - Year 2001 – IEMP update and OMMP revision
   - Year 2002 – IEMP revision and OMMP update, etc.

6) The review and approval cycle for each OMMP and IEMP update/revision will include timely internal Fluor Fernald, Inc., DOE-FEMP, and USEPA/OEPA reviews and approvals.
7) Remedial Action Work Plan addenda will be short (1-3 pages) and will therefore require only minor effort to complete.

8) The review and approval cycle for Remedial Action Work Plan addenda will include timely internal Fluor Fernald, Inc., DOE-FEMP, and USEPA/OEPA reviews and approvals.
9) The work will be completed by Fluor Fernald, Inc. personnel with minor assistance from teaming partners (not outsourced).
10) Completion of work is based on a 40-hour workweek with no overtime.

B. Exclusions

1) Remedial design documentation as it is covered in the Groundwater Remedy Performance Reporting task.

C. Government Services and Equipment

None

1.2.3 Groundwater Remedy Performance Monitoring Assumptions and Exclusions

A. Assumptions

1) Routine IEMP groundwater monitoring scope is defined in Revision 2 of the IEMP, dated January 2001 except where noted otherwise.
2) The groundwater remedy, consisting of a pump and treat system with re-injection of treated groundwater, will continue to be maintained as the remedy of choice throughout the closure contract.
3) Groundwater restoration will continue through and beyond the duration of the closure contract.
4) Monitoring activities must conform to "Ohio EPA Technical Guidance for Hydrogeologic Investigations and Ground Water Monitoring".
5) For the purpose of remedy performance monitoring, twenty direct push sampling location will be sampled each year for the remainder of the closure contract, beginning in FY 2002. This is in addition to the direct push sampling defined in Revision 2 of the IEMP.
6) Applicable regulatory drivers, compliance agreements, and DOE policies are defined in Revision 2 of the IEMP, dated January 2001.
7) Groundwater monitoring south of the "administrative boundary" will continue as outlined in Revision 2 of the IEMP, dated January 2001, until such time as the need for a different action is established and implemented.
8) Fluor Fernald, Inc. personnel will conduct groundwater monitoring activities with assistance from subcontractors.
9) The Waste Storage and Plant 6 areas will be the only areas designated as ~~Radiation Control Areas~~ Radiological Control Areas.

R1-D-452

10) All direct push samples will be analyzed for total uranium at an on-site lab.
11) Any new monitoring wells added to the program will only be sampled for total uranium.
12) Labor, material, and analytical cost estimates for routine monitoring activities assume that the schedule, scope, and effort outlined in Revision 2 of the IEMP, dated January 2001 does not change.

13) Access to all monitoring points will be maintained
14) Sampling of all the required monitoring points will be completed on the specified schedule for the specified constituents.
15) The cost for on-site analytical work is reflected as labor hours.
16) Labor costs are based on a 40-hour workweek, with no overtime.
17) The Fluor Fernald labor effort to develop (CMT) multilevel monitoring wells will be consistent with that required for 2-inch PVC monitoring wells.
18) Groundwater samples collected via the direct push method will be filtered through a 5 micron filter and analyzed for total uranium only.
19) New monitoring wells will be added to the IEMP, program but will only be sampled for uranium.
20) All CMT multilevel wells will have 7 sampling horizons.
21) Kd work scope will not change as a result of internal DOE and EPA reviews

B. Exclusions

1) All labor and materials provided by centralized organizations are excluded from this account beginning in FY02.
2) Perched groundwater sampling, analysis, and remediation do not fall within the scope of this task
3) Overtime and premium labor costs are not included.
4) Scope and costs associated with final certification that the groundwater remedy is complete in any of the affected areas
5) Sampling of extraction wells is excluded as it is covered in a separate well field operations control account
6) Filtering of groundwater samples collected via the direct push method through a 0.45 micron filter prior to analysis is excluded.

B. Government Services and Equipment

None

1.2.4 Groundwater Remedy Performance Reporting Assumptions and Exclusions

A. Assumptions

1) No change in regulatory requirements from those existing on November 20, 2000.
2) Prior to implementation, all PSPs and Remedial Design Reports will require timely review cycles by Fluor Fernald, Inc., DOE, and EPA.
3) VAM3D Data Fusion Model (Phase II) will be accepted by USEPA and OEPA by FY02 for use in tracking the progress of the aquifer remedy and designing additional extraction/injection wells.
4) Phase III (Optimization) of the Model Upgrade Project will be initiated.
5) VAM3D Data Fusion Model (Phase II) will improve well-head uranium concentration predictions.
6) The planned additional geochemical characterization is successful in determining kinetic model parameters or at least is successful in setting reasonable ranges for the model kinetic parameters.

7) One trip will be needed for a Fluor Fernald Inc. groundwater modeler to visit HGL offices in Washington, D.C.
8) One trip will be needed for HGL personnel to visit the site as Phase III of the Model Improvement Project begins.
9) Each well-design activity will be executed as scheduled. Groundwater modeling design activities precede each well-design activity.
10) Groundwater characterization efforts required for each new well design will be available at least one quarter before the design activity begins to allow characterization results to be incorporated into the groundwater model.
11) In FY2001 the effort to complete IEMP quarterly, annual, and extranet reporting obligations will be consistent with the effort required in FY2000.
12) Beginning in FY2002 and for the remainder of the closure contract, the effort to complete IEMP quarterly, annual, and extranet reporting obligations will be consistent with the effort required in FY2000, less the centralized labor functions.
13) Data required for reporting purposes will be provided in desired format and in accordance with established schedules from centralized groups.
14) No more than seven summaries of groundwater sampling results for private landowners will need to be prepared annually.
15) Analysis, and provision of the data for all required samples will be completed in a manner such that reporting schedules can be met.

R1-F04-008
16) The site's Information Management (IM) group will provide a groundwater modeler ½ time (for FY01 through December CY09) to support the groundwater modeling needs outlined in this control account. The charges for this groundwater modeler will be centralized to the IM group.

R1-D-114
17) No great differences in the Aquifer plume conditions from those known as of November 20, 2000.

B. Exclusions

1) Revisions to the aquifer restoration strategy such that the baseline remedial strategy report will need to be revised.
2) All groundwater sampling activities conducted in support of the aquifer remedy are specifically excluded from this task as they are provided for under the Groundwater Remedy Performance Monitoring task.

R1-D-114
~~3) Additional, separate contaminant plumes in the aquifer above and beyond those defined as of November 20, 2000.~~

4) All surface water modeling activities are excluded. They are covered under SDFP.
5) All labor and materials provided by centralized organizations are excluded from this account beginning in FY02.

C. Government Services and Equipment

None

1.2.5 On-Site Disposal Facility Leak Detection Monitoring and Reporting Assumptions and Exclusions

A. OSDF Monitoring Assumptions

1) No change in regulatory requirements from those existing on November 20, 2000.
2) The OSDF will be comprised of seven individual Cells.
3) Future sampling and analysis costs will be consistent with per sample costs experienced in FY 2000.
4) "Sampling and analysis" covers activities from sample collection through data base entry.
5) OSDF leak detection sampling will follow scope/schedule outlined in the 1997 OSDF Groundwater/Leak Detection and Leachate Monitoring Plan(GW/LD&LMP) and follow on agreements issued prior to November 20, 2000.
6) Great Miami Aquifer (GMA) monitoring wells will be installed, developed and ready for baseline sampling at least 24 months ahead of waste placement in the particular Cell they are monitoring.
7) Baseline period for GMA monitoring wells for the future cells will be 24 months.
8) Total samples required to establish baseline for each GMA well will be 24.
9) GMA well baseline samples will be collected monthly.
10) Horizontal Till Monitoring Wells (HTWs) for the future cells will be installed and be ready for sampling at least I year ahead of waste placement in the particular cell they are monitoring.
11) Baseline period for HTWs for the remaining cells will be 12 months
12) Total samples required to establish baseline for each HTW will be 24.
13) HTW baseline samples will be collected twice monthly.
14) For each sampling event the HTW's will yield sufficient water to collect the required samples on the initial trip to the well.
15) Post baseline sampling will be required quarterly for each sampling location.
16) Cost to install and develop GMA Monitoring Wells will be $37,000 per well including subcontract labor and materials, Flour Fernald Inc. labor, and dedicated sampling pump purchase and installation costs. This is based on actual costs for installing similar wells in the past at the site.
17) Chemical rehabilitation of OSDF monitoring wells will be approved by EPA and Ohio EPA.
18) Monitoring well redevelopment and chemical rehabilitation efforts will generally be successful and no more than 3 replacement wells will be required over the life of the closure contract.
19) Routine leachate collection system (LCS) and leak detection system (LDS) sampling will be conducted quarterly for all remaining cells beginning after waste is placed.
20) For all remaining cells (4-7), 1 LCS and 1 LDS sample will be collected and analyzed for GW/LD&LMP Table 4-5 parameters prior to placing any impacted material in the cell.
22) Access to all monitoring points will be maintained.
23) Sampling of all the required monitoring points will be completed on the specified schedule for the specified constituents.

B. OSDF Monitoring Exclusions

1) All labor and materials provided by centralized organizations are excluded from this account beginning in FY02.
2) Monitoring well chemical rehabilitation will be required not more than once every 5 years and is covered in a separate, sitewide well maintenance account.
3) Monitoring well redevelopment will be required not more than once every 5 years and is covered in a separate, sitewide well maintenance account.
4) All groundwater sampling activities conducted in support of the aquifer remedy are specifically excluded from this task as they are provided for under the Groundwater Remedy Performance Monitoring task.

C. Government Services and Equipment

None

D. OSDF Reporting Assumptions

1) No change in regulatory requirements from those existing on November 20, 2000.
2) The OSDF will be comprised of not more than seven individual cells.
3) Cells 1, 2, and 3 Baseline for GMA monitoring wells and HTWs will be established in a single Baseline Report.
4) Individual baseline reports will be issued for the remaining cells.
5) Baseline reports will require timely internal Fluor Fernald Inc, DOE and US EPA/Ohio EPA review and approval cycles.
6) Effort to complete IEMP reporting (quarterly reports, extranet reports and Annual Site Environmental Report will remain consistent with that required in FY 2000
7) Effort to complete weekly reporting requirements will be consistent with that required in FY 2000.
8) Primary Liner Performance Evaluation Reports will be completed annually for all active Cells beginning in 2002.
9) Effort to complete the annual liner performance evaluation report will be consistent with that required for the OSDF Monitoring Results Sections of the Annual Integrated Site Environmental Report (Part of Chapter 3 and Appendix A.6)
10) Data required for reporting purposes will be provided in desired format and in accordance with established schedules from centralized groups. (Analysis, and provision of the data for all required samples will be completed in a manner such that reporting schedules can be met).

E. OSDF Reporting Exclusions

1) All labor and materials provided by centralized organizations are excluded from this account beginning in FY02.
2) OSDF leak detection monitoring activities. All groundwater sampling activities conducted in support of the aquifer remedy are specifically excluded from this

task as they are provided for under the Groundwater Remedy Performance Monitoring task.

F. Government Services and Equipment

None

1.3 DRIVERS

1.3.1 Clean Water Act Drivers

1) Perform required sampling at the frequency specified in the Site's NPDES permit.
2) Clean Water Act (40 CFR 112 and 40 CFR 122).
3) Approved NPDES permit (Current permit was approved under NPDES application 1IO00004*FD).

1.3.2 CERCLA Documentation Drivers

1) Timely provision of required information from the analytical database such that IEMP Section 3 update/revision can be completed in accordance with established schedules.
2) Timely provision of wastewater flow information from various projects such that OMMP update/revision can be completed in accordance with established schedules.
3) Operable Unit 5 Record Of Decision (DOE 1996).
4) Operable Unit 5 Remedial Design Work Plan (DOE 1996).
5) Operable Unit 5 Remedial Action Work Plan for Aquifer Restoration (DOE 1997).
6) Integrated Environmental Monitoring Plan (IEMP) Rev. 2 (DOE 2001).
7) Operations and Maintenance Master Plan (OMMP) for Aquifer Restoration and Wastewater Treatment Rev. 1 (DOE 1999).

1.3.3 Groundwater Remedy Performance Monitoring Drivers

Remediation of the Great Miami Aquifer is dependent upon the removal of surface sources of contamination and having access to those areas. A modular approach is being pursued so that aquifer remediation can begin as early as possible in those areas where surface access is available.

1) The removal and restoration of the Waste Pits impacts the aquifer remediation schedule for that area.
2) The removal and restoration of the Inactive Flyash Pile in the South Field impacts the aquifer remediation schedule for that area.
3) Access to offsite property impacts the schedule for offsite remediation.
4) Discharge concentration limits set for the Great Miami River impacts the schedule for aquifer remediation.

5) Available treatment capacity impacts the schedule for aquifer remediation.
6) Approved Integrated Environmental Monitoring Plan, Rev. 2., Final (DOE 2001), and subsequent revisions.
7) Approved PSPs for control of monitoring activities associated with the design of remediation modules and the start-up of new extraction and injection wells.
8) Operations and Maintenance Plan for Aquifer Restoration and Wastewater Treatment (DOE 1999).
9) Baseline Remedial Strategy Report (DOE 1997).
10) Sitewide CERCLA Quality Assurance Project Plan (DOE 1998).

1.3.4 Groundwater Remedy Performance Reporting Drivers

1) Sampling of all the required monitoring points needs to be completed on the specified schedule for the specified constituents.
2) Analysis, and provision of the data for all required samples needs to be completed in a manner such that reporting schedules can be met.
3) Approved Integrated Environmental Monitoring Plan, Revision 2, Final (DOE 2001).
4) Baseline Remedial Strategy Report (DOE 1997).
5) ODNR groundwater withdrawal reporting requirements.
6) Operable Unit 5 Record of Decision (DOE 1996).
7) Operations and Maintenance Master Plan (DOE 1999).

1.3.5 On-Site Disposal Facility Leak Detection Monitoring and Reporting Drivers

1) Groundwater/Leak Detection and Leachate Monitoring Plan (GW/LD&LMP) (DOE 1997) and follow-on agreements through November 20, 2000. Follow-on agreements are based on resolution of EPA/Ohio EPA comments made on deliverables specified in the GW/LD&LMP.
2) OSDF Systems Plan (DOE, 2001)
3) Sitewide CERCLA Quality Assurance Project Plan (DOE, 1998)
4) Cell-specific Horizontal Till Wells (HTWs) need to be installed and ready for baseline sampling 1 year prior to waste placement for each future cell.
5) Cell-specific Great Miami Aquifer monitoring wells need to be installed and ready for baseline sampling 2 years prior to waste placement for each future cell.
6) To perform required sampling at the required frequency in accordance with the GW/LD&LMP.
7) Analysis, data validation and database entry of all required samples needs to be completed in a manner such that reporting schedules can be met
8) Reporting of the volume of waters other than leachate (monitoring well purge volumes, OSDF heavy equipment wash, etc.) being disposed of in the Leachate Transmission System needs to be maintained such that established EPA reporting schedules can be met.
9) Reporting of leachate volumes needs to be maintained such that established EPA reporting schedules can be met.
10) Reporting of cell-specific waste volumes by OSDF Engineering to ARWWP needs to be maintained such that established EPA reporting schedules can be met.

11) Collection and reporting of cell-specific LDS accumulation rate data from data loggers such that such that established EPA reporting schedules can be met.
12) PSP for Leak detection sampling at the OSDF needs to be maintained.

1.4 PROJECT PLAN/TECHNICAL SCOPE AND QUANTIFICATION

1.4.1 EGMR1 – ARWWP Monitoring and Reporting

1) Task #1 – Clean Water Act

1.1) Subtask #1 – National Pollutant Discharge Elimination System (NPDES) Permit

This task consists of program management to ensure compliance with site NPDES permit. Subtasks include:

1) Preparing an annual NPDES sampling schedule to help ensure that the permit required samples are identified and collected.
2) Providing a technical point of contact to ensure appropriate guidance is provided to field sampling crews when they have questions regarding the sampling program.
3) Compile data and prepare monthly Discharge Monitoring Report (DMR).
4) Ensure accuracy of data contained in DMR reports.
5) Submit Non-Compliance reports, as required.
6) Submit data required for NPDES permit renewals.
7) Dialogue with Ohio EPA on various issues that arise, including permit modifications.
8) Conduct an annual surveillance, in conjunction with Ohio EPA, to verify compliance with NPDES permit.

Annual labor and material estimates presented below are based on FY1999 and FY2000 actuals and assume that this planned schedule, scope, and effort does not change.

LABOR CATEGORY	HOURS
CLERKS	15
DRFCAD	9
ENGINR	15
ENPREP	338
ENSREP	658
INRREP	1
TPSMGR	226
TOTAL	1272

ODCs	COST
Annual NPDES permit fee	$750
Annual water discharge fee	$16,600
TOTAL	$17,350

1.2) Subtask #2 – Stormwater Pollution Prevention Plan (SWPPP)

This task consists of program management for surveillance and self-assessment to ensure compliance with regulatory requirements and FEMP procedures pertaining to storm water. Subtasks include:

1) Conduct weekly inspection of sediment and erosion control structures site-wide.
2) Inspect sediment, erosion control structures within twenty-four hours following each rainfall of one half inch or greater.
3) Perform annual SWPPP site inspection.
4) Annual assessment of SWPPP and revisions, if necessary.
5) Review and comment on sediment, erosion control plans and documents for new site construction projects.

Annual labor and material estimates presented below are based on FY1999 and FY2000 actuals and assume that this planned schedule, scope, and effort does not change.

LABOR CATEGORY	HOURS
CLERKS	15
DRFCAD	54
ENGINR	10
ENPREP	676
INRREP	1
TPSMGR	104
TOTAL	860

1.3) Subtask #3 – Spill Prevention Control and Countermeasure (SPCC) Plan

This task consist of program management for surveillance and self-assessment to ensure compliance with regulatory requirements and FEMP procedures pertaining to wastewater Subtasks include:

1) Provide technical support for container storage/spill prevention activities on site.
2) Conduct annual SPCC site surveillance.
3) Prepare annual revision of SPCC plan.

Annual labor and material estimates presented below are based on FY1999 and FY2000 actuals and assume that this planned schedule, scope, and effort does not change.

LABOR CATEGORY	HOURS
CLERKS	5
DRFCAD	18
ENGINR	1
ENPREP	3676
INRREP	1
TPSMGR	17
TOTAL	718

2) Task #2 – CERCLA Documentation

This task includes maintenance of:

- The Operations and Maintenance Master Plan (OMMP) for the Aquifer Restoration and Wastewater Project,
- Section 3 of Integrated Environmental Monitoring Plan (IEMP), and;
- Preparation of Remedial Action work plan Addenda.

The OMMP for the Aquifer Restoration and Wastewater Project (ARWWP) fulfills Task 2 of the OU5 Remedial Design Work Plan. Periodic updates/revisions to the OMMP are required to reflect operational and maintenance refinements based on additional experience and changes as the project matures. Therefore, updates/revisions of the OMMP will be completed as necessary through internal Fluor Fernald Inc., DOE, US EPA, and Ohio EPA approval.

The IEMP fulfills Task 9 of the OU5 Remedial Design Work Plan. Section 3 of the IEMP pertains to monitoring of the aquifer restoration progress. The ARWWP is responsible for maintaining Section 3 of the IEMP. Periodic updates/revisions to Section 3 of the IEMP are required to reflect monitoring refinements based on additional experience and changes as the project matures. Therefore, annual updates and biennial revisions of the Groundwater section of the Integrated Environmental Monitoring Plan (IEMP) will be completed through internal Fluor Fernald Inc., DOE, US EPA, and Ohio EPA approval.

Remedial Action work plan addenda may be required for groundwater restoration modules to re-establish schedule dates if the dates established in the Remedial Action Work Plan for Aquifer Restoration at OU5 (June 1997) are moved due to schedule delays in other projects. Any required addenda to the Remedial Action Work Plan for Operable Unit 5 Aquifer Restoration will be completed as necessary to modify schedules for groundwater remediation module construction and commencement of operations

Specific subtasks include:

1) Complete revisions of the Operations and Maintenance Master Plan for the Aquifer Restoration and Wastewater Treatment Project as necessary. For planning purposes it is assumed that annual updates and biennial revisions will be required

2) Complete annual updates to the Groundwater section of the Integrated Environmental Monitoring Plan (IEMP) through internal Fluor Fernald Inc., DOE, USEPA, and Ohio EPA approval

3) Complete biennial revisions of the Groundwater section of the Integrated Environmental Monitoring Plan (IEMP) through internal Fluor Fernald Inc., DOE, USEPA, and Ohio EPA approval

4) Complete required addenda to the Remedial Action Work Plan for Operable Unit 5 Aquifer Restoration as necessary to establish schedules for groundwater remediation module construction and commencement of operations

Based on FY1999 and FY2000 actuals, it is assumed that:

- For the OMMP, 150 hours are required for the update and 350 hours are required for the revision

- For the IEMP, 140 hours are required for the Section 3 revision and 125 hours are required for the Section 3 update.

1) The labor hours are split out as follows:

Labor Category	OMMP Update	OMMP Revision	IEMP Update	IEMP Revision
ENSREP	43	101	80	90
ENSMGR	14	32	26	30
DRFCAD	0	0	5	5
INRREP	35	81	14	0
CLERK	58	136	0	15
Totals:	150	350	125	140

2) The labor hours are spread evenly across the months noted as follows:

Activity	Years	Months
OMMP Updates	2002, 2004, 2006, 2008	September through December
OMMP Revision	2001, 2003, 2005, 2007, 2009	May through December
IEMP Updates	2001, 2003, 2005, 2007, 2009	September through December
IEMP Revision	2002, 2004, 2006, 2008	May through December

3) Task #3 – Groundwater Remedy Performance Monitoring

3.1) Subtask #1 – Routine Groundwater Remedy Performance Monitoring

- The scope of the routine IEMP monitoring program (number of monitoring locations, sampling frequency, and analytical constituents) is based on the IEMP, Rev 2 final, dated January 2001. In addition to the scope found in the IEMP, up-to 20 additional direct push-sampling locations will be sampled each year, for a total of 27 locations.

- Labor, material, and analytical estimates presented below assume that this planned schedule, scope, and effort does not change.

- Labor, material, and analytical costs (excluding direct push sampling) are as follows:

  Labor hours, materials and analytical costs for annual remedy performance groundwater monitoring for FY02, FY03, FY04, FY05, FY07, FY08, and FY09 for

the scope of work outlined in the IEMP are based on actual labor hours, materials, and analytical costs recorded for charge account 5FGM1 in FY00. ***Labor hours do not include those activities that will now be conducted by a centralized organization.*** Labor costs will be as follows:

Annual IEMP Labor

Labor Category	IEMP Scope (excluding geoprobe) (hours)	Geoprobe (27 locations) (hours)	Yearly Total (hours)
ENGMGR	0	54	54
ENSVMGR	1503	162	1665
ENVSREP	583.50	1323	1906.50
ENVSTEC	7,323.50	2,430	9,753.50
CLERKS	701.50	0	701.50
LABCHEM	457	351	808
LABTEC	90	0	90
RADTEC	0	210	210
MATERIALS	$58,698.40	$23,251.59	$81,949.99

Annual material costs (minus direct-push sampling) are $58,698.40. Materials costs are based on 5FGM1 actual costs and accruals for FY00.

Annual IEMP Materials (excluding geoprobe)

Material	Annual Cost
Maintenance materials and supplies	$ 4,803.74
Safety clothing and equipment	$ 932.45
Packaging, supplies, and expenses	$ 793.80
Sampling materials and supplies	$36,971.37
Laundry and cleaning supplies	$ 14.02
Freight	$12,567.01
Sales Tax	$ 2,519.31
Laboratory Supplies	$ 96.70
TOTAL	**$58,698.40**

In addition to the annual material costs outlined above major equipment and instrument repairs and replacements not covered by a centralized organization are anticipated. These are outlined below:

Major equipment, instrument repairs and replacements

Item	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09
1	$11000			$11000			$11000		
2	$6000			$6000			$6000		
3	$3400		$3400		$3400		$3400		$3400
4	$8800			$8800			$8800		
5		$5000				$5000			
6	$2000			$2000			$2000		
7		$5000		$5000		$5000		$5000	
8			$5300			$5300			
TOTAL	$31200	$14000	$8700	$32800	$3400	$15300	$31200	$5000	$3400

Item definitions for above table:

1. Replace 5 Horiba water quality meters at a cost of $2,150 / meter.
2. Replace Horiba sensors at a cost of $6,000.
3. Replace two QED air compressors, at a cost of $1,700 / compressor.
4. Replace 4-QED control boxes at a cost of $2,200 / box.
5. Replace two generators at a cost of $2,500 / generator.
6. Replace two 2-inch Grundfos Pumps at a cost of $1,000 / pump.
7. Auto calibration solutions $5,000
8. Replace two Minitroll instruments at a cost of $2650 / Minitroll.

Annual Offsite Analytical Costs

FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09
$703,178	$435,638	$435,638	$435,638	$435,638	$703,178	$435,638	$435,638	$435,638

Off-site analytical costs based on actual dollars spent in FY00 for offsite analytical costs under the 5FGM1 charge account. FY01 and FY06 include an additional $267,540 to cover the analysis of <N constituents. The <N constituent analytical costs are estimates used in the FY01 purchase agreement. The cost for on-site analytical work is reflected in labor hours posted above.

Labor hours, materials, and analytical costs for direct-push (Geoprobe) sampling (per location)

Labor estimates are based on work experience gained over the course of several years. It takes an average, of 5-days to complete sampling at one location.

1 day to survey, stake, permit, and set-up
1 day to pre-probe
1 day to sample
1 day to grout
1 day to clean up, move equipment, complete paperwork

Manpower Estimates per direct-push location:

ENGMGR 2 hrs
ENVSMGR 6 hrs
ENVSREP 49 hrs
ENVSTEC 90 hours
RADTEC (see note below)

R1-D-452 453

Note: 30 hours of ~~Radiation Monitoring Coverage~~ Rad. Tech Coverage are needed for each sampling location located in a contamination area. The WSA and the former production area are the only areas assumed to be ~~Radiation~~ Radiological controlled areas. It is assumed that 25% of the 27 locations will be in radiation monitoring areas (7 locations, 210 hours).

Each direct-push location sampled will require $861.17 in materials. Materials costs are based on 5FGM2 actual costs and accruals for FY00. These costs assume that no major equipment replacement or repairs will be needed. In FY00 29 locations were sampled. The total materials cost was $24,973.92. The estimate includes the following:

Direct Push Material Costs (per location)

Material	Annual Cost
Safety Clothing and Equipment	$ 473.71
Propane	$76.91
Instrumentation	$ 487.98
Sampling Materials and Equipment	$21,317.81
Office Supplies & Equipment	$297.78
Freight	$1092.45
Sales Tax	$1227.28
TOTAL	$ 24,973.92

Each direct-push location sampled will require 13 hours of LABCHM labor. Analytical costs are based on the average number of samples to be collected at each location and price estimates for analysis provided by the on-site lab. On average, each location will have 9 samples. (The maximum average sampling depth is approximately 60 feet below the water table, which correlates out to 7 sampling depths 1', 10' 20' 30' 40' 50' 60'. A duplicate sample is collected at 20 feet bwt. ***Only samples filtered through a 5-micron filter will be collected and analyzed.*** Samples will not be filtered through a 0.45-micron filter. One rinsate is collected at each location. The average cost for uranium analysis of a groundwater sample at the onsite lab is $55.00. (9 x $55 = $495.00.) The hourly rate for a chemist is averaged out at $38.76. ($495/$38.76/hour = 12.77 hours.) Each location sampled will therefore require 13 hours of LABCHM labor. In addition to the per-location material costs outlined above, major equipment and instrument repairs and replacements are anticipated. These are outlined below:

Major geoprobe equipment and repair costs.

Item	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09
1				110,000					
2		$3,000							
3			$4,800						
4			$2,775						
5					$6,000				
6		$9,750	$10,250	$10,750	$11,250	$11,750	$12,250	$12,750	$13,250
TOTAL		12,750	$17,825	$120,750	$17,250	$11,750	$12,250	$12,750	$13,250

Item definitions for above table:

1. New Geoprobe vehicle
2. New Grouter (GS500)
3. New Grouter (GS100)
4. New Waterra Pump and water Level indicator.
5. Overall of hydraulic systems on the two older geoprobe units.

3.2) Subtask #2 – Direct Push Sampling to Support the Design of Restoration Modules

- **WSA and SFES Phase II Design will require 30 direct push locations in FY01** (this includes SFES Phase II). (12856, 12857a, 12858, 12859a, 12829, 12830, 12831, 12832, 12818, 12819, 12820, 12824, 12825, 12826, 12827, 12828, 12833, 12834, 12835, 12836, 12837, 12838). (450 hours of Radiation Monitoring Coverage)

Labor	Hours	Materials
ENGMGR	60	$25,835.10
ENSMGR	180	
ENSREP	1470	
ENSTEC	2700	
LABCHM	390	

Materials: $25,835.10 ($861.17/location x 30 locations). This does not consider any major equipment replacements or breakdowns.

Analytical: Reflected in labor above. (30 locations x 13 LABTACH hours/location) This covers the analysis of uranium only at the on-site lab.

- **South Plume Design Support will require 5 direct-push** locations **in FY02.**

Labor	Hours	Materials
ENGMGR	10	$4,305.85
ENSMGR	30	
ENSREP	245	
ENSTEC	450	
LABCHM	65	

Materials: $4,305.85 ($861.17/location x 5 locations). This does not consider any major equipment replacements or breakdowns.

Analytical: Reflected in labor above. (5 locations x 13 LABTACH hours/location) This covers the analysis of uranium only at the on-site lab.

- **Waste Storage Area Phase II Design will require 8 direct-push locations in FY FY05**

Labor	Hours	Materials
ENGMGR	16	$6,889.36
ENSMGR	48	
ENSREP	392	
ENSTEC	720	
LABCHM	104	

Materials: $6,889.36 ($861.17/location x 8 locations). This does not consider any major equipment replacements or breakdowns.

Analytical: Reflected in labor above. (8 locations x 13 LABTACH hours/location) This covers the analysis of uranium only at the on-site lab.

3.3) Subtask #3 – Monitoring Network Upgrades

- Each extraction well needs to be monitored within a few hundred feet upgradient, downgradient and on either side (transgradient directions) in order to manage pulse-pumping operations, monitor flushing patterns under different pumping rates, and assess plume hydraulic capture.

- Three different monitoring well designs are considered:

  1) 2-inch inner diameter, schedule 40 PVC, with a 10-foot (0.010 inch slot) screen set in the highest concentration of the plume. The casing will have flush thread joints. The screen will consist of wound schedule-40 PVC with flush thread joints that are compatible with the well casing. A 2-foot sump will be installed in the bottom of each monitoring well.

  2) 2-inch inner diameter, schedule 40 PVC, with a screen that extends across the entire length of the 20 µg/L total uranium plume. The screen will consist of wound schedule-40 PVC with flush thread joints that are compatible with the well casing. A two-foot sump will be installed in the bottom of each monitoring well. Contingent upon the purchase and use of discrete level samplers by Insitu, Inc.

  3) CMT Multilevel Systems by In-Situ, Inc. A new system that provides a bundle type installation for the monitoring of several vertical depths at one location. This design provides a more accurate 3-D assessment of the plume and reduces the number of wells needed to monitor the vertical extent of the plume. The special tubing required for the installation is comparable in cost to 2-inch or 4-inch diameter slotted PVC pipe (Einarson and Cherry 1999).

- The cost of the first two designs (1 and 2 above) is estimated at $22,262 / well and is detailed as follows:

Monitoring Well Installation and Development for Designs 1 and 2

Installation Costs

Fluor Fernald Oversight Labor
Monitoring well installation oversight. (2.5 days, ENVSREP, 25 hours, at $41.96/hour = $1,049.00)

Subcontractor Labor
Subcontract drilling costs assume a 2-inch diameter, schedule 40 PVC monitoring well. Recent subcontractor costs for the installing 4 wells of this type came to $48,000.00 or $12,000/well.

Development Costs

Fluor Fernald Oversight Labor
Oversight of subcontract development work (4 days, ENVSTEC, 40 hours at $28.32/hour = $1,132.80.

Subcontractor Labor
Subcontract costs are based on current contract with Moodys of Dayton. It is assumed that this cost will not change over the life of the project.

Current hourly development costs are $168.00/hour. It takes approx. I week to develop a well (40 hours). (40 hours x $168.00/hour = $6,720.00.

Development also requires he oversight of a drilling supervisor. The current rate is $68.00/hour. A typical development requires 20 hours of supervisor time (20 hours x $68.00/hour = $1,360.00.

Normal installation and development costs per Monitoring well are $22,261.80

Fluor Fernald oversight	$2,181.80
Subcontract	$20,080.00
Total	$22,261.80

Fluor Fernald labor breakdown per well.

ENVSREP	25 hours
ENVSTEC	40 hours

- The cost of the multilevel design would be $20,273 and is detailed as follows:

Monitoring Well Installation and Development for Design 3 (multilevel)

Installation Costs

Fluor Fernald Oversight Labor
Drilling oversight. (2.5 days, ENVSREP, 25 hours, at $41.96/hour = $1,049.00)

Installation of tubing (1 day, 1 ENVSREP and 1 ENVSTEC, (10 hours ENVSREP at $41.96/hour = $419.60 and 10 hours ENVSTEC at $28.32/hour = $282.30)

Subcontractor Labor
Subcontract drilling costs are assumed to be consistent with that for a 2-inch diameter, schedule 40 PVC monitoring well. Recent subcontractor costs for the installing 4 wells of this type came to $48,000.00 or $12,000/well.

Tubing Cost: $1,500

Development Costs

Development costs assume that an alternate method to the one that is currently used for the first two well designs will be approved by EPA and Ohio EPA for use on the multilevel wells. It is also assumed that this alternate method will bring development time for each multilevel well to approx. 2 weeks.

Fluor Fernald labor will conduct development. Development of each well will take 8 days.

Fluor Fernald Labor
(8 days, ENVSREP 80 hours at $41.96/hour = $3,356.80) (ENVSTEC, 80 hours at $28.32/hour = $2,265.60).

Normal installation and development costs per Monitoring well are $20,873.30.

Fluor Fernald labor	$7,373.30
Subcontract	$12,000.00
Tubingq	$1,500.00
Total	$20,873.30

Fluor Fernald labor breakdown per well.

ENVSREP	115 hours
ENVSTEC	90 hours

If the multilevel design is used, there will also be a one-time charge for pump control units, mini water level indicators, etc. of approximately $2,520.00.

- The South Field Monitoring Network Upgrade will consist of 12 new monitoring wells.

- New Extraction well coverage in FY02 will consist of 12 new monitoring wells. Two Wells to monitor one new extraction well in the South Field and 10 wells to monitor Pilot Plant Drainage Ditch Plume Extraction Wells.

- Two Replacement Monitoring Wells are planned for each year. Replacement would be needed to correct maintenance problems, access problems, accidental destruction, etc. A total not to exceed 18 replacement monitoring wells at a cost of approximately $20,000/well is likely over the course of 9 years.

- New monitoring wells will be sampled for total uranium and samples will be analyzed at the on-site lab. Once installed, quarterly routine monitoring for total uranium and water level will continue.

- New monitoring wells will be added to the IEMP, but will only be sampled for uranium on a quarterly basis. Below is a breakdown of the anticipated analytical costs. These analytical costs will be reflected in LABCHEM labor (number of samples x $55.00/sample)/($38.76/hour). LABCHEM Labor reported in hours.

  FY02: (25 wells) 12 wells in SF, 10 wells in Pilot Plant Drainage Ditch Plume, 3 wells south plume
  FY03: (4 wells) 4 wells south plume optimization
  FY06: (10 wells) 8 wells in WSA, plus 2 replacements
  FY03 through FY08: (6 wells) 4 new wells plus two replacements each year.

New Monitoring Well Sampling Costs

- New monitoring wells will be added to the IEMP, but will only be sampled for uranium.

- Assumes that each CMT will have 7 sampling horizons.

- First year: After initial development, each CMT will be sampled at all seven depths twice. (14 samples). This will take a crew of two, 1.5 day per location, per sampling event (30 ENVSREP hours). Then sample one depth quarterly for the remainder of the year. (2 samples). This will take a crew of two, 2 hours (4 ENVSREP hours). In installation year will take 68 hours ENVSREP per well.

- Following years: Once a year, sample all seven depths. Remaining 3 quarters only sample one depth. (10 samples total) Using hours estimated above this works out to 42 hours ENVSREP per well per year.

	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09
# new wells		25	10	6	6	16	6	6	
# samples (New well)		400	160	96	96	256	96	96	
# samples (Existing well)			250	350	410	470	630	690	
ENVSREP (New well)		1700	680	408	408	1088	408	408	
ENVSREP (Existing well)			1050	1470	1722	1974	2646	2898	
LABCHEM Labor		567	582	633	718	1030	1030	1115	

3.4) Subtask #4 – Extraction/Reinjection Well Start Up Monitoring

- Increased water level monitoring in the area around the new extraction well (weekly for a period of 1 month, then monthly for the first quarter) as follows:

  FY02 2nd quarter Waste Storage Area, Phase I
  FY03 1st quarter SFES Phase II

FY04	1st quarter	South Plume Optimization Phase II
FY07	1st quarter	Waste Storage Area, Phase II

- First quarter of FY04, FY05, FY06, FY07, FY08, and FY09 to support additional extraction wells.

- Will require the work of two ENVSTEC personnel, 4 hours for each monitoring episode. There would be 6-monitoring episodes, 4 weeks and 2 months). Total labor would equal 48 hours ENVSTEC.

3.5) Subtask #5 – Kd Work

- The work consists of five parts:

  1. Sample Collection
  2. Sieving and Total Uranium Analysis of sieve fractions
  3. Sequential Leaching
  4. Detailed microscopy
  5. Report Preparation

- This project is in the early planning stage. The assumption is made that the scope outlined below will not change pending internal Fluor Fernald review, DOE review, and EPA review.

Activity 1) Sample Collection

- A minimum of four sampling locations will be targeted for the project (South Plume, western edge of South Field Plume, eastern edge of South Field Plume, Pilot Plant Drainage Ditch Plume).

- The collection of samples must be coordinated with the installation of either an extraction well or a groundwater monitoring well. A rotosonic-drilling rig will be used to collect a core sample.

- Four sieve samples will be selected from the core at each location. Two--liter samples will be collected. This assumes that the plume on average is 40 feet thick and sieve samples will be collected from the core every ten feet.

- It is estimated to take approximately 10 hours of ENVSREP time to collect and analyze the core, select intervals for sieve analysis, and collect the sieve analysis samples at each location.

- It will take approximately 4 days to collect sieve samples from all four sampling locations. Therefore collection of the sieve samples for the entire project will require 40 hours ENVSREP labor.

- It is assumed that equipment and materials costs for the collection of the samples are minimal.

Activity 2) Sieving and Total Uranium Analysis of the Sieve Fractions:

- Sieving will be conducted on-site.
- Each sieve sample will be run through 8 different sieve sizes resulting in 32 sieve fractions. The six finest sieve fractions from each sample will be targeted for further analytical work. Since there will be on average four sieve samples for each sampling location this will result in 24 sieve fractions for each location.
- It is estimated that it will take on average 12 hours of LABTEC time to conduct the sieve analyses for each sample location.
- The uranium analysis of the sieve fractions will be conducted on-site at a cost of approximately $100.00 per sieve fraction. Assuming that LABCHEM personnel do this work, this equates to approximately 2.5 LABCHEM hours per sieve fraction. Twenty-four sieve fractions would therefore require 60 LABCHEM hours.
- It is assumed that equipment and materials costs for sieving are minimal.

Activity 3) Sequential leaching: Sequential-leaching work will be conducted on-site. The work is divided into two parts. First the 24 sieve fractions will be used to generate 96 time-series aliquots (four aliquots per sample). Second, the 96 aliquots will be analyzed for uranium using ICPMS technology.

- LABTEC personnel will conduct the leaching process and collect the aliquots. It is assumed that the tests will need to be run in two batches of 12. It is estimated that it will take two LABTECS two days to set up each batch of samples and begin the leaching process. Assuming 10-hour days this equals 80 LABTEC hours. It is assumed that it will take two LABTECS one day to properly collect the 12 aliquots. This equals 40 LABTEC hours. This will need to be done 4 times, for a total of 160 LABTEC hours. Therefore this activity will use approximately 240 hours of LABTEC time for each location. (240 hours x $27.79/hour = $6,669.60.
- LABCHEM personnel will analyze the 96 aliquots for uranium using ICPMS methodology. Using an average cost of $55.00 per sample, this amounts to 136 hours of LABCHEM labor. (96 analyses x $55.00/analysis = $5,280) ($5,280 / $38.76/hour = 136 hours)
- Equipment and material costs are reflected in labor hours.

Activity 4) Detailed microscopy: Laser ablation and ICPMS analysis will be conducted offsite on 24 samples at an approximate cost of $1,800.00 per sample.

Activity 5) Report Preparation: Estimated to take 18 weeks to complete.

Following receipt of all of the data, it will take 8 weeks to reduce, organize, and analyze the data. (80 hours ENGREP, 80 hours ENVSREP)

4-weeks to prepare a draft report (40 hours ENGREP, 40 hours ENVSREP)

4-weeks for FF internal review (40 hours ENGREP, 40 hours ENVSREP)

2-weeks to prepare a draft final report (40 hours ENGREP, 40 hours ENVSREP)

200 hours of ENGREP
200 hours of ENVSREP

Per Location Summary of Costs and Time Requirements (excluding report preparation)

Activity	Description	Work Location	Time Requirement per Location	Per Sample Cost	Per Location Cost
One	Sample Collection	On-site	10-hours ENVSREP		$ 419.60
Two	Sieving (4 samples into 32 fractions)	On-site	12-hours LABTEC		$ 333.48
Two	Uranium Analysis (24 fractions)	On-Site	60-hours LABCHEM		$ 2,325.60
Two	Sequential Leachate Process (24 sieve fractions, 4 aliquot/sample for a total of 96 aliquots.	On-Site	240-hours LABTEC		$ 6,669.60
Three	Analysis of Leachate Aliquots (96 aliquots)	On-site	136-hours LABCHEM		$ 5,280.00
Four	Detailed Microscopy (24-samples at $1,800/sample	Off-site	8 weeks	$1,800	$43,200.00

Per Location Field and Analytical Cost $58,228.28
Total Field and Analytical Cost _____ $232,913.12

4) Task #4 – Groundwater Remedy Performance Reporting

Groundwater Remedy Performance Reporting provides for:

- groundwater modeling and groundwater modeling improvements,
- groundwater technical support for surface water sampling and reporting,
- groundwater reporting activities conducted in support of the aquifer remedy,
- general site wide groundwater technical support to other FEMP projects and stakeholders, and;
- necessary administrative functions.

Estimates of the labor required to complete the outlined technical scope are based on actual labor hours charged to the 5FGP1 charge account in FY2000.

Quarterly and Annual IEMP Groundwater Reporting
Quarterly and annual reports are prepared to document the progress of the aquifer remedy as required in the documents cited above as drivers. The preparation of these reports requires the collection of data from the Site Environmental database and from groundwater sampling/measurement activities then reviewing the data for completeness and consistency. Activities involved in preparation of these reports include interpreting the data, writing the reports, and creating tables/figures. Also included in this task is reviewing the reports, incorporating reviewer comments on the reports through final EPA approval. The Environmental Monitoring Project is responsible for copying and distributing

the reports for internal Fluor Fernald, DOE, and EPA review, and for shipping same to DOE and regulatory agencies as required. The review of groundwater data prior to posting on the IEMP extranet site as well as the preparation of groundwater-specific figures and for this site is also included in this effort. It is anticipated that activities for this effort will occur in each quarter of the fiscal year through the remainder of the closure contract.

Technical Support to IEMP Surface Water Reporting
Groundwater technical support is provided to surface water sampling and reporting activities to ensure integration across media boundaries. This technical support includes the review of surface water data and results presented in quarterly and annual IEMP reports to determine if surface water discharges have the potential to cause ongoing impacts to groundwater and to ensure consistency with groundwater sampling results. Another component of this effort is the compilation and verification of wastewater discharge data as well as data contained in the annual Ohio Department of Natural Resources water withdrawal report. Interfacing with surface water reporting personnel is also necessary to integrate significant surface water sampling results or issues with the groundwater sampling and analysis program

Groundwater Remedial Design Support
Groundwater Remedial Design Support consists primarily of preparing Project Specific Plans (PSPs) for Start up Monitoring for Waste Storage Area (WSA), South Field Extraction System Phase II, South Plume Optimization Phase II, and additional extraction and monitoring well modules and preparing Remedial Design Reports. This effort includes preparing outline and completion schedules for each plan and report. The approximately 20 page PSP must be written and graphics produced. Each Remedial Design Report is approximately 70 pages, including graphics. These documents are copied and distributed for internal Fluor Fernald, DOE, and EPA review. A comment response and resolution phase occurs with each review. Documents are taken through final approval, word processing, reproduction, and distribution. . As needed, this task will also include the preparation, review, approval, and distribution of Remedial Design Letters for individual supplemental wells and maintaining/revising as necessary, the aquifer restoration strategy.

Groundwater Model Improvements (VAM3D: Data Fusion Project)
Groundwater Model Improvements consists of providing for improvements in the groundwater modeling technology at the site. This includes providing for subcontractor work to customize the Data Fusion Modeling software and technology for application to groundwater modeling at the site as required to support the aquifer remedy. Work consists of: modifying and writing groundwater modeling codes, writing user interfaces for modeling codes, debugging modeling codes, testing modeling software with site groundwater data files, developing optimization codes for Phase III of the Model Upgrade Project and responding to comments on model improvement documentation from Fluor Fernald, DOE, USEPA, and Ohio EPA. This technology will then be transferred to Fluor Fernald personnel who will assist in pulling data and preparing files for testing, reviewing test results, and incorporating this modeling technology into site groundwater modeling activities as part of Phase IV of the Groundwater Model Upgrade Project.

Sitewide Groundwater Support
Sitewide Groundwater Support involves providing groundwater modeling for the site as required by Fluor Fernald groundwater personnel, other site project personnel, DOE, and other site stakeholders. These activities include, but are not limited to, integrating OSDF leak detection groundwater monitoring with other site groundwater monitoring, integration with other site projects regarding placement and/or plugging and abandonment of

groundwater monitoring wells. Other tasks include periodically evaluating waste pit excavation data and inspecting WPRAP waste pit excavations are requested by WPRAP project management. Activities associated with groundwater modeling include preparing input files for the groundwater model, running the groundwater model, post-processing and reporting of model results, modeling for new wells as needed, and preparing and running auxiliary groundwater models that may be required to support the aquifer remedy. Other activities include the preparation of summaries of groundwater sampling results for distribution to private owners on whose property DOE has installed monitoring wells. Tasks include writing the summary, creating tables and figures, and Fluor Fernald and DOE comment resolution.

Administrative Functions

Administrative Functions associated with this effort include operations and strategic planning tasks, budgeting and baselining activities as well as attendance at staff and safety meetings. It is anticipated that these activities will occur during each quarter through the end of the closure contract.

Labor Estimates

Labor estimates presented in the following table assume that the planned scope and schedule for these activities does not change.

R1-F04-008

Labor Category	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
ENSREP	5,708	5,708	5,332	5,332	5,332	5,332	5,332	5,332	5,332	5,332
ENSMGR	1,604	1,604	1,604	1,604	1,604	1,604	1,604	1,604	1,604	1,604
INSREP	1,437	1,386	~~874~~	~~874~~	~~874~~	~~874~~	~~874~~	~~874~~	~~874~~	~~874~~
CLERKS	349	349	349	349	349	349	349	349	349	349
INRREP	137	137	137	137	137	137	137	137	137	137
INSMGR	117	117	0	0	0	0	0	0	0	0
ENPREP	74	74	74	74	74	74	74	74	74	74
BUYCON	15	15	0	0	0	0	0	0	0	0
E&CTEC	9	9	0	0	0	0	0	0	0	0
CNSCOD	9	9	0	0	0	0	0	0	0	0
DRFCAD	14	14	0	0	0	0	0	0	0	0
ENGMGR	2	2	2	2	2	2	2	2	2	2
TOTAL	**9,475**	**9,424**	~~8,372~~ 7,498	~~8,372~~ 7,498	~~8,372~~ 7,498	~~8,372~~ 7,498	~~8,372~~ 7,498	~~8,372~~ 7,498	~~8,372~~ 7,498	~~8,372~~ 7,498

5) Task #5 – **Technical Scope for On-Site Disposal Facility Leak Detection Monitoring and Reporting**

The on-site disposal facility leak detection monitoring and reporting tasks include:

- LCS/LDS Flow Data Collection and Evaluation
- Sample Collection and Analysis
- Program Management
- Reporting
- Groundwater Monitoring Well Installation

The technical scope and activities related to each of these tasks is provided in the following subsections.

5.1) Subtask #1 – LCS/LDS Flow Data Collection and Evaluation

This task includes the following activities and scope:

1) Weekly download of LDS water level dataloggers for all active cells. This activity is accomplished using environmental technicians from the water monitoring group.

2) Weekly interpretations of LDS water level information for all active cells. This activity is completed by environmental scientists and environmental science managers from the hydrogeology section of the ARWWP.

3) Maintenance of the LDS water level dataloggers. This activity consists of changing batteries in the dataloggers and is completed by environmental technicians from the water monitoring group.

4) Obtain monitoring well/horizontal till well purge volumes disposed of in the Leachate Transmission System (LTS) quarterly. This data is compiled by the Water Monitoring Group and is provided to the ARWWP Hydrogeology group for evaluation.

5) Obtain OSDF equipment wash volumes disposed of in the LTS quarterly for use in determining actual leachate volume. This data is compiled by the OSDF construction group and provided to the ARWWP Hydrogeology group quarterly.

6) Maintaining a record of leachate flow through the LTS and from individual cells. Flow data is compiled by the ARWWP Operations group and is provided to the ARWWP Hydrogeology group quarterly or more frequently, if necessary.

7) Review ARWWP Operations OSDF daily monitoring round sheets as necessary to provide supplemental leak detection information. ARWWP Operations group provides the ARWWP Hydrogeology group these sheets for review, typically on a weekly basis.

8) Review video tapes of annual inspection of each cells LDS and LCS piping to provide supplemental leak detection information. These inspections are typically carried out near the end of each calendar year and the tapes are available for review in February of the year following the inspection. ARWWP Operations or ARWWP Engineering provides the tapes to ARWWP Hydrogeology group for review.

9) Provide liquid height-to-volume calibration for each cell's LDS containment vessel. This activity is accomplished with environmental technicians from the water monitoring group and Environmental Scientists/Environmental Science managers from thew ARWWP Hydrogeology group. It involves collection of numerous water level data points while filling the vessel in known increments, then graphing the data to establish the volume to water level relationship for each of the LDS vessels. This activity was completed in 2001 for Cells 1,2, and 3 and will be completed for the to-be-constructed cells prior to waste placement.

10) Obtain and integrate month-by-month cell-specific loading volumes with LCS/LDS flow volume interpretations. (Month-by-month loading volumes to be provided by OSDF Construction Group to ARWWP Hydro.).

11) Obtain site-specific monthly rainfall data for integration into LCS and LDS flow assessments. (Precipitation data to be obtained from site meteorological personnel).

12) Create various charts and graphs to facilitate interpretation of LCS and LDS flow data (Charts and graphs are to be created on a weekly, monthly, quarterly and annual basis as needed). Numerous charts are generated on a cell by cell basis. Typically LDS accumulation rates are compared with cell loading rates and precipitation (weekly and monthly). Total uranium concentration of water pumped from each cell's LDS are graphed. LCS volumes are compared to rainfall.

5.2) Subtask #2 – Sample Collection and Analysis

Sampling and analysis for the OSDF leak detection program is divided into 9 Activities as follows:

1) Annual Analytical Sample Collection from the LCS at each cell for OAC 3745-27-10 Appendix I COCs (about 67constituents).

2) Analytical Sample Collection for Establishing Baseline in the Great Miami Aquifer (GMA) at each cell (2 wells/cell) This consists of collecting and analyzing 24 samples over a 2 year period prior to waste placement for each of the remaining cells to be constructed (Cells 4, 5, 6, and 7).

3) Analytical Sample Collection for Establishing Baseline in the Horizontal Till Well (HTW) at each cell (1 well/cell). This consists of collecting and analyzing 24 samples over a 1 year period prior to waste placement for each of the remaining cells yet to be constructed (Cells 4, 5, 6, and 7).

4) Analytical Sample Collection for post-Baseline, GMA at each cell (2 wells/cell). This sampling is completed quarterly for leak detection purposes after the baseline data set is collected. Cells 1, 2, and 3 are currently under this sampling scheme. Cells 4, 5, 6, and 7 will be added as their baseline sample data sets are completed.

5) Analytical Sample Collection for post-Baseline, HTW at each cell (1 well/cell). This sampling is completed quarterly for leak detection purposes after the baseline data set is collected. Cells 1, 2, and 3 are currently under this sampling regime. Cells 4, 5, 6, and 7 will be added as their baseline sample data sets are completed.

6) Analytical Sample Collection for Pre-Waste Placement, LCS at each cell. This sampling is completed to provide a comparison of the key indicator parameters found in the construction water draining from each cell's LCS to the same key indicator parameters in leachate draining from the cell after waste placement begins. This sampling will be conducted for the to-be-constructed cells 4, 5, 6, and 7, provided their LCS' yield water prior to waste placement.

7) Analytical Sample Collection for Pre-Waste Placement, LDS at each cell. This sampling is completed to provide a comparison of the key indicator parameters of construction water draining from each cell's LDS to the same key indicator parameters in water draining from each cell's LDS after waste placement begins. This sampling will be conducted for the to-be-constructed Cells 4, 5, 6, and 7, provided their LDS' yield water prior to waste placement.

8) Analytical Sample Collection for Post-Waste-Placement, LCS at each cell. This sampling is completed quarterly for leak detection purposes after waste placement begins in a particular cell. The LCS for Cells 1, 2, and 3 are currently under this sampling scheme. Cells 4, 5, 6, and 7 will be added when waste placement begins in each of these cells.

9) Analytical Sample Collection for Post-Waste-Placement, LDS at each cell. This sampling is completed quarterly for leak detection purposes after waste placement begins in a particular cell. The LDS for cells 1, 2, and 3 are currently under this sampling scheme. Cells 4, 5, 6, and 7 will be added when waste placement begins in each of these cells.

The scope of the above noted sampling is further defined in the Groundwater/Leak Detection and Leachate Monitoring Plan (GW/LD&LMP) for the OSDF (DOE 1997). Number of samples, costs for sampling and analysis activities are provided below through FY09.

Labor, Material, and Analytical Costs For OSDF Leak Detection and Leachate Monitoring

- Labor hours, materials, and analytical costs for annual OSDF groundwater/leachate/leak detection monitoring for FY01 through FY09, for the scope of work outlined in the Groundwater/Leak Detection and Leachate Monitoring Plan, were derived based on actual labor hours, materials, and analytical costs recorded for charge account 2FP13 in FY00. ***Labor hours for FY 02 through FY10 do not include those activities that will now be conducted by a centralized organization.*** Non centralized labor hours for FY2000 were as follows:

2FP13 LABOR CATEGORY	HOURS
Fluor Fernald personnel[1]	
ENSMGR	123
ENSTEC	1566
WSTENG	10.5
Subcontractor Basic Ordering Agreement (BOA) personnel[2]	
ENSTEC-BOA	832.5
TOTAL	**2532**

[1]Centralized Fluor Fernald personnel included the following resource codes: RADMGR, ENGINR, CLERKS, BUYCON, MNTREP, LANDRY, LABTEC, CNSMGR, ENSTEC, ADMMGR, ENSMGR, QACENG, S&HENG, LABCHM, S&HTEC.

[2]Centralized BOA personnel included the following resource codes: CLERKS, ENSTEC.

- Centralized labor hours for FY2000 were as follows:

2FP13 LABOR CATEGORY	HOURS
Fluor Fernald personnel	
ADMMGR	13.5
BUYCON	3
CLERKS	380
CNSMGR	12
ENGINR	2.5
ENSMGR	61.5
ENSTEC	48.3
LABCHM	2
LABTEC	107.5
LANDRY	24
MNTREP	18
QACENG	2
RADMGR	2
S&HENG	6
S&HTEC	1
Subcontractor Basic Ordering Agreement (BOA) personnel	
CLERKS-BOA	610
ENSTEC-BOA	195
TOTAL	**1488.3**

- Sampling labor estimates for FY01 through FY09. For purposes of this comparison, only normal (non-QC) samples were considered. The table below indicates planned labor hours to collect the OSDF leak detection monitoring samples by fiscal year. QC samples are not included in the total because their collection requires insignificant additional effort.

FISCAL YEAR	NUMBER OF SAMPLES (no QC)	LABOR HOURS
FY00 (basis of estimate)	67	2532
FY01	64	2419
FY02	63	2381
FY03	87	3288
FY04	137	5177
FY05	158	5971
FY06	191	7218
FY07	200	7558
FY08	163	6160
FY09	155	5858

- Materials costs for 2FP13 in FY00 were summed in the following object classes (OCs) and costs (Note: does not include Freight and Sales Tax):

2FP13 MATERIALS OBJECT CLASS	Extent (dollars)
013 Maintenance/Operations	$89.19
310 Maintenance Materials and Supplies	$5,638.51
330 Safety Clothing and Equipment	$217.00
366 Sampling Materials and Equipment	$12,053.41
TOTAL	**$17,998.11**

FISCAL YEAR	NUMBER OF SAMPLES (no QC)	MATERIAL COSTS
FY00 (basis of estimate)	67	$17,998
FY01	64	$17,192
FY02	63	$16,924
FY03	87	$23,371
FY04	137	$36,8021
FY05	158	$42,443
FY06	191	$51,308
FY07	200	$53,726
FY08	163	$43,786
FY09	155	$41,637

- Invoiced actual analytical costs for 2FP13 in FY99 and FY00 were $129,943 and $88,154 respectively. Excluding trip blanks, 135 samples were collected in FY99 and 95 were collected in FY00. The per sample analytical costs were $922 for FY99 and $884 for FY00. The average per sample cost for these 2 years is $903, which is used in the estimate. Per Sample cost for trip blanks was estimated based on "Best Estimated Price" for volatiles ($167/sample) provided in Fluor Fernald Inc. Internal Memorandum: M:SWP(SDM):2000-042, Revision 1. The table below presents the planned costs including quality control (QC) samples (all QC samples but trip blanks [TBs] are analyzed for the full suite of constituents, whereas TBs are analyzed only for volatile organic compounds [VOCs]). The number of QC samples was estimated based on the actual number of QC samples collected during the FY99 and FY 00 sampling efforts.

FISCAL YEAR	SAMPLE ANALYSIS COST
FY01	$92,076
FY02	$90,637
FY03	$125,165
FY04	$197,099
FY05	$227,311
FY06	$274,788
FY07	$287,736
FY08	$234,505
FY09	$222,995

5.3) Subtask #3 – Program Management

Program management activities include:

1) Perform control account management functions for work associated with the OSDF leak detection monitoring program.

2) Work with field sampling personnel to ensure program requirements are met.

3) Work with sample data management personnel to ensure program requirements are met.

4) Perform periodic self assessments to ensure program requirements are being met.

5) Relative to leak detection monitoring, provide input to ARWWP Operations group regarding revisions to the Systems Plan for the OSDF.

6) Ensure the OSDF leak detection monitoring and reporting program evolves as necessary as the OSDF construction and cell capping progresses. This will be accomplished by maintaining and revising as necessary, the GW/LD&LMP. It is anticipated that the GW/LD&LMP will be revised after each Cell is capped.

Program management labor costs for Activities 1, 2, 3, 4, and 5 are anticipated to be consistent with program management costs for FY00 embodied in the hours charged to charge account 2FP12 shown below. Labor costs for Activity 6 is anticipated to be as follows and is based on past experience with revising similar documents:

Activity	Schedule		Labor Required per Revision	
Revise GW/LD&LMP	Year	Months		
	2001	October-December	ENSREP	60
	2006	April-June	ENSMGR	40
	2007	January-March	DRFCAD	5
	2008	January-March	INRREP	35
	2009	January-March	CLERK	60
			Totals	200 Hours

5.4) Subtask #4 – Reporting

OSDF leak detection reporting activities include:

1) Prepare weekly reports of OSDF leak detection information for site management and US EPA/Ohio EPA.

2) Prepare and evaluate OSDF leak detection data to be posted to the IEMP extranet web site on a monthly basis.

3) Complete routine quarterly reports providing OSDF leak detection and leachate information as specified in the IEMP and in the GW/LD&LMP. These reports are incorporated into the IEMP quarterly report.

4) Complete the OSDF leak detection section and associated appendix of the annual Integrated Site Environmental Report (which incorporates information to fulfill the required OSDF Annual Operational Report as specified by Ohio Municipal Solid Waste Rules).

5) Complete an annual Primary Liner Performance Evaluation Report which includes an revaluation of all active and closed cells.

6) Baseline GW Conditions Technical Memorandum for Cells 1 through 3.

7) Baseline GW Conditions Technical Memoranda Cells 4 through 7.

- Labor hours for annual OSDF groundwater/leachate/leak detection reporting Activities 1-4 above, for FY01through calendar year 2009 for the scope of work outlined in the IEMP, GW/LD&LMP and weekly reporting are based on actual labor hours recorded for charge account 2FP12 in FY00. ***Labor hours for FY-02 through calendar year 2009 do not include those activities that will be conducted by a centralized organization beginning in FY2002.*** Annual labor hours for FY2000 were as follows:

2FP12 LABOR CATEGORY	FY00 HOURS
Fluor Fernald personnel[1]	
ENSMGR	230
ENSTEC	36
CNSCOD	163
ENSREP	267
Subcontractor Basic Ordering Agreement (BOA) personnel[2]	
ENSTEC-BOA	63
TOTAL	**759**

[1]Centralized Fluor Fernald personnel included the following resource codes or descriptions: LANDRY, transport, proc/doc, ADMMGR, CLERKS, data management, data quality, and sample management.
[2]Centralized BOA personnel included the following resource code: CLERKS.

- Centralized labor hours for FY2000 were as follows:

2FP12 LABOR CATEGORY	FY00 HOURS
Fluor Fernald personnel	
TRANSPORT	2
CLERKS	40.5
ADMMGR	1
PROC/DOC	1
LANDRY	4
ENSREP[1]	366
Subcontractor Basic Ordering Agreement (BOA) personnel[2]	
CLERKS-BOA	3
TOTAL	**417.5**

[1]Data management, data quality, and sample management functions are included.

- There were no materials costs for 2FP12 in FY00, and none are anticipated in the specified planning years for the reporting activities.

- There were no analytical costs for 2FP12 in FY00, and none are anticipated in the specified planning years for reporting activities.

Labor hours for reporting Activities 5, 6, and 7 are estimated in the following table based on past experience in preparing reports of similar size, scope, and content.

Reporting Task	Schedule	Labor Category	Hours
Activity 5: Primary Liner Performance Evaluation Report (to be prepared 8 times)	January- March every year 2002-2009	ENSREP ENSMGR DRFCAD INRREP CLERK Totals:	60 40 5 35 60 200 Hours
Activity 6: Baseline GW Conditions Technical Memorandum for Cells 1 through 3	January 2001 to January 2002	ENSREP ENSMGR TPSREP DRFCAD INRREP CLERK Totals:	350 80 160 5 35 65 695 Hours
Activity 7: Baseline GW Conditions Technical Memoranda (to be prepared 4 times once for each Cell, 4-7)	Cell 4: January-October 2005 Cell 5: January-October 2006 Cell6: January-October 2007 Cell7: April 2007-January 2008	ENSREP ENSMGR TPSREP DRFCAD INRREP CLERK Totals:	120 60 80 5 25 50 340 Hours

5.5) Subtask #5 – Monitoring Well Installation

This task includes GMA well installation and development of up to 12 wells as follows:

- Cell 4, up gradient only,
- Cell 5, up- and down-gradient,
- Cell 6 up- and down-gradient,
- Cell 7 up- and down-gradient also 2 on south side; and
- Three replacement wells

Monitoring well installation/development costs for the OSDF were estimated based on past costs for monitoring wells with four-inch stainless steel casings. These costs were applied to the nine remaining cell-specific GMA monitoring wells that are to be installed for the leak detection monitoring program. Replacement wells were also accounted for at a rate of 1 per year in FY05, FY07, and FY09. Note that this account will not include dust suppression well installations. The schedule specifies GMA monitoring well installation quantities and installation dates. The costs are detailed in the following table:

Fiscal Year	Number of Wells	Subcontracted Labor/Material Cost	Dedicated Pumping Equipment	Fluor Fernald Labor Cost	Total Cost
01	0	0	0	0	0
02	1	$28,000	$2,000	$7,000	$37,000
03	2	$56,000	$4,000	$14,000	$74,000
04	2	$56,000	$4,000	$14,000	$74,000
05	3	$84,000	$6,000	$21,000	$111,000
06	2	$56,000	$4,000	$14,000	$74,000
07	1	$28,000	$2,000	$7,000	$37,000
08	0	0	0	0	0
09	1	$28,000	$2,000	$7,000	$37,000

All wells will be installed such that they monitor the upper portion of the Great Miami Aquifer at cell-specific locations. The locations will be selected based on groundwater modeling. The selected locations will be those most likely to detect a leak from the OSDF (should a cell-specific leak be of such a magnitude and duration that it would adversely impact the Great Miami Aquifer at the monitored location).

SECTION 4

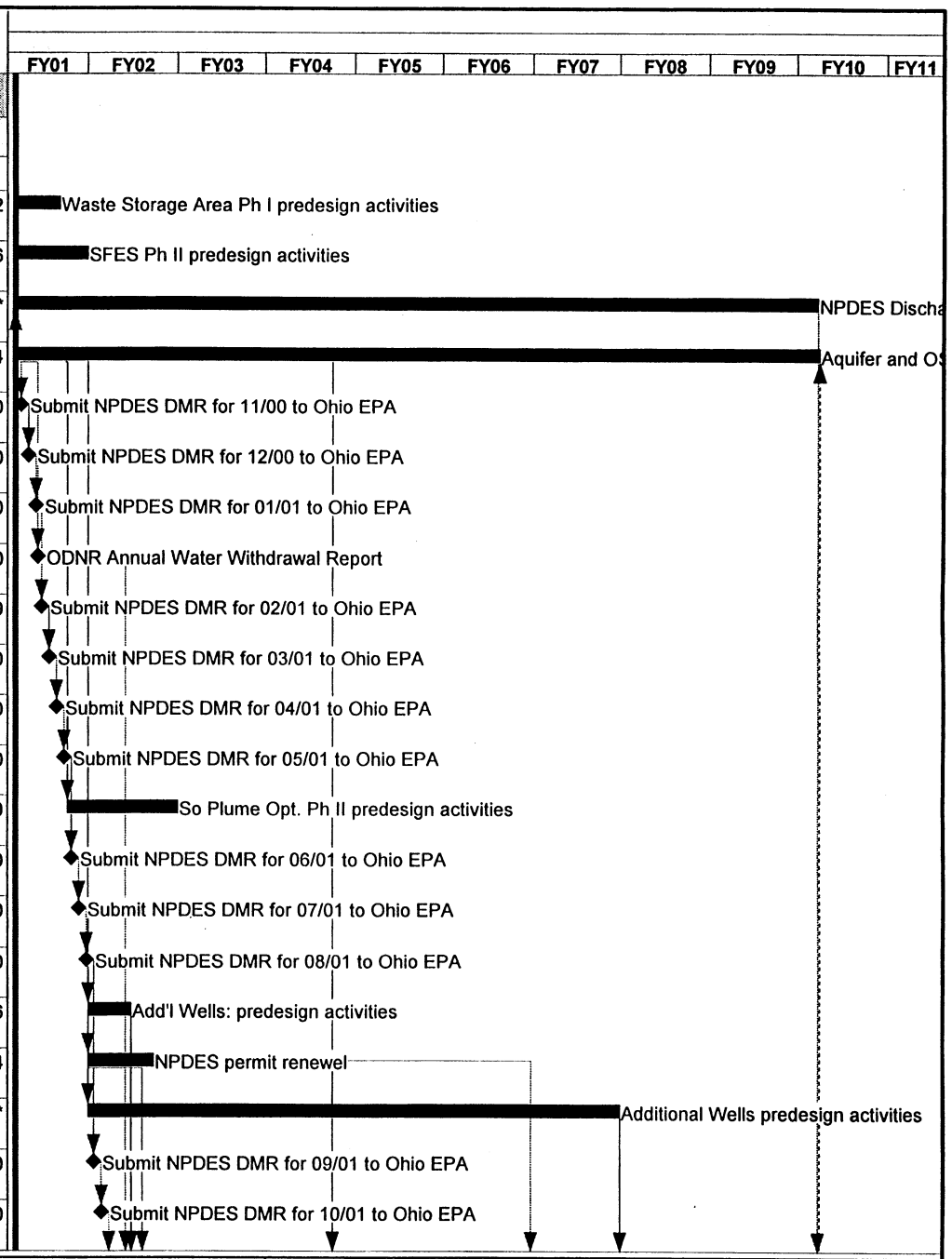
2.0 SCHEDULE

E PBS 04 - AQUIFER RESTORATION

1.1.E.G ARWWP MONITORING & REPORTING

EGMR1 ARWWP Monitoring & Reporting

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
ECGMR10200	Waste Storage Area Ph I predesign activities	01DEC00	01JUN01	112
ECGMR10300	SFES Ph II predesign activities	01DEC00	27SEP01	186
ECGMR1H100	NPDES Discharge Monitoring Reports (DMRs)	01DEC00	20DEC09	3,307*
ECGMR10000	Aquifer and OSDF Monitoring & Reporting	01DEC00	27DEC09	3,314
ECGMR1M100	Submit NPDES DMR for 11/00 to Ohio EPA		20DEC00	0
ECGMR1M101	Submit NPDES DMR for 12/00 to Ohio EPA		20JAN01	0
ECGMR1M102	Submit NPDES DMR for 01/01 to Ohio EPA		20FEB01	0
ECGMR1M001	ODNR Annual Water Withdrawal Report		01MAR01	0
ECGMR1M103	Submit NPDES DMR for 02/01 to Ohio EPA		20MAR01	0
ECGMR1M104	Submit NPDES DMR for 03/01 to Ohio EPA		20APR01	0
ECGMR1M105	Submit NPDES DMR for 04/01 to Ohio EPA		20MAY01	0
ECGMR1M106	Submit NPDES DMR for 05/01 to Ohio EPA		20JUN01	0
ECGMR10705	So Plume Opt. Ph II predesign activities	02JUL01	30SEP02	280
ECGMR1M107	Submit NPDES DMR for 06/01 to Ohio EPA		20JUL01	0
ECGMR1M108	Submit NPDES DMR for 07/01 to Ohio EPA		20AUG01	0
ECGMR1M109	Submit NPDES DMR for 08/01 to Ohio EPA		20SEP01	0
ECGMR10621	Add'l Wells: predesign activities	01OCT01	22MAR02	106
ECGMR10100	NPDES permit renewel	01OCT01	21JUN02	264
ECGMR1H600	Additional Wells predesign activities	01OCT01	28SEP07	1,343*
ECGMR1M110	Submit NPDES DMR for 09/01 to Ohio EPA		20OCT01	0
ECGMR1M111	Submit NPDES DMR for 10/01 to Ohio EPA		20NOV01	0



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Start Date	01DEC00
Finish Date	27DEC09
Data Date	01DEC00
Run Date	05SEP01 15:21

BLCF - EC01

Sheet 1 of 7

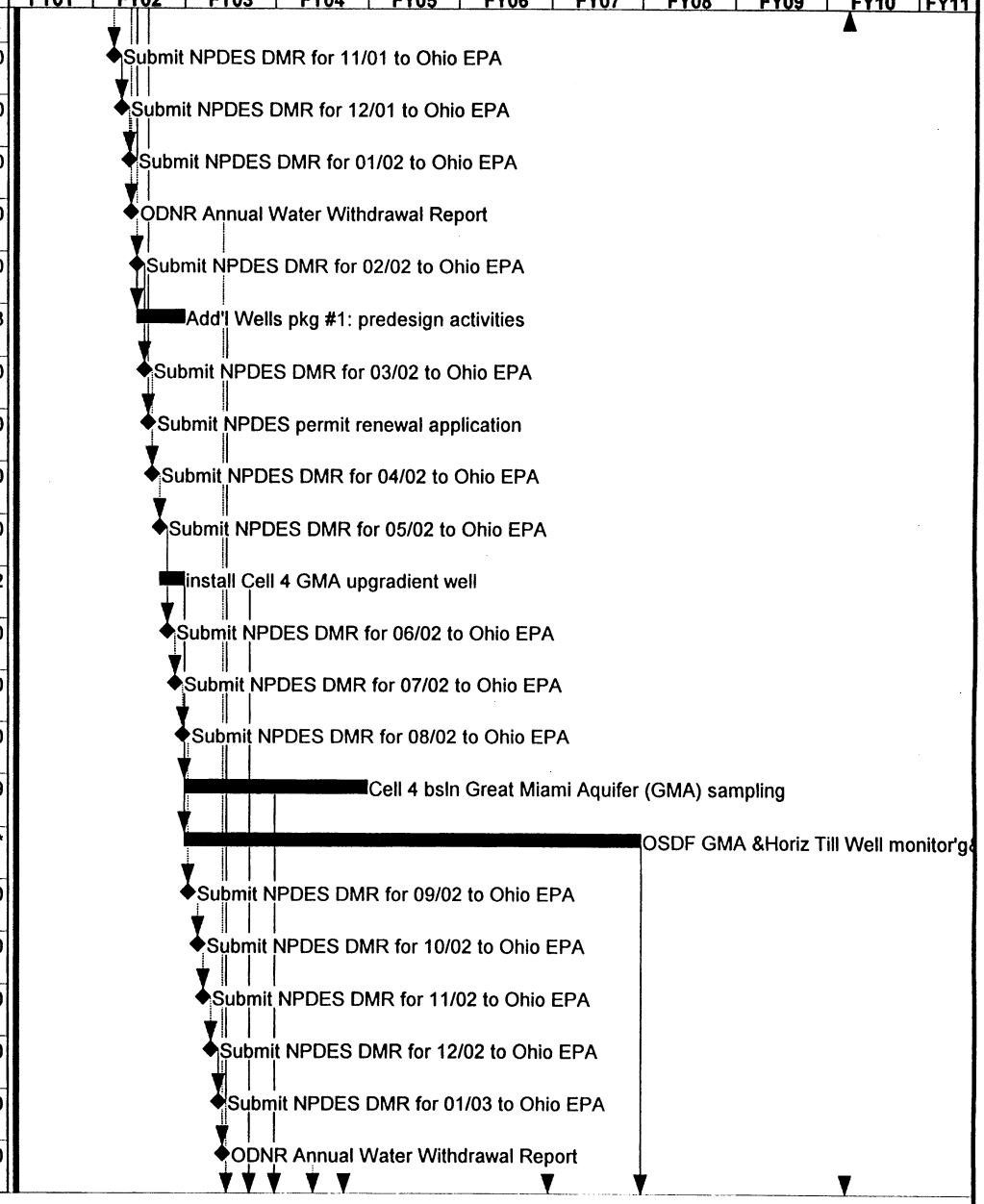
AQUIFER RESTORATION

1.1.E.G ARWWP MONITORING & REPORTING

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved
	F04-004		
	F04-005		

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
EGMR1 ARWWP Monitoring & Reporting				
ECGMR1M112	Submit NPDES DMR for 11/01 to Ohio EPA		20DEC01	0
ECGMR1M113	Submit NPDES DMR for 12/01 to Ohio EPA		20JAN02	0
ECGMR1M114	Submit NPDES DMR for 01/02 to Ohio EPA		20FEB02	0
ECGMR1M002	ODNR Annual Water Withdrawal Report		01MAR02	0
ECGMR1M115	Submit NPDES DMR for 02/02 to Ohio EPA		20MAR02	0
ECGMR10631	Add'l Wells pkg #1: predesign activities	25MAR02	30SEP02	118
ECGMR1M116	Submit NPDES DMR for 03/02 to Ohio EPA		20APR02	0
ECGMR1M020	Submit NPDES permit renewal application		04MAY02	0
ECGMR1M117	Submit NPDES DMR for 04/02 to Ohio EPA		20MAY02	0
ECGMR1M118	Submit NPDES DMR for 05/02 to Ohio EPA		20JUN02	0
ECGMR11740	install Cell 4 GMA upgradient well	24JUN02	30SEP02	62
ECGMR1M119	Submit NPDES DMR for 06/02 to Ohio EPA		20JUL02	0
ECGMR1M120	Submit NPDES DMR for 07/02 to Ohio EPA		20AUG02	0
ECGMR1M121	Submit NPDES DMR for 08/02 to Ohio EPA		20SEP02	0
ECGMR11440	Cell 4 bsln Great Miami Aquifer (GMA) sampling	01OCT02	30SEP04	449
ECGMR1H110	OSDF GMA &Horiz Till Well monitor'g&report'g	01OCT02	28SEP07	1,119*
ECGMR1M122	Submit NPDES DMR for 09/02 to Ohio EPA		20OCT02	0
ECGMR1M123	Submit NPDES DMR for 10/02 to Ohio EPA		20NOV02	0
ECGMR1M124	Submit NPDES DMR for 11/02 to Ohio EPA		20DEC02	0
ECGMR1M125	Submit NPDES DMR for 12/02 to Ohio EPA		20JAN03	0
ECGMR1M126	Submit NPDES DMR for 01/03 to Ohio EPA		20FEB03	0
ECGMR1M003	ODNR Annual Water Withdrawal Report		01MAR03	0



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Start Date	01DEC00
Finish Date	27DEC09
Data Date	01DEC00
Run Date	05SEP01 15:21

BLCF - EC01

Sheet 2 of 7

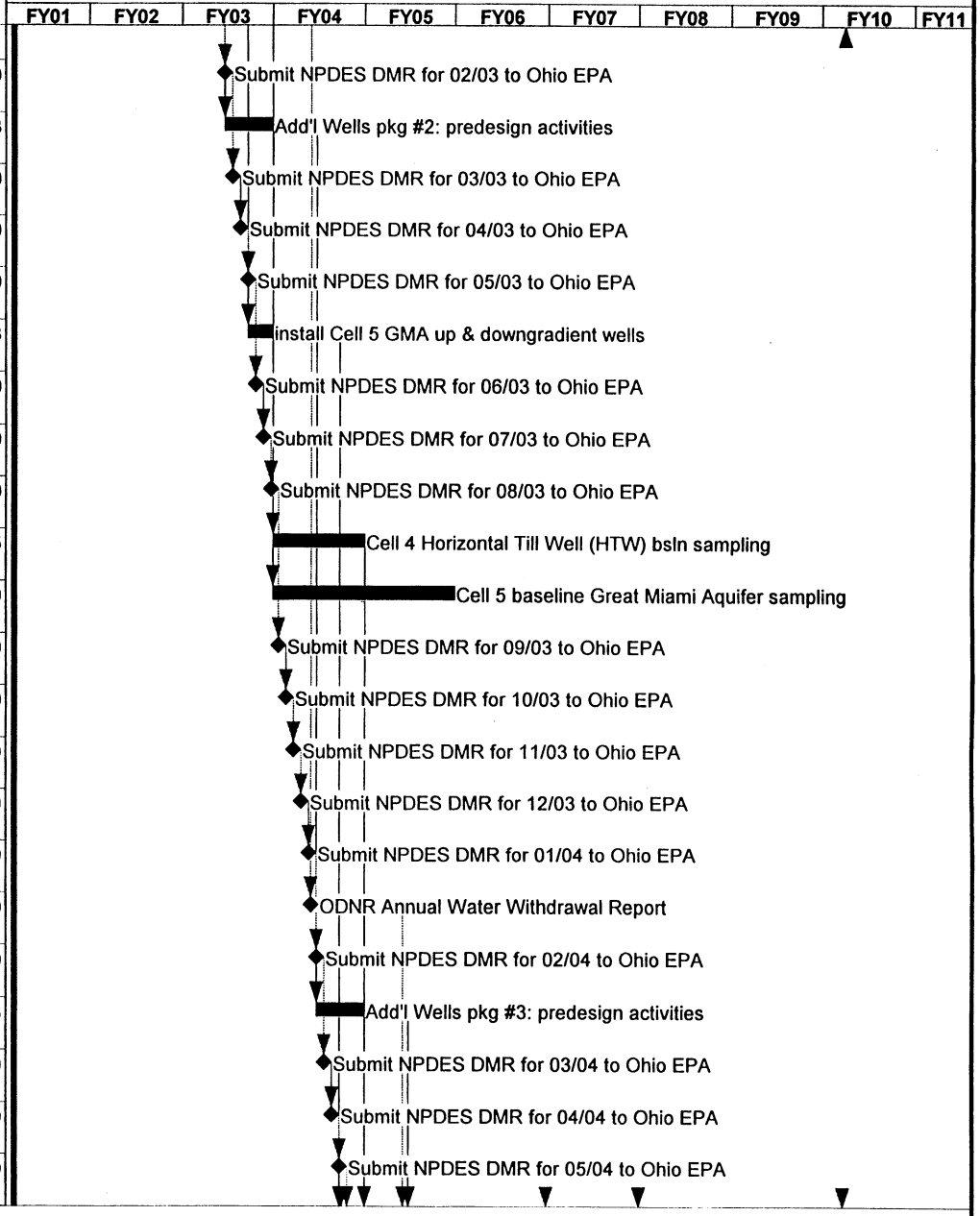
AQUIFER RESTORATION

1.1.E.G ARWWP MONITORING & REPORTING

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved
	F04-004		
	F04-005		

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
EGMR1 ARWWP Monitoring & Reporting				
ECGMR1M127	Submit NPDES DMR for 02/03 to Ohio EPA		20MAR03	0
ECGMR10641	Add'l Wells pkg #2: predesign activities	24MAR03	29SEP03	118
ECGMR1M128	Submit NPDES DMR for 03/03 to Ohio EPA		20APR03	0
ECGMR1M129	Submit NPDES DMR for 04/03 to Ohio EPA		20MAY03	0
ECGMR1M130	Submit NPDES DMR for 05/03 to Ohio EPA		20JUN03	0
ECGMR11750	install Cell 5 GMA up & downgradient wells	23JUN03	30SEP03	63
ECGMR1M131	Submit NPDES DMR for 06/03 to Ohio EPA		20JUL03	0
ECGMR1M132	Submit NPDES DMR for 07/03 to Ohio EPA		20AUG03	0
ECGMR1M133	Submit NPDES DMR for 08/03 to Ohio EPA		20SEP03	0
ECGMR11445	Cell 4 Horizontal Till Well (HTW) bsln sampling	01OCT03	30SEP04	225
ECGMR11450	Cell 5 baseline Great Miami Aquifer sampling	01OCT03	30SEP05	449
ECGMR1M134	Submit NPDES DMR for 09/03 to Ohio EPA		20OCT03	0
ECGMR1M135	Submit NPDES DMR for 10/03 to Ohio EPA		20NOV03	0
ECGMR1M136	Submit NPDES DMR for 11/03 to Ohio EPA		20DEC03	0
ECGMR1M137	Submit NPDES DMR for 12/03 to Ohio EPA		20JAN04	0
ECGMR1M138	Submit NPDES DMR for 01/04 to Ohio EPA		20FEB04	0
ECGMR1M004	ODNR Annual Water Withdrawal Report		01MAR04	0
ECGMR1M139	Submit NPDES DMR for 02/04 to Ohio EPA		20MAR04	0
ECGMR10651	Add'l Wells pkg #3: predesign activities	22MAR04	27SEP04	118
ECGMR1M140	Submit NPDES DMR for 03/04 to Ohio EPA		20APR04	0
ECGMR1M141	Submit NPDES DMR for 04/04 to Ohio EPA		20MAY04	0
ECGMR1M142	Submit NPDES DMR for 05/04 to Ohio EPA		20JUN04	0



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Data Date	01DEC00
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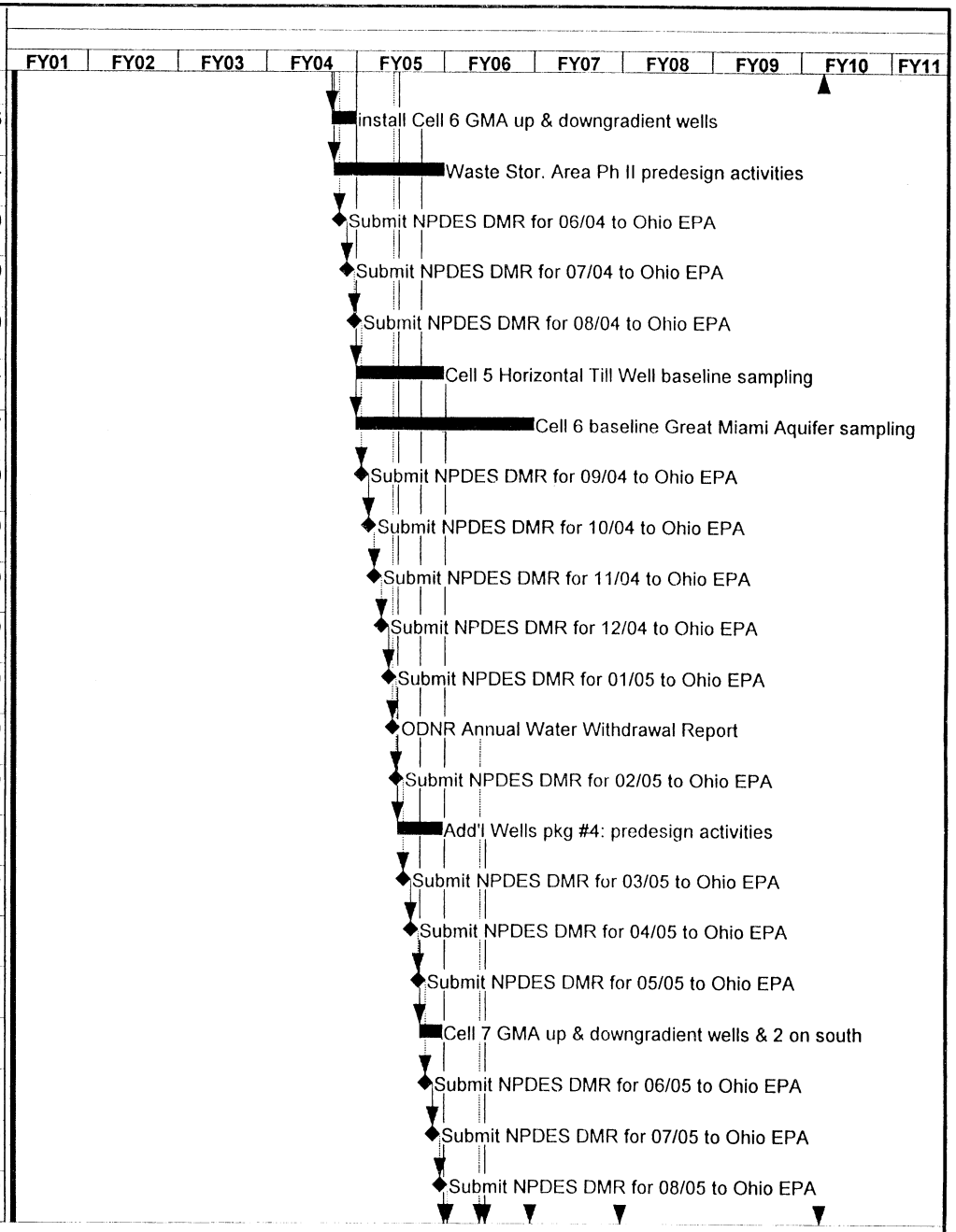
AQUIFER RESTORATION

1.1.E.G ARWWP MONITORING & REPORTING

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved
	F04-004		
	F04-005		

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
EGMR1 ARWWP Monitoring & Reporting				
ECGMR11760	install Cell 6 GMA up & downgradient wells	21JUN04	30SEP04	65
ECGMR10250	Waste Stor. Area Ph II predesign activities	28JUN04	30SEP05	284
ECGMR1M143	Submit NPDES DMR for 06/04 to Ohio EPA		20JUL04	0
ECGMR1M144	Submit NPDES DMR for 07/04 to Ohio EPA		20AUG04	0
ECGMR1M145	Submit NPDES DMR for 08/04 to Ohio EPA		20SEP04	0
ECGMR11455	Cell 5 Horizontal Till Well baseline sampling	01OCT04	30SEP05	224
ECGMR11460	Cell 6 baseline Great Miami Aquifer sampling	01OCT04	29SEP06	447
ECGMR1M146	Submit NPDES DMR for 09/04 to Ohio EPA		20OCT04	0
ECGMR1M147	Submit NPDES DMR for 10/04 to Ohio EPA		20NOV04	0
ECGMR1M148	Submit NPDES DMR for 11/04 to Ohio EPA		20DEC04	0
ECGMR1M149	Submit NPDES DMR for 12/04 to Ohio EPA		20JAN05	0
ECGMR1M150	Submit NPDES DMR for 01/05 to Ohio EPA		20FEB05	0
ECGMR1M005	ODNR Annual Water Withdrawal Report		01MAR05	0
ECGMR1M151	Submit NPDES DMR for 02/05 to Ohio EPA		20MAR05	0
ECGMR10661	Add'l Wells pkg #4: predesign activities	28MAR05	29SEP05	118
ECGMR1M152	Submit NPDES DMR for 03/05 to Ohio EPA		20APR05	0
ECGMR1M153	Submit NPDES DMR for 04/05 to Ohio EPA		20MAY05	0
ECGMR1M154	Submit NPDES DMR for 05/05 to Ohio EPA		20JUN05	0
ECGMR11770	Cell 7 GMA up & downgradient wells & 2 on south	27JUN05	30SEP05	61
ECGMR1M155	Submit NPDES DMR for 06/05 to Ohio EPA		20JUL05	0
ECGMR1M156	Submit NPDES DMR for 07/05 to Ohio EPA		20AUG05	0
ECGMR1M157	Submit NPDES DMR for 08/05 to Ohio EPA		20SEP05	0



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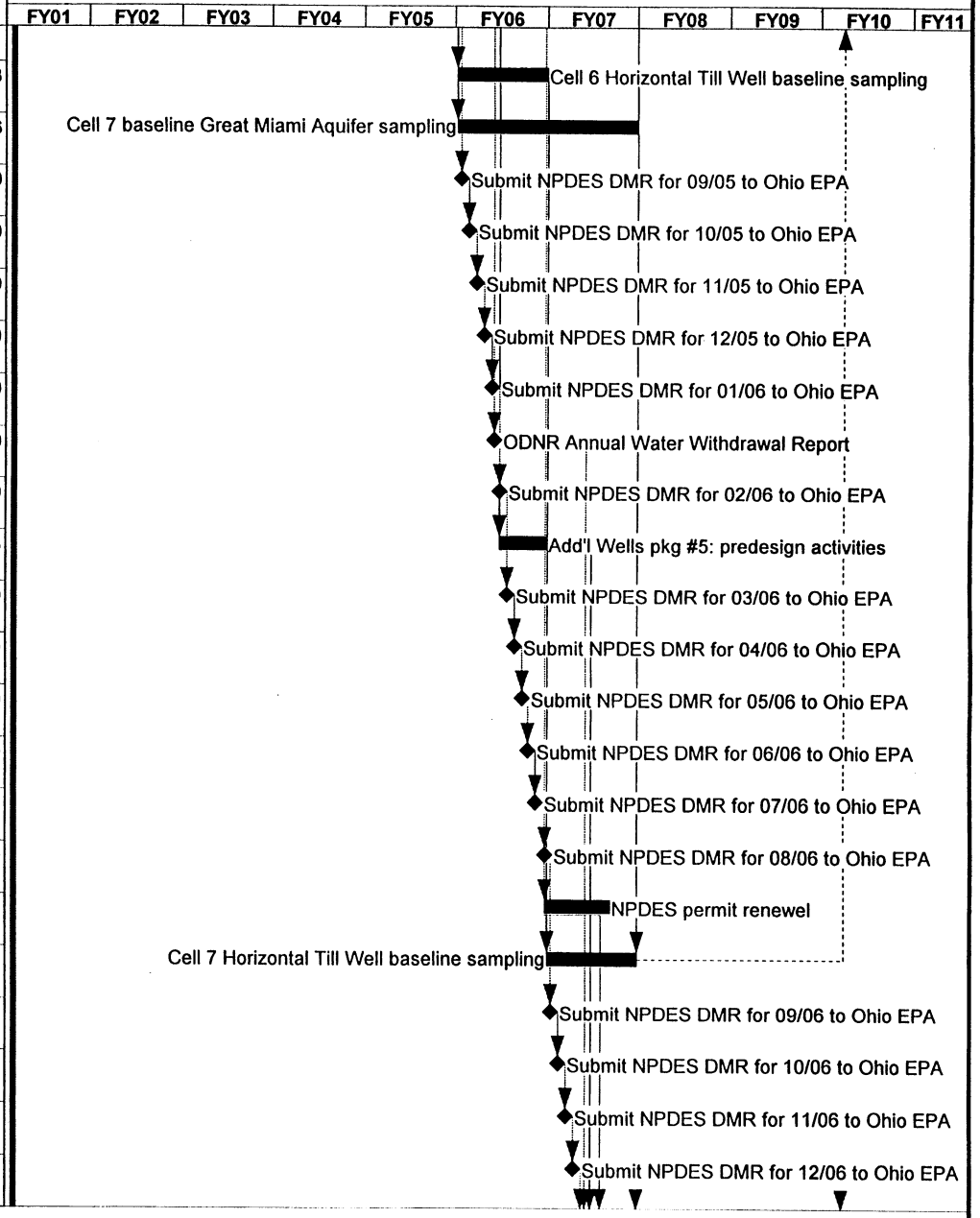
AQUIFER RESTORATION

1.1.E.G ARWWP MONITORING & REPORTING

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved
	F04-004		
	F04-005		

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
EGMR1 ARWWP Monitoring & Reporting				
ECGMR11465	Cell 6 Horizontal Till Well baseline sampling	03OCT05	29SEP06	223
ECGMR11470	Cell 7 baseline Great Miami Aquifer sampling	03OCT05	28SEP07	446
ECGMR1M158	Submit NPDES DMR for 09/05 to Ohio EPA		20OCT05	0
ECGMR1M159	Submit NPDES DMR for 10/05 to Ohio EPA		20NOV05	0
ECGMR1M160	Submit NPDES DMR for 11/05 to Ohio EPA		20DEC05	0
ECGMR1M161	Submit NPDES DMR for 12/05 to Ohio EPA		20JAN06	0
ECGMR1M162	Submit NPDES DMR for 01/06 to Ohio EPA		20FEB06	0
ECGMR1M006	ODNR Annual Water Withdrawal Report		01MAR06	0
ECGMR1M163	Submit NPDES DMR for 02/06 to Ohio EPA		20MAR06	0
ECGMR10671	Add'l Wells pkg #5: predesign activities	27MAR06	29SEP06	118
ECGMR1M164	Submit NPDES DMR for 03/06 to Ohio EPA		20APR06	0
ECGMR1M165	Submit NPDES DMR for 04/06 to Ohio EPA		20MAY06	0
ECGMR1M166	Submit NPDES DMR for 05/06 to Ohio EPA		20JUN06	0
ECGMR1M167	Submit NPDES DMR for 06/06 to Ohio EPA		20JUL06	0
ECGMR1M168	Submit NPDES DMR for 07/06 to Ohio EPA		20AUG06	0
ECGMR1M169	Submit NPDES DMR for 08/06 to Ohio EPA		20SEP06	0
ECGMR10105	NPDES permit renewel	25SEP06	15JUN07	264
ECGMR11475	Cell 7 Horizontal Till Well baseline sampling	02OCT06	28SEP07	223
ECGMR1M170	Submit NPDES DMR for 09/06 to Ohio EPA		20OCT06	0
ECGMR1M171	Submit NPDES DMR for 10/06 to Ohio EPA		20NOV06	0
ECGMR1M172	Submit NPDES DMR for 11/06 to Ohio EPA		20DEC06	0
ECGMR1M173	Submit NPDES DMR for 12/06 to Ohio EPA		20JAN07	0



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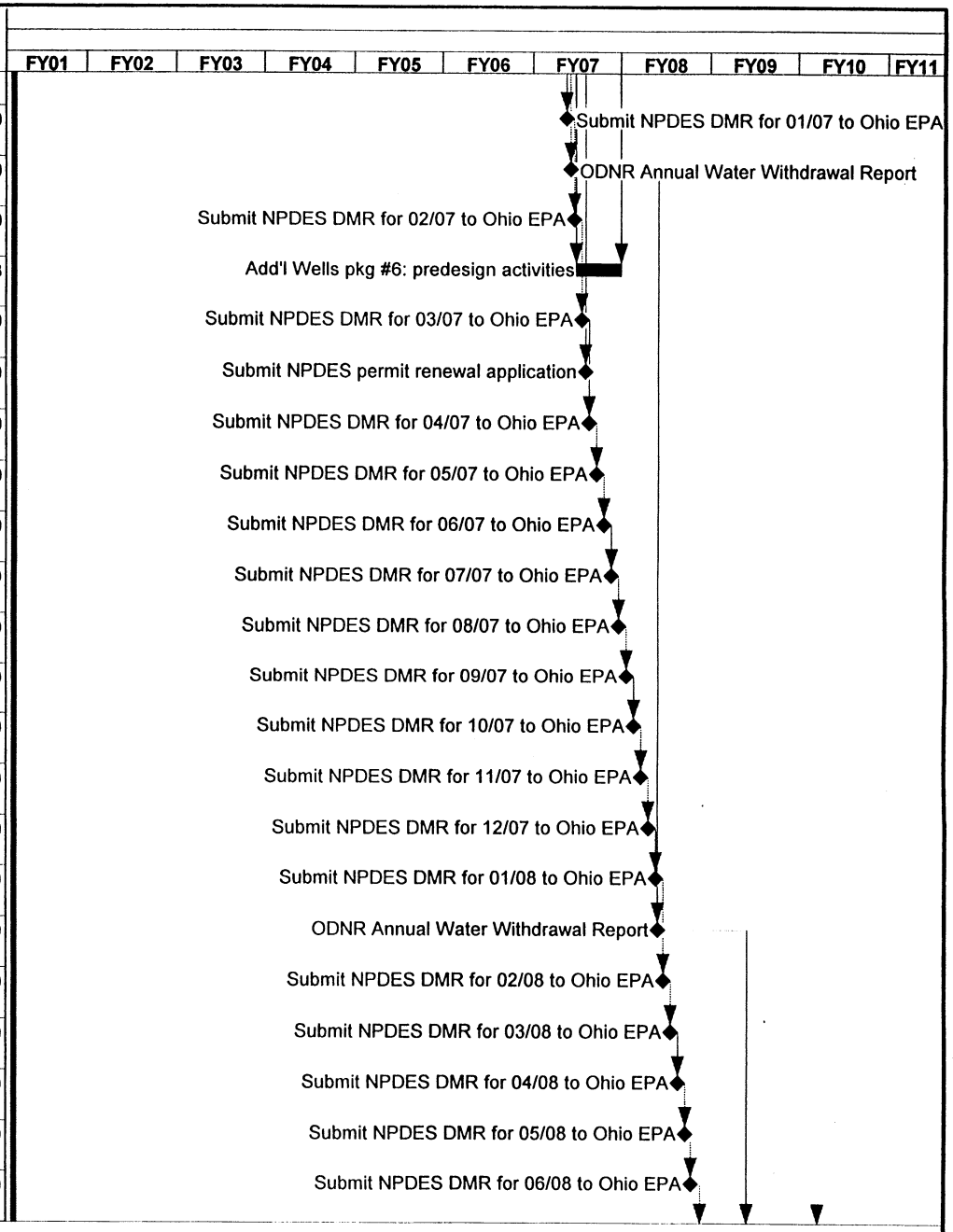
AQUIFER RESTORATION

1.1.E.G ARWWP MONITORING & REPORTING

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved
	F04-004		
	F04-005		

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
EGMR1 ARWWP Monitoring & Reporting				
ECGMR1M174	Submit NPDES DMR for 01/07 to Ohio EPA		20FEB07	0
ECGMR1M007	ODNR Annual Water Withdrawal Report		01MAR07	0
ECGMR1M175	Submit NPDES DMR for 02/07 to Ohio EPA		20MAR07	0
ECGMR10681	Add'l Wells pkg #6: predesign activities	26MAR07	28SEP07	118
ECGMR1M176	Submit NPDES DMR for 03/07 to Ohio EPA		20APR07	0
ECGMR1M021	Submit NPDES permit renewal application		04MAY07	0
ECGMR1M177	Submit NPDES DMR for 04/07 to Ohio EPA		20MAY07	0
ECGMR1M178	Submit NPDES DMR for 05/07 to Ohio EPA		20JUN07	0
ECGMR1M179	Submit NPDES DMR for 06/07 to Ohio EPA		20JUL07	0
ECGMR1M180	Submit NPDES DMR for 07/07 to Ohio EPA		20AUG07	0
ECGMR1M181	Submit NPDES DMR for 08/07 to Ohio EPA		20SEP07	0
ECGMR1M182	Submit NPDES DMR for 09/07 to Ohio EPA		20OCT07	0
ECGMR1M183	Submit NPDES DMR for 10/07 to Ohio EPA		20NOV07	0
ECGMR1M184	Submit NPDES DMR for 11/07 to Ohio EPA		20DEC07	0
ECGMR1M185	Submit NPDES DMR for 12/07 to Ohio EPA		20JAN08	0
ECGMR1M186	Submit NPDES DMR for 01/08 to Ohio EPA		20FEB08	0
ECGMR1M008	ODNR Annual Water Withdrawal Report		01MAR08	0
ECGMR1M187	Submit NPDES DMR for 02/08 to Ohio EPA		20MAR08	0
ECGMR1M188	Submit NPDES DMR for 03/08 to Ohio EPA		20APR08	0
ECGMR1M189	Submit NPDES DMR for 04/08 to Ohio EPA		20MAY08	0
ECGMR1M190	Submit NPDES DMR for 05/08 to Ohio EPA		20JUN08	0
ECGMR1M191	Submit NPDES DMR for 06/08 to Ohio EPA		20JUL08	0



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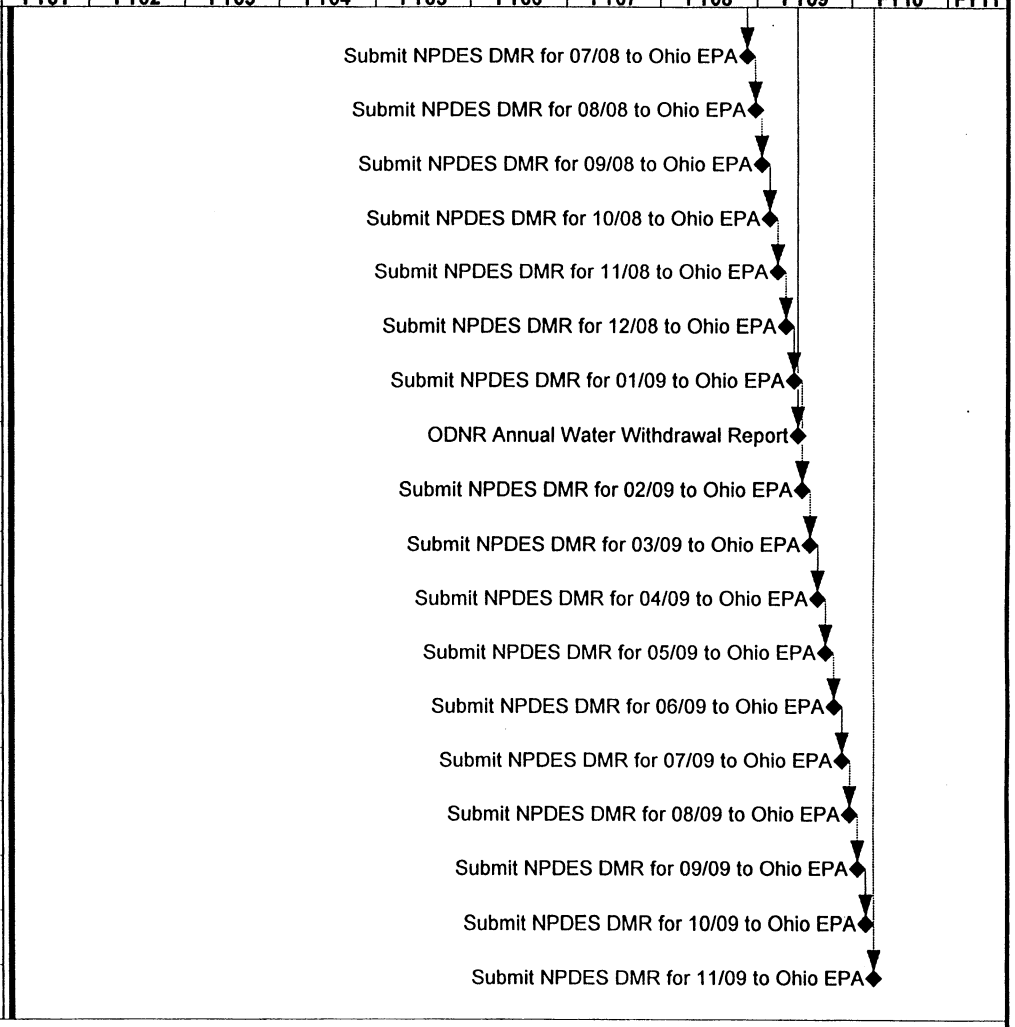
AQUIFER RESTORATION

1.1.E.G ARWWP MONITORING & REPORTING

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved
	F04-004		
	F04-005		

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
EGMR1 ARWWP Monitoring & Reporting				
ECGMR1M192	Submit NPDES DMR for 07/08 to Ohio EPA		20AUG08	0
ECGMR1M193	Submit NPDES DMR for 08/08 to Ohio EPA		20SEP08	0
ECGMR1M194	Submit NPDES DMR for 09/08 to Ohio EPA		20OCT08	0
ECGMR1M195	Submit NPDES DMR for 10/08 to Ohio EPA		20NOV08	0
ECGMR1M196	Submit NPDES DMR for 11/08 to Ohio EPA		20DEC08	0
ECGMR1M197	Submit NPDES DMR for 12/08 to Ohio EPA		20JAN09	0
ECGMR1M198	Submit NPDES DMR for 01/09 to Ohio EPA		20FEB09	0
ECGMR1M009	ODNR Annual Water Withdrawal Report		01MAR09	0
ECGMR1M199	Submit NPDES DMR for 02/09 to Ohio EPA		20MAR09	0
ECGMR1M200	Submit NPDES DMR for 03/09 to Ohio EPA		20APR09	0
ECGMR1M201	Submit NPDES DMR for 04/09 to Ohio EPA		20MAY09	0
ECGMR1M202	Submit NPDES DMR for 05/09 to Ohio EPA		20JUN09	0
ECGMR1M203	Submit NPDES DMR for 06/09 to Ohio EPA		20JUL09	0
ECGMR1M204	Submit NPDES DMR for 07/09 to Ohio EPA		20AUG09	0
ECGMR1M205	Submit NPDES DMR for 08/09 to Ohio EPA		20SEP09	0
ECGMR1M206	Submit NPDES DMR for 09/09 to Ohio EPA		20OCT09	0
ECGMR1M207	Submit NPDES DMR for 10/09 to Ohio EPA		20NOV09	0
ECGMR1M208	Submit NPDES DMR for 11/09 to Ohio EPA		20DEC09	0



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Data Date	01DEC00
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AQUIFER RESTORATION

1.1.E.G ARWWP MONITORING & REPORTING

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved
	F04-004		
	F04-005		

SECTION 4

3.0 MANPOWER PLANS

Manpower Planning Sheet (CR2)

MPS # 1EG01 ARWWP MONITORING & REPORTING

DRIVERS	START DATE	END DATE	TOT	FY 2001 Q1	FY 2001 Q2	FY 2001 Q3	FY 2001 Q4	FY 2002 Q1	FY 2002 Q2	FY 2002 Q3	FY 2002 Q4	FY 2003 Q1	FY 2003 Q2	FY 2003 Q3	FY 2003 Q4	FY 2004 Q1	FY 2004 Q2	FY 2004 Q3	FY 2004 Q4	FY 2005 Q1	FY 2005 Q2	FY 2005 Q3	FY 2005 Q4	FY 2006 Q1	FY 2006 Q2	FY 2006 Q3	FY 2006 Q4
301 OSDF Summary Schedule	04/01/2004	12/23/2009																xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
411 AWWT Operations	10/02/2000	12/31/2009		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
502 WASTE PIT SHIP/DISPOSAL OPERATIONS	10/02/2000	08/01/2005		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xx				
601 Soils Excavation Project Summary	10/01/2003	12/31/2009														xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
704 Silos AWR Summary	10/02/2000	10/23/2003		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	x											
710 Silos 1, 2, & 3 Summary Activity	10/02/2000	03/31/2008		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Administration	Clerks		30.80	1.2	1.8	1.8	2.1	0.8	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.7	0.6	0.6	0.8	0.8	0.7	0.7	0.8	0.8	0.7	0.6
Construction	Construction Coordinator		3.70	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Engineering & Design	Drafter/CAD Operator		3.70	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Engineering & Design	Engineer Manager		0.40	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental	Environmental Protection Rep.		37.00	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1.1	1	1	0.9	1.1	1	1	0.9
Environmental	Environmental Scientist Mgr.		75.20	2.1	2.6	2.5	2.7	2.5	2.5	2.3	2.3	1.9	1.9	1.8	1.8	1.9	1.9	1.8	1.8	2.1	1.9	1.9	1.8	2.3	2.1	2.1	1.9
Environmental	Environmental Scientist Rep.		221.10	7.7	9	9	9.3	6.8	6.8	6.8	6.8	5.6	5.6	5.6	5.6	5.6	5.6	5.3	5.3	6.3	5.6	5.6	5.6	6.2	6.2	6.2	6.2
Environmental	Environmental Scientist Tech.		375.10	7.9	9.2	9.1	9.3	8.3	8.3	8.3	8.3	8.5	8.5	8.5	8.5	9.6	9.6	9.6	9.6	12.5	11	10.5	10	13	11.5	11.5	11.5
Craft Labor	Industrial Mechanic		0.40	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Department Administrator		5.80	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Information Management	Information Systems Mgr.		0.40	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Information Management	Information Systems Rep.		4.30	1	1.1	1.1	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lab	Chemist		19.90	0.2	0.6	0.6	0.6	0.9	0.9	0.9	0.9	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Lab	Lab Tech.		6.40	0.2	0.3	0.3	0.3	0.6	0.6	0.6	0.6	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Environmental Safety & H	Rad Tech		3.60	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Project Management	Tech/Program Support Mgr.		7.40	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Project Management	Tech/Program Support Rep.		1.60	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.1	0	0.1	0.1	0.1	0.1
General Labor	Hazwat		0.80	0.2	0.2	0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Security	Security Guard/Officer		0.40	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Sheet Totals:	798.00	22.60	26.90	26.70	27.80	21.60	21.40	21.10	21.10	18.90	18.90	18.80	18.80	20.10	20.00	19.50	19.50	24.10	21.70	21.10	20.30	24.80	23.00	22.90	22.50

Manpower Planning Sheet (CR2)

MPS # 1EG01 ARWWP MONITORING & REPORTING

DRIVERS	START DATE	END DATE	FY 2007 Q1	FY 2007 Q2	FY 2007 Q3	FY 2007 Q4	FY 2008 Q1	FY 2008 Q2	FY 2008 Q3	FY 2008 Q4	FY 2009 Q1	FY 2009 Q2	FY 2009 Q3	FY 2009 Q4	FY 2010 Q1	FY 2010 Q2	FY 2010 Q3	FY 2010 Q4	FY 2011 Q1	FY 2011 Q2	FY 2011 Q3	FY 2011 Q4
301 OSDF Summary Schedule	04/01/2004	12/23/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
502 WASTE PIT SHIP/DISPOSAL OPERATION	10/02/2000	08/01/2005																				
601 Soils Excavation Project Summary	10/01/2003	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
704 Silos AWR Summary	10/02/2000	10/23/2003																				
710 Silos 1, 2, & 3 Summary Activity	10/02/2000	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
Administration	Clerks		0.9	0.9	0.7	0.7	0.9	0.9	0.6	0.6	0.7	0.9	0.7	0.7	0.6	0	0	0	0	0	0	0
Construction	Construction Coordinator		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0
Engineering & Design	Drafter/CAD Operator		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0
Engineering & Design	Engineer Manager		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental	Environmental Protection Rep.		1.1	1	1	0.9	1.1	1	1	0.9	1	1	1	1	1	0	0	0	0	0	0	0
Environmental	Environmental Scientist Mgr.		2.1	2.1	1.9	1.9	2.1	2.1	1.8	1.8	1.8	1.9	1.8	1.8	1.7	0	0	0	0	0	0	0
Environmental	Environmental Scientist Rep.		6	5.6	5.3	5.3	5.3	5.3	5.3	5.3	5	5	4.7	4.7	4	0	0	0	0	0	0	0
Environmental	Environmental Scientist Tech.		11.5	11.5	11.5	11.5	11	11	11	11	11	11	10.5	10.5	9.5	0	0	0	0	0	0	0
Craft Labor	Industrial Mechanic		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Department Administrator		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0	0	0	0	0	0	0
Information Management	Information Systems Mgr.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Information Management	Information Systems Rep.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lab	Chemist		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0	0	0	0	0	0	0
Lab	Lab Tech.		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0
Environmental Safety & Health	Rad Tech		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0
Project Management	Tech/Program Support Mgr.		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0	0	0	0	0	0	0
Project Management	Tech/Program Support Rep.		0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Labor	Hazwat		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Security	Security Guard/Officer		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Sheet Totals:	23.00	22.50	21.80	21.70	21.80	21.60	21.00	20.90	20.80	21.10	20.00	20.00	17.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SECTION 4

4.0 ESTIMATE

EGMR1

ARWWP MONITORING & REPORTING

09/06/2001
3:26 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EGMR
CHARGE NO: EGMR1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: WM. HERTEL
FISCAL YEAR: 2001-2010

Resource: BUYCON **BUYER/CONTRACTS ADMN** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	14.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5	14.5
Yr Total Cost:	608	0	0	0	0	0	0	0	0	0
Cum Total Cost:	608	608	608	608	608	608	608	608	608	608

Resource: CLERKS **CLERKS** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	2,670.3	1,208.6	1,257.8	1,201.7	1,298.3	1,309.1	1,397.4	1,285.3	1,317.3	266.2
Cum Hours:	2,670.3	3,878.9	5,136.7	6,338.3	7,636.7	8,945.7	10,343.1	11,628.4	12,945.7	13,211.9
Yr Total Cost:	63,793	30,391	33,502	33,893	38,791	41,786	48,355	46,879	53,392	11,124
Cum Total Cost:	63,793	94,184	127,686	161,579	200,369	242,155	290,510	337,389	390,781	401,905

Resource: CNSCOD **CONSTRUCTION COORD** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	145.7	164.4	163.0	163.0	163.7	164.8	164.8	162.3	163.0	40.6
Cum Hours:	145.7	310.1	473.1	636.1	799.8	964.6	1,129.4	1,291.8	1,454.8	1,495.4
Yr Total Cost:	4,625	5,491	5,768	6,108	6,500	6,989	7,577	7,867	8,778	2,255
Cum Total Cost:	4,625	10,116	15,884	21,993	28,492	35,481	43,058	50,925	59,703	61,958

Resource: DEPADM **DEPT ADMINISTRATOR** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	224.9	256.0	262.1	281.6	277.8	332.3	272.7	292.4	33.7
Cum Hours:	0.0	224.9	480.9	743.0	1,024.6	1,302.5	1,634.7	1,907.4	2,199.8	2,233.5
Yr Total Cost:	0	7,508	9,051	9,812	11,167	11,772	15,261	13,203	15,730	1,868
Cum Total Cost:	0	7,508	16,558	26,371	37,538	49,310	64,570	77,773	93,503	95,371

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EGMR
CHARGE NO: EGMR1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: WM. HERTEL
FISCAL YEAR: 2001-2010

Resource: DRFCAD **DRAFTER/CAD OPERATOR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	90.3	93.3	89.7	90.7	92.8	103.7	103.9	99.6	96.8	21.1
Cum Hours:	90.3	183.6	273.3	364.0	456.8	560.5	664.4	764.0	860.8	881.8
Yr Total Cost:	2,816	3,063	3,119	3,341	3,619	4,320	4,696	4,741	5,122	1,148
Cum Total Cost:	2,816	5,878	8,997	12,338	15,958	20,278	24,974	29,715	34,837	35,986

Resource: E&CTEC **ENG & CONST TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	11.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4	11.4
Yr Total Cost:	306	0	0	0	0	0	0	0	0	0
Cum Total Cost:	306	306	306	306	306	306	306	306	306	306

Resource: ENGINR **ENGINEER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	23.9	28.4	28.4	28.4	28.6	28.0	28.0	28.1	28.4	7.0
Cum Hours:	23.9	52.2	80.6	108.9	137.5	165.5	193.5	221.6	250.0	256.9
Yr Total Cost:	1,641	2,053	2,174	2,302	2,455	2,573	2,790	2,948	3,308	836
Cum Total Cost:	1,641	3,693	5,867	8,170	10,625	13,198	15,988	18,936	22,244	23,080

Resource: ENGMGR **ENGINEERING MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	145.2	65.0	53.8	53.8	71.4	54.1	54.1	53.1	53.8	0.0
Cum Hours:	145.2	210.2	263.9	317.7	389.1	443.1	497.2	550.2	604.0	604.0
Yr Total Cost:	8,683	4,090	3,584	3,795	5,338	4,319	4,682	4,843	5,453	0
Cum Total Cost:	8,683	12,773	16,357	20,151	25,489	29,808	34,489	39,333	44,786	44,786

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EGMR
CHARGE NO: EGMR1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: WM. HERTEL
FISCAL YEAR: 2001-2010

Resource: ENPREP **ENVIR PROTECTION REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,483.5	1,765.4	1,763.2	1,763.2	1,765.3	1,762.2	1,762.2	1,764.8	1,763.2	307.4
Cum Hours:	1,483.5	3,248.9	5,012.1	6,775.3	8,540.6	10,302.8	12,064.9	13,829.7	15,592.9	15,900.3
Yr Total Cost:	71,711	89,826	95,027	100,630	106,722	113,817	123,386	130,242	144,609	25,988
Cum Total Cost:	71,711	161,537	256,564	357,193	463,915	577,732	701,118	831,360	975,969	1,001,958

Resource: ENSMGR **ENVIR SCIENTIST MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	3,791.5	4,218.2	3,194.2	3,216.4	3,358.3	3,612.9	3,464.8	3,333.9	3,170.2	722.8
Cum Hours:	3,791.5	8,009.6	11,203.8	14,420.2	17,778.5	21,391.4	24,856.2	28,190.1	31,360.3	32,083.1
Yr Total Cost:	199,963	234,163	187,815	200,275	221,503	254,591	264,690	268,442	283,667	66,671
Cum Total Cost:	199,963	434,126	621,940	822,216	1,043,718	1,298,309	1,563,000	1,831,442	2,115,108	2,181,779

Resource: ENSREP **ENVIR SCIENCE REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	12,878.5	11,832.2	9,984.8	9,494.1	10,133.3	10,979.1	9,559.2	9,280.0	8,600.8	1,708.3
Cum Hours:	12,878.5	24,710.7	34,695.5	44,189.6	54,322.9	65,302.1	74,861.2	84,141.2	92,742.0	94,450.3
Yr Total Cost:	540,384	522,584	467,096	470,329	531,755	615,539	580,991	594,487	612,290	125,363
Cum Total Cost:	540,384	1,062,968	1,530,064	2,000,393	2,532,148	3,147,687	3,728,678	4,323,165	4,935,455	5,060,818

Resource: ENSTEC **ENVIR SCIENTIST TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	13,207.8	14,412.7	14,862.4	16,754.2	18,481.8	19,994.3	20,179.6	19,109.9	18,553.7	4,028.9
Cum Hours:	13,207.8	27,620.5	42,482.9	59,237.1	77,718.9	97,713.2	117,892.8	137,002.7	155,556.4	159,585.3
Yr Total Cost:	374,045	429,629	469,262	560,182	654,578	756,577	827,792	826,249	891,468	199,545
Cum Total Cost:	374,045	803,673	1,272,935	1,833,117	2,487,695	3,244,272	4,072,063	4,898,313	5,789,781	5,989,326

INCLUDES ESCALATION COSTS

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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EGMR
CHARGE NO: EGMR1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: WM. HERTEL
FISCAL YEAR: 2001-2010

Resource: FIELDSUB **FIELD SUBS** **EOC:** SUBCONTRACTORS
Res Dept: **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	685,482.0	1,215,894.0	751,797.0	769,737.0	827,940.0	1,249,965.0	832,371.0	751,140.0	686,631.0	164,658.0
Cum Units:	685,482.0	1,901,376.0	2,653,173.0	3,422,910.0	4,250,850.0	5,500,815.0	6,333,186.0	7,084,326.0	7,770,957.0	7,935,615.0
Yr Total Cost:	685,482	1,248,723	792,942	834,596	922,839	1,433,641	982,369	912,209	858,049	211,732
Cum Total Cost:	685,482	1,934,205	2,727,147	3,561,743	4,484,582	5,918,223	6,900,592	7,812,801	8,670,850	8,882,582

Resource: HAZWAT **HAZWAT** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	266.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	266.0	266.0	266.0	266.0	266.0	266.0	266.0	266.0	266.0	266.0
Yr Total Cost:	7,659	0	0	0	0	0	0	0	0	0
Cum Total Cost:	7,659	7,659	7,659	7,659	7,659	7,659	7,659	7,659	7,659	7,659

Resource: INDMEC **INDUSTRIAL MECHANIC** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	89.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	89.9	89.9	89.9	89.9	89.9	89.9	89.9	89.9	89.9	89.9
Yr Total Cost:	2,828	0	0	0	0	0	0	0	0	0
Cum Total Cost:	2,828	2,828	2,828	2,828	2,828	2,828	2,828	2,828	2,828	2,828

Resource: INRREP **INFO RECORDS REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	247.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	247.5	247.5	247.5	247.5	247.5	247.5	247.5	247.5	247.5	247.5
Yr Total Cost:	7,347	0	0	0	0	0	0	0	0	0
Cum Total Cost:	7,347	7,347	7,347	7,347	7,347	7,347	7,347	7,347	7,347	7,347

INCLUDES ESCALATION COSTS

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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EGMR
CHARGE NO: EGMR1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: WM. HERTEL
FISCAL YEAR: 2001-2010

Resource: INSMGR **INFO SYSTEMS MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	117.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	117.6	117.6	117.6	117.6	117.6	117.6	117.6	117.6	117.6	117.6
Yr Total Cost:	6,898	0	0	0	0	0	0	0	0	0
Cum Total Cost:	6,898	6,898	6,898	6,898	6,898	6,898	6,898	6,898	6,898	6,898

Resource: INSREP **INFO SYSTEMS REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,561.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	1,561.1	1,561.1	1,561.1	1,561.1	1,561.1	1,561.1	1,561.1	1,561.1	1,561.1	1,561.1
Yr Total Cost:	77,725	0	0	0	0	0	0	0	0	0
Cum Total Cost:	77,725	77,725	77,725	77,725	77,725	77,725	77,725	77,725	77,725	77,725

Resource: LABCHM **CHEMIST** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	820.8	1,658.8	804.6	804.6	910.7	805.3	805.3	804.8	804.6	113.5
Cum Hours:	820.8	2,479.6	3,284.2	4,088.8	4,999.5	5,804.8	6,610.2	7,415.0	8,219.6	8,333.2
Yr Total Cost:	31,814	67,674	34,770	36,820	44,144	41,708	45,214	47,626	52,912	7,697
Cum Total Cost:	31,814	99,489	134,259	171,079	215,223	256,931	302,146	349,771	402,684	410,380

Resource: LABTEC **LAB TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	423.0	1,090.3	88.9	88.9	89.8	89.4	89.4	88.0	98.2	22.4
Cum Hours:	423.0	1,513.3	1,602.2	1,691.1	1,780.9	1,870.3	1,959.6	2,047.6	2,145.8	2,168.2
Yr Total Cost:	11,755	31,892	2,755	2,918	3,120	3,318	3,597	3,732	4,632	1,088
Cum Total Cost:	11,755	43,647	46,402	49,320	52,440	55,759	59,356	63,088	67,719	68,808

INCLUDES ESCALATION COSTS

09/06/2001
3:26 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EGMR
CHARGE NO: EGMR1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: WM. HERTEL
FISCAL YEAR: 2001-2010

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	112,270.0	157,194.0	160,604.0	309,488.0	184,012.0	190,772.0	208,962.0	168,688.0	167,376.0	32,751.0
Cum Units:	112,270.0	269,464.0	430,068.0	739,556.0	923,568.0	1,114,340.0	1,323,302.0	1,491,990.0	1,659,366.0	1,692,117.0
Yr Total Cost:	112,270	161,438	169,394	335,566	205,104	218,805	246,618	204,860	209,162	42,114
Cum Total Cost:	112,270	273,708	443,102	778,668	983,771	1,202,576	1,449,195	1,654,055	1,863,216	1,905,330

Resource: ODC700 **ODC 700** **EOC:** ODC
Res Dept: **Overtime:** **Class:** ODC

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	1,992.0	1,500.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	1,992.0	3,492.0	3,492.0	3,492.0	3,492.0	3,492.0	3,492.0	3,492.0	3,492.0	3,492.0
Yr Total Cost:	1,992	1,541	0	0	0	0	0	0	0	0
Cum Total Cost:	1,992	3,533	3,533	3,533	3,533	3,533	3,533	3,533	3,533	3,533

Resource: RADTEC **RAD TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	174.5	210.2	210.3	210.3	213.5	211.3	211.3	215.8	208.3	0.0
Cum Hours:	174.5	384.7	595.0	805.3	1,018.8	1,230.1	1,441.5	1,657.3	1,865.6	1,865.6
Yr Total Cost:	5,946	7,540	7,991	8,462	9,100	9,624	10,433	11,229	12,045	0
Cum Total Cost:	5,946	13,486	21,477	29,939	39,038	48,662	59,094	70,323	82,368	82,368

Resource: SECOFC **SECURITY OFFICER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	150.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	150.6	150.6	150.6	150.6	150.6	150.6	150.6	150.6	150.6	150.6
Yr Total Cost:	3,796	0	0	0	0	0	0	0	0	0
Cum Total Cost:	3,796	3,796	3,796	3,796	3,796	3,796	3,796	3,796	3,796	3,796

INCLUDES ESCALATION COSTS

09/06/2001
3:26 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EGMR
CHARGE NO: EGMR1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: WM. HERTEL
FISCAL YEAR: 2001-2010

Resource: TPSMGR **TECH/PROG SUPT MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	293.4	350.2	351.7	351.7	350.0	349.1	349.1	349.3	351.7	88.3
Cum Hours:	293.4	643.6	995.2	1,346.9	1,696.9	2,046.0	2,395.0	2,744.3	3,096.0	3,184.3
Yr Total Cost:	18,320	23,016	24,480	25,923	27,332	29,121	31,569	33,300	37,253	9,640
Cum Total Cost:	18,320	41,335	65,815	91,738	119,071	148,192	179,761	213,061	250,314	259,954

Resource: TPSREP **TECH/PROG SUPT REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	121.6	49.7	0.0	0.0	74.3	82.2	128.8	39.3	0.0	0.0
Cum Hours:	121.6	171.3	171.3	171.3	245.5	327.8	456.5	495.8	495.8	495.8
Yr Total Cost:	6,317	2,717	0	0	4,825	5,710	9,692	3,114	0	0
Cum Total Cost:	6,317	9,034	9,034	9,034	13,859	19,569	29,261	32,376	32,376	32,376

Resource: WSTENG **WASTE ENGINEER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	9.3	12.4	17.5	17.5	28.2	29.6	32.9	28.1	18.8	4.2
Cum Hours:	9.3	21.8	39.2	56.7	84.9	114.4	147.3	175.4	194.2	198.4
Yr Total Cost:	477	668	994	1,053	1,797	2,015	2,433	2,188	1,628	376
Cum Total Cost:	477	1,144	2,138	3,191	4,987	7,002	9,435	11,622	13,250	13,626

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	38,738.0	37,384.4	33,126.2	34,500.5	37,341.5	39,852.8	38,663.0	36,914.8	35,521.1	7,364.4
Cum Hours:	38,738.0	76,122.4	109,248.6	143,749.1	181,090.6	220,943.3	259,606.3	296,521.1	332,042.2	339,406.6
Yr Total Cost:	2,249,201	2,874,004	2,309,723	2,636,005	2,800,688	3,556,223	3,212,145	3,118,158	3,199,497	707,446
Cum Total Cost:	2,249,201	5,123,204	7,432,927	10,068,933	12,869,620	16,425,843	19,637,988	22,756,146	25,955,644	26,663,089

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

SECTION 4

5.0 RISK PLAN

Risk/Opportunity Identification and Analysis Form

Project: ARWWP Monitoring and Reporting		PBS Number: 04			Total Baseline Dollars (Minimum Case):			$26,663,089		
Evaluator:	Date:	WBS Number: 1.1.E.G								
CAM: W. HERTEL	Date: March 29, 2001	Control Account Number: EGMR								
Project Task	Risk and/or Opportunit	Potential Impact	Internal Or External Driver	Impact Cost $ (Maximum Case)	Risk Impact Level	Risk Probability %	Risk Probability Level	Probable Cost $ (Likeliest Case)	Risk Critical Value	Risk Handling Strategy
Groundwater Remedy Performance Monitoring & Reporting	Installation of the Plant 6 Aquifer Restoration Module is reqiured precipitating need for additional monitoring wells and subsequent monitoring and reporting.	Will require additional subcontracted services for well installation, labor and material for the additional sampling efforts, additional subcontracted analytical services for the additional samples and additional labor to evaluate and report the data.	Internal	$288,000	2	30	2	$86,400	2	Accept
Groundwater Remedy Performance Monitoring & Reporting	Substantive new aquifer contamination as a result of source removal activities.	Will require additional subcontracted services for well installation, labor and material for the additional sampling efforts, additional subcontracted analytical services for the additional samples and additional labor to evaluate and report the data.	Internal	$240,000	2	40	3	$96,000	2	Accept
Groundwater Remedy Performance Monitoring & Reporting	Monitoring scope increase due to comingling (or percieved comingling) with Paddys Run Roadsite Plume.	Will require additional subcontracted services for well installation, labor and material for the additional sampling efforts, additional subcontracted analytical services for the additional samples and additional labor to evaluate and report the data.	Internal	$240,000	2	40	3	$96,000	2	Accept
Groundwater Remedy Performance Monitoring & Reporting	Excessive drawdown during an extended drought.	Will require additional subcontracted services for well installation.	Internal	$600,000	2	20	2	$120,000	2	Accept
Groundwater Remedy Performance Monitoring & Reporting	Soils project is delayed by Silo project extension precipitating a 1 year contract extension	Continued groundwater and OSDF monitoring and reporting for an additional year	Internal	$2,200,000	3	50	3	$1,100,000	4	Accept
			Total:	$3,568,000			Total:	$1,498,400		

Risk/Opportunity Identification and Analysis Form

Project: ARWWP Monitoring and Reporting		PBS Number: 04			Total Baseline Dollars (Minimum Case):			$26,663,089		
Evaluator:	Date:	WBS Number: 1.1.E.G								
CAM: W. HERTEL	Date: March 29, 2001	Control Account Number: EGMR								
Project Task	Risk and/or Opportunit	Potential Impact	Internal Or External Driver	Impact Cost $ (Maximum Case)	Risk Impact Level	Risk Probability %	Risk Probability Level	Probable Cost $ (Likeliest Case)	Risk Critical Value	Risk Handling Strategy
Groundwater Remedy Performance Monitoring & Reporting	EPA requires additional constituents to be analyzed for in groundwater samples collected to monitor the performance of the groundwater remedy.	Will require additional labor and material for the additional sampling efforts, additional subcontracted analytical services for the additional samples and additional labor to evaluate and report the data.	External	$2,244,000	3	30	2	$673,200	3	
Groundwater Remedy Performance Monitoring & Reporting	Reduce groundwater monitoring constituent list to just total uranium.	Will reduce labor and material required for sample collection , data evaluation and reporting. Will also reduce the level of subcontracted analytical services required.	Internal	-$2,200,000	3	30	2	-$660,000		
OSDFLeak Detection Monitoring & Reporting	Reduce OSDF leak detection monitoring constituent list.	Will reduce labor and material required for sample collection , data evaluation and reporting. Will also reduce the level of subcontracted analytical services required.	Internal	-$700,000	2	50	3	-$350,000		

Analytical Lab Services

WBS DICTIONARY
CONTROL ACCOUNT/CHARGE NUMBER

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	35

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E.B	ANALYTICAL LAB SERVICES

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

LABOR
SUBCONTRACTS
MATERIALS
ODC'S

b. TECHNICAL CONTENT:

The Analytical Lab Services element is responsible for Fernald laboratory operations necessary to maintain an administrative infrastructure to support the receipt, process, preparation, and analysis of FEMP samples. This WBS element includes all managerial, supervisory, and administrative day to day functions of the Analytical Laboratory Services (ALS) Project. This element also includes ALS procedure development and maintenance; facilities administration and laboratory equipment and supplies which includes disposition activities associated with laboratory samples and waste; and compliance requirements which includes activities for self-assessment, health and safety, nuclear criticality, quality assurance, training, environmental regulatory issues and the management of quality control for all services and activities at the on-site laboratories. This element also includes the subcontractor portion of the laboratory consolidation project. Refer, also to the Analytical Laboratory Services Close Plan for further details.

c. SCOPE OF WORK:

Activities for the Analytical Lab Services element include:

Lab Management & Staff:
Department Management - Provision for the administrative activities of the managerial, supervisory, clerical, technical, temporary, subcontractor and teaming partner personnel that are normally performed as part of day to day operations. This element also includes downtime resulting from equipment

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	35

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E.B	ANALYTICAL LAB SERVICES

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

maintenance, housekeeping activities, and loss of facility services/utilities.

Procedure Development and Administration - This work includes the development, implementation, conduction of periodic review and revisions, and training for all written procedures owned by the ALS Project. Specifically, this includes the review requirement of all the Operating Procedures and methods, the development of new procedures for analysis of samples; activities necessary to validate the procedures, a provision for on-the-job training and/or certification of the analysts to the procedure/method.

Facilities Administration and Laboratory Equipment and Supplies - Carry out facilities administration activities which include various inventories and tracking such as nuclear materials, sensitive property, precious metals, special materials, chemical and hazardous materials. The scope also provides for government property management, laboratory sub-stores management, and reconfiguration/equipment relocation activities, laboratory building facility owner responsibilities as they relate to the safety of the building occupants. The latter includes the maintenance of the MEF and MSDS records and inspection of safety and spill equipment and supplies. Finally, facilities work includes ALS activities involving the disposition of sample residues and appropriate laboratory generated waste. This includes all tasks associated with maintaining satellite accumulation areas (SAA) and disposing of excess equipment and chemicals from the on-site laboratories. This scope of work includes wage personnel for their support in performing and completing the above tasks.

Laboratory Equipment and Supplies section of this work scope provides for all equipment and supplies necessary to operate the analytical laboratories. These include equipment and supplies for the inorganic, organic, radiochemical, AWWT and sample processing laboratories. This element contains provisions for routine instrument maintenance service contracts.

Compliance Requirements - Perform all activities with self assessment, commitment tracking and reporting, required training, training coordination, project personnel health and safety, nuclear criticality, Conduct of Operations, and quality assurance/quality control in order to comply with Federal Regulations, DOE Orders, and site policies and procedures. This also includes preparing and distributing Quality Control sample duplicates, blanks, and spikes; managing the Performance Evaluation Testing (PET) Program, National Pollutant Discharge Elimination System (NPDES) Program, Interlaboratory Comparability Studies (IDC), and the review, preparation and verification of a

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	35

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E.B	ANALYTICAL LAB SERVICES

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

sample data package for every package run.

Future Lab Projects/Renovations:
Lump Sum Subcontract - ALS Lab Consolidation Project
Provide all necessary procurement activities, manpower, materials, equipment, craft labor, and supervision to construct and install the items for completion of the ALS Consolidation Project. Work scope will include but not be limited to the following subcontractor activities: design, procurement, and delivery of the modular modifications and revisions to existing Road Transportable Analytical Laboratories laboratory units; site clearing and grading; modification and installation of drainage piping; installation of underground piping for fire protection, sewage, and domestic water; installation of driveways and sidewalks; installation of structural support piers; installation of new fencing; installation of utilities including electrical and communications; providing new argon gas storage and piping; installation of new equipment; installation of piping for natural gas and laboratory waste; and all other items as identified and detailed in the subcontract contract documents.

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE 12/01/2000	Page 1
3. WBS ELEMENT CODE 1.1.E.B	4. WBS ELEMENT TITLE/NAME ANALYTICAL LAB SERVICES	
5. PERFORMING DIV/DEPARTMENT CODE 52	6. ORIGINATOR NAME/PHONE A. MEYER 648-5423	7. WBS ELEMENT MANAGER MARC JEWETT
8. BUDGET AND REPORTING NUMBER EW05H3040	9. BUDGET TITLE AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE? NEW PER CP# FY01-0115-0004-00		11. ESTIMATED START / COMPLETION DATE 12/01/00 - 12/27/09
12. TASK IDENTIFICATION (CONTROL ACCOUNT) EBAL	13. TASK DESCRIPTION (ONE LINE) ANALYTICAL LAB SERVICES	

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

LABOR
SUBCONTRACTS
MATERIALS
ODCs

b. TECHNICAL CONTENT:

The Analytical Lab Services control account is responsible for Fernald laboratory operations necessary to maintain an administrative infrastructure to support the receipt, process, preparation, and analysis of FEMP samples. This control account includes all managerial, supervisory, and administrative day to day functions of the Analytical Laboratory Services (ALS) Project. This control account also includes ALS procedure development and maintenance; facilities administration and laboratory equipment and supplies which includes disposition activities associated with laboratory samples and waste; and compliance requirements with include activities for self-assessment, health and safety, nuclear criticality, quality assurance, training, environmental regulatory issues and the management of quality control for all services and activities at the on-site laboratories. Refer also to the Analytical Laboratory Services Close Plan for further details.

c. SCOPE OF WORK:

Activities for the Analytical Lab Services control account include:

Lab Management & Staff
Department Management - Provision for the administrative activities of the managerial, supervisory, clerical, technical, temporary, subcontractor and

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.B	ANALYTICAL LAB SERVICES

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	A. MEYER 648-5423	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
EBAL	ANALYTICAL LAB SERVICES

14. ELEMENT TASK DESCRIPTION

teaming partner personnel that are normally performed as part of day to day operations. Specific examples include attendance at staff meetings; work coordination tasks; operations and strategic planning activities; procurement activities; budgeting, baseline and project control activities; personal development; training; travel; and personnel administration. The latter includes salary administration, performance evaluation, career development, and other matters routinely conducted. This element also includes downtime resulting from equipment maintenance, housekeeping activities, and loss of facility services/utilities. This scope also includes the purchase of office supplies.

Procedure Development and Administration - This work includes the development, implementation, conduction of periodic review and revisions, and training for all written procedures owned by the ALS Project. Specifically, this includes the review requirement of all the Standard Operating Procedures and methods, the development of new procedures for analysis of samples; activities necessary to validate the procedures for which include a provision for on-the-job training and/or certification of the analysts to the procedure/method.

Facilities Administration and Laboratory Equipment and Supplies - Carry out facilities administration activities which include various inventories and tracking such as nuclear materials, sensitive property, precious metals, special materials, chemical and hazardous materials. The scope also provides for government property management, laboratory sub-stores management, and reconfiguration/equipment relocation activities, maintenance work activities as they pertain to laboratory operations and facility owner responsibilities as they relate to the safety of the building occupants. The latter includes the maintenance of the MEF and MSDS records and inspection of safety and spill equipment and supplies. Finally, facilities work includes all activities involving the disposition of sample residues and appropriate laboratory generated waste. This includes all tasks associated with maintaining satellite accumulation areas (SAA) and disposing of excess equipment and chemicals from the on-site laboratories. This scope of work includes wage personnel for their support in performing and completing the above tasks.

Laboratory Equipment and Supplies section of this work scope provides for all equipment and supplies necessary to operate the analytical laboratories. These include equipment and supplies for the inorganic, organic, radiochemical, and

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 3

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.B	ANALYTICAL LAB SERVICES

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	A. MEYER 648-5423	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
EBAL	ANALYTICAL LAB SERVICES

14. ELEMENT TASK DESCRIPTION

sample processing laboratories. This element contains provisions for routine instrument maintenance service contracts.

Compliance Requirements - Perform all activities with self assessment, commitment tracking and reporting, required training, training coordination, project personnel health and safety, nuclear criticality, Conduct of Operations, and quality assurance/quality control in order to comply with Federal Regulations, DOE Orders, and site policies and procedures. This also includes preparing and distributing Quality Control sample duplicates, blanks, and spikes; managing the Performance Evaluation Testing (PET) Program, NPDES Program, Interlaboratory Comparability Studies (IDC), and the review, preparation and verification of sample data packages.

Future Lab Projects/Renovations

Lump Sum Subcontract - ALS Lab Consolidation Project
Provide all necessary procurement activities, manpower, materials, equipment, craft labor, and supervision to construct and install the items for completion of the ALS Consolidation Project. Work scope will include but not be limited to the following activities: design, procurement, and delivery of the modular modifications and revisions to existing Road Transportable Analytical Laboratories laboratory units; site clearing and grading; modification and installation of drainage piping; installation of underground piping for fire protection, sewage, and domestic water; installation of driveways and sidewalks; installation of structural support piers; installation of new fencing; installation of utilities including electrical and communications; providing new argon gas storage and piping; installation of new equipment; installation of piping for natural gas and laboratory waste; and all other items as identified and detailed in the subcontract contract documents.

d. WORK SPECIFICALLY EXCLUDED:

This Control Account excludes all activities that are directly attributable to specific customers and excludes the receipt, process, preparation and analysis of samples that are directly allocable to a specific control account/charge

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 4

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.B	ANALYTICAL LAB SERVICES

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	A. MEYER 648-5423	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
EBAL	ANALYTICAL LAB SERVICES

14. ELEMENT TASK DESCRIPTION

number. The AWWT laboratory labor is not included in this work scope. The Fluor support costs for the ALS Lab Consolidation Project are excluded from this control account.

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE 12/01/2000	Page 1
3. WBS ELEMENT CODE 1.1.E.B	4. WBS ELEMENT TITLE/NAME ANALYTICAL LAB SERVICES	
5. PERFORMING DIV/DEPARTMENT CODE 52	6. ORIGINATOR NAME/PHONE A. Meyer 648-5423	7. WBS ELEMENT MANAGER MARC JEWETT
8. BUDGET AND REPORTING NUMBER EW05H3040	9. BUDGET TITLE AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE? NEW PER CP# FY01-0115-0004-00		11. ESTIMATED START / COMPLETION DATE 12/01/00 - 12/27/09
12. TASK IDENTIFICATION (WORK PACKAGE) EBAL1	13. TASK DESCRIPTION (ONE LINE) LAB MANAGEMENT & STAFF	

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

LABOR
MATERIALS
SUBCONTRACTS
ODC'S

b. TECHNICAL CONTENT:

This charge number work scope represents the management of the Analytical Laboratory Services (ALS) Project including administrative activities of approximately 60 managerial, supervisory, clerical, technical, temporary, subcontractor, and teaming partner personnel that are normally performed as part of day to day departmental operations.

Procedure Development and Administration - Includes the development, implementation, periodic review and revision, and training for all written procedures owned by the department. Specifically, this includes the biennial review of over 100 SOPs and analytical procedures currently owned by the ALS Project. It also includes the development of new procedures for analysis of samples, as well as activities necessary to validate new procedures, provide on-the-job training, and certification of analytical chemists.

Carry out facilities administration activities, which include various inventories and tracking such as nuclear materials, sensitive property, precious metals, special materials, chemical and hazardous materials. The scope also provides for government property management, laboratory sub-stores management, and reconfiguration/equipment relocation activities, maintenance work activities pertaining to laboratory operations and facility owner responsibilities as they relate to the safety of the building occupants. The latter includes the maintenance of the MEF and MSDS records and inspection of safety and spill equipment and supplies. Finally, facilities work includes all activities

Project Manager	Control Account Manager	Control Team Manager
for MT	for MT	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.B	ANALYTICAL LAB SERVICES

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	A. Meyer 648-5423	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EBAL1	LAB MANAGEMENT & STAFF

14. ELEMENT TASK DESCRIPTION

involving the disposition of sample residues and appropriate laboratory generated waste. This includes all tasks associated with maintaining satellite accumulation areas (SAA) and disposing of excess equipment and chemicals from the on-site laboratories. This scope of work includes wage personnel for their support in performing and completing the above tasks.

Laboratory Equipment and Supplies section of this work scope provides for all equipment and supplies necessary to operate the analytical laboratories. These include equipment and supplies for the inorganic, organic, radiochemical, and sample processing laboratories. This charge number contains provisions for routine instrument maintenance service contracts. However, this work scope specifically excludes office supplies.

Compliance Requirements - Perform activities associated with self assessment, commitment tracking and reporting, training coordination, health and safety, nuclear criticality, quality assurance/quality control, and environmental regulatory issues pertaining to laboratory operations, and all required training to comply with Federal Regulations, DOE Orders, and FDF policies and procedures.

c. SCOPE OF WORK:

Activities normally performed as part of day to day operations for the analytical Laboratory Services Project include but are not limited to: attendance at staff meetings, attendance at general employee meetings, participation in emergency preparedness drills, instrument maintenance, laboratory safety and housekeeping activities, work coordination tasks, operations and strategic planning activities, procurement activities, budgeting activities, subcontract administration, personal development, travel, Continuous Performance Improvement activities, and personnel administration. The latter includes salary administration, performance evaluation, career development and other matters routinely conducted. This WBS element also includes down time due to inclement weather and temporary loss of facility services and utilities. The operations and strategic planning includes the planning of FDF lab operations throughout the accelerated cleanup plan and the D&D of the lab buildings (15,

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 3

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.B	ANALYTICAL LAB SERVICES

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	A. Meyer 648-5423	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EBAL1	LAB MANAGEMENT & STAFF

14. ELEMENT TASK DESCRIPTION

15B, & 53). This planning includes, but is not limited to, operations, design and implementation of alternate laboratory facilities for relocation of analytical functions.

Activities for this Analytical Laboratory Services charge number work scope include biennial review of over 100 existing procedures, writing new procedures, performing laboratory work to develop new methodologies, and training and certifying analysts to new procedures.

As Fernald transitions from RI/FS activities to remedial activities, increased emphasis will be given to developing and implementing various field screening analytical procedures, quick turn around time methods, and methods to provide analytical support for process control operations.

Facilities Administration - Specific facilities administration activities include the following:

Generating and tracking all work orders for maintenance activities
Interfacing with Space Management Services to move personnel within the building.
Complying with all lockout and tagout requirements as specified by Conduct of Operations.
Ensuring building compliance with all regulatory and health and safety requirements.
Performing special materials inventory.
Performing sensitive property inventory.
Performing precious metals inventory.
Managing and performing the government property program.
Performing and maintaining nuclear materials inventory.
Implementing and maintaining MIMCS tracking systems.
Maintaining MEF and MSDS records.
Maintaining and inspecting safety/spill supplies.
Managing and maintaining chemical sub-stores.
Supervising and scheduling wage personnel for non-maintenance activities.
Supervising radiological technicians on all activities associated with property movement and inventories.
Supervising work activities of Project personnel engaged in all above

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 4

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.B	ANALYTICAL LAB SERVICES

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	A. Meyer 648-5423	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EBAL1	LAB MANAGEMENT & STAFF

14. ELEMENT TASK DESCRIPTION

activities.
Performing building health and safety activities and inspections.

Other activities involved with this charge number include downtime for relocation of laboratory staff, transportation and moving of laboratory equipment, and reconfiguration of electric plumbing and gas-handling utilities. Such moves reflect changing analytical equipment at Fernald, and, hence, different laboratory functions and space disposition.

This scope of work includes wage personnel (laborers, MVOs, hazwats, and various maintenance support) for their support in performing and completing the tasks assigned in this charge number.

Finally, facilities work includes the disposition of samples residues from the on-site laboratories and the low-level/mixed waste generated from the analysis of the samples. This includes maintaining the SAAs and the non-hazardous wastes streams associated with this waste. This also includes disposing of unnecessary, expired, and excessed chemicals.

Laboratory Equipment and Supplies - This section of the scope of work provides for all equipment and supplies necessary to operate the analytical laboratories. This includes solvents, chemicals, glassware, safety supplies/equipment, compressed gases, liquified gases, drums, spray paint, sample shipping supplies, maintenance work order parts, filter paper, and ion exchange resins, etc. necessary to run the inorganic, organic, radiochemical, and sample processing laboratories.

This scope includes the purchase of instrumentation to perform sample analyses including replacing and upgrading aging instrumentation as well as purchasing instruments required to implement new analytical methods.

This charge number also provides for the purchase of maintenance services agreements. These include preventative maintenance and service calls on all major laboratory instrumentation which may including ICPs, GC/MSs, graphic furnace AAs, ICP/MS, spectrometry equipment, laser kinetic phosphorescence equipment, analytical balances, and gas flow proportional counting systems.

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 5

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.B	ANALYTICAL LAB SERVICES

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	A. Meyer 648-5423	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EBAL1	LAB MANAGEMENT & STAFF

14. ELEMENT TASK DESCRIPTION

Activities for this Analytical Laboratory Services charge number work scope include all compliance training (GET, radiological worker training, DOT training, hazwoper training, chemical hygiene training, NVO 325 training, etc.) as well as necessary manager/supervisor training, CAM training, and other miscellaneous required training. This charge number work scope also provides for the activities of the Project Training Coordinator. Activities associated with self assessment, analysis of required QC samples (such as NPDES QC samples), health and safety inspections, regulatory issues, commitment tracking and reporting, radiologic compliance, and quality assurance compliance are covered by this charge number work scope. This charge number work scope also includes preparing and distributing Quality Control sample duplicates, blanks, and spikes; managing the Performance Evaluation Testing (PET) Program, NPDES program, IDC (Interlaboratory Comparability Studies) Bioassay program; and the review, preparation, and verification of a sample data package for every package run.

d. WORK SPECIFICALLY EXCLUDED:

This Charge Number excludes all activities that are directly attributable to specific customers and excludes the receipt, process, preparation and analysis of samples that are directly allocable to a specific control account/charge number. The AWWT laboratory labor is not included in this work.

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE 12/01/2000	Page 1
3. WBS ELEMENT CODE 1.1.E.B	4. WBS ELEMENT TITLE/NAME ANALYTICAL LAB SERVICES	
5. PERFORMING DIV/DEPARTMENT CODE 52	6. ORIGINATOR NAME/PHONE A. MEYER 648-5423	7. WBS ELEMENT MANAGER MARC JEWETT
8. BUDGET AND REPORTING NUMBER EW05H3040	9. BUDGET TITLE AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE? NEW PER CP# FY01-0115-0004-00		11. ESTIMATED START / COMPLETION DATE 10/08/01 - 09/30/02
12. TASK IDENTIFICATION (WORK PACKAGE) EBAL2	13. TASK DESCRIPTION (ONE LINE) FUTURE LAB PROJECTS & RENOVATIONS	

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Subcontract

b. TECHNICAL CONTENT:

This project will provide facilities for continuation of existing on-site analytical services to support the Site Closure Plan. The scheduled decontamination and decommissioning of the buildings where analytical work is performed make continuation of laboratory operations in these building impossible.

c. SCOPE OF WORK:

The scope of this project consists of providing temporary laboratory facilities for the Analytical Laboratory Services (ALS) to carry out its mission in support of Fernald Closure Plan. The scope consists of the following items:

Lump Sum Subcontract - ALS Consolidation
Provide all necessary procurement activities, manpower, materials, equipment, craft labor, and supervision to construct and install the items for completion of the ALS Consolidation Project. Work scope will include but not be limited to the following activities: design, procurement, and delivery of the modular modifications and revisions to existing Road Transportable Analytical Laboratories laboratory units; site clearing and grading; modification and installation of drainage piping; installation of underground piping for fire protection, sewage, and domestic water; installation of driveways and sidewalks; installation of structural support piers; installation of new fencing; installation of utilities including electrical and communications; providing new nitrogen storage and piping; procurement and installation of new equipment;

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.B	ANALYTICAL LAB SERVICES

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	A. MEYER 648-5423	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	10/08/01 - 09/30/02

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EBAL2	FUTURE LAB PROJECTS & RENOVATIONS

14. ELEMENT TASK DESCRIPTION

installation of piping for natural gas and laboratory waste; and all other items as identified and detailed in the subcontract contract documents.

d. WORK SPECIFICALLY EXCLUDED:

The Fluor Fernald support costs for the ALS Lab Consolidation Project are excluded from this charge number.

SECTION 5

1.0 NARRATIVE

1. PROJECT TITLE: AQUIFER RESTORATION PROJECT	2. DATE: 09/10/01	3. PBS#: 04
4. WBS ELEMENT CODE: 1.1.E.B.	5. WBS ELEMENT TITLE: ANALYTICAL LAB SERVICES	
6. CAM NAME/ PHONE: AMY MEYER	7. CAM SIGNATURE:	
8. ORIGINAL/ CHANGE SCOPE/ PER CP#:	9.CONTROL ACCOUNT: EBAL	

SECTION 5: EBAL – ANALYTICAL LAB SERVICES

1.0 NARRATIVE

1.1 OVERVIEW

Analytical Laboratory Services (ALS) is responsible for the chemical and radiochemical on-site analysis of samples in a safe, timely, efficient and cost-effective manner; and for the management of the laboratory building. These analyses and ancillary activities are performed in Buildings 15, 15B, 53, and 51. The laboratory is responsible for the generation of data to support remediation activities, waste disposal and sample shipping activities, process control operations, and environmental monitoring programs. Completion of all sample analyses to comply with customer schedules, data quality objectives (DQOs), and defensibility requirements are a priority within the ALS Project. ALS also manages the Laboratory Building by controlling the work to ensure the safe completion of work activities within the building and associated ancillary structures. This control account contains two charge numbers, EBAL1 and EBAL2. This control account is responsible for all costs, which are not directly allocable to the projects. This is a Level of Effort account. The EBAL1 charge number includes the analytical infrastructure necessary to carry out the analysis of the project samples. Charge number EBAL2 contains the construction subcontractor costs associated with the laboratory consolidation project. The laboratory consolidation project includes the construction of a modular lab complex and modification of the three existing road transportable analytical laboratories (RTALs) for the relocation of the laboratory functions.

1.2 ASSUMPTIONS/EXCLUSIONS

1.2.1 Assumptions

1.2.1.1 EBAL - Analytical Lab Services

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1. There will be no significant changes to the requirements involving the existing analytical methods as of November 20, 2000 resulting in major changes in manpower, materials and/or equipment.

2. Lab Building D&D October 2004; must vacate by April 2004.

3. FACTs will remain the primary Laboratory Information Management System (LIMS).

~~4. Fluor and DOE evaluation of outsourcing of analytical operations will be complete and go/no-go decision will be made by September 30, 2001.~~

~~4.~~ Review of drawings, rebid, and construction of the laboratory consolidation project will begin in October 2001~~. if decision to outsource has not been made or if decision is not to outsource.~~

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R1-F04 008

~~5. If decision has been made to outsource analytical operations, then costs involving the construction of the laboratory consolidation project will not be incurred. However, there will be some costs required to implement the outsource decision.~~

5. Material estimates are based on FY02 projections and carried out through the life of the project.

6. The rational for FY01 manpower is based on the charge in and charge out practices that were in effect as of the start of the Fluor Fernald Contract in December 2000. The rationale defined in this document is effective as of October 1, 2001 and is based on Revision 0 of the Functional Responsibilities Matrix issued in January of 2001.

1.2.1.2 EBAL1 – Lab Management and Staff

1. In FY02, relocation of laboratory functions and laboratory equipment from Building 15, 15B, and 53 will occur.

2. Approximately 50% of ALS staff labor will be billed out to the projects per historical charging data records.

3. The staffing has been estimated directly proportional to the number of analyses requested based upon historical staffing/analyses records.

4. Aquifer Restoration Project will budget for 3 FTE's to support the operations of the AWWT laboratory. This only includes labor. The materials and supplies costs for the AWWT laboratory will be included in this control account.

5. ALS will continue to lab pack excess/expired chemicals through the coordination with WGS.

1.2.1.3 EBAL2 – Future Lab Project/Renovation

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1. The modular units, ~~if constructed~~ and three existing Road Transportable Analytical Laboratories are assumed to be part of the AWWT facility and will be included in the post closure contract. Therefore, any D and D activities will not be included as part of ~~this baseline~~.

1.2.2 Exclusions

1.2.2.1 EBAL – Analytical Lab Services

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~~1. A detailed estimate for outsourced Lab Operations is not included in this baseline plan.~~ None

1.2.2.2 EBAL1 – Lab Management and Staff

1. This charge number does not include the costs of any specialized packaging materials that may be requested by the projects for sample shipments. These will be baselined by the projects. The standard packaging materials will be baselined by this account.

2. This charge number does not include field sample analysis.

1.2.2.3 EBAL2 – Future Lab Project/Renovation

1. This charge number does not include the construction oversight, transformer, or relocation of existing lab equipment costs associated with the Laboratory Consolidation Project. These costs will be included in the Aquifer Engineering/Construction Management Account.

1.2.3 Government-Furnished Services/Equipment

None

1.3 DRIVERS

1. The actual analytical, data quality and data package report requirements of each project or program are the primary drivers as shown in Table 1. Samples requesting approximately 485,000 (47.7%) analyses will be performed onsite between October 1, 2000 and December 31, 2009. This includes approximately 400,000 process control analyses to be performed by the ALS AWWT laboratory. A detail listing of types of analyses is included in the summary section. The labor associated with the actual samples and analysis is charged out to the project. The remaining samples/analyses will be sent offsite for analysis.

2. Sitewide CERCLA Quality Assurance Project Plan, FD-1000, Revision 1

3. Test Methods for Evaluating Solid Waste, USEPA SW846 3rd edition.

4. USEPA Contract Laboratory Program Statement of Work for Inorganic Analyses, USEPA Document # ILM04.0 1995.

5. RM-3001, Laboratory Chemical Hygiene Manual, Revision 3.

6. Auditable Safety Record (ASR) 96-1075, Laboratory Auditable Safety Record, Revision 5.

7. TQP-042, Analytical Laboratory Services Training and Qualification Plan, Revision 6.

8. CONOPS Matrix COF-503, Revision 0.

9. CONOPS Matrix COF-504, Revision 0.

10. MS-1027, Laboratory Building Work Planning and Management, Revision 1.

11. Lab Building D&D October 2004; must vacate by April 2004.

Table 1
Analyses to be Performed Through December 31, 2009

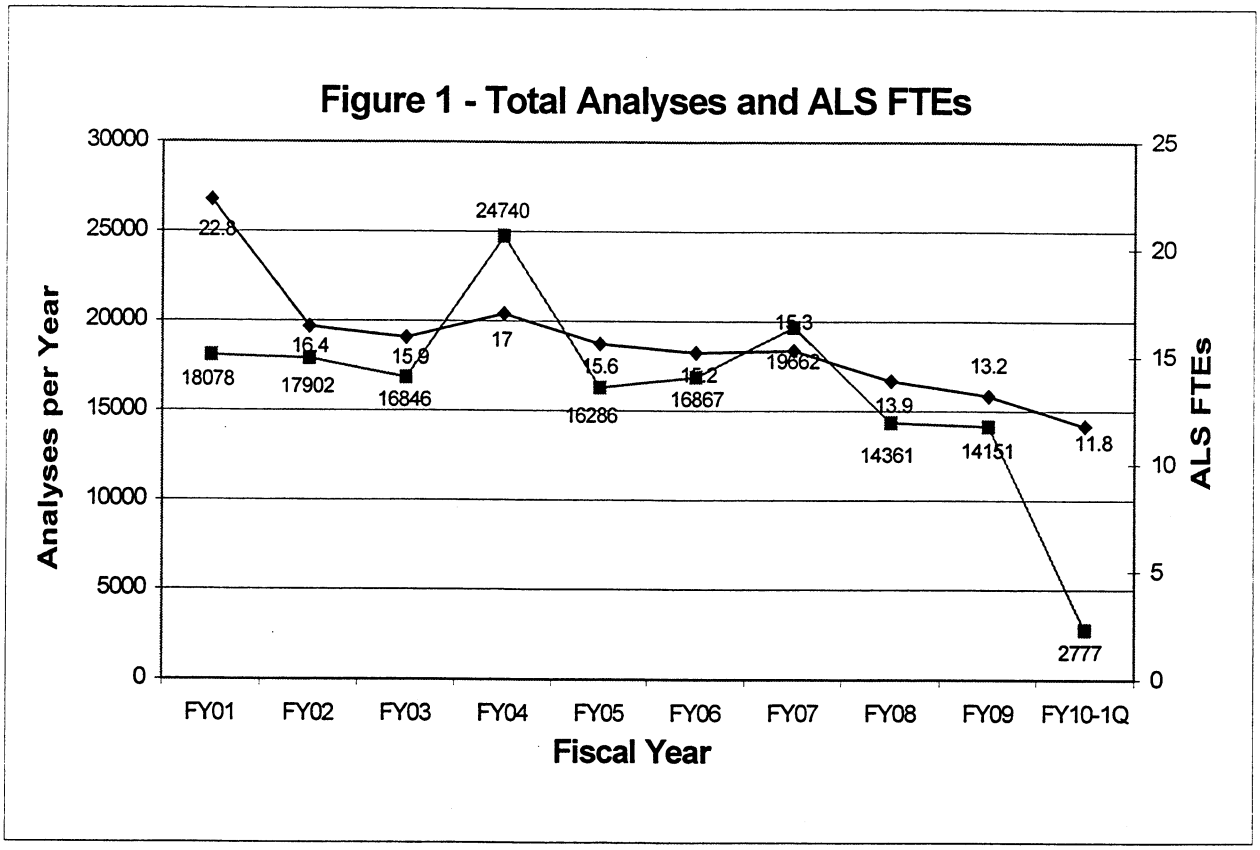
Project/Program	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10-1Q	Total
NPDES	2,307	2,363	2,307	2,307	2,307	2,307	2,363	2,307	2,307	577	**21,452**
Aquifer Restoration-Process control	46,539	46,539	46,539	46,539	46,539	41,807	41,807	38,895	38,895	9,724	**403,823**
Aquifer Restoration-Various Groundwater	761	414	345	313	404	300	331	297	204	0	**3,369**
WPRAP	4,824	3,798	3,738	3,638	1,798	0	0	0	0	0	**17,796**
OSDF	712	702	956	1,484	1,712	2,067	2,168	1,783	1,698	0	**13,282**
Demolition Projects	373	868	1,445	568	209	215	215	0	0	0	**3,893**
Soil Project	0	0	30	8,906	2,733	1,969	5,314	4,139	4,427	850	**28,368**
IEMP	5,621	5,312	5,372	5,312	5,312	5,681	5,312	5,312	5,372	1,328	**49,934**
Silos 1 and 2	200	0	0	0	0	3,006	3,006	0	0	0	**6,212**
Silo 3	486	390	390	843	0	0	0	0	0	0	**2,109**
Waste Generator Services	1,405	2,807	955	15	0	0	0	0	0	0	**5,182**
Industrial Hygiene/Asbestos	1,031	1,008	908	944	1,626	904	728	388	58	6	**7,601**
Special Projects	358	240	400	410	185	418	225	135	85	16	**2,472**
Total	**64,617**	**64,411**	**63,385**	**71,279**	**62,825**	**58,674**	**61,469**	**53,256**	**53,046**	**12,501**	**565,493**
Total Excluding Aquifer Restoration Process Control	**18,078**	**17,902**	**16,846**	**24,740**	**16,286**	**16,867**	**19,662**	**14,361**	**14,151**	**2,777**	**161,670**

1.4 Scope of Work

1.4.1 EBAL1 – Lab Management and Staff

Figure 1 depicts the total manpower labor charged to this account versus the number of analyses requests per year.

R1-F04 008



1) Task #1 – Administrative

1.1) Plan/Scope - Administrative

- Documentation and distribution of the Chemical Hygiene Meeting minutes
- Performing Performance reviews of personnel
- Coordinate personnel issues with HR
- Input information on personnel for compensation program
- Aquifer (weekly), ALS (biweekly), section (biweekly) staff meeting
- Strategic planning activities
- Budgeting, baseline, and project control account activities
- Travel – Meetings/Conferences - Pittcon, American Chemical Society meetings, DOE Analytical Managers meeting

- Compiling and reporting Monthly Technical Performance Indicators information (i.e., Backlog, repreps, TAT, etc.)
- Review and update profiles used in FACTS periodically
- Cost-savings proposal preparation
- Budget tracking and reporting (labor summary/billability) weekly
- Supervisory oversight of section activities
- Escorting equipment vendors/service reps through labs
- Data/records sorting, creating labels, filing, inventory and archiving
- Filling out requisitions
- Evaluating items for purchase
- Creation/Maintenance on spreadsheets/worksheets for internal/external use (i.e., Backlog, Safety and Housekeeping Inspections, CSI forms, etc.
- Completing appropriate expense reports
- Drills - tornado/rally point/etc.
- Filing of raw data, memo's, logbooks, etc.
- Preparation and distribution of memorandums and analyst certification letters
- Credit Card/Chemical buyer duties, contacting vendors about purchases, problems, getting quotes for purchases or service contracts (approximately 300 requisitions/year)
- Office supplies
- Professional memberships
- Mileage
- Registration fees
- Periodicals
- Publications.

1.2) Quantification - Administrative

These are based on the numbers of analyses that the projects request for FY2002.

R1-D-190

R1-F04 008

Chemist	~~1~~ .9
Lab Mgr	.8
Env Sci Rep	.1
Lab Tech	~~.1~~ .2
Waste Eng	.2
Clerk	~~.7~~ .3
Rad Tech	.1
~~Engineer~~	~~.3~~
Project Manager	.2

ODCs

2002	2003	2004	2005	2006	2007	2008	2009	2010
6,000	5,500	8,000	5,500	5,500	7,000	5,000	5,000	1,000

Materials

2002	2003	2004	2005	2006	2007	2008	2009	2010
8,000	7,000	10,000	7,000	7,000	9,000	5,000	5,000	1,000

2) Task #2 - Compliance

2.1) Plan/Scope - Compliance

- ALS QC activities: logging in performance evaluation (PE) samples, preparing PE samples, and analysis of PE samples:

PE Program	Frequency	Number of samples/year
AIHA	Quarterly	4
PAT	Quarterly	4
NVLAP	Semi annual	4
DOE-EML	Semi annual	4
MAPEP	Semi annual	2
DMRQA	Annual	2
APG	Annual	28
Round Robin Asbestos-PLM/PCM	Semi annual	8

- Pipette (monthly) and thermometer (annually) maintenance and calibration checks
- QA Officer activities (3 surveillance's per month, write NCRs, review corrective action plans, procedure review, analyst certification oversight, instrumentation PM/CAL oversight, ALS M&TE tracking, NCR tracking, etc.)
- Audit preparation and follow-up activities
- Accreditation (NVLAP, AIHA) costs
- IDL Quarterly and MDL (annually) determinations
- Control chart maintenance – daily and review monthly and quarterly
- Logbook (approximately 150) crosscheck and review - quarterly
- Audits and preparations for audits (NVLAP-every two years, EMCAP-annually, CONOPS-every two years)
- Analytical balance check weights verified – semi annually
- Refrigerator temperature checks – daily
- Large scale verification - weekly
- Physicals and required drug screens, In-Vivo
- Prepare, review, and/or revise CONOPS matrices annually
- Subcontractor costs for balance calibrations – semi annually

2.2) Quantification - Compliance

These are based on the numbers of analyses that the projects request for FY2002.

R1-F04-008

Chemist	.5
Lab Mgr	.2
Env Sci Rep	.2
Lab Tech	~~.2~~ .1
Env Sci Tech	.1
Project Manager	.2
QA	~~.9~~ .8

Materials

2002	2003	2004	2005	2006	2007	2008	2009	2010
8,000	7,000	9,000	7,000	7,000	8,500	5,000	5,000	1,000

3) Task #3 – Operations

3.1 Plan/Scope – Operations

- Preventive maintenance or general maintenance on laboratory instruments

Major pieces of Instrumentation	Frequency
Inductively Coupled Plasma Spectrophotometer	Annual
Inductively Coupled Plasma Spectrophotometer	Annual
Atomic Absorption Spectrophotometer - 5100A	Semi annual
Atomic Absorption Spectrophotometer - 5100B	Semi annual
Atomic Absorption Spectrophotometer - 5100C	Semi annual
Microscope, polarized light	Annual
Microscope, stereoscope	Annual
Microscope, phase contrast	Annual
Inductively Coupled Plasma Mass Spectrometer	Annual
Tennelec LB4100 Gas Proportional Counter	Annual
Tennelec LB4100 Gas Proportional Counter	Annual
Canberra Gamma Spec. Detector	Annual
Canberra Gamma Spec. Detector	Annual
Canberra Gamma Spec. Detector	Annual
Canberra Gamma Spec. Detector	Annual
Canberra Alpha Spectroscopy Unit (48 detectors); 8 per bank	Annual
Canberra Gamma Analyst Model Detector	Annual

- Troubleshooting on instruments
- MS-1027, Non-Routine Work Activities for Building 15 - Approximately 7 workplans per year
- Preparation of reagents and standards, including standard verification tests
- Generations and review of the analysis backlog report – weekly
- Laboratory-related materials and supplies, service contracts for laboratory instrumentation and equipment including chemicals, standards, gases, instrumentation, parts, samples shipping materials, and accessories

- Calibrations
- Equipment repairs
- Laundry and cleaning supplies
- Activities (MSO, rad survey) related to sending small items (pipettes) or recyclables (ICP torches or nebulizers) to vendor for repair or refurbish
- Review of off-site laboratory radioactive material licenses to ensure that samples can be shipped to laboratory – annually
- Packing excess sample material into containers (drums) for disposition through WGS
- Laboratory instrument software, updates of software, instrument-related computers, printers, and maintenance associated with these items
- Vendor Service Agreements on instrumentation

3.2) Quantification - Operations

These are based on the numbers of analyses that the projects request for FY2002.

R1-D-190

R1-F04 008

Chemist	.5
Lab Mgr	~~.2~~ .1
Lab Tech	~~.3~~ .2
Waste Eng	.1
Env Sci Tech	.1
Rad Tech	~~.4~~ .3
Project Manager	~~.2~~ .1

Materials

2002	2003	2004	2005	2006	2007	2008	2009	2010
400,000	385,000	550,000	385,000	385,000	500,000	325,000	300,000	70,000

4) Task #4 – Facility

4.1) Plan/Scope – Facility

- Chemical disposition and preparation (package, survey, etc.) for lab pack to offsite vendor
- Alpha/beta screens of chemicals to determine whether disposal will be through regular trash, lab pack, or contaminated
- Getting excess equipment (identify, clean, survey) ready to be disposition through property
- Waste disposition activities – maintenance of the MEF records, 65 card preparation, approximately 200 drums/year
- Disposition activities associated with laboratory radiological standards and solutions
- Coordination of lab building hazwat activities
- Hazwat labor for waste handling, safety equipment checks, and preparation of waste and containers

- MVO labor to move waste material to storage location
- Coordinate/tracking of maintenance work requests
- Lab waste disposition/coordinator
- Fluor Fernald Precious Metals Control Officer
- Manage the lab SAA
- Manage the chemical sub-store
- Manage and conduct various inventories (precious metals, special source/ERM, chemical)
- ALS will budget for the packaging, movement to the WGS storage location, characterization, and disposition. The WGS estimate will be used as the basis for their support required (characterization, hazwat, laborer, etc.) for the laboratory waste as applicable based on the following.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
White Metal Boxes	6	4	3	4	0	1	0	1	0	1
SAA (lab waste) drums	8	8	8	8	8	8	8	8	8	3
Contact waste	100	100	100	100	100	100	100	100	100	25
Excess samples	50	50	50	50	50	50	50	50	50	10

- ALS will research, develop and implement the use of Russian Gubka technology to stabilize excess radiochemical laboratory standard solutions. This technology would allow for a potentially quicker disposition and safer storage for these solutions. Disposition of this material will be to NTS.
- Drums, paint, miscellaneous supplies for waste containers.

4.2) Quantification

These are based on the numbers of analyses that the projects request for FY2002.

R1-D-190

R1-F04-008

Chemist	.2
Waste Eng	.7
Rad Tech	~~.8~~ .7
Hazwat	~~2~~ 1.8
MVO	.1
Project Manager	.1

Materials

2002	2003	2004	2005	2006	2007	2008	2009	2010
30,000	25,000	40,000	25,000	25,000	35,000	17,000	17,000	4,000

5) Task #5 – Procedures

5.1) Plan/Scope – Procedures

- Review of the Chemical Hygiene Manual and Program (annual)
- Method Development and validation activities
- SCQ revision activities
- Procedure and work plan writing
- Procedure (approximately 125) and work plan reviews (IH, QA, ALS), comment resolution, and approval
- ALS will research, develop and implement the use of Inductively Coupled Plasma Mass Spectrometer for analyzing for Thorium 230 in air filter samples instead of the current Scintrex method.

5.2) Quantification – Procedures

These are based on the numbers of analyses that the projects request for FY2002.

R1-D-190

R1-F04-008

Chemist	~~1.5~~ 1.4
Lab Mgr	.2
Env Sci Rep	.1
Lab Tech	.1
Waste Eng	.1
Env Sci Tech	.1
Clerk	~~.7~~ .1
Industrial Hyg.	.1
QA	.1
Project Manager	.1

6) Task #6 – Safety

6.1) Plan/Scope – Safety

- Participating in the site Chemical Hygiene Committee Meeting – one meeting every two weeks.
- Chemical Hygiene Officer
- Review and create information as needed for Chemical Hygiene Training Program (annual)
- Update/Review/Change training programs (lesson plans) for Chemical Hygiene Refresher, Chemical Hygiene - Basic, and Chemical Hygiene - Awareness.

- Maintain and review Chemical Storage Inspections - do periodic checks of this part of the program.
- ALS Project (one/month) and Section (one-two/month) safety meetings
- Timeout day activities (one day/month)
- Performing Safety & Housekeeping inspections (quarterly)
- Performing Chemical Storage inspections (quarterly)
- IH Ventilation Surveys (fume hoods and local exhaust systems) Buildings 15A, 51 and 53-68 total in-service systems conducted quarterly
- IH Air Monitoring (mostly SAA waste transfer) - 3 samples per month
- Employee safety concerns are approximately 2/month
- Safety walkthroughs – three per month for four supervisors
- Safety advocate activities
- Updating MSDS stations – ongoing and yearly
- General housekeeping in labs and office areas
- Activities involved in the Chemical Accountability procedure for ALS (chemical tracking forms, input information into chemical management system etc.)
- Safety equipment

6.2) Quantification - Safety

These are based on the numbers of analyses that the projects request for FY2002.

R1-D-190

R1-F04 008

Chemist	~~1.0~~ .9
Lab Mgr	.2
Env Sci Rep	.1
Lab Tech	.2
Waste Eng	.2
Env Sci Tech	.1
Rad Tech	.1
Rad Supervisor	.1
Rad Engineer	.1
Project Manager	~~.1~~ .2
Industrial Hyg.	~~.4~~ .3

Materials

2002	2003	2004	2005	2006	2007	2008	2009	2010
30,000	25,000	40,000	25,000	25,000	35,000	17,000	17,000	4,000

7) Task #7 - Training

7.1) Plan/Scope - Training

- Mandatory compliance training (Site)
- Mandatory project specific training per TQP042
- Required readings

- Training/Travel - attending professional development classes or required off-site training for instrument, analyst certification.
- DOT required training
- Registration fees
- mileage
- Conducting analyses for analyst certification and/or recertification program
- Prepare, review, and /or revise TQP annually
- Cross - Training other team members or being trained on new procedures, including certification sample analysis

7.2) Quantification - Training

These are based on the numbers of analyses that the projects request for FY2002.

R1-D-190

R1-F04 008

Chemist	~~.9~~ .8
Lab Mgr	.2
Env Sci Rep	.1
Lab Tech	.2
Waste Eng	.1
Env Sci Tech	.1
Clerk	~~.3~~ .1
Industrial Hyg.	.1
Project Manager	.1

ODCs

2002	2003	2004	2005	2006	2007	2008	2009	2010
6,000	5,500	8,000	5,500	5,500	7,000	5,000	5,000	1,000

1.4.2 EBAL2 – Future Lab Project/Renovation

1) Task #1 – Construction Subcontractor

1.1) Plan/Scope – Construction Subcontractor

This charge number will provide for the subcontract cost of new laboratory facilities for the continuation of the existing onsite analytical services to support the site projects. The scope of this project consists of providing modular laboratory facilities and the renovation of the existing road transportable analytical laboratories for ALS to carry out its mission.

The scope contains the following items:
Design, procurement, and delivery of modular units, modifications and revisions to the existing road transportable analytical laboratory units, site clearing and grading, modification and installation of drainage piping, installation of driveways and sidewalks, installation of structural support piers; installation of new fencing, installation of underground piping for fire protections, sewage and domestic water, installation of utilities

including electrical and communications, providing new gas storage and piping, and installation of new equipment, installation of piping for laboratory waste lines, and all other item as identified and detailed in the subcontract contract documents. This work will be performed in FY02 under design package 60310-DC-0001.

1.2) Quantification – Construction Subcontractor

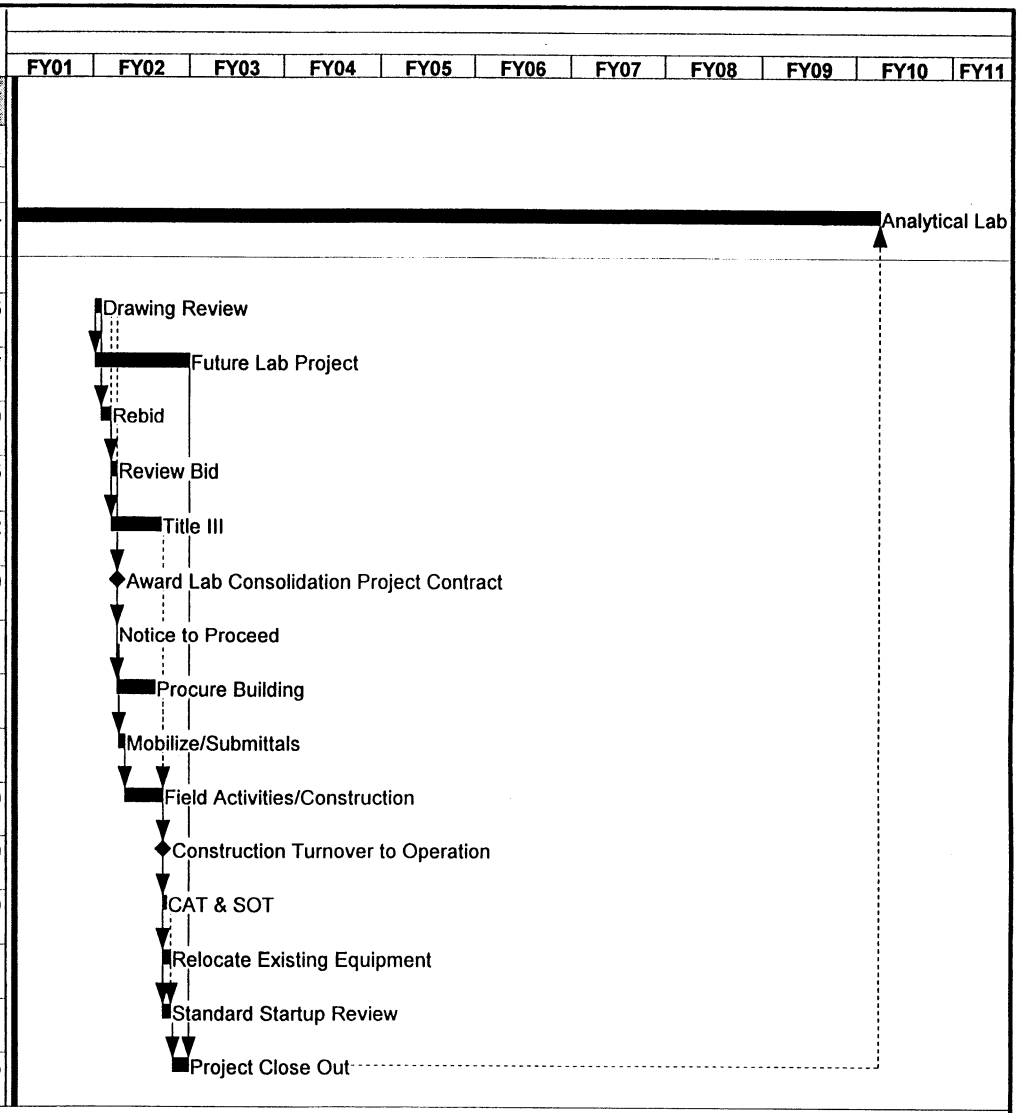
R1-F04-006 008

Subcontracts	~~$1,220,190~~ $1,860,059

SECTION 5

2.0 SCHEDULE

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
E PBS 04 - AQUIFER RESTORATION				
1.1.E.B ANALYTICAL LAB SERVICES				
EBAL1 Lab Management & Staff				
ECBAL10000	Analytical Lab Management	01DEC00	27DEC09	3,314
EBAL2 Future Lab Projects & Renovations				
ECBAL20001	Drawing Review	08OCT01*	26OCT01	15
ECBAL2H000	Future Lab Project	08OCT01	30SEP02	245*
ECBAL20011	Rebid	27OCT01	05DEC01	40
ECBAL20021	Review Bid	06DEC01	28DEC01	15
ECBAL20031	Title III	06DEC01	17JUN02	132
ECBAL2M041	Award Lab Consolidation Project Contract		28DEC01	0
ECBAL20061	Notice to Proceed	31DEC01	31DEC01	1
ECBAL20051	Procure Building	31DEC01	23MAY02	101
ECBAL20071	Mobilize/Submittals	02JAN02	30JAN02	21
ECBAL20081	Field Activities/Construction	31JAN02	24JUN02	100
ECBAL2M091	Construction Turnover to Operation		24JUN02	0
ECBAL20131	CAT & SOT	25JUN02	09JUL02	10
ECBAL20101	Relocate Existing Equipment	25JUN02	24JUL02	21
ECBAL20111	Standard Startup Review	27JUN02	26JUL02	21
ECBAL20121	Project Close Out	29JUL02	30SEP02	45



FLUOR FERNALD

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Start Date	01DEC00
Finish Date	27DEC09
Data Date	01DEC00
Run Date	05SEP01 15:10

BLCF - EC01

Sheet 1 of 1

AQUIFER RESTORATION

1.1.E.B LAB SERVICES

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved

SECTION 5

3.0 MANPOWER PLANS

Manpower Planning Sheet (CR2)

MPS # 1EB01 LAB MANAGEMENT & STAFF

DRIVERS	START DATE	END DATE	TOT	FY 2001 Q1 Q2 Q3 Q4	FY 2002 Q1 Q2 Q3 Q4	FY 2003 Q1 Q2 Q3 Q4	FY 2004 Q1 Q2 Q3 Q4	FY 2005 Q1 Q2 Q3 Q4	FY 2006 Q1 Q2 Q3 Q4
205 LAB/PILOT PLANT D&D	10/01/2003	09/29/2006					xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx
224 Lab Complex D&D	10/01/2004	10/31/2005						xxx xxx xxx xxx	x
301 OSDF Summary Schedule	04/01/2004	12/23/2009					xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx
411 AWWT Operations	10/02/2000	12/31/2009		xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx
502 WASTE PIT SHIP/DISPOSAL OPERATIONS	10/02/2000	08/01/2005		xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xx	
608 Area 3A Precert/Certification	10/03/2005	09/29/2006							xxx xxx xxx xxx
609 Area 3B Precert/Certification	04/02/2008	02/09/2009							
612 Area 2 Phase 2 Precert/Cert	10/04/2004	04/10/2007						xxx xxx xxx xxx	xxx xxx xxx xxx
613 Area 3A Predesign/Design	10/02/2000	07/27/2001		xxx xxx xxx x					
614 Area 4A Predesign/Design	10/02/2000	07/27/2001		xxx xxx xxx x					
615 Area 3B/4B/5 Predesign/Design	10/01/2003	09/28/2005					xxx xxx xxx xxx	xxx xxx xxx xxx	
618 Area 3A Exc. Control Characterization	04/01/2004	09/30/2005					xxx xxx	xxx xxx xxx xxx	
619 Lime Sludge Pond Exc. Control Characterizatio	04/01/2004	09/30/2004					xxx xxx		
620 Area 3B Exc. Control Characterization	10/03/2005	03/31/2008							xxx xxx xxx xxx
621 Area 4A Exc. Control Characterization	04/01/2004	09/30/2005					xxx xxx	xxx xxx xxx xxx	
622 Area 4B Exc. Control Characterization	10/03/2005	03/31/2008							xxx xxx xxx xxx
623 Area 5 Exc. Control Characterization	10/03/2005	03/31/2008							xxx xxx xxx xxx
624 Area 7, Sector 1 and 4 Characterization	07/02/2007	10/27/2008							
630 Area 4B Precert/Cert	04/01/2008	03/31/2009							
631 Area 5: Pre-Cert/Cert	04/01/2008	03/31/2009							
634 Area 4A Precert/Certification	10/03/2005	09/29/2006							xxx xxx xxx xxx
635 Area 6: Predsign/Design	10/03/2005	09/29/2006							xxx xxx xxx xxx
636 Area 6: Precert/Cert	07/02/2007	06/30/2008							
637 Area 7: Predesign/Design	10/02/2006	09/28/2007							
705 SILOS 1, 2, & 3 CONSTRUCTION & CAT	04/01/2003	04/01/2005				xxx xxx	xxx xxx xxx xxx	xxx xxx x	
707 SILOS 1, 2, & 3 OPERATIONS	10/03/2005	03/30/2007							xxx xxx xxx xxx
801 Nuclear Materials Summary	10/02/2000	05/20/2002		xxx xxx xxx xxx	xxx xxx xx				
1001 Mixed Waste Summary	10/02/2000	09/30/2003		xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx			
1101 Low Level Waste Summary	10/02/2000	09/30/2005		xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	

Lab	Chemist	220.20	8.7	9.4	9	9	5.2	5.2	5.2	5.2	5.3	5.3	5.3	5.3	6.3	6.3	6.3	6.3	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
Lab	Lab Manager	56.00	0	0	0	0	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Environmental	Environmental Scientist Rep.	20.10	0.1	0	0.1	0.1	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Lab	Lab Tech.	41.10	3.5	3.9	3.5	3.5	1.1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Administration	Clerks	17.70	0.4	0.2	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Waste Management	Waste Engineer	37.90	1.6	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Environmental	Environmental Scientist Tech.	16.50	0	0	0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Manpower Planning Sheet (CR2)

MPS # 1EB01 LAB MANAGEMENT & STAFF

DRIVERS	START DATE	END DATE	FY 2007 Q1	FY 2007 Q2	FY 2007 Q3	FY 2007 Q4	FY 2008 Q1	FY 2008 Q2	FY 2008 Q3	FY 2008 Q4	FY 2009 Q1	FY 2009 Q2	FY 2009 Q3	FY 2009 Q4	FY 2010 Q1	FY 2010 Q2	FY 2010 Q3	FY 2010 Q4	FY 2011 Q1	FY 2011 Q2	FY 2011 Q3	FY 2011 Q4
205 LAB/PILOT PLANT D&D	10/01/2003	09/29/2006																				
224 Lab Complex D&D	10/01/2004	10/31/2005																				
301 OSDF Summary Schedule	04/01/2004	12/23/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
502 WASTE PIT SHIP/DISPOSAL OPERATION	10/02/2000	08/01/2005																				
608 Area 3A Precert/Certification	10/03/2005	09/29/2006																				
609 Area 3B Precert/Certification	04/02/2008	02/09/2009							xxx	xxx	xxx	xx										
612 Area 2 Phase 2 Precert/Cert	10/04/2004	04/10/2007	xxx	xxx	x																	
613 Area 3A Predesign/Design	10/02/2000	07/27/2001																				
614 Area 4A Predesign/Design	10/02/2000	07/27/2001																				
615 Area 3B/4B/5 Predesign/Design	10/01/2003	09/28/2005																				
618 Area 3A Exc. Control Characterization	04/01/2004	09/30/2005																				
619 Lime Sludge Pond Exc. Control Characteriz	04/01/2004	09/30/2004																				
620 Area 3B Exc. Control Characterization	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
621 Area 4A Exc. Control Characterization	04/01/2004	09/30/2005																				
622 Area 4B Exc. Control Characterization	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
623 Area 5 Exc. Control Characterization	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
624 Area 7, Sector 1 and 4 Characterization	07/02/2007	10/27/2008				xxx	xxx	xxx	xxx	xxx	x											
630 Area 4B Precert/Cert	04/01/2008	03/31/2009							xxx	xxx	xxx	xxx										
631 Area 5: Pre-Cert/Cert	04/01/2008	03/31/2009							xxx	xxx	xxx	xxx										
634 Area 4A Precert/Certification	10/03/2005	09/29/2006																				
635 Area 6: Predsign/Design	10/03/2005	09/29/2006																				
636 Area 6: Precert/Cert	07/02/2007	06/30/2008				xxx	xxx	xxx	xxx													
637 Area 7: Predesign/Design	10/02/2006	09/28/2007	xxx	xxx	xxx	xxx																
705 SILOS 1, 2, & 3 CONSTRUCTION & CAT	04/01/2003	04/01/2005																				
707 SILOS 1, 2, & 3 OPERATIONS	10/03/2005	03/30/2007	xxx	xxx																		
801 Nuclear Materials Summary	10/02/2000	05/20/2002																				
1001 Mixed Waste Summary	10/02/2000	09/30/2003																				
1101 Low Level Waste Summary	10/02/2000	09/30/2005																				

		FY 2007 Q1	FY 2007 Q2	FY 2007 Q3	FY 2007 Q4	FY 2008 Q1	FY 2008 Q2	FY 2008 Q3	FY 2008 Q4	FY 2009 Q1	FY 2009 Q2	FY 2009 Q3	FY 2009 Q4	FY 2010 Q1	FY 2010 Q2	FY 2010 Q3	FY 2010 Q4	FY 2011 Q1	FY 2011 Q2	FY 2011 Q3	FY 2011 Q4
Lab	Chemist	6.2	6.2	6.2	6.2	5.3	5.3	5.3	5.3	4.9	4.9	4.9	4.9	4.9	0	0	0	0	0	0	0
Lab	Lab Manager	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	0	0	0	0	0	0	0
Environmental	Environmental Scientist Rep.	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0	0	0	0	0	0	0
Lab	Lab Tech.	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0	0	0	0	0	0	0
Administration	Clerks	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0
Waste Management	Waste Engineer	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0	0	0	0	0	0	0
Environmental	Environmental Scientist Tech.	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0

Manpower Planning Sheet (CR2)

MPS # 1EB01 LAB MANAGEMENT & STAFF

DRIVERS	START DATE	END DATE	TOT	FY 2001 Q1	FY 2001 Q2	FY 2001 Q3	FY 2001 Q4	FY 2002 Q1	FY 2002 Q2	FY 2002 Q3	FY 2002 Q4	FY 2003 Q1	FY 2003 Q2	FY 2003 Q3	FY 2003 Q4	FY 2004 Q1	FY 2004 Q2	FY 2004 Q3	FY 2004 Q4	FY 2005 Q1	FY 2005 Q2	FY 2005 Q3	FY 2005 Q4	FY 2006 Q1	FY 2006 Q2	FY 2006 Q3	FY 2006 Q4
Environmental Safety & H	Rad Tech		43.80	2	2	2	2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.4	1.4	1.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Environmental Safety & H	Rad Engineer		3.60	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Environmental Safety & H	Rad Supervisor/Manager		3.60	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Environmental Safety & H	Industrial Hygienist		14.00	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Project Management	Project Mgr.		1.20	0.3	0.3	0.3	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Engineering & Design	Engineer		7.50	0.1	0	0.1	0	0	0	0	0	0	0	0	0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
QA/QC	QA Engineer		21.70	1	1.1	1	1	1	1	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5
Project Controls	Cost Analyst		0.50	0.2	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Safety & H	Safety Tech.		1.30	0.4	0.3	0.3	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Labor	Hazwat		41.90	1.5	2	1.8	1.9	1.8	1.8	1.8	1.8	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1	1	1	1	1	0.8	0.8	0.8	0.8
Transportation Labor	Motor Vehicle Operator		4.20	0.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
General Labor	General Laborer		0.40	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Information Management	Information Records Rep.		1.40	0.1	0.5	0.4	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance	Project Support Manager		0.90	0.3	0.2	0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Craft Labor	Millwright		0.40	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Craft Labor	Carpenter		0.40	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Craft Labor	Instrument Mechanic		0.40	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Craft Labor	Electrician		0.40	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Craft Labor	Pipefitter		0.30	0.1	0	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Management	Project Mgr.		33.00	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		Sheet Totals:	590.40	21.80	23.00	22.10	22.10	16.80	16.50	16.20	16.20	16.00	16.00	15.80	15.80	17.20	17.20	17.20	16.40	15.80	15.50	15.50	15.50	15.20	15.20	15.20	15.20

Manpower Planning Sheet (CR2)

MPS # 1EB01 LAB MANAGEMENT & STAFF

DRIVERS	START DATE	END DATE	FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Environmental Safety & Health	Rad Tech		1.2	1.2	1.2	1.2	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.4	0	0	0	0	0	0	0
Environmental Safety & Health	Rad Engineer		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0
Environmental Safety & Health	Rad Supervisor/Manager		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0
Environmental Safety & Health	Industrial Hygienist		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0	0	0	0	0	0	0
Project Management	Project Mgr.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Engineering & Design	Engineer		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.1	0	0	0	0	0	0	0
QA/QC	QA Engineer		0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0	0	0	0	0	0	0
Project Controls	Cost Analyst		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental Safety & Health	Safety Tech.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Labor	Hazwat		0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.3	0	0	0	0	0	0	0
Transportation Labor	Motor Vehicle Operator		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0
General Labor	General Laborer		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Information Management	Information Records Rep.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maintenance	Project Support Manager		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Craft Labor	Millwright		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Craft Labor	Carpenter		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Craft Labor	Instrument Mechanic		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Craft Labor	Electrician		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Craft Labor	Pipefitter		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Management	Project Mgr.		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
		Sheet Totals:	15.30	15.30	15.20	15.20	13.90	13.90	13.80	13.80	13.20	13.20	13.20	13.20	11.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Manpower Planning Sheet (CR2)

MPS # 1EB02 FUTURE LAB PROJECTS & RENOVATIONS

DRIVERS	START DATE	END DATE	TOT	FY 2001 Q1 Q2 Q3 Q4	FY 2002 Q1 Q2 Q3 Q4	FY 2003 Q1 Q2 Q3 Q4	FY 2004 Q1 Q2 Q3 Q4	FY 2005 Q1 Q2 Q3 Q4	FY 2006 Q1 Q2 Q3 Q4
205 LAB/PILOT PLANT D&D	10/01/2003	09/29/2006					xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx
301 OSDF Summary Schedule	04/01/2004	12/23/2009					xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx
411 AWWT Operations	10/02/2000	12/31/2009		xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx
502 WASTE PIT SHIP/DISPOSAL OPERATIONS	10/02/2000	08/01/2005		xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xx	
608 Area 3A Precert/Certification	10/03/2005	09/29/2006							xxx xxx xxx xxx
609 Area 3B Precert/Certification	04/02/2008	02/09/2009							
612 Area 2 Phase 2 Precert/Cert	10/04/2004	04/10/2007						xxx xxx xxx xxx	xxx xxx xxx xxx
613 Area 3A Predesign/Design	10/02/2000	07/27/2001		xxx xxx xxx x					
614 Area 4A Predesign/Design	10/02/2000	07/27/2001		xxx xxx xxx x					
615 Area 3B/4B/5 Predesign/Design	10/01/2003	09/28/2005					xxx xxx xxx xxx	xxx xxx xxx xxx	
618 Area 3A Exc. Control Characterization	04/01/2004	09/30/2005					xxx xxx	xxx xxx xxx xxx	
619 Lime Sludge Pond Exc. Control Characterizatio	04/01/2004	09/30/2004					xxx xxx		
620 Area 3B Exc. Control Characterization	10/03/2005	03/31/2008							xxx xxx xxx xxx
621 Area 4A Exc. Control Characterization	04/01/2004	09/30/2005					xxx xxx	xxx xxx xxx xxx	
622 Area 4B Exc. Control Characterization	10/03/2005	03/31/2008							xxx xxx xxx xxx
623 Area 5 Exc. Control Characterization	10/03/2005	03/31/2008							xxx xxx xxx xxx
624 Area 7, Sector 1 and 4 Characterization	07/02/2007	10/27/2008							
630 Area 4B Precert/Cert	04/01/2008	03/31/2009							
631 Area 5: Pre-Cert/Cert	04/01/2008	03/31/2009							
634 Area 4A Precert/Certification	10/03/2005	09/29/2006							xxx xxx xxx xxx
635 Area 6: Predsign/Design	10/03/2005	09/29/2006							xxx xxx xxx xxx
636 Area 6: Precert/Cert	07/02/2007	06/30/2008							
637 Area 7: Predesign/Design	10/02/2006	09/28/2007							
705 SILOS 1, 2, & 3 CONSTRUCTION & CAT	04/01/2003	04/01/2005				xxx xxx	xxx xxx xxx xxx	xxx xxx x	
707 SILOS 1, 2, & 3 OPERATIONS	10/03/2005	03/30/2007							xxx xxx xxx xxx
801 Nuclear Materials Summary	10/02/2000	05/20/2002		xxx xxx xxx xxx	xxx xxx xx				
1001 Mixed Waste Summary	10/02/2000	09/30/2003		xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx			
1101 Low Level Waste Summary	10/02/2000	09/30/2005		xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	xxx xxx xxx xxx	
Subcontract	Subcontract Craft		17.60	0 0 0 0	0 8.8 8.8 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
Subcontract	Subcontract Staff		12.80	0 0 0 0	3.2 3.2 3.2 3.2	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
Engineering & Design	Engineer Piping/Mechanic		0.10	0.1 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
		Sheet Totals:	30.50	0.10 0.00 0.00 0.00	3.20 12.00 12.00 3.20	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00

Manpower Planning Sheet (CR2)

MPS # 1EB02 FUTURE LAB PROJECTS & RENOVATIONS

DRIVERS	START DATE	END DATE	FY 2007 Q1	FY 2007 Q2	FY 2007 Q3	FY 2007 Q4	FY 2008 Q1	FY 2008 Q2	FY 2008 Q3	FY 2008 Q4	FY 2009 Q1	FY 2009 Q2	FY 2009 Q3	FY 2009 Q4	FY 2010 Q1	FY 2010 Q2	FY 2010 Q3	FY 2010 Q4	FY 2011 Q1	FY 2011 Q2	FY 2011 Q3	FY 2011 Q4
205 LAB/PILOT PLANT D&D	10/01/2003	09/29/2006																				
301 OSDF Summary Schedule	04/01/2004	12/23/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
502 WASTE PIT SHIP/DISPOSAL OPERATION	10/02/2000	08/01/2005																				
608 Area 3A Precert/Certification	10/03/2005	09/29/2006																				
609 Area 3B Precert/Certification	04/02/2008	02/09/2009							xxx	xxx	xxx	xx										
612 Area 2 Phase 2 Precert/Cert	10/04/2004	04/10/2007	xxx	xxx	x																	
613 Area 3A Predesign/Design	10/02/2000	07/27/2001																				
614 Area 4A Predesign/Design	10/02/2000	07/27/2001																				
615 Area 3B/4B/5 Predesign/Design	10/01/2003	09/28/2005																				
618 Area 3A Exc. Control Characterization	04/01/2004	09/30/2005																				
619 Lime Sludge Pond Exc. Control Characteriz	04/01/2004	09/30/2004																				
620 Area 3B Exc. Control Characterization	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
621 Area 4A Exc. Control Characterization	04/01/2004	09/30/2005																				
622 Area 4B Exc. Control Characterization	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
623 Area 5 Exc. Control Characterization	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
624 Area 7, Sector 1 and 4 Characterization	07/02/2007	10/27/2008				xxx	xxx	xxx	xxx	xxx	x											
630 Area 4B Precert/Cert	04/01/2008	03/31/2009							xxx	xxx	xxx	xxx										
631 Area 5: Pre-Cert/Cert	04/01/2008	03/31/2009							xxx	xxx	xxx	xxx										
634 Area 4A Precert/Certification	10/03/2005	09/29/2006																				
635 Area 6: Predsign/Design	10/03/2005	09/29/2006																				
636 Area 6: Precert/Cert	07/02/2007	06/30/2008				xxx	xxx	xxx	xxx													
637 Area 7: Predesign/Design	10/02/2006	09/28/2007	xxx	xxx	xxx	xxx																
705 SILOS 1, 2, & 3 CONSTRUCTION & CAT	04/01/2003	04/01/2005																				
707 SILOS 1, 2, & 3 OPERATIONS	10/03/2005	03/30/2007	xxx	xxx																		
801 Nuclear Materials Summary	10/02/2000	05/20/2002																				
1001 Mixed Waste Summary	10/02/2000	09/30/2003																				
1101 Low Level Waste Summary	10/02/2000	09/30/2005																				
Subcontract	Subcontract Craft		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subcontract	Subcontract Staff		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Engineering & Design	Engineer Piping/Mechanic		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Sheet Totals:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SECTION 5

4.0 ESTIMATE

EBAL1

LAB MANAGEMENT & STAFF

09/06/2001
1:12 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EBAL
CHARGE NO: EBAL1
COMMENT NO: F04-001, F04-008, F04-011

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: AMY MEYER
FISCAL YEAR: 2001-2010

Resource: CLERKS **CLERKS** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	403.9	873.5	873.5	873.5	873.5	873.5	873.5	873.5	873.5	193.5
Cum Hours:	403.9	1,277.4	2,150.9	3,024.4	3,897.9	4,771.4	5,644.9	6,518.4	7,391.9	7,585.4
Yr Total Cost:	9,649	21,965	23,265	24,637	26,098	27,883	30,227	31,859	35,405	8,085
Cum Total Cost:	9,649	31,614	54,880	79,517	105,615	133,497	163,724	195,584	230,988	239,073

Resource: CRPNTR **CARPENTER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	145.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2
Yr Total Cost:	4,497	0	0	0	0	0	0	0	0	0
Cum Total Cost:	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497	4,497

Resource: CSTANL **COST ANALYST** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	157.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	157.8	157.8	157.8	157.8	157.8	157.8	157.8	157.8	157.8	157.8
Yr Total Cost:	6,138	0	0	0	0	0	0	0	0	0
Cum Total Cost:	6,138	6,138	6,138	6,138	6,138	6,138	6,138	6,138	6,138	6,138

INCLUDES ESCALATION COSTS

09/06/2001
1:12 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EBAL
CHARGE NO: EBAL1
COMMENT NO: F04-001, F04-008, F04-011

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: AMY MEYER
FISCAL YEAR: 2001-2010

Resource: ELECTN **ELECTRICIAN** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	145.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2
Yr Total Cost:	4,551	0	0	0	0	0	0	0	0	0
Cum Total Cost:	4,551	4,551	4,551	4,551	4,551	4,551	4,551	4,551	4,551	4,551

Resource: ENGINR **ENGINEER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	56.8	0.0	0.0	524.1	524.1	524.1	524.1	524.1	524.1	42.1
Cum Hours:	56.8	56.8	56.8	580.9	1,105.0	1,629.1	2,153.2	2,677.3	3,201.4	3,243.5
Yr Total Cost:	3,906	0	0	42,546	45,069	48,151	52,199	55,019	61,141	5,063
Cum Total Cost:	3,906	3,906	3,906	46,452	91,520	139,671	191,871	246,889	308,030	313,093

Resource: ENSREP **ENVIR SCIENCE REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	100.9	1,048.2	1,048.2	1,048.2	1,048.2	1,048.2	1,048.2	1,048.2	1,048.2	252.6
Cum Hours:	100.9	1,149.1	2,197.3	3,245.5	4,293.7	5,341.9	6,390.1	7,438.3	8,486.5	8,739.1
Yr Total Cost:	4,234	46,295	49,036	51,927	55,005	58,767	63,708	67,149	74,621	18,537
Cum Total Cost:	4,234	50,529	99,565	151,491	206,497	265,263	328,972	396,120	470,742	489,278

INCLUDES ESCALATION COSTS

09/06/2001
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Fluor Fernald, Inc.

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EBAL
CHARGE NO: EBAL1
COMMENT NO: F04-001, F04-008, F04-011

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: AMY MEYER
FISCAL YEAR: 2001-2010

Resource: ENSTEC **ENVIR SCIENTIST TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	873.5	873.5	873.5	873.5	873.5	873.5	873.5	873.5	210.5
Cum Hours:	0.0	873.5	1,747.0	2,620.5	3,494.0	4,367.5	5,241.0	6,114.5	6,988.0	7,198.5
Yr Total Cost:	0	26,038	27,580	29,206	30,937	33,053	35,832	37,767	41,970	10,426
Cum Total Cost:	0	26,038	53,618	82,824	113,761	146,814	182,646	220,413	262,383	272,809

Resource: GLMNT **GEN LABOR MAINT** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	264.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	264.9	264.9	264.9	264.9	264.9	264.9	264.9	264.9	264.9	264.9
Yr Total Cost:	6,474	0	0	0	0	0	0	0	0	0
Cum Total Cost:	6,474	6,474	6,474	6,474	6,474	6,474	6,474	6,474	6,474	6,474

Resource: HAZWAT **HAZWAT** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	2,708.5	3,144.6	2,795.2	2,530.6	1,706.4	1,397.6	1,222.9	1,134.0	1,048.2	126.3
Cum Hours:	2,708.5	5,853.1	8,648.3	11,178.9	12,885.3	14,282.9	15,505.8	16,639.8	17,688.0	17,814.3
Yr Total Cost:	77,978	95,293	89,720	86,016	61,439	53,762	50,997	49,844	51,200	6,359
Cum Total Cost:	77,978	173,271	262,991	349,006	410,446	464,208	515,205	565,049	616,249	622,609

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EBAL
CHARGE NO: EBAL1
COMMENT NO: F04-001, F04-008, F04-011

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: AMY MEYER
FISCAL YEAR: 2001-2010

Resource: INDHYG **INDUSTRIAL HYGIENIST** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	871.2	873.5	785.2	698.8	524.1	524.1	524.1	524.1	524.1	84.2
Cum Hours:	871.2	1,744.7	2,529.9	3,228.7	3,752.8	4,276.9	4,801.0	5,325.1	5,849.2	5,933.4
Yr Total Cost:	40,441	42,680	40,637	38,298	30,426	32,507	35,240	37,143	41,276	6,836
Cum Total Cost:	40,441	83,121	123,758	162,055	192,481	224,988	260,228	297,371	338,647	345,483

Resource: INRREP **INFO RECORDS REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	587.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	587.3	587.3	587.3	587.3	587.3	587.3	587.3	587.3	587.3	587.3
Yr Total Cost:	17,431	0	0	0	0	0	0	0	0	0
Cum Total Cost:	17,431	17,431	17,431	17,431	17,431	17,431	17,431	17,431	17,431	17,431

Resource: INSMEC **INSTRUMENT MECHANIC** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	145.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2
Yr Total Cost:	4,526	0	0	0	0	0	0	0	0	0
Cum Total Cost:	4,526	4,526	4,526	4,526	4,526	4,526	4,526	4,526	4,526	4,526

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EBAL
CHARGE NO: EBAL1
COMMENT NO: F04-001, F04-008, F04-011

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: AMY MEYER
FISCAL YEAR: 2001-2010

Resource: LABCHM **CHEMIST** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	13,207.4	9,084.4	9,259.1	11,006.1	10,132.6	10,132.6	10,831.4	9,259.1	8,560.3	2,062.9
Cum Hours:	13,207.4	22,291.8	31,550.9	42,557.0	52,689.6	62,822.2	73,653.6	82,912.7	91,473.0	93,535.9
Yr Total Cost:	511,919	370,625	400,116	503,651	491,166	524,757	608,111	547,913	562,931	139,839
Cum Total Cost:	511,919	882,544	1,282,660	1,786,311	2,277,477	2,802,233	3,410,345	3,958,258	4,521,189	4,661,028

Resource: LABMGR **LAB MANAGER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	2,969.9	2,969.9	4,716.9	2,969.9	2,969.9	2,969.9	2,969.9	2,969.9	619.2
Cum Hours:	0.0	2,969.9	5,939.8	10,656.7	13,626.6	16,596.5	19,566.4	22,536.3	25,506.2	26,125.4
Yr Total Cost:	0	159,804	169,264	284,682	189,870	202,855	219,911	231,789	257,582	55,359
Cum Total Cost:	0	159,804	329,069	613,751	803,620	1,006,476	1,226,387	1,458,175	1,715,757	1,771,116

Resource: LABTEC **LAB TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	5,259.2	1,523.9	1,397.6	1,397.6	1,397.6	1,397.6	1,397.6	1,397.6	1,397.6	336.8
Cum Hours:	5,259.2	6,783.1	8,180.7	9,578.3	10,975.9	12,373.5	13,771.1	15,168.7	16,566.3	16,903.1
Yr Total Cost:	146,153	44,576	43,302	45,855	48,573	51,895	56,258	59,297	65,895	16,369
Cum Total Cost:	146,153	190,729	234,031	279,885	328,458	380,353	436,612	495,908	561,804	578,173

INCLUDES ESCALATION COSTS

09/06/2001
1:12 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EBAL
CHARGE NO: EBAL1
COMMENT NO: F04-001, F04-008, F04-011

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: AMY MEYER
FISCAL YEAR: 2001-2010

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: 952 **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	580,499.0	400,680.0	375,240.0	572,400.0	381,600.0	381,600.0	508,800.0	298,920.0	279,840.0	63,600.0
Cum Units:	580,499.0	981,179.0	1,356,419.0	1,928,819.0	2,310,419.0	2,692,019.0	3,200,819.0	3,499,739.0	3,779,579.0	3,843,179.0
Yr Total Cost:	580,499	411,498	395,777	620,631	425,339	437,674	600,489	363,018	349,702	81,783
Cum Total Cost:	580,499	991,997	1,387,774	2,008,405	2,433,744	2,871,418	3,471,907	3,834,925	4,184,628	4,266,410

Resource: MILWRT **MILLWRIGHT** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	145.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2	145.2
Yr Total Cost:	4,538	0	0	0	0	0	0	0	0	0
Cum Total Cost:	4,538	4,538	4,538	4,538	4,538	4,538	4,538	4,538	4,538	4,538

Resource: MVOOPR **MOTOR VEHICLE OPER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	334.7	174.7	174.7	174.7	174.7	174.7	174.7	174.7	174.7	42.1
Cum Hours:	334.7	509.4	684.1	858.8	1,033.5	1,208.2	1,382.9	1,557.6	1,732.3	1,774.4
Yr Total Cost:	9,659	5,307	5,621	5,953	6,305	6,737	7,303	7,697	8,554	2,125
Cum Total Cost:	9,659	14,966	20,587	26,540	32,845	39,582	46,885	54,583	63,137	65,262

INCLUDES ESCALATION COSTS

09/06/2001
1:12 PM

PBS: OHFN04
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COMMENT NO: F04-001, F04-008, F04-011

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: AMY MEYER
FISCAL YEAR: 2001-2010

Resource: ODC700 **ODC 700** **EOC:** ODC
Res Dept: 952 **Overtime:** **Class:** ODC

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	1,000.0	6,000.0	5,520.0	8,400.0	5,400.0	5,400.0	7,800.0	5,196.0	5,196.0	1,000.0
Cum Units:	1,000.0	7,000.0	12,520.0	20,920.0	26,320.0	31,720.0	39,520.0	44,716.0	49,912.0	50,912.0
Yr Total Cost:	1,000	6,162	5,822	9,108	6,019	6,194	9,206	6,310	6,493	1,286
Cum Total Cost:	1,000	7,162	12,984	22,092	28,111	34,304	43,510	49,820	56,313	57,599

Resource: ODCTRVL **TRAVEL RESOURCE** **EOC:** ODC
Res Dept: 952 **Overtime:** **Class:** ODC

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	3,099.0	6,000.0	5,400.0	7,200.0	5,400.0	5,400.0	6,000.0	4,800.0	4,800.0	1,000.0
Cum Units:	3,099.0	9,099.0	14,499.0	21,699.0	27,099.0	32,499.0	38,499.0	43,299.0	48,099.0	49,099.0
Yr Total Cost:	3,099	6,162	5,696	7,807	6,019	6,194	7,081	5,829	5,998	1,286
Cum Total Cost:	3,099	9,261	14,957	22,763	28,782	34,976	42,057	47,886	53,885	55,170

Resource: PIPFTR **PIPE FITTER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	100.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	100.9	100.9	100.9	100.9	100.9	100.9	100.9	100.9	100.9	100.9
Yr Total Cost:	3,151	0	0	0	0	0	0	0	0	0
Cum Total Cost:	3,151	3,151	3,151	3,151	3,151	3,151	3,151	3,151	3,151	3,151

INCLUDES ESCALATION COSTS

09/06/2001
1:12 PM

PBS: OHFN04
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CTRL ACCT: EBAL
CHARGE NO: EBAL1
COMMENT NO: F04-001, F04-008, F04-011

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: AMY MEYER
FISCAL YEAR: 2001-2010

Resource: PJSMGR **PROJECT SUPPORT MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	303.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	303.0	303.0	303.0	303.0	303.0	303.0	303.0	303.0	303.0	303.0
Yr Total Cost:	13,853	0	0	0	0	0	0	0	0	0
Cum Total Cost:	13,853	13,853	13,853	13,853	13,853	13,853	13,853	13,853	13,853	13,853

Resource: PRJMGR **PROJECT MANAGER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	435.6	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	387.0
Cum Hours:	435.6	2,182.6	3,929.6	5,676.6	7,423.6	9,170.6	10,917.6	12,664.6	14,411.6	14,798.6
Yr Total Cost:	38,838	163,953	173,659	183,897	194,799	208,121	225,620	237,806	264,269	60,346
Cum Total Cost:	38,838	202,791	376,449	560,347	755,145	963,267	1,188,886	1,426,692	1,690,961	1,751,307

Resource: QACENG **QA ENGINEER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,496.3	1,480.0	1,134.6	1,048.2	1,027.9	873.5	781.7	698.8	524.1	84.2
Cum Hours:	1,496.3	2,976.3	4,110.9	5,159.1	6,187.0	7,060.5	7,842.2	8,541.0	9,065.1	9,149.3
Yr Total Cost:	68,770	71,597	58,137	56,877	59,082	53,641	52,040	49,033	40,867	6,768
Cum Total Cost:	68,770	140,367	198,505	255,382	314,464	368,105	420,144	469,178	510,045	516,813

INCLUDES ESCALATION COSTS

09/06/2001
1:12 PM

PBS: OHFN04
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Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: AMY MEYER
FISCAL YEAR: 2001-2010

Resource: RADENG **RAD ENGINEER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	145.2	174.7	174.7	174.7	174.7	174.7	174.7	174.7	174.7	0.0
Cum Hours:	145.2	319.9	494.6	669.3	844.0	1,018.7	1,193.4	1,368.1	1,542.8	1,542.8
Yr Total Cost:	6,853	8,679	9,193	9,735	10,312	11,018	11,944	12,589	13,990	0
Cum Total Cost:	6,853	15,533	24,726	34,461	44,774	55,791	67,735	80,324	94,314	94,314

Resource: RADMGR **RAD SUPERVISOR/MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	145.2	174.7	174.7	174.7	174.7	174.7	174.7	174.7	174.7	0.0
Cum Hours:	145.2	319.9	494.6	669.3	844.0	1,018.7	1,193.4	1,368.1	1,542.8	1,542.8
Yr Total Cost:	8,684	10,998	11,649	12,336	13,067	13,961	15,135	15,952	17,728	0
Cum Total Cost:	8,684	19,683	31,332	43,668	56,735	70,697	85,832	101,784	119,512	119,512

Resource: RADTEC **RAD TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	2,904.0	2,096.4	2,096.4	2,357.6	2,096.4	2,096.4	2,096.4	1,397.6	1,222.9	168.4
Cum Hours:	2,904.0	5,000.4	7,096.8	9,454.4	11,550.8	13,647.2	15,743.6	17,141.2	18,364.1	18,532.5
Yr Total Cost:	98,968	75,202	79,654	94,860	89,351	95,461	103,488	72,718	70,709	10,037
Cum Total Cost:	98,968	174,170	253,824	348,684	438,034	533,496	636,983	709,701	780,410	790,447

INCLUDES ESCALATION COSTS

09/06/2001
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Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: AMY MEYER
FISCAL YEAR: 2001-2010

Resource: S&HTEC **SAFETY TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	448.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	448.2	448.2	448.2	448.2	448.2	448.2	448.2	448.2	448.2	448.2
Yr Total Cost:	12,957	0	0	0	0	0	0	0	0	0
Cum Total Cost:	12,957	12,957	12,957	12,957	12,957	12,957	12,957	12,957	12,957	12,957

Resource: SERVSUB **SUBS** **EOC:** SUBCONTRACTORS
Res Dept: 952 **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	86,941.0	90,000.0	90,000.0	108,000.0	84,000.0	84,000.0	108,000.0	78,000.0	72,000.0	15,000.0
Cum Units:	86,941.0	176,941.0	266,941.0	374,941.0	458,941.0	542,941.0	650,941.0	728,941.0	800,941.0	815,941.0
Yr Total Cost:	86,941	92,430	94,926	117,100	93,628	96,343	127,462	94,726	89,975	19,288
Cum Total Cost:	86,941	179,371	274,297	391,397	485,025	581,368	708,831	803,556	893,531	912,819

Resource: WSTENG **WASTE ENGINEER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	2,058.0	2,445.8	2,271.1	2,096.4	1,688.4	1,572.3	1,222.9	1,222.9	1,222.9	252.6
Cum Hours:	2,058.0	4,503.8	6,774.9	8,871.3	10,559.7	12,132.0	13,354.9	14,577.8	15,800.7	16,053.3
Yr Total Cost:	105,020	131,372	129,210	126,303	107,752	107,205	90,392	95,274	105,876	22,544
Cum Total Cost:	105,020	236,391	365,601	491,904	599,655	706,860	797,252	892,527	998,403	1,020,947

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
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CHARGE NO: EBAL1
COMMENT NO: F04-001, F04-008, F04-011

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: AMY MEYER
FISCAL YEAR: 2001-2010

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	32,569.8	28,684.8	27,775.4	31,442.6	27,133.7	26,554.4	26,637.3	24,194.4	23,060.4	4,862.4
Cum Hours:	32,569.8	61,254.6	89,030.0	120,472.6	147,606.3	174,160.7	200,798.0	224,992.4	248,052.8	252,915.2
Yr Total Cost:	1,880,728	1,790,637	1,812,262	2,351,424	1,990,256	2,076,177	2,402,643	2,078,734	2,166,184	472,334
Cum Total Cost:	1,880,728	3,671,365	5,483,627	7,835,051	9,825,307	11,901,484	14,304,127	16,382,860	18,549,044	19,021,378

CAM _____ for MJ _____ CONTROL TEAM _____

INCLUDES ESCALATION COSTS

WASTE DISPOSITION CAMPAIGN ESTIMATE WORKSHEET FOR LIQUID MIXED WASTES

PBS: 4
WBS: 0
Control Account:

Duration:
Fiscal Year:

Charge Number: EBAL
CAM: Amy Meyer

Project: LAB

Campaign: Excess Samples - Organic liquids (FY01-FY10)

Quantity Basis (containers and volume): approximately 913 cu.ft. in 125 containers

Total Containers minus RCRs: 125

1 day = 10 mhrs

Make Entries in Yellow Shaded Areas Only

Activity		Days	PPE Count	Total Mhrs	Hazwat (HAZWAT) Req'd	Hazwat (HAZWAT) Mhrs	MVO (MVOOPR) Req'd	MVO (MVOOPR) Mhrs	HEO (HEOOPR) Req'd	HEO (HEOOPR) Mhrs	Tran. Labor (TRNLAB) Req'd	Tran. Labor (TRNLAB) Mhrs	Maintenance (MILWRTOPVTR) Req'd	Maintenance (MILWRTOPVTR) Mhrs	Supervisor (OPRMGR) Req'd	Supervisor (OPRMGR) Mhrs	Rad Tech (RADTEC) Req'd	Rad Tech (RADTEC) Mhrs	NTS Comp. (QACENG) Req'd	NTS Comp. (QACENG) Mhrs	QA (QACENG) Req'd	QA (QACENG) Mhrs	WAO (WSTENG) Req'd	WAO (WSTENG) Mhrs	Safety Tech (SSHTEC) Req'd	Safety Tech (SSHTEC) Mhrs	Rad Eng. (RADENG) Req'd	Rad Eng. (RADENG) Mhrs	Safety Eng. (SSHENG) Req'd	Safety Eng. (SSHENG) Mhrs	Safety Anal (SSHENG) Req'd	Safety Anal (SSHENG) Mhrs	Waste Eng. (WSTENG) Req'd	Waste Eng. (WSTENG) Mhrs	MC&A Clerk (MPCREP) Req'd	MC&A Clerk (MPCREP) Mhrs	TO Writer (TPSREP) Req'd	TO Writer (TPSREP) Mhrs	Acquisitions (BUYCON) Req'd	Acquisitions (BUYCON) Mhrs	Proj. Mgr. (PRJMGR) Req'd	Proj. Mgr. (PRJMGR) Mhrs	Admin. Spt. (CLERKS) Req'd	Admin. Spt. (CLERKS) Mhrs
1. Campaign Planning		11		156	0.05	8	0.05	8	0	0	0	0	0	0	0.1	11	0.1	11	0	0	0.05	8	0	0	0.05	6	0.05	6	0.05	6	0	0	0.5	55	0.05	6	0.05	6	0	0	0.25	28	0.05	6
2. SSR	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
3. Sampling/Visual Inspection (Assumed Number of Samples/Visuals: 0)		0	0	0	3	0	1	0	0	0	0	0	0	0	0.5	0	1	0	0	0	0.05	0	0	0	0.2	0	0.05	0	0.05	0	0	0	0.1	0	0	0	0.05	0	0	0	0	0	0.05	0
4. Characterization		16	0	293	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.9	285	0	0	0	0	0	0	0	0	0.05	8
5. Liquid Bulking	Drums 125	8	156	824	4	320	1	80	0	0	0	0	0.2	16	0.5	40	1	80	0	0	0.2	16	0	0	1	80	0.05	4	0.05	4	0	0	2	160	0.2	16	0.05	4	0	0	0	0	0.05	4
6. TSCA Shipping	Tanker 2	6	161	789	3	230	1	77	0	0	0	0	0.2	15	0.5	38	2.5	192	0	0	0.25	19	0	0	0.5	38	0.05	4	0.05	4	0	0	2	153	0.2	15	0	0	0	0	0	0	0.05	4
7. Container Movements				156																																								
ISOs	0	0	0	0	2	0	1	0	0.1	0	2	0	0	0	0.25	0	0.5	0	0	0	0	0	0	0	0	0	0.05	0	0.05	0	0	0	0	0	0.2	0	0.05	0	0	0	0	0	0.05	0
Metal Boxes	0	0	0	0	2	0	1	0	0.1	0	2	0	0	0	0.25	0	0.5	0	0	0	0	0	0	0	0	0	0.05	0	0.05	0	0	0	0	0	0.2	0	0.05	0	0	0	0	0	0.05	0
Drums	125	2.6	44	156	2	50	1	25	0.1	3	2	50	0	0	0.25	6	0.5	13	0	0	0	0	0	0	0	0	0.05	1	0.05	1	0	0	0	0	0.2	5	0.05	1	0	0	0	0	0.05	1
Total Manhours by Skill						608		197		3		50		21		94		295		0		41		0		124		15		15		0		464		13		11		0		28		22

MATERIALS	Unit	Quantity	Rate	Total
Full Anti-Cs	change	156	$9.68	$1,510
Normal Protective Clothing	change	206	$4.03	$826
3 Vehicles- Moves/Repack	day	0	$166	$0
Labeling/Misc Materials	each	2	$240	$480
Freight to Oak Ridge	shipment	2	$2,500	$5,000

SUBCONTRACTS	Unit	Quantity	Rate	Total
Commercial Treatment	gallon	0	$10	$0
Offsite Lab Analysis	sample	0	$1,675	$0
Required TSCA Analysis	batch	2	$4,700	$9,400

Worksheet Summary	
Total Manhours	2,219
Total Labor	$80,323
Total Materials	$7,815
Total Subcontracts	$9,400
Total Cost	$97,438
Total Cost minus burial	$97,438

All costs are stated in FY01 Dollars.

Comments and Assumptions:

1. 50 containers per year x 10 years = 500 containers (drums)
2. Assumes TSCA analysis will require three sampling events ($15,000 per event) per batch.
3. 500 containers x est. of 25% organic liquid (provided by lab) = 125 containers
4. 125 containers x 7.3 cu.ft. per drum = 912.5 cu.ft.
5. 125 drums @ 50 gal each = 6,250 gallons
6. Tanker holds approximately 4,000 gallons
7. Shipment cost of tanker round trip to Oak Ridge is approximately $2,500 per Al Schmidt
8. Average 16 drums per day for bulking

Prepared by: Hugh A. Clinger
Date Prepared: 3/26/01

Control Team Review: _____

Project Review: _____

Comments

LLW RESIDUES WASTE DISPOSITION COST WORKSHEET SUMMARY

PROJECT: LAB

PROJECT MANAGER:

***PBS:** 4

WBS:

Total Waste Volume: 1,825 cu.ft.

Total Waste Containers: 250

TOTAL DURATION:

FISCAL YEAR:

PREPARED BY: Hugh A. Clinger

DATE PREPARED: Rev 1, 03/28/2001

Waste Stream	*Total Hours*	*Labor Cost*	*Material Cost*	*Subcontract Cost*	*Burial Cost*	*Total Cost*	*Total Cost Minus Burial*
EXCESS SAMPLES RESIDUES	2,195	$83,599	$108,243	$0	$18,500	$210,342	$191,842
LLW Residues #2	0	$0	$0	$0	$0	$0	$0
LLW Residues #3	0	$0	$0	$0	$0	$0	$0
LLW Residues #4	0	$0	$0	$0	$0	$0	$0
LLW Residues #4	0	$0	$0	$0	$0	$0	$0
LLW Residues #4	0	$0	$0	$0	$0	$0	$0
LLW Residues #4	0	$0	$0	$0	$0	$0	$0
LLW Residues #5	0	$0	$0	$0	$0	$0	$0
LLW Residues #6	0	$0	$0	$0	$0	$0	$0
PROJECT SUBTOTALS:	2,195	$83,599	$108,243	$0	$18,500	$210,342	$191,842

Total Hours By Skill				
	HAZWAT	306	RADENG	11
	MVOOPR	206	S&HENG	5
	HEOOPR	0	S&HTEC	56
	TRNLAB	200	MPCREP	26
	MILWRT/PIPFTR	5	TPSREP	11
	OPRMGR	63	BUYCON	0
	RADTEC	213	PRJMGR	31
	QACENG	238	CLERKS	29
	WSTENG	794		

General Basis of Estimate Comments:*

1. Shipment to Envirocare

* Control Account/Charge Number information and specific basis of estimate information can be found on individual waste stream worksheets. Information related to crew sizes, throughput rates, and container assumptions can be found in Appendix C of the Integrated Waste Management Plan.

WASTE DISPOSITION CAMPAIGN ESTIMATE WORKSHEET FOR LOW LEVEL WASTE MEETING LDR

PBS: 4 Duration:
WBS: 0 Fiscal Year:
Control Account:

Project: LAB

Campaign: Mixed Waste Residue (FY01-FY10)

Quantity Basis (containers and volume): approximately 913 cu.ft. in 125 containers

Charge Number: EBAL
CAM: Amy Meyer

Containers for Off-site Shipment: 2.6 1 day = 10 mhrs
Total Containers minus RORs: 125

Make Entries in Yellow Shaded Areas Only

Activity	ev 3, 03/27/20	Days	PPE Count	Total Manhours	Hazwat (HAZWAT) Req'd	Hazwat (HAZWAT) Mhrs	MVO (MVOOPR) Req'd	MVO (MVOOPR) Mhrs	HEO (HEOOPR) Req'd	HEO (HEOOPR) Mhrs	Tran. Labor (TRNLAB) Req'd	Tran. Labor (TRNLAB) Mhrs	Maintenance (MAINTPRTM) Req'd	Maintenance (MAINTPRTM) Mhrs	Supervisor (OPRMGR) Req'd	Supervisor (OPRMGR) Mhrs	Rad Tech (RADTEC) Req'd	Rad Tech (RADTEC) Mhrs	NTS Comp. (QACENG) Req'd	NTS Comp. (QACENG) Mhrs	QA (QACENG) Req'd	QA (QACENG) Mhrs
1. Campaign Planning		11		314	0.05	6	0.05	6	0	0	0	0	0	0	0.1	11	0.1	11	0	0	0.05	6
2. SSR	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Sampling/Visual Inspection (Assumed Number of Samples/Visuals: 125)		0	0	0	3	0	1	0	0	0	0	0	0	0	0.5	0	1	0	0	0	0.05	0
4. Characterization		36		702	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5. Repackaging/Overpacking				321																		
ISOs	0	0	0	0	2	0	1	0	0.1	0	0	0	0	0	0.5	0	1	0	0	0	0.05	0
Boxes	0	0	0	0	2	0	1	0	0.1	0	0	0	0	0	0.5	0	1	0	0	0	0.05	0
Drums	125	60	83	321	2	120	1	60	0.1	6	0	0	0	0	0.5	30	1	60	0	0	0.05	3
6. Container Movements				0																		
ISOs	0	0	0	0	1	0	0.5	0	0.5	0	0	0	0	0	0.2	0	1	0	0	0	0	0
Metal Boxes	0	0	0	0	1	0	0.5	0	0.5	0	0	0	0	0	0.2	0	1	0	0	0	0	0
Drums	0	0	0	0	1	0	0.5	0	0.5	0	0	0	0	0	0.2	0	1	0	0	0	0	0
8. Loading and Shipping				473																		
ISOs	2.6	4	116	472	5	200	3	120	0.2	8	0	0	0.05	2	0.5	20	1	40	1	40	0	0
Metal Boxes	0	0	0	0	3	0	3	0	0	0	0	0	0.05	0	0.5	0	2	0	2	0	0	0
Drums	0	0	0	0	3	0	2	0	0	0	0	0	0.05	0	0.5	0	2	0	2	0	0	0
Total Manhours by SAW						326		186		14		0		2		61		111		40		9

Activity	Hazwat (HAZWAT) Req'd	Hazwat (HAZWAT) Mhrs	WAO (WSTENG) Req'd	WAO (WSTENG) Mhrs	Safety Tech (SSHTEC) Req'd	Safety Tech (SSHTEC) Mhrs	Rad Eng. (RADENG) Req'd	Rad Eng. (RADENG) Mhrs	Safety Eng. (SSHENG) Req'd	Safety Eng. (SSHENG) Mhrs	Safety Anal (SSHENG) Req'd	Safety Anal (SSHENG) Mhrs	Waste Eng. (WSTENG) Req'd	Waste Eng. (WSTENG) Mhrs	MC&A Clerk (MPCREP) Req'd	MC&A Clerk (MPCREP) Mhrs	TO Writer (TPSREP) Req'd	TO Writer (TPSREP) Mhrs	Acquisitions (BUYCON) Req'd	Acquisitions (BUYCON) Mhrs	Proj. Mgr. (PRJMGR) Req'd	Proj. Mgr. (PRJMGR) Mhrs	Admin. Spt. (CLERKS) Req'd	Admin. Spt. (CLERKS) Mhrs
1. Campaign Planning	0.05	6	0.05	6	0.05	6	0.05	6	0	0	0	0	1	113	0.05	6	0.05	6	0	0	0.25	28	0.05	6
2. SSR	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
3. Sampling/Visual Inspection	0	0	0	0	0.2	0	0	0	0	0	0	0	0.1	0	0	0	0.05	0	0	0	0	0	0.05	0
4. Characterization	0	0	0	0	0	0	0	0	0	0	0	0	1.9	684	0	0	0	0	0	0	0	0	0.05	18
5. Repackaging/Overpacking																								
ISOs	0	0	0	0	0.2	0	0.05	0	0.05	0	0	0	0.1	0	0.2	0	0.05	0	0	0	0	0	0.05	0
Boxes	0	0	0	0	0.2	0	0.05	0	0.05	0	0	0	0.1	0	0.2	0	0.05	0	0	0	0	0	0.05	0
Drums	0	0	0	0	0.2	12	0.05	3	0.05	3	0	0	0.1	6	0.2	12	0.05	3	0	0	0	0	0.05	3
6. Container Movements																								
ISOs	0	0	0	0	0	0	0.05	0	0.05	0	0	0	0.1	0	0	0	0.05	0	0	0	0	0	0.05	0
Metal Boxes	0	0	0	0	0	0	0.05	0	0.05	0	0	0	0.1	0	0	0	0.05	0	0	0	0	0	0.05	0
Drums	0	0	0	0	0	0	0.05	0	0.05	0	0	0	0.1	0	0	0	0.05	0	0	0	0	0	0.05	0
8. Loading and Shipping																								
ISOs	0	0	0	0	0.5	20	0.05	2	0.05	2	0	0	0.1	4	0.2	8	0.05	2	0	0	0	0	0.1	4
Metal Boxes	0	0	0	0	0.5	0	0.05	0	0.05	0	0	0	0.1	0	0.2	0	0.05	0	0	0	0	0	0.05	0
Drums	0	0	0	0	0.5	0	0.05	0	0.05	0	0	0	0.1	0	0.2	0	0.05	0	0	0	0	0	0.05	0
Total Manhours by SAW		8				38				11		6		807		26		11		0		28		31

MATERIALS	Unit	Quantity	Rate	Total
ISOs	each	3	$2,000	$6,000
Metal Boxes	each	0	$1,200	$0
Drums	each	0	$40	$0
Full Anti-Cs	change	63	$9.56	$602
Normal Protective Clothing	change	118	$4.03	$469
3 Vehicles for Moves/Repackaging	day	0	$166	$0
4 Vehicles for Loading	day	0	$220	$0
Absorbent	each	3	$120	$300
Other Materials	each	3	$240	$600
Envirocare Truck Freight	shipment	3	$5,598	$16,794
Shoring	shipment	3	$100	$300
Envirocare Rail Freight	rail car	0	$8,700	$0

SUBCONTRACTS	Unit	Quantity	Rate	Total
Lab Analysis	sample	0	$1,075	$0
WPPAP Processing (residues)	ton	0	$372	$0

BURIAL FEES	Unit	Quantity	Rate	Total
NTS Fee	cu. ft.	0	$10.80	$0
Envirocare LLW Rail Car	rail car	0	$10,600	$0
Envirocare MW Fee	cu. ft.	2,700	$23	$62,100

WORKSHEET SUMMARY		
Total Hours	1,709	
Total Labor		$67,250
Total Materials		$25,265
Total Subcontracts		$0
Total Burial		$62,100
Total Cost		$154,615
Total Cost minus burial		$92,515

All costs are stated in FY01 Dollars

Comments and Assumptions:
1. Repackaging 20 drums per day
2. Loading 2 ISOs per day
3. 125 drums x 7.3 cu.ft. = 912.5 cu.ft.
4. Approximately 62 drums per ISO

Prepared by: Hugh A. Clinger
Date Prepared: 3/20/01

Control Team Review: _____ Project Review: _____

WASTE DISPOSITION CAMPAIGN ESTIMATE WORKSHEET FOR HAZARDOUS WASTES

PBS: 4 Duration:
WBS: 0 Fiscal Year:
Control Account:

Project: LAB
Campaign: Lab Packs (FY01-FY10)

Quantity Basis (containers and volume): approximately 205 cu.ft. in 28 containers (drums)

Charge Number: EBAL
CAM: Amy Meyer

1 day = 10 mhrs

Make Entries in Yellow Shaded Areas Only

Total Containers minus ROBs: 28

Activity	Days	PPE Cover	Total Manhours	Hazwat (HAZWAT) Req'd	Hazwat (HAZWAT) Mhrs	MVO (MVOOPR) Req'd	MVO (MVOOPR) Mhrs	HEO (HEOOPR) Req'd	HEO (HEOOPR) Mhrs	Tran. Labor (TRNLAB) Req'd	Tran. Labor (TRNLAB) Mhrs	Maintenance (MAINTPRTR) Req'd	Maintenance (MAINTPRTR) Mhrs	Supervisor (OPRMGR) Req'd	Supervisor (OPRMGR) Mhrs	Rad Tech (RADTEC) Req'd	Rad Tech (RADTEC) Mhrs	NTS Comp. (QACENG) Req'd	NTS Comp. (QACENG) Mhrs	QA (QACENG) Req'd	QA (QACENG) Mhrs
1. Campaign Planning	10		149	0.05	5	0.05	5	0	0	0	0	0	0	0.05	5	0.05	5	0	0	0	0
2. Sampling/Visual Inspection (Assumed Number of Samples/Visuals: 0)	0	0	0	3	0	1	0	0	0	0	0	0	0	0.5	0	1	0	0	0	0.05	0
3. Characterization	10		5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4. Container Movements			0																		
ISOs	0	0	0	1	0	0.5	0	0.5	0	0	0	0	0	0.2	0	1	0	0	0	0	0
Metal Boxes	0	0	0	1	0	0.5	0	0.5	0	0	0	0	0	0.2	0	1	0	0	0	0	0
Drums	0	0	0	1	0	0.5	0	0.5	0	0	0	0	0	0.2	0	1	0	0	0	0	0
Total Manhours by Shift					5		5		0		0		0		5		5		0		0

Activity	WAO (WSTENG) Req'd	WAO (WSTENG) Mhrs	Safety Tech (S&HTEC) Req'd	Safety Tech (S&HTEC) Mhrs	Rad Eng. (RADENG) Req'd	Rad Eng. (RADENG) Mhrs	Safety Eng. (S&HENG) Req'd	Safety Eng. (S&HENG) Mhrs	Safety Anal (S&HENG) Req'd	Safety Anal (S&HENG) Mhrs	Waste Eng. (WSTENG) Req'd	Waste Eng. (WSTENG) Mhrs	MC&A Clerk (MPCREP) Req'd	MC&A Clerk (MPCREP) Mhrs	TO Writer (TPSREP) Req'd	TO Writer (TPSREP) Mhrs	Acquisitions (BUYCON) Req'd	Acquisitions (BUYCON) Mhrs	Proj. Mgr. (PRJMGR) Req'd	Proj. Mgr. (PRJMGR) Mhrs	Admin. Spt. (CLERKS) Req'd	Admin. Spt. (CLERKS) Mhrs
1. Campaign Planning	0	0	0.05	5	0	0	0	0	0	0	0.75	77	0.05	5	0.05	5	0.25	26	0.05	5	0.05	5
2. Sampling/Visual Inspection	0	0	0.2	0	0.05	0	0.05	0	0	0	0.1	0	0	0	0.05	0	0	0	0	0	0.05	0
3. Characterization	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.05	5
4. Container Movements																						
ISOs	0	0	0	0	0.05	0	0.05	0	0	0	0.1	0	0	0	0.05	0	0	0	0	0	0.05	0
Metal Boxes	0	0	0	0	0.05	0	0.05	0	0	0	0.1	0	0	0	0.05	0	0	0	0	0	0.05	0
Drums	0	0	0	0	0.05	0	0.05	0	0	0	0.1	0	0	0	0.05	0	0	0	0	0	0.05	0
Total Manhours by Shift		0		5		0		0		0		77		5		5		26		5		10

MATERIALS	Unit	Quantity	Rate	Total
ISOs	each	0	$2,000	$0
Metal Boxes	each	0	$1,200	$0
Drums	each	0	$40	$0
Full Anti-Cs	change	0	$9.68	$0
Normal Protective Clothing	change	0	$4.03	$0

SUBCONTRACTS	Unit	Quantity	Rate	Total
Haz Waste Disposal	cu. ft.	205	$15	$3,075

WORKSHEET SUMMARY

Total Hours 154	
Total Labor	$6,508
Total Materials	$0
Total Subcontracts	$3,075
Total Cost	$9,583
Total Cost minus burial	$9,583

All costs stated in FY01 Dollars

Comments and Assumptions:
1. WGS pays for shipment

Prepared by: Hugh A. Clinger
Date Prepared: 3/26/01

Control Team Review: _____

Project Review: _____

WASTE DISPOSITION CAMPAIGN ESTIMATE WORKSHEET FOR SOIL DISPOSITION

PBS: 4 Duration:
WBS: 0 Fiscal Year:
Control Account:

Project: LAB

Campaign: Lab Misc. Debris to OSDF (FY01-FY10)

Quantity Basis (containers and volume): approximately 1425 cu.ft. in 19 boxes

Charge Number: EBAL
CAM: Amy Meyer

Containers for Off-site Shipment: 0 1 day = 10 mhrs Make Entries in Yellow Shaded Areas Only
Total Containers where ROBs: 19

Activity		Days	PPE Gowns	Total Manhours	Hazwat (HAZWAT) Req'd	Hazwat Mhrs	MVO (MVOOPR) Req'd	MVO Mhrs	HEO (HEOOPR) Req'd	HEO Mhrs	Tran. Labor (TRNLAB) Req'd	Tran. Labor Mhrs	Maintenance (MAINTENTR) Req'd	Maintenance Mhrs	Supervisor (OPMGR) Req'd	Supervisor Mhrs	Rad Tech (RADTEC) Req'd	Rad Tech Mhrs	NTS Comp. (QACENG) Req'd	NTS Comp. Mhrs	QA (QACENG) Req'd	QA Mhrs
1. Campaign Planning		10		183	0.05	5	0.05	5	0	0	0	0	0	0	0.1	10	0.1	10	0	0	0	0
2. SSR	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3. Sampling/Visual Inspection Assumed Number of Samples/Minutes	10	2	19	73	0	0	0	0	0	0	0	0	0	0	0.5	12	1	25	0	0	0.05	1
4. Characterization		15		293	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5. SP7 Dumping				0																		
Metal Boxes	0	0	0	0	2	0	2	0	3	0	0	0	0.2	0	0.5	0	1	0	0	0	0.05	0
Drums	0	0	0	0	2	0	2	0	3	0	0	0	0.2	0	0.5	0	1	0	0	0	0.05	0
6. Repackaging/Overpacking				0																		
ISOs	0	0	0	0	2	0	1	0	0.1	0	0	0	0.2	0	0.5	0	1	0	0	0	0.05	0
Boxes	0	0	0	0	2	0	1	0	0.1	0	0	0	0.2	0	0.5	0	1	0	0	0	0.05	0
Drums	0	0	0	0	2	0	1	0	0.1	0	0	0	0.2	0	0.5	0	1	0	0	0	0.05	0
7. ROB Movements (assumes round trip for ROBs)																						
ROBs	2	1	18	68	1	10	1	10	0.25	3	2	20	0	0	0.2	2	1	10	0	0	0	0
8. Container Movements				0																		
ISOs	0	0	0	0	1	0	0.5	0	0.5	0	0	0	0	0	0.2	0	1	0	0	0	0	0
Metal Boxes	0	0	0	0	1	0	0.5	0	0.5	0	0	0	0	0	0.2	0	1	0	0	0	0	0
Drums	0	0	0	0	1	0	0.5	0	0.5	0	0	0	0	0	0.2	0	1	0	0	0	0	0
9. Loading and Shipping				0																		
ISOs	0	0	0	0	6	0	3	0	0.3	0	0	0	0.05	0	0.5	0	1	0	1	0	0	0
Metal Boxes	0	0	0	0	3	0	2	0	0	0	2	0	0.05	0	0.5	0	2	0	2	0	0	0
Drums	0	0	0	0	3	0	2	0	0	0	2	0	0.05	0	0.5	0	2	0	2	0	0	0
Total Manhours by SAM						15		15		3		20		0		38		45		0		1

Activity	Safety Tech (SSITEC) Req'd	Safety Tech Mhrs	Rad Eng. (RADENG) Req'd	Rad Eng. Mhrs	Safety Eng. (SSIENG) Req'd	Safety Eng. Mhrs	Safety Anal. (SSHENG) Req'd	Safety Anal. Mhrs	Waste Eng. (WSTENG) Req'd	Waste Eng. Mhrs	MC&A Clerk (MPCREP) Req'd	MC&A Clerk Mhrs	TO Writer (TPSREP) Req'd	TO Writer Mhrs	Acquisitions (BUYCON) Req'd	Acquisitions Mhrs	Proj. Mgr. (PRJMGR) Req'd	Proj. Mgr. Mhrs	Admin. Spt. (CLERKS) Req'd	Admin. Spt. Mhrs
1. Campaign Planning	0.25	25	0.05	5	0.05	5	0.05	5	0.5	51	0.05	5	0.05	5	0	0	0.25	25	0.05	5
2. SSR	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
3. Sampling/Visual Inspection	0.2	5	0	0	0	0	0	0	0.1	2	0	0	0.05	1	0	0	0	0	0.05	1
4. Characterization	0	0	0	0	0	0	0	0	1.9	285	0	0	0	0	0	0	0	0	0.05	8
5. SP7 Dumping																				
Metal Boxes	0.05	0	0.05	0	0.05	0	0	0	0.1	0	0.2	0	0.05	0	0	0	0	0	0.05	0
Drums	0.05	0	0.05	0	0.05	0	0	0	0.1	0	0.2	0	0.05	0	0	0	0	0	0.05	0
6. Repackaging/Overpacking																				
ISOs	0.2	0	0.05	0	0.05	0	0	0	0.1	0	0.2	0	0.05	0	0	0	0	0	0.05	0
Boxes	0.2	0	0.05	0	0.05	0	0	0	0.1	0	0.2	0	0.05	0	0	0	0	0	0.05	0
Drums	0.2	0	0.05	0	0.05	0	0	0	0.1	0	0.2	0	0.05	0	0	0	0	0	0.05	0
7. ROB Movements (assumes round trip for ROBs)																				
ROBs	0.1	1	0.05	1	0.05	1	0	0	0.1	1	0.2	2	0.05	1	0	0	0	0	0.05	1
8. Container Movements																				
ISOs	0	0	0.05	0	0.05	0	0	0	0.1	0	0	0	0.05	0	0	0	0	0	0.05	0
Metal Boxes	0	0	0.05	0	0.05	0	0	0	0.1	0	0	0	0.05	0	0	0	0	0	0.05	0
Drums	0	0	0.05	0	0.05	0	0	0	0.1	0	0	0	0.05	0	0	0	0	0	0.05	0
9. Loading and Shipping																				
ISOs	0.5	0	0.05	0	0.05	0	0	0	0.1	0	0.2	0	0.05	0	0	0	0	0	0.1	0
Metal Boxes	0.5	0	0.05	0	0.05	0	0	0	0.1	0	0.2	0	0.05	0	0	0	0	0	0.05	0
Drums	0.5	0	0.05	0	0.05	0	0	0	0.1	0	0.2	0	0.05	0	0	0	0	0	0.05	0
Total Manhours by SAM		30		31		6		6		339		7		7		0		25		14

* Includes two warehouse attendants in Loading and Shipping

MATERIALS	Unit	Quantity	Rate	Total
ISOs	each	0	$2,000	$0
Metal Boxes	each	0	$1,200	$0
Drums	each	0	$40	$0
Full Anti-Cs	change	19	$9.00	$170
Normal Protective Clothing	change	18	$4.03	$72
3 Vehicles Moves/Repack/Dump	day	0	$165	$0
4 Vehicles for Loading	day	0	$220	$0
1 Vehicle for ROB Movements	day	0	$55	$0
Absorbent	each	0	$120	$0
Other Materials	each	0	$240	$0
NTS Truck Freight	shipment	0	$4,800	$0
Envirocare Truck Freight	shipment	0	$5,500	$0
Shoring	shipment	0	$100	$0
Envirocare Rail Freight	rail car	0	$8,700	$0
Subcontracts	**Unit**	**Quantity**	**Rate**	**Total**
Lab Analysis	sample	0	$1,075	$0
WPRAP Processing (soils)	ton	0	$135	$0
BURIAL FEES	**Unit**	**Quantity**	**Rate**	**Total**
NTS Fee	cu. ft.	0	$10.00	$0
Envirocare Rail Car Fee	rail car	0	$10,000	$0
Envirocare LLW Fee	cu. ft.	0	$10	$0

WORKSHEET SUMMARY

Total Hours 894	
Total Labor	$26,719
Total Materials	$261
Total Subcontracts	$0
Total Burial	$0
Total Cost	$26,970
Total Cost inclusive burial	$26,970

All costs are stated in FY01 Dollars

Comments and Assumptions:
1. ROB to be staged at Lab

Prepared by: Hugh A. Clinger
Date Prepared: 3/29/01

Control Team Review: _____

Project Review: _____

EBAL2

FUTURE LAB PROJECTS & RENOVATIONS

09/06/2001
4:07 PM

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EBAL
CHARGE NO: EBAL2
COMMENT NO:

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: AMY MEYER
FISCAL YEAR: 2001-2010

Resource: ENGMEC **ENGINEER MECH/PIPING** **EOC:** LABOR
Res Dept: **Overtime:** FY01 **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	12.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6
Yr Total Cost:	783	0	0	0	0	0	0	0	0	0
Cum Total Cost:	783	783	783	783	783	783	783	783	783	783

Resource: FIELDSUB **FIELD SUBS** **EOC:** SUBCONTRACTORS
Res Dept: 952 **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	1,860,100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Units:	0.0	1,860,100.0	1,860,100.0	1,860,100.0	1,860,100.0	1,860,100.0	1,860,100.0	1,860,100.0	1,860,100.0	1,860,100.0
Yr Total Cost:	0	1,910,323	0	0	0	0	0	0	0	0
Cum Total Cost:	0	1,910,323	1,910,323	1,910,323	1,910,323	1,910,323	1,910,323	1,910,323	1,910,323	1,910,323

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	12.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6	12.6
Yr Total Cost:	783	1,910,323	0	0	0	0	0	0	0	0
Cum Total Cost:	783	1,911,106	1,911,106	1,911,106	1,911,106	1,911,106	1,911,106	1,911,106	1,911,106	1,911,106

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

FLUOR GLOBAL SERVICES

Memorandum

To:	Amy Meyer, MS35 Jack Hughes,MS52-5 Dick Butterfiled, MS52-5	Date:	April 03, 2001
Location:	Fernald	Reference:	N/A
From:	Ken Kepler, MS80-3	Fernald #:	M:OOTP:(PC/EST)2001-0015
Location:	Springdale	Client:	DOE DE-AC24-01OH20115
Extension:	648-6761	Subject:	RE-EVALUATION OF LAB WHITE PAPER - ALS

c: File Record Subject ESTIMATE C6-0004-01
Tom Wagner, MS80-3

Attached are two (2) copies of the estimate for the RE-EVALUATION OF LAB WHITE PAPER – ALS.

To request any additional copies of this estimate or for any questions, please contact Tom Wagner on extension 6120.

KGK:TW:hmp
Attachment

Fluor Fernald, Inc.

ESTIMATING SERVICES

March 7, 2001

REQUEST FOR ESTIMATE

PROJECT: Analytical Laboratory Services

ESTIMATE/PROJECT TITLE: Re-evaluation of Lab White Paper - ALS

WBS NUMBER: 2.1.2.C CONTROL ACCOUNT/CHARGE NO.: EFAA / EFAA1

ESTIMATE FILE NUMBER: C6000401 Rev.1

ESTIMATE DUE DATE: ESTIMATOR'S CHARGE NO.:

ACTIVITY: START: FINISH:

mm/dd/yr) (mm/dd/yr)

	Name	Extension	Pager	FAX	Location
REQUESTOR:	Ameyer	5423	303-3319	5198	B15
CAM:	Ameyer	5423	303-3319	5198	B15
PROJECT ENG.:	D. Butterfield	3765	303-3259	4029	T80
CONSTR. MGR.:	J. Hughes	3751	303-3420	4029	T80
PROJECT MGR.:					
SCHEDULER:					
ENV./HLTH./SFTY. REP.:					
VPM REP.:					
CONTR./AQUIS. REP.:					

ESTIMATING SERVICES REQUIRED: Update into FY01 dollars
Just include field Direct & Indirect Costs.
J Hughes will complete support cost estimates

APPROVED. PROCEED W/ESTIMATE SERVICE: Amy Meyer DATE: 3-7-01
CAM's SIGNATURE

EST. TYPES/SERVICE:		EST. TECHNIQUE:		PURPOSE OF EST.:	
PLANNING/FEASIBILITY		BOTTOMS UP		BASELINE DEVELOPMENT	✓
CONCEPTUAL DESIGN		SPECIFIC ANALOGY		CHANGE PROPOSAL*	
DISCRETE		PARAMETRIC		S/C PROPOSAL ANALYSIS	
TITLE I		COST REVIEW & UPDATE	✓	DCN*	
TITLE II		TREND ANALYSIS		CHANGE ORDER*	
GOVERNMENT	✓	EXPERT OPINION		AVOIDABLE COST EVAL.	
TOTAL PROJECT COST		OTHER		COST STUDY/ANALYSIS	
LIFE CYCLE COST				REVIEW/COMMENTS	
COST SAVINGS				DAVIS BACON DETERM.	
COST AVOIDANCE					
LEVEL OF EFFORT					
OTHER					

* >$100,000

Fluor Fernald, Inc.

ESTIMATING SERVICES

March 7, 2001

REQUEST FOR ESTIMATE

PROJECT:

ESTIMATE/PROJECT TITLE:

WBS NUMBER: CONTROL ACCOUNT/CHARGE NO.:

ESTIMATE FILE NUMBER:

ESTIMATE DUE DATE: ESTIMATOR'S CHARGE NO.:

ACTIVITY: START: FINISH:

mm/dd/yr) (mm/dd/yr)

TYPES of COSTS to be INCLUDED:

DIRECT FIELD COST (S/C)	X			
INDIRECT FIELD COST (S/C)	X			
FF SUPPORT COSTS:	LOE**	%**	N/A	DET AIL
PROJECT MGMT.				
CONSTRUCTION MGMT.				
WASTE PROG. MGMT.				
ENGINEERING SERVICES:				
FF COSTS				
S/C (PARSONS, ETC.)				

include materials

** LOE TO BE PROVIDED BY CAM
*** IF NO LOE BY CAM, ESTIMATING TO USE DEFAULT %

DOCUMENTS PROVIDED/ACTIVITIES PARTICIPATED IN:

KICK-OFF MTG.		DATE:	LOCATION:
OTHER MTGS		DATE:	LOCATION:
SITE VISIT/WALK-THRU		DATE:	LOCATION:
WRITTEN SCOPE		Provided by:	DATE:
VERBAL SCOPE		Provided by:	DATE:
SKETCHES		SEE LIST	
PRELIM. DWGS.		SEE LIST	
SITE REF. DWGS.		SEE LIST	
TITLE I DWGS.		SEE LIST	
TITLE II DWGS.	X	SEE LIST	
CFC DWGS.		SEE LIST	
SPECIFICATIONS	X	DATE:	REV. NO.:
WORK PLAN		DATE:	REV. NO.:
WORK/PROJECT SCHED.		DATE:	REV. NO.:
VENDOR DATA		SEE LIST	
CWID FORM		DATE:	REV. NO.:

DISTRIBUTION:
Project Engineer
Requestor

ESTIMATE SUMMARY SHEET

PROJECT: Re-evaluation of Lab White Paper - ALS
ESTIMATE NO.: C6000401 Rev. 2 (4MLU + 3RTALs
CLIENT: DOE
BS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM DESCRIPTION	M/H	RATE	LABOR $	S/C $	MAT'L $	EQUIP. $	TOTAL $
01 PREMOBILIZATION	150			$6,800			$6,800
02 MOBILIZATION	165		$3,800	$7,100	$17,800	$27,000	$55,700
03 SITE PREPARATION	3,706		$87,100	$44,700	$206,200	$17,900	$355,900
04 MODULAR LABORATORY UNIT	1,659		$37,200	$474,000	$167,500	$2,000	$680,700
05 MODIFICATION of RTAL's	744		$17,000		$22,300	$200	$39,500
06 CLOSEOUT & DEMOBILIZATION	339		$7,500	$6,900	$4,300	$6,200	$24,900
07 SAFETY INCENTIVE				$3,090			$3,090
DIRECT FIELD COSTS TOTAL	**6,763**	**$22.56**	**$152,600**	**$542,590**	**$418,100**	**$53,300**	**$1,166,590**
SUPERVISION - CONTRACTOR	5,761		$130,000				$130,000
SMALL TOOLS & CONSUMABLES					$9,200		$9,200
MISC. EQUIP. RENTAL							
TEMPORARY FACILITIES							
TEMPORARY UTILITY HOOK-UP							
JOB CLEAN-UP	304		$6,900		$2,300		$9,200
SAFETY (INCLUDED WITH SITE & PPE PROD.FACTOR							
HEALTH PHYSICS S/C	137		$3,100				$3,100
CERCLA - 40 HRs/FTE	425		$9,600				$9,600
GET/SITE ACCESS & JOB SPECIFIC TRAINING	306		$6,900				$6,900
PAYROLL BURDENS & BENEFITS	-	-	$176,200				$176,200
OVERHEAD & PROFIT	-	-		$302,200			$302,200
BOND	-	-		$18,100			$18,100
SALES TAX	-	-			$25,800	$3,200	$29,000
INDIRECT FIELD COSTS TOTAL	**6,934**		**$332,700**	**$320,300**	**$37,300**	**$3,200**	**$693,500**
DIRECT & INDIRECT FIELD COSTS TOTAL	**13,697**	**$35.43**	**$485,300**	**$862,890**	**$455,400**	**$56,500**	**$1,860,090**
WASTE DISPOSITION MGMT. - FD FERNALD							
FAT&LC and HONEYWELL COSTS							
WASTE MANAGEMENT COSTS TOTAL							
PROJECT & CONSTRUCTION MANAGEMENT - FD FERNALD							
FD FERNALD FIELD SUPPORT COSTS TOTAL							
ENGINEERING/DESIGN/INSPECTION - FD FERNALD							
ENGINEERING/DESIGN/INSPECTION - A/E							
ENGINEERING COSTS TOTAL							
SALES TAX - FD FERNALD							
SUB-TOTAL (BASE ESTIMATE)							**$1,860,100**

ARGET ESTIMATE (FY 01 DOLLARS) $1,860,100

ESTIMATE PERFORMED BY ESTIMATING SERVICES

F:\ESTIMATE\BASELI~1\LABPRO~1\LABPRJCT.WK4

FLUOR DANIEL FERNALD
PROJECTS CONTROLS
ESTIMATING SERVICES

March 23, 2001

PROJECT DESCRIPTION: Re-evaluation of Lab White Paper - ALS
WBS NUMBER: 2.1.2.C
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C6000401 Rev. 2

BASIS OF ESTIMATE

SUPPORTING DOCUMENTATION:

Verbal Scope	☐	P & ID's	☐	Work Plan	☐
Drawings	☒	Equipment List	☒	Site Walk	☐
Sketches	☐	Specifications	☐	Eng. Mtg.	☐
Flow Diagrams	☐	Written Scope	☒	Estimate	☒

TYPE OF ESTIMATE:

Change Proposal	☐	Government	☐
Plan/Feasibility	☐	Conceptual	☐
Construction	☐	Title I Design	☐
Budget	☒	Independent	☐

BASIS OF ESTIMATE:

Estimates C6000401R1 was prepared to support life cycle cost studies that address future site needs for laboratory analysis.

C6000401R1 provides construction cost for a new ALS facility consisting of four Modular Laboratory Units (MLUs), 56' X 60', and associated equipment, site preparation, installation of utilities, utility and other modifications to three RTALs (T115, T116 & T117), and final site grading.

FLUOR DANIEL FERNALD
PROJECTS CONTROLS
ESTIMATING SERVICES

March 23, 2001

PROJECT DESCRIPTION: Re-evaluation of Lab White Paper - ALS
WBS NUMBER: 2.1.2.C
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C6000401 Rev. 2

ESTIMATE ASSUMPTIONS

EXECUTION:

- ☒ This project is to be performed on a 40-hour week, 10 hours a day.
- ☐ This project is to be performed on a 40-hour week, 8 hours a day.
- ☒ Premium time for 13.2 kV electrical and water main tie-ins.

WAGE RATES:

☒ Wage rates within this estimate are based on Project Labor Agreement rates, effective October 2000 and are considered FY01 dollars for estimating.

ENGINEERING:

☒ N/A

CONSTRUCTION MANAGEMENT:

☒ N/A

PROJECT MANAGEMENT:

☒ N/A

WASTE PROGRAM MANAGEMENT:

☒ N/A

FLUOR DANIEL FERNALD
PROJECTS CONTROLS
ESTIMATING SERVICES

March 23, 2001

PROJECT DESCRIPTION: Re-evaluation of Lab White Paper - ALS
WBS NUMBER: 2.1.2.C
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C6000401 Rev. 2

PRODUCTIVITY:

A productivity factor has been developed and applied to the unit man-hours derived from MEANS, Richardson, NECA, and or any other published estimating source. See attachment APPENDIX "A" and APPENDIX "B".

ESCALATION:

Escalation costs are excluded from the target estimate. The estimate is expressed in 2001 dollars.

UNIT RATES:

Unit man-hours, equipment and material dollars are based on Richardson, MEANS, NECA, and or other published rates.

G & A (HO EXPENSE):

N/A

HEALTH PHYSICS:

See attached APPENDIX "C".

RISK BUDGET:

N/A

FLUOR DANIEL FERNALD
PROJECTS CONTROLS
ESTIMATING SERVICES

March 23, 2001

PROJECT DESCRIPTION: Re-evaluation of Lab White Paper - ALS
WBS NUMBER: 2.1.2.C
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C6000401 Rev. 2

ESTIMATE INCLUSIONS & EXCLUSIONS

INCLUSIONS:

- Contractor Premobilization.
- Mobilization & Demobilization
- A temporary gravel access road 20' w x 1700 lf. Existing ground is assumed to be structurally adequate for the road without any preparation.
- Silt fence and construction fence.
- Site preparation for 4 Modular Lab Units, 56' x 60'.
- Domestic water tie-in to existing main.
- Lab waste sewer with a lift station.
- Trenching with 1:1 side slopes. Any excess excavated materials are trucked to a stockpile within .5 mi. Common trench backfill utilizes excavated trench material.
- Minor pumping of groundwater for the Lab Waste Sump installation.
- Trench shoring of Lab Waste Sump discharge installed under the road. All other pipe trenches are open cut.
- RTAL utility hook-ups.
- An allowance of $60,000 for subgrade removal and engineered fill under the 4 MLUs, approximately 2,400 CY, and was based on the judgement of the project manager and the estimator.
- Engineering & Supervision by the contractor.
- Engineering, delivery, setup of MLU's.
- A DOE site will take the MLUs and RTALs after they are no longer needed at FERNALD.
- Lighting and heat where appropriate for SeaLands and flammable storage units.
- These estimates were prepared by modifying a previous estimate C6000101R1.

FLUOR DANIEL FERNALD
PROJECTS CONTROLS
ESTIMATING SERVICES

March 23, 2001

PROJECT DESCRIPTION: Re-evaluation of Lab White Paper - ALS
WBS NUMBER: 2.1.2.C
PROJECT ENGINEER: D. Butterfield
ESTIMATOR: T. Wagner
ESTIMATE NUMBER: C6000401 Rev. 2

EXCLUSIONS:

- Site clearing and demolition for installation of temporary road.
- Load, haul and disposal of excavated materials.
- Scheduled premium time other than 13.2 kV and water tie-in.
- Lab supplies and chemicals.
- Purchase or relocation of SeaLands and flammable storage units.
- Permits and fees.
- FD G & A (Home Office Expense).
- Any second tier subcontract costs.
- FDF Project Management , and Construction management.
- Allowance for contamination.
- Decontamination of construction equipment or relocated equipment.
- Contractor per diem and subsistence.
- Groundwater allowance except for Lab Waste Sump.
- RTAL purchase or rental. Existing RTALs to be provided by Fernald.
- Long term maintenance of stockpile.
- Relocation of existing argon unit and temporary argon unit by FAT&LC.
- Transfer of existing lab equipment as identified by Chris Sutton and performed by FAT&LC.
- Relocation of existing lab furniture and coolers by FAT&LC.
- Relocation of PCs by FAT&LC.
- Honeywell equipment in RTALs.
- An allowance of $10,000 for Honeywell and telephone company service costs per estimator's judgement.
- An allowance of $40,000 for telecommunications from the Services Bldg. to the New Lab and was based on the judgement of the project manager.
- D&D of all installations with disposal to OSDF.

ESTIMATE SUMMARY SHEET

PROJECT: Re-evaluation of Lab White Paper - ALS

ESTIMATE NO.: C6000401 Rev. 2 (4MLU + 3RTALs **FACTORS**

CLIENT: DOE

'BS NO.: 2.1.2.C

DATE: 15-May-2000

ESTIMATOR: T. Wagner

LOCATION: FERNALD

TASK NO.: EFAA1

XED PRICE SUBCONTRACT	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
DFC DOLLARS	$152,600	$542,590	$418,100	$53,300		$1,166,590
IFC COST FACTOR	3.1802	–	1.0275	1.0000	–	
BOND + OVERHEAD & PROFIT COST FACTOR	1.2080	1.2080	1.2080	1.2080	1.2080	
SALES TAX	-	-	1.0600	1.0600	1.0600	
DIRECT FIELD COST FACTOR =	3.8417	1.2080	1.3157	1.2805	1.2805	
BASE ESTIMATE $'s	$586,250	$655,457	$550,101	$68,250		$1,860,059
RISK BUDGET FACTOR	1.0000	1.0000	1.0000	1.0000	1.0000	
TARGET ESTIMATE FACTOR	3.8417	1.2080	1.3157	1.2805	1.2805	
FPS TARGET ESTIMATE (FY01 DOLLARS)	$586,250	$655,457	$550,101	$68,250		$1,860,059

NOTE:

1.)The above costs represent constant FY dollars and require de-escalation to FY96 for input to microframe. SEE De-Escalated Summary.

2.) If there are no DFC Equip. $, enter The IFC Equip. $'s into the direct field cost TOTAL and delete IFC Factor in G65.

3.) If FD Fernald Support dollars appear below, and were generated as a percenatage of the DFC, Risk Budget would apply and these dollars would be de-escalated to FY96. Indicate an 'X' in the 'YES' box and enter 'SPACE BAR' in the NO box.
If the FDF Support costs are supported by LOE estimates, use those estimates for input to microframe, enter 'SPACE BAR' in the Yes Box and an X in the N

DOES RISK BUDGET APPLY TO FD FERNALD SUPPORT COSTS	YES	NO X

FD FERNALD SUPPORT COSTS	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
FD FERNALD PROJECT MGMT.						
RISK BUDGET FACTOR	1.00	1.00	1.00	1.00	1.00	1.00
TOTAL PM						
FD FERNALD CONSTRUCTION MGMT.						
SK BUDGET FACTOR	1.00	1.00	1.00	1.00	1.00	1.00
TOTAL CM						
FD FERNALD WASTE PROGRAM MGMT.						
RISK BUDGET FACTOR	1.00	1.00	1.00	1.00	1.00	1.00
TOTAL WPM						
FD FERNALD RSO						
RISK BUDGET FACTOR	1.00	1.00	1.00	1.00	1.00	1.00
TOTAL RSO						
FD FERNALD ENGINEERING/DESIGN/INSPECTION						
RISK BUDGET FACTOR	1.00	1.00	1.00	1.00	1.00	1.00
TOTAL FD FERNALD ENG.						
A/E ENGINEERING/DESIGN/INSPECTION						
RISK BUDGET FACTOR	1.00	1.00	1.00	1.00	1.00	1.00
TOTAL A/E.						
SUB-TOTAL PROJECT TARGET EST. (FY01 DOLLARS)						$1,860,059

If FDF Support Costs were based on % defaults, indicate 'Yes' above. These costs are considered FY01 $'s and Risk Budget applies.

If FDF Support Costs were based on LOE estimates provided by the CAM's, indicate 'NO' and escalate the LOE dollars to FY01. (x 1.103)
Risk Budget will NOT apply. Separate the Sales Tax below.

The sales tax below may be included in the LOE estimates above. Choose where to show sales tax and whether Risk allowance applies.

OTHER FD FERNALD SALES TAX - 6%						
RISK BUDGET FACTOR	1.00	1.00	1.00	1.00	1.00	1.00
TOTAL OTHER FD FERNALD SALES TAX						
TOTAL PROJECT TARGET EST. (FY01 DOLLARS)						$1,860,059

ESTIMATE SUMMARY SHEET

PROJECT: Re-evaluation of Lab White Paper - ALS

ESTIMATE NO.: C6000401 Rev. 2 (4MLU + 3RTALs

Direct Field Cost w/FACTORS AND RISK BUDGET

	YES	NO
	X	

DATE: 15-May-2000

ESTIMATOR: T. Wagner

CLIENT: DOE

BS NO.: 2.1.2.C

LOCATION: FERNALD

TASK NO.: EFAA1

AY ITEM NO.	DESCRIPTION	LABOR $	S/C $	MAT'L. $	EQUIP. $	PPE $	TOTAL $
	01 PREMOBILIZATION		6800 $8,210				6800 $8,210
	02 MOBILIZATION	3800 $14,600	7100 $8,580	17800 $23,420	27000 $34,570		55700 $81,170
	03 SITE PREPARATION	87100 $334,620	44700 $54,000	206200 $271,300	17900 $22,920		355900 $682,840
	04 MODULAR LABORATORY UNIT	37200 $142,910	474000 $572,600	167500 $220,380	2000 $2,560		680700 $938,450
	05 MODIFICATION of RTAL's	17000 $65,310		22300 $29,340	200 $260		39500 $94,910
	06 CLOSEOUT & DEMOBILIZATION	7500 $28,810	6900 $8,340	4300 $5,660	6200 $7,940		24900 $50,750
	07 SAFETY INCENTIVE		3090 $3,730				3090 $3,730
OTAL DIRECT FIELD COSTS w/FACTORS			(FY01 DOLLARS)				$1,860,060

NOTE: The above costs exclude any FD Fernald support costs that may appear on page 1 & 2, such as Waste Disposition, Engineering, Project Management, or Construction Management.

DETAIL ESTI. .TE WORKSHEETS

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	SUMMARY DIRECT COST	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST / UNIT Labor	COST / UNIT S/C	COST / UNIT Mat'l	COST / UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
01	01 PREMOBILIZATION	1	LOT		150							$6,800			$6,800
02	02 MOBILIZATION	1	LOT		165						$3,800	$7,100	$17,800	$27,000	$55,700
03	03 SITE PREPARATION	1	LOT		3,706						$87,100	$44,700	$206,200	$17,900	$355,900
04	04 MODULAR LABORATORY UNIT	1	LOT		1,659						$37,200	$474,000	$167,500	$2,000	$680,700
05	05 MODIFICATION of RTAL's	1	LOT		744						$17,000		$22,300	$200	$39,500
06	06 CLOSEOUT & DEMOBILIZATION	1	LOT		339						$7,500	$6,900	$4,300	$6,200	$24,900
07	07 SAFETY INCENTIVE	1	LOT									$3,090			$3,090
	NOTE: Shaded Items indicate D&D scope.														
	SUMMARY DIRECT COST	1	LOT		6,763	$22.56					$152,600	$542,590	$418,100	$53,300	$1,166,590

DETAIL ESTIMATE WORKSHEETS

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	01 PREMOBILIZATION	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
01.4	SUBCONTRACTOR'S PREMOBILIZATION														
	· Plant Facilities Engineering Package Desc. of S/C's Operation & Processes, Design Criteria & Assumptions, PFD's w/Mass & Energy Balance, Site Plans & General Arrgmnt. Plans, Equip. Data Sheets/Specs. · Desc. of Work, Site Plan, Grading PLan & Details, Specifications, Mfg. Fabrication Dwgs., Utility Plans 30 days	5.0	men		150			$45				$6,750			$6,750
	Take-off Allowance		%												
	01 PREMOBILIZATION	1	LOT		150							$6,750			$6,750

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	02 MOBILIZATION	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
02.2	SET UP CONTRACTOR'S TEMPORARY FACILITIES														
	Move equipment and material on jobsite														
D	Equipment	9	ea	4.000	41	23.90		200.00			$980	$1,850			$2,830
D	Misc material,	1	ls	20.000	23	23.90					$550				$550
D	50x10 office trailer furnished & hookup	1	ls	32.000	36	23.90					$860	$2,000			$2,860
	Construction rentals														
	Office trailer rental	6	mo							325				$2,010	$2,010
	Storage trailer rental	6	mo							100				$620	$620
	Change trailer rental	6	mo							200				$1,240	$1,240
	Toilets	6	mo					180.00				$1,110			$1,110
	Utilities and telephone	6	mo					350.00				$2,160			$2,160
	Pickup truck	6	mo							1000				$6,180	$6,180
	Trencher, 12 hp	2	mo							1275				$2,550	$2,550
	Line Truck	2	mo							3400				$6,800	$6,800
	Manlift	2	mo							3000				$6,000	$6,000
	Access Road														
D	Geotextile Fabric, 20'w x 1700' lg and 60' x 84'	4338	SY	0.006	30	21.49			0.65		$640		$2,900		$3,540
D	6" thk Compacted 304 aggregate	723	BCY	0.043	35	21.49			20.00	2.11	$750		$14,890	$1,570	$17,210
	Take-off Allowance														
	02 MOBILIZATION	1	LOT		165	$23.03					$3,800	$7,100	$17,800	$27,000	$55,700

DETAIL EST. .TE WORKSHEETS

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	03 SITE PREPARATION	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
03.3	UNDERGROUND PIPING & LIFT STATIONS														
	Domestic Water (continued)														
D	1 1/2" HDPE to 1 1/2" IPS Adapter	3	ea	0.850	3	26.40			9.50		$80		$30		$110
D	1 1/2" HDPE Pipe	235	LF	0.012	3	26.40			0.512		$80		$120		$200
D	1 1/2" HDPE 45 Ell, socket	3	ea	0.820	3	26.40			6.34		$80		$20		$100
D	Saturday premium time	50	mhs			13.20					$660				$660
	5 men x 10 hrs														
D	1 1/2" C.I. Gate valve	1	ea	1.200	1	26.40			353.76		$30		$360		$390
D	Valve box w/cover, 3'	1	ea	0.300		26.40			142.00				$150		$150
D	2" HDPE Flange adapter	2	ea	0.410	1	26.40			11.62		$30		$20		$50
D	2" Flange, 150#	2	ea	0.900	2	26.40			10.03		$50		$20		$70
D	Sawcut pavement, 6"	80	LF	0.046	4	26.40			1.65	0.88	$110		$140	$70	$320
D	Excavate for pipe trench	509	CY	0.107	62	26.40				1.50	$1,640			$790	$2,430
D	Bedding	175	CY	0.249	49	26.40			10.00	2.110	$1,290		$1,800	$380	$3,470
D	Common backfill	382	CY	0.119	52	26.40				1.250	$1,370			$490	$1,860
D	Aggregate backfill	27	CY	0.119	4	26.40			20.00	1.250	$110		$560	$30	$700
D	Haul excess excav. matl. to stockpile	222	CY	0.042	11	26.40				2.56	$290			$580	$870
D	Dozer w/ spotter at stockpile	1.0	Day	16.000	18	26.40				712.25	$480			$730	$1,210
D	Concrete patch trench	9.9	CY	1.074	12	22.43			80.00	0.81	$270		$810	$10	$1,090
D	Pipe concrete thrust blocks (16 ea)	4.1	cy	1.000	0	26.40			88.88		$240		$380		$620
D	Insulate 1 1/2" pipe, 1 1/2" fiberglass	10	LF	0.080	1	26.40			2.03		$30		$30		$60
	w / vapor barrier														
D	Concrete protection pads	1	CY	4.000	6	22.43			77.00		$110		$80		$190
D	Eyewash / Safety Shower, Haws	1	ea	4.000	5	26.40			3184.00		$130		$3,280		$3,410
	No. 8317CTFPB, w/ drench hose														
D	Guard posts @ safety shower	3	ea	1.200	4	21.49			168.00	10.15	$90		$520	$30	$640
D	Disinfect & flush new lines	1	Allow	18.000	18	26.40			10.00		$480		$10		$490
D	Testing, 2 men x 8 hrs	1	Allow	16.000	16	39.60					$630				$630

DETAIL ESTIMATE WORKSHEETS

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	03 SITE PREPARATION	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
03.3	UNDERGROUND PIPING & LIFT STATIONS														
	Lab Waste Drains														
D	4"PP Pipe (SDR-11)	237	LF	0.356	96	26.40			9.92		$2,530		$2,420		$4,950
D	4"PP 90 Ell (SDR-11)	4	ea	1.143	5	26.40			35.34		$130		$150		$280
D	4"PP Cap (SDR-11)	4	ea	1.143	5	26.40			40.58		$130		$170		$300
D	4"PP Wye (SDR-11)	3	ea	1.778	6	26.40			51.74		$160		$160		$320
D	4"PP 45 Ell (SDR-11)	3	ea	1.143	4	26.40			52.75		$110		$160		$270
D	Lift station: w/pump, controls, internal	1	ea	16.000	18	26.40			41795		$480		$43,050		$43,530
D	piping, sump and cover. 4'Dia x 8.7' h														
D	Concrete ballast	1.5	CY	1.223	2	22.43			75.27	0.81	$40		$110		$150
D	Anchor bolts	1	Allow	2.000	2	22.43			50.00		$40		$50		$90
D	Concrete apron	1	CY	1.223	1	22.43			75.27	0.81	$20		$60		$80
D	Dewater excavation, pump from low point	10	hr	1.000	11	21.49				4.00	$240			$40	$280
D	Sawcut pavement, 6"	155	LF	0.046	8	21.49			1.65	0.88	$170		$260	$140	$570
D	Excavate for pipe trench & lift station	617	BCY	0.107	75	21.49				1.50	$1,610			$950	$2,560
D	Shoring for above: (80+35)' x 5'	1150	SF	0.030	30	21.49			0.57	1.26	$840		$680	$1,490	$3,010
D	Hand excavation at T115 & T116	1	Allow	20.000	20	21.49					$430				$430
D	Bedding	123	LCY	0.249	35	21.49			10.00	2.11	$750		$1,270	$270	$2,290
D	Common backfill	403	LCY	0.119	54	21.49				1.25	$1,160			$520	$1,680
D	Aggregate backfill	177	LCY	0.119	24	21.49			20.00	1.25	$520		$3,650	$230	$4,400
D	Haul excess excav. matl. to stockpile	320	LCY	0.042	15	21.49				2.56	$320			$840	$1,160
D	Dozer w/ spotter at stockpile	1.5	Day	18.000	27	21.49				712.25	$580			$1,100	$1,680
D	Guard posts	4	ea	1.200	5	21.49			168.00	10.15	$110		$690	$40	$840
D	Concrete patch trench & lift station	11	CY	0.872	13	22.43			80.00	0.81	$200		$940	$10	$1,240
D	2"PP/ 4"PP Pipe (SDR-11)	147	LF	0.614	102	26.40			27.19		$2,600		$4,120		$6,810
D	2"PP/ 4"PP 45 Ell (SDR-11)	1	ea	1.714	2	26.40			207.90		$50		$210		$260
D	2"PP/ 4"PP 90 Ell (SDR-11)	3	ea	1.714	6	26.40			175.56		$160		$540		$700
D	4"PP Access Tee (SDR-11)	3	ea	1.778	6	26.40			469.29		$160		$1,450		$1,610
D	4"PP Cap (SDR-11)	3	ea	1.143	4	26.40			40.58		$110		$130		$240
D	2"PP/ 4"PP Flange termination (SDR-11)	6	ea	1.143	8	26.40			131.29		$210		$810		$1,020
D	4" Backing ring	2	ea	0.100		26.40			46.82				$100		$100
D	2" Ball va.	2	ea	0.542	1	23.57			161.60		$20		$330		$350
D	2"PP/ 4"PP Valve enclosure	2	ea	1.778	4	26.40			469.29		$110		$970		$1,080
	Electrofusion machine rental	2	week							150.00				$310	$310

DETAIL ESTIMATE WORKSHEETS

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	03 SITE PREPARATION	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
03.3	UNDERGROUND PIPING & LIFT STATIONS														
	Sanitary Sewer														
D	4" 90 Ell, SDR 35 PVC	1	ea	1.263	1	26.40			2.79		$30				$30
D	4" 45 Ell, SDR 35 PVC	2	ea	1.263	3	26.40			2.79		$80		$10		$90
D	4" Pipe, SDR 35 PVC	38.5	LF	0.064	3	26.40			2.21		$80		$90		$170
D	4" Plug, SDR 35 PVC	1	ea	0.632	1	26.40			1.40		$30				$30
D	3" Pipe, C900 PVC PC200	5	LF	0.038		26.40			0.80						
D	4" Pipe, C900 PVC PC200	5	LF	0.040		26.40			1.38				$10		$10
D	3" x 4" Reducer, C900 PVC PC200	1	ea	1.600	2	26.40			11.45		$50		$10		$60
D	4" 90 Ell, C900 PVC PC200	2	ea	1.600	4	26.40			11.45		$110		$20		$130
D	3" Flange, C900 PVC C2000	1	ea	1.333	2	26.40			5.10		$50		$10		$60
D	4" Flange, C900 PVC C200	1	ea	1.600	2	26.40			11.45		$50		$10		$60
D	Lift station: w/pump, controls, internal piping, sump and cover, 2.5'dia x 9.1'h	1	ea	14.000	16	26.40			7332		$420		$7,550		$7,970
D	Concrete ballast	1	CY	1.223	1	22.43			75.27	0.81	$20		$80		$100
D	Anchor bolts	1	Allow	2.000	2	22.43			10.00		$40		$10		$50
D	Concrete apron	1	CY	1.223	1	22.43			75.27	0.81	$20		$80		$100
D	Pump excavation	10	hr	1.000	10	21.49				4.00	$210			$40	$250
D	Excavate for pipe trench & lift station	141	BCY	0.107	17	21.49				1.50	$370			$220	$590
D	Bedding	11	LCY	0.240	3	21.40			10.00	2.11	$80		$110	$20	$190
D	Common backfill	144	LCY	0.119	19	21.49				1.25	$410			$190	$600
D	Haul excess excav. matl. to stockpile	17	LCY	0.042	1	21.49				2.56	$20			$40	$60
D	Dozer w/ spotter at stockpile	0.1	Day	16.000	2	21.49				712.25	$40			$70	$110
D	Guard posts	4	ea	1.200	5	21.40			100.00	10.15	$110		$800	$40	$840
D	Hand excavation	1	Allow	10.000	10	21.49					$210				$210
D	Testing	1	Allow	10.000	10	26.40					$260				$260
	Surveying: Paving, bldgs, & U/G														
	2 men x 3 days	60	mhs					50.00				$3,090			$3,090

DETAIL ESTIMATE WORKSHEETS

PROJECT: Re-evaluation of Lab White Paper - ALS
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Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	03 SITE PREPARATION	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
03.4	**ABOVEGROUND PIPING & SERVICES**														
	Lab Waste Drains A/G														
D	Cut-in to existing pipe to Tank 155	1	Allow	10.000	10	26.40			-		$260				$260
D	2"PP/ 4"CS Flange termination for above	1	ea	3.048	3	26.40			159.13		$80		$160		$240
D	2"PP/ 4"CS Pipe (SDR-11)	30	LF	2.201	75	26.40			9.53		$1,980		$290		$2,270
D	2"PP/ 4"CS 90 Ell (SDR-11)	2	ea	13.658	31	26.40			160.73		$820		$330		$1,150
D	2"PP/ 4"CS Flange termination (SDR-11)	4	ea	3.048	14	26.40			159.13		$370		$660		$1,030
D	Insulate 4" pipe, 1 1/2" fiberglass w / vaper barrier	30	LF	0.114	4	23.33			3.71		$90		$110		$200
	T115 & T116 Lab Waste Drains A/G														
	See Pay Item 05.4														

DETAIL ESTIMATE WORKSHEETS

PROJECT: Re-evaluation of Lab White Paper - ALS
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CLIENT: DOE
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Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	03 SITE PREPARATION	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
03.5	TELECOMMUNICATIONS, ELEC. SERVICES, 100kva TRANSFORMER														
	SW597 pole and feeder cable														
D	1. Lock & Tag system - see SW596														
D	2. Dig up area for pole	6	CY	3.560	24	21.49				35.00	$520			$220	$740
D	3. Install new pole (wooden)	1	EA	13.000	15	21.49			525.00	400.00	$320		$540	$410	$1,270
D	4. Install hardware	8	EA	2.300	21	22.66			20.00		$480		$160		$640
D	5. Install guy wire	2	EA	14.500	33	22.66			350.00	200.00	$750		$720	$410	$1,880
D	6. Run new cable #2 awg	200	LF	0.120	27	22.66			0.92	1.13	$610		$190	$230	$1,030
D	7. Run new cable 336.4 kcmil	200	LF	0.120	27	22.66			1.10	1.13	$610		$230	$230	$1,070
D	8. Install crossarms 5' long	2	EA	3.636	8	22.66			147.00	75.00	$180		$300	$150	$630
D	9. Install ground rods	2	EA	1.739	4	22.66			18.20		$90		$40		$130
D	10. Install 3/8" static line	150	LF	0.110	19	22.66				1.13	$430			$170	$600
D	11. Termination	12	EA	1.143	16	22.66			3.25		$360		$40		$400
D	12. Backfill holes	6	CY	2.200	15	22.66				35.00	$340			$220	$560
D	13. Compact area	6	CY	1.200	8	22.66				35.00	$180			$220	$400
D	14. Install suspension insulator	4	EA	3.501	16	22.66				35.00	$360			$140	$500
	SW598 pole and feeder cable														
D	1. Lock & Tag system - see SW596														
D	2. Dig up area for pole	6	CY	3.560	24	21.49				35.00	$520			$220	$740
D	3. Install new wood pole, 58.5' lg	1	EA	13.000	15	21.49			525.00	400.00	$320		$540	$410	$1,270
D	4. Install hardware	8	EA	2.300	21	22.66			20.00		$480		$160		$640
D	5. Install guy wire	1	EA	14.500	16	22.66			350.00	200.00	$360		$360	$210	$930
D	6. Tap into exist. 13.2 kv line	1	LS	16.000	18	22.66			192.00	75.00	$410		$200	$80	$690
D	7. Run new cable 336.4 kcmil	100	LF	0.120	14	22.66			1.10		$320		$110		$430
D	8. Install crossarms 5' long	2	EA	3.636	8	22.66			147.00	75.00	$180		$300	$150	$630
D	9. Install ground rods	2	EA	1.739	4	22.66			18.20		$90		$40		$130
D	10. Install 3/8" static line	150	LF	0.110	19	22.66				1.13	$430			$170	$600
D	11. Termination	12	EA	1.143	16	22.66			3.25		$360		$40		$400
D	12. Backfill holes	6	CY	2.200	15	22.66				35.00	$340			$220	$560
D	13. Compact area	6	CY	1.200	8	22.66				35.00	$180			$220	$400
D	14. Install suspension insulator	4	EA	1.200	5	22.66				1.13	$110				$110
D	15. 15kV fused switch/arrester, 200A	3	EA	9.000	31	22.66			595.00		$700		$1,840		$2,540

DETAIL ESTI.. .TE WORKSHEETS

PROJECT: Re evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	03 SITE PREPARATION	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
03.5	TELECOMMUNICATIONS, ELEC. SERVICES, 100kva TRANSFORMER														
	Feed to Transformer														
D	Install 3 1/2" RGS conduit	48	LF	0.36	19	22.66			13.75		$430		$650		$1,080
D	Install 3 1/2" PVC conduit U/G	54	LF	0.160	10	22.66			4.55		$230		$250		$480
D	Concrete envelope	0.8	CY	2.729	3	22.66			84.00	0.93	$70		$70		$140
D	Install 3 1/2" pvc conduit bend	2	ea	0.667	2	22.66					$50				$50
D	Tap into exist. 13.2 kv line	1	LS	16.000	18	22.66			124.50	75.00	$410		$130	$80	$620
D	Install 3-1/C #2 15kv shield cable	113	LF	0.069	9	22.66			5.49		$200		$640		$840
D	Terminations #2 15kv shielded	6	ea	0.364	2	22.66			0.76		$50				$50
	Trenching	2	CY	0.107		25.42				1.50					
	Backfill	2	CY	0.119		25.42				1.25					
D	1000 kVA Dry Xfmer, 15KV/480V, NEMA 3R	1	EA	66.667	76	22.66			43700		$1,720		$45,010		$46,730
	Modify exist. SW596 pole														
D	1. Lock & Tag system @ Sat. O.T.	1	EA	8.000	9	33.00				75.00	$300			$80	$380
D	2. Tap into exist. 13.2 kv line @ Sat. O.T.	1	LS	16.000	18	33.00			192.00	75.00	$590		$200	$80	$870
D	3. Install new static line	40	LF	0.120	5	22.66					$110				$110
D	4. Install new 13.2 kv aerial cable	50	LF	0.120	7	22.66			1.10		$160		$60		$220
D	5. Remove guy wires	1	EA	14.500	16	22.66				75.00	$360			$80	$440
	Transformer to MLU														
D	Install 3 1/2" PVC conduit U/G	236	LF	0.160	43	22.66			4.55		$970		$1,110		$2,080
D	Install 3 1/2" PVC conduit bend	8	ea	0.667	6	22.66					$140				$140
D	Trenching	12	CY	0.107	1	25.42				1.50	$30			$20	$50
D	Backfill	12	CY	0.119	2	25.42				1.25	$50			$10	$60
D	Install 4-1/C 500 mcm wire	69	LF	0.200	18	22.66			19.60		$360		$1,390		$1,750
D	Install 1/C #3/0 g wire	69	LF	0.032	3	22.66			1.72		$70		$120		$190
D	Terminations 500 mcm	8	ea	1.333	12	22.66			6.30		$270		$50		$320
D	Terminations #3/0	2	ea	0.667	2	22.66			2.50		$50		$10		$60
D	Install 480V distr. panel, PP-15D	1	EA	4.000	5	22.66			510.00		$110		$530		$640
	Lab Waste Electrical														
D	1" PVC conduit	50	LF	0.100	6	22.66			1.10		$140		$60		$200
D	2" PVC conduit	376	LF	0.100	43	22.66			1.93		$070		$750		$1,720
D	Trenching & backfill included with piping														
D	3-1/C #10 wire	180	LF	0.120	24	22.66			0.62		$540		$110		$650
D	2-1/C #8 wire	772	LF	0.089	78	22.66			12.30		$1,770		$9,780		$11,550
D	1-1/C #10 wire	386	LF	0.120	53	22.66			0.62		$1,200		$250		$1,450
D	pH Meter	1	ea	5.000	8	22.66			1548.00		$140		$1,590		$1,730
D	Flowmeter	1	ea	7.200	8	22.66			3000.00		$180		$3,090		$3,270
D	Data wire, 3/C	4	CLF	1.600	7	22.66			19.00		$160		$70		$230

DETAIL ESTI..TE WORKSHEETS

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	03 SITE PREPARATION	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
03.5	TELECOMMUNICATIONS, ELEC. SERVICES, 100kva TRANSFORMER														
	Grounding														
D	5/8" x 10' lg ground rod	10	ea	1.739	20	22.66			27.30		$450		$280		$730
D	5/8" clamp	10	ea	0.250	3	22.66			4.10		$70		$40		$110
D	#2/0 ground wire	300	LF	0.150	51	22.66			0.93		$1,160		$200		$1,450
D	#4/0 ground wire	50	LF	0.120	7	22.66			0.62		$160		$30		$190
D	#4 wire bare copper	50	LF	0.080	5	22.66			1.10		$110		$60		$170
	Install wiring														
D	Install 1" pvc conduit	250	LF	0.100	28	22.66			1.10		$630		$200		$910
D	Install enclosure Nema (12"x10"x6"dp)	1	EA	4.000	5	22.66			360.00		$110		$370		$480
D	Install weatherheads	1	EA	2.320	3	22.66			20.00		$70		$20		$90
D	Install 2" conduit	300	LF	0.178	61	22.66			4.06		$1,380		$1,530		$2,910
D	Install 1-#10g wiring	450	LF	0.080	41	22.66			11.10		$930		$5,140		$6,070
D	Install heat tracing	500	LF	0.032	18	22.66			5.80		$410		$2,990		$3,400
D	Install evac circulting	160	LF	0.020	4	22.66			0.50		$90		$90		$180
D	Install terminations	12	EA	0.800	11	22.66			8.60		$250		$110		$360
D	Install eyewash/shower w/ lights	1	EA	8.000	9	22.66			150.00		$200		$150		$350
D	Install unit heater w/ thermostat	2	EA	8.000	18	22.66			500.00		$410		$1,030		$1,440
D	Install flood lights 400w/pole mount	1	EA	4.000	5	22.66			265.00		$110		$270		$380
D	Install 1" IMC conduit	50	LF	0.114	6	22.66			1.86		$140		$100		$240
D	Install 1-1/4" conduit	50	LF	0.133	8	22.66			3.13		$180		$160		$340
D	Install 1-1/4" IMC conduit	150	LF	0.123	21	22.66			2.43		$480		$380		$860
D	Install lights 150 watts	8	EA	2.000	18	22.66			230.00		$410		$1,900		$2,310
D	Install 1" rgs conduit	50	LF	0.190	11	22.66			1.89		$250		$100		$350
D	Install #2 awg ground conductor	1	LF	3.478	4	22.66			410.00		$90		$420		$510
D	Install hardware	10	EA	2.300	26	22.66			20.00		$500		$210		$800
D	Install #4 awg ground conductor	6	LF	2.983	20	22.66			310.00		$450		$1,920		$2,370
D	Install ground plates	4	EA	1.230	6	22.66			9.75		$140		$40		$180
D	Install 10kV transformer, 480V/120V	1	EA	12.000	14	22.66			800.00		$320		$820		$1,140
D	Install LP-15D panelboard, 100A	1	EA	4.000	5	22.66			500.00		$110		$400		$510
D	Trenching & backfill, 2'd x 8"w	180	LF	0.063	13	20.76				0.64	$270			$120	$390
D	Striplight 1 x 4, 32w	4	ea	1.143	5	22.00			52.00		$110		$210		$320
D	3/4" conduit	40	LF	0.190	9	22.66			1.89		$200		$80		$280
D	3-1/c #10	150	LF	0.080	14	22.66			11.10		$320		$1,710		$2,030

DETAIL ESTI...TE WORKSHEETS

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Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	03 SITE PREPARATION	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
03.5	TELECOMMUNICATIONS, ELEC. SERVICES, 100kva TRANSFORMER														
	Install Miscellaneous material														
D	1. Install 5/8" bolts galv.	1	LS	8.000	9	22.66			50.00		$200		$50		$250
D	2. Install 5/8" machine bolts	1	LS	8.000	9	22.66			50.00		$200		$50		$250
D	3. Install 5/8" washers	1	LS	8.000	9	22.66			50.00		$200		$50		$250
D	4. Install 5/8" nuts	1	LS	8.000	9	22.66			35.00		$200		$40		$240
D	5. Install hardware	8	EA	2.300	21	22.66			20.00		$480		$160		$640
D	6. Miscl. elect. fittings	1	LS	20.000	20	22.00			150.00		$440		$150		$590
D	7. Install circuit breakers	8	EA	3.400	23	22.66			54.60		$520		$340		$860
D	8. Install 13.2 kv cable	300	LF	0.230	78	22.66			1.20		$1,770		$370		$2,140
D	10. Install 1-1/2" conduit	250	LF	0.150	43	22.66			3.68		$970		$950		$1,920
D	11. Install terminations	24	EA	1.140	31	22.66			3.25		$700		$80		$780
D	Set up	1	Allow		20	22.00					$440				$440
D	Electrical Testing	1	LS	40.000	45	22.66					$1,020				$1,020
D	Acceptance Testing	1	LS	40.000	45	22.66					$1,020				$1,020
	Allowance: Extend telecommunications from Services Bldg. to New Lab. Per Project Manager	1	Allow									$40,000			$40,000

DETAIL ESTIMATE WORKSHEETS

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Fluor Fernald, Inc.

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ITEM NO.	03 SITE PREPARATION	QTY.	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
03.6	**CONCRETE PADS, SIDEWALKS and PLATFORMS**														
	Concrete Pavement														
D	Excavate unsuitable soil / load into trucks	63	CY	0.014	1	21.49				0.86	$20			$60	$80
D	Haul to stockpile within .5 mi	76	LCY	0.032	3	21.49				1.79	$60			$140	$200
D	Dozer w/ spotter at stockpile	0.1	Day	16.000	2	21.49				712.25	$40			$70	$110
D	Subase fill, from stockpile	13	CY	0.014	1	21.49				0.86	$20			$10	$30
D	Prepare & roll sub-base	190	SY	0.016	3	21.49				0.63	$60			$120	$180
D	6" thk compacted mineral aggregate base	32	CY	0.043	2	21.49			20.00	2.11	$40		$650	$70	$760
D	Forms - concrete pavement	93	SF	0.149	16	22.43			1.39		$360		$130		$490
D	WWM 6x6 - W6xW5 - concrete pavement	17	CSF	0.593	11	22.43			21.50		$250		$380		$630
D	8" thk 3000# concrete pavement	94	CY	0.972	104	22.43			70.00	0.81	$2,330		$6,780	$80	$9,190
	Area aggregate								1.20	0.35					
D	Excavate unsuitable soil / load into trucks	186	CY	0.014	3	21.49				0.86	$60			$170	$230
D	Haul to stockpile within .5 mi	224	LCY	0.032	8	21.49				1.79	$170			$410	$580
D	Dozer w/ spotter at stockpile	1.0	Day	16.000	18	21.49				712.25	$390			$730	$1,120
D	Subase fill, from stockpile	13	CY	0.014		21.49				0.86				$10	$10
D	Prepare & roll sub-base	559	SY	0.016	10	21.49				0.63	$210			$360	$570
D	6" thk Compacted No. 2 aggregate base	93	BCY	0.043	5	21.49			20.00	2.11	$110		$1,920	$200	$2,230
D	4" thk Compacted 304 aggregate	62	BCY	0.080	6	21.49			20.00	2.11	$130		$1,280	$130	$1,540
	Soil & Concrete Testing														
	Soil: D2292, Moisture, Proctor	10	ea					119.00				$1,230			$1,230
	Concrete:	18	ea					20.00				$370			$370
	Sidewalks														
D	6 x 4 pads	72	SF	0.045	4	22.43			1.12	0.02	$90		$80		$170
D	5' sidewalks, 15D	475	SF	0.045	24	22.43			1.12	0.02	$540		$550	$10	$1,100
D	5' sidewalks, RTAL's	220	SF	0.045	11	22.43			1.12	0.02	$250		$250		$500
D	Fine grade for sidewalks	61	SY	0.015	1	21.49				0.77	$20			$50	$70
	Building 15D Walkways & Ramps														
D	2x12 Stringers & girders	417	LF	0.029	14	22.69			2.35		$320		$1,010		$1,330
D	2x8 Joists	486	LF	0.025	14	22.69			1.47		$320		$730		$1,050
D	2x6 Guardrail & handrail support	598.8	LF	0.023	16	22.69			1.05		$360		$650		$1,010
D	2x4 Guardrail	299.4	LF	0.016	5	22.69			0.66		$110		$200		$310
D	1x1 Pickets	3142.8	LF	0.015	53	22.69			0.08		$1,200		$270		$1,470
D	4x4 Posts	331.2	LF	0.041	15	22.69			1.77		$340		$600		$940
D	3/4" Decking, treated plywood	810.6	SF	0.01	11	22.69			0.75		$250		$630		$880
D	3/16" Chem Grip sheets	648	SF	0.012	9	22.69			8.15		$200		$5,440		$5,640
D	1 1/2" Aluminum handrail	299.4	LF	0.150	51	22.69			8.25		$1,160		$2,540		$3,700
D	12" dia concrete piers 3' deep	37.2	ea	0.183	8	22.43			7.00	3.15	$180		$270	$120	$570

DETAIL ESTIMATE WORKSHEETS

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Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	03 SITE PREPARATION	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
03.7	**ARGON TANK SYSTEM**														
	U/G Argon Line														
D	Excavate for pad	4	CY	2.000	9	21.49					$190				$190
D	Concrete pad, 12' x 6'	5	CY	2.942	17	22.43			92.50	1.00	$380		$490	$10	$880
D	3/4" Copper tube, type K water tube	99	LF	0.107	12	22.43			1.20		$270		$120		$390
D	3/4" Coupling, wrought copper	5	ea	-	-				0.26						
D	3/4" x 12" Flox connectors, bronze ends	2	ea	0.400	1	26.40			20.00		$30		$40		$70
D	3/4" Ell, wrought copper	7	ea	0.421	3	26.40			0.39		$80				$80
D	3/4" Adapter, copper to MIP	6	ea	0.471	3	26.40			0.62		$80				$80
D	3/4" Cap, thrd'd	2	ea	0.211		26.40			0.22						
D	3/4" Union, copper to copper	2	ea	0.444	1	26.40			2.15		$30				$30
D	3/4" Ball valve, 150# bronze threaded	1	ea	0.400		26.40			10.60				$10		$10
D	3/4" Y Strainer, 150# bronze threaded	1	ea	0.421		26.40			17.40				$20		$20
D	Insulate 3/4" pipe, 1 1/2" fiberglass	10	LF	0.073	1	23.33			2.21		$20		$20		$40
D	w/ vapor barrier														
D	Nitrogen purge	1	ea	4.000	5	26.40			100.00		$130		$100		$230
D	Trenching & backfill, 8" cover, 6" wide	100	LF	0.027	3	21.49				0.29	$60			$30	$90
D	Excavate for pad	4	CY	2.000	10	21.49					$210				$210
D	Concrete pad, 12' x 6'	5	CY	2.942	17	22.43			92.50	1.00	$380		$490	$10	$880
	Furnish & install 30 day argon tank & apparatus	1	Lot		by FDF										
	Remove 30 day argon tank & apparatus	1	Lot		by FDF										
03.8	**CONNECT TO NEW SYSTEM**														
	Remove existing argon tank & apparatus and relocate & set on new argon pad.	1	Lot		by FDF										
D	Connect relocated argon tank to new system	1	Lot		30	26.40					$790				$790
	Take-off Allowance		%												
	03 SITE PREPARATION	1	LOT		3,708	$23.49					$87,080	$44,690	$206,170	$17,850	$355,770

DETAIL ESTI. .TE WORKSHEETS

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Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	04 MODULAR LABORATORY UNIT	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	BUILDING 15D														
04.1	DESIGN of MLU	9%						458500				$42,500			$42,500
04.2	FABRICATION and DELIVERY														
	Basic structure, modular construction	3360	SF					45.39				$157,080			$157,080
Plant	4 units 14'w x 60'lg														
Plant	Siding - DCN Adjustment	1	LS									($8,160)			($8,160)
Plant	Roofing			included in basic structure											
Plant	Floor, 2 hr fire rated, 50 psf + extra loads	3360	SF	included in basic structure											
Plant	Floor vapor barrier, 6 mil polyethylene	3360	SF	included in basic structure											
Plant	Flooring, VCT	3360	SF	included in basic structure											
Plant	4" vinyl cove base	753	LF	included in basic structure											
Plant	Ceiling - DCN Adjustment	1	LS	included in basic structure								($8,500)			($8,500)
	Additions to basic structure:														
Plant	4" Metal stud for walls, 16" cnts, 20 ga	2425	SF	0.019	46	40.00			0.29			$2,617			$2,617
Plant	5/8" gyp board, taped & finished	1383	SF	0.017	24	40.00			0.33			$1,443			$1,443
Plant	5/8" gyp board, moist. resist., taped & finishd	4663	SF	0.017	79	40.00			0.39			$5,171			$5,171
Plant	Seamless fiberglass reinf. plastic wall finish	2046	SF	0.025	51	40.00			1.38			$5,152			$5,152
	.090" adhsive mtd on drywall, smooth														
Plant	Molding	47	LF	0.032	1	40.00			0.22			$71			$71
Plant	Paint walls, gyp board: 1 coat primer,	6046	SF	0.004	24	40.00			0.04			$1,233			$1,233
Plant	2 coats acrylic	6046	SF	0.01	60	40.00			0.08			$2,950			$2,950
	Exterior doors & frames														
Plant	6' x 7' (2FG2) doors & frames	1	ea	12.308	12	40.00			1488.00			$2,120			$2,120
Plant	3' x 7' (N) Insulated w/ narrow lite	4	ea	2.134	9	40.00			387.50			$2,046			$2,046
	Interior doors & frames														
Plant	4' x 7' (NFW) Fire rated	4	ea	2.134	9	40.00			341.50			$1,844			$1,844
Plant	3' x 7' (FL) Fire rated	2	ea	2.008	4	40.00			331.50			$890			$890
Plant	3' x 7' (N) Fire rated		ea	2.008		40.00			330.00						
Plant	3' x 7' (F) Fire rated	2	ea	2.008	4	40.00			267.50			$749			$749
Plant	Paint doors & frames, 2 coats epoxy	12	ea	1.600	19	40.00			8.58			$881			$881
	Door hardware sets														
Plant	#1	4	sets	5.675	23	40.00			499.55			$3,106			$3,106
Plant	#2	2	sets	2.667	6	40.00			286.50			$844			$844
Plant	#3	2	sets	2.000	4	40.00			226.25			$658			$658
Plant	#4	4	sets	6.133	25	40.00			784.92			$4,435			$4,435
Plant	#5	1	sets	10.132	10	40.00			1510.89			$2,067			$2,067
Plant	Window 5'-0" x 4'-2"h (2 ea)	42	SF	0.171	7	40.00			30.50			$1,696			$1,696

DETAIL ESTIMATE WORKSHEETS

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04.3	**MLU FOUNDATION and EQUIPMENT PADS**														
	MLU Pad & Piers														
D	Prepare & roll	373	SY	0.016	7	21.49				0.83	$150			$240	$390
D	Treat soil for termites	3360	SF	0.002	8	21.49			0.05		$170		$170		$340
	DCN Adjustment	1	LS					($1,220)				($1,260)			($1,260)
D	MLU augered pier foundations, 18"dia x 3' d	40	ea	2.600	113	23.77			68.05	17.70	$2,600		$2,720	$730	$6,140
	Allowance: Unsuitable soil replacement	1	Allow					60000				$61,800			$61,800
	Equipment														
	Compressor														
D	Excavate for pad	3	CY	2.000	6	21.49					$130				$130
D	Concrete pad, 8' x 5'	3	CY	2.942	11	22.43			92.50	1.00	$250		$310		$560
	Transformer														
D	Excavate for pad	4	CY	2.000	9	21.49					$190				$190
D	Concrete pad, 10' x 8'	5	CY	2.942	17	22.43			92.50	1.00	$380		$490	$10	$880
04.4	**SET UP MLU's**														
D	Freight & crain service	1	Lot					10000				$10,300			$10,300
D	Assemble units	6	ea		606	21.49			500.00	150.00	$13,020		$3,090	$930	$17,040
D	Caged ladder	13	LF	0.640	9	23.57			53.00	1.68	$210		$710	$20	$940
D	1 1/2" Handrail A53, 2 rail w/ tooplate & prime	232	LF	0.125	33	23.57			17.37	0.33	$780		$4,150	$80	$5,010
D	Shop paint HR, 1 finish coat	232	LF	-	-				0.98				$230		$230
D	MLU blocking & anchors	6	Lot	20.000	120	21.49			100.00		$2,580		$620		$3,200
04.5	**CASEWORK, FUME HOODS, and LAB EQUIP.**														
	Casework														
D	Base cabinet w/ doors	88.0	LF	0.889	89	22.69			112.00		$2,020		$10,150		$12,170
D	Base cabinet w/ drawers	76	LF	0.889	77	22.69			245.00		$1,750		$19,180		$20,930
D	Counter top	195.0	LF	0.215	48	22.69			20.00		$1,090		$4,020		$5,110
D	Wall units w/doors	119	LF	0.800	107	22.69			145.00		$2,430		$17,700		$20,130
	Fume Hoods														
D	Fume hoods, 11 ea	35	LF	5.000	198	22.69			1000.00		$4,490		$36,050		$40,540
D	Slotted hoods	2	ea	15.000	34	22.69			1200.00		$770		$2,470		$3,240
D	Environmental grinder enclosure, 1/4" PVC dbl. wall, 20"w x 26"d x 32"h	1	ea	2.000	2	22.69			2500.00		$50		$2,580		$2,630

DETAIL EST. .TE WORKSHEETS

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	04 MODULAR LABORATORY UNIT	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
04.5	**CASEWORK, FUME HOODS, and LAB EQUIP.**														
	New Lab Equipment														
	Air Compressored														
D	Two stage, 5 hp, 10 SCFM @ 175 psig, w/ tank, filters, refrigerated air dryer, automatic condensate drain, FRP enclosure	1	ea	16	18	23.60			10960		$420		$11,290		$11,710
D	Liquid nitrogen generator, Cryomech LNP-40	1	ea	5.000	6	23.60			33200		$140		$34,200		$34,340
D	Vacuum jacketed secondary fill line, 10' lg	1	ea	2.000	2	23.60			1500		$50		$1,550		$1,600
	DCN Adjustment	1	LS					($26,000)				($26,780)			($26,780)
D	Glassware Washer w/ Acid Rinse		ea	8.000		23.60			8420						
D	Point-of-Use Distilled Water Unit, 1 GPH	6	ea	2.000	14	23.60			1397		$330		$8,630		$8,960
D	Point-of-Use Deionized Water Unit, dbl cartrig.	6	ea	2.000	14	23.60			1075		$330		$6,640		$6,970
D	Fire extinguisher cabinet, steel	5	ea	2.000	10	22.69			46.00		$230		$240		$470
D	Fire extinguisher, 10# type A,B,C	5	ea	0.267	1	22.69			65.00		$30		$330		$360
	Relocated Existing Lab Equipment														
D	Point-of-Use Distilled Water Unit	1	ea											See Item 10 FAT&LC Costs	
D	Point-of-Use Deionized Water Unit	1	ea											See Item 10 FAT&LC Costs	
	From Estimate C6C980301 and quantity adjusted by C. Sutton:														
mC	Gamma Spectometry, Ge Detect	4	ea											See Item 10 FAT&LC Costs	
mC	Gas Prportional Counter	2	ea											See Item 10 FAT&LC Costs	
mC	Inductively Coupled Plasma/Mass Spectrometry	1	ea											See Item 10 FAT&LC Costs	
D	Install above large equipment in new bldg	7	ea											See Item 10 FAT&LC Costs	

DETAIL ES...ATE WORKSHEETS

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	04 MODULAR LABORATORY UNIT	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
04.6	ELECTRICAL, TELECOMMUNICATION, and FIRE PROTECTION														
	Electrical	3360	SF					26.20				$90,670			$90,670
Plant	Lighting	3360	SF	incl. in Electrical unit cost					incl						
Plant	Exit signs	12	ea	incl. in Electrical unit cost					incl						
Plant	Emergency lighting	12	ea	incl. in Electrical unit cost					incl						
Plant	Exterior lights	5	ea	incl. in Electrical unit cost					incl						
Plant	Fire detection	13	ea	incl. in Electrical unit cost					incl						
Plant	EVAC system	5	ea	incl. in Electrical unit cost					incl						
Plant	Telephone, LAN, FACTS	1	Lot	incl. in Electrical unit cost					incl						
04.7	PIPING, PLUMBING, and HVAC														
	Piping and Plumbing	3360	SF					18.45				$63,850			$63,850
Plant	Plumbing	3360	SF	incl. in Plumbing unit cost					incl						
Plant	Lab piping	3360	SF	incl. in Plumbing unit cost					incl						
Plant	Fire protection, sprinklers	3360	SF	incl. in Plumbing unit cost					incl						
Plant	Restrooms	2	ea	incl. in Plumbing unit cost					incl						
Plant	Drinking fountains	1	ea	incl. in Plumbing unit cost					incl						
Plant	Eyewash / safety shower, Haws 9187	4	ea	4.000	40	40.00			745.34			$4,879			$4,879
Plant	Backflow preventer, 1 1/2" thrd'd ball va's	1	ea	0.667	2	40.00			990.00			$1,169			$1,169
Plant	Large sink, double & deep, epoxy resin		ea	6.000		40.00			245.00						
Plant	Lab sink, small, epoxy resin	1	ea	4.000	10	40.00			140.00			$554			$554
Plant	Lab sinks, epoxy resin	3	ea	4.000	30	40.00			140.00			$1,662			$1,662
Plant	Lab sinks faucets, epoxy coated	4	ea	2.000	20	40.00			150.00			$1,460			$1,460
Plant	Added Plumbing final connections	15%		82	12	40.00			4531			$1,240			$1,240
	HVAC	3360	SF					26.90				$93,100			$93,100
Plant	HVAC per unit	4	ea	included in HVAC unit cost					incl						
Plant	Local exhausts	3	ea	included in HVAC unit cost					incl						
Plant	HEPA filers	1	Lot	included in HVAC unit cost					incl						
Plant	Restroom exhaust fans	2	ea	included in HVAC unit cost					incl						
Plant	Lab equipment exhaust connections	3	ea	included in HVAC unit cost					incl						
	DCN Adjustment	-1	LS					50030				($51,530)			($51,530)
04.8	SYSTEM OPERABILITY TESTING														
D	5 men x 2 days	1	Allow		100	25.00					$2,500				$2,500
	Take-off Allowance		%												
	04 MODULAR LABORATORY UNIT	1	LOT		1,659	$22.41					$37,180	$474,017	$167,520	$2,010	$680,727

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	05 MODIFICATION of RTAL's	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
05.1	REMOVAL of FUME HOOD & DUCTWORK														
D	Remove fume hood (2 ea)	8	LF	2.500	23	$22.69					$520				$520
D	Blank-off ducts	1	Allow	2.000	2	$22.69			$50.00		$50		$50		$100
D	Remove existing countertops	4	LF	0.161	1	$22.69					$20				$20
D	Disposal of countertops & fume hoods (assume no decon required)	1	Lot		by owner										
05.2	NEW COUNTERTOPS														
D	Remove existing countertops	4	LF	0.161	1	$22.69					$20				$20
D	New counter tops	11.5	LF	0.215	3	$22.69			20.00		$70		$240		$310
05.3	TELEPHONE, LAN and ALS FACTS														
D	1. Install 3/8" messenger wire	100	LF	0.120	14	21.49			3.45		$300		$360		$660
D	2. Install 3/4" emt conduit	100	LF	0.130	15	22.66			1.23		$340		$130		$470
D	3. Install photo elect. smoke detectors	6	EA	4.000	27	22.66			55.00		$610		$340		$950
D	4. Install photo elect. smoke detectors base	6	EA	4.000	27	22.66			15.00		$610		$90		$700
D	5. Install rate of rise heat detector	3	EA	2.300	8	22.66			45.00		$180		$140		$320
D	6. Miscl. honeywell fittings	1	LS						200.00				$210		$210
D	7. Install manual pull station	3	EA	2.000	7	22.66			83.00		$160		$260		$420
D	8. Install lighting suppressors	3	EA	1.000	3	22.66			120.00		$70		$370		$440
D	9. Install evac speckers	6	EA	2.000	14	22.66			75.00		$320		$460		$780
D	10. Install lighting suppressors for horn	3	EA	1.000	3	22.66			120.00		$70		$370		$440
D	11. Install 8pr 18/2 cable wire	200	LF	0.110	25	22.66			0.06		$570		$10		$580
D	12. Install 18/2 red / yellow cable	200	LF	0.120	27	22.66			0.09		$610		$20		$630
D	13. Install 18/2 brown / yellow cable	200	LF	0.120	27	22.66			0.09		$610		$20		$630
D	14. Install 1.9k line resistors	4	EA	1.200	5	22.66			22.00		$110		$90		$200
D	15. Install splice box	1	EA	2.000	2	22.66			22.00		$50		$20		$70
D	16. Install strobes	6	EA	1.200	8	22.66			22.00		$180		$140		$320
D	14. Install evac circuiting	650	LF	0.020	15	22.66			0.50		$340		$330		$670
D	15. Install telephone wiring	450	LF	0.050	26	22.66			0.25		$590		$120		$710
D	16. Install computer wiring	450	LF	0.050	26	22.66			4.68		$590		$2,170		$2,760
D	17. Install data cable #16 twist pr.	250	LF	0.100	28	22.66			0.62		$630		$160		$790
D	18. Install data cable #18 twist pr.	250	LF	0.120	34	22.66			0.71		$770		$180		$950
D	Set up	1	Allow		20	23.00					$460				$460

DETAIL ESTIMATE WORKSHEETS

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	05 MODIFICATION of RTAL's	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
05.3	**TELEPHONE, LAN and ALS FACTS**														
	Conduit Trenching for RTAL's														
D	1. Excavate area for 2" conduit from SW64	18	CY	0.570	12	21.49					$260				$260
D	2. Backfill area	16	CY	0.320	5	21.49					$110				$110
D	3. Compact area	15	CY	0.120	2	21.49					$40				$40
D	4. Excavate area for conduit runs	30	CY	0.570	19	21.49					$410				$410
D	5. Backfill area	25	CY	0.320	9	21.49					$190				$190
D	6. Compact area	25	CY	0.120	3	21.49					$60				$60
D	Install 2" pvc conduit	178	LF	0.089	18	22.66			2.01		$410		$370		$780
D	Install 2" pvc conduit bends	6	ea	0.400	3	22.66					$70				$70
D	Install 12" x 12" x 6" JB, NEMA 3R	1	EA	2.00	2	22.66			55.00		$50		$60		$110
D	Telephone & computer wiring				by others										
05.4	**TIE IN of DOMESTIC WATER & WASTE DRAINS to T115 & T116**														
	Domestic Water														
D	Remove existing fill hose:	1	Allow	5.000	6	26.40					$160				$160
	(Assumed 12 LF / bibb)														
	Connect to hose bibb:														
D	Assumed 1 1/2" Galv pipe.	10	LF	0.200	2	26.40			2.60		$50		$30		$80
D	1 1/2" Ball valve	2	ea	0.615	1	26.40			28.50		$30		$60		$90
D	Adapt from 1 1/2" to hose bibb	2	ea	5.708	13	26.40			65.00		$340		$130		$470
D	Hose bibb	2	ea	0.400	1	26.40			7.00		$30		$10		$40
D	Insulate 1 1/2" pipe, 1 1/2" fiberglass w/ vapor barrier	24	LF	0.080	2	23.33			2.63		$50		$70		$120
D	Backflow preventer, 1 1/2" thrd'd ball valve	2	ea	0.667	2	26.40			990.00		$50		$2,040		$2,090
	DCN Adjustment	-2	ea	0.667	-2	26.40			990.00		($50)		($2,040)		($2,090)
	Lab Waste Drains														
D	Remove existing lab drains to tanks	2	Allow	5	11	26.40					$290				$290
	Connect to new stub-ups.														
D	4"PP Pipe	10	LF	0.356	4	26.40			9.92		$110		$100		$210
D	4"PP Fittings	6	ea	1.143	8	26.40			35.34		$210		$220		$430
	Disposal of existing drain system				by Owner										

DETAIL ESTIMATE WORKSHEETS

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	05 MODIFICATION of RTAL's	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
05.5	DESIGN & CONSTRUCT ACCESS RAMPS, ROOF and PLATFORMS														
	Walkways & Ramps														
D	2x12 Stringers & girders	544	LF	0.029	18	22.69			2.35		$410		$1,320		$1,730
D	2x8 Joists	679	LF	0.025	16	22.69			1.47		$360		$870		$1,230
D	2x6 Guardrail & handrail support	666	LF	0.023	17	22.69			1.05		$390		$720		$1,110
D	2x4 Guardrail	333	LF	0.016	6	22.69			0.66		$140		$230		$370
D	1x1 Pickets	3497	LF	0.015	59	22.69			0.08		$1,340		$300		$1,640
D	4x4 Posts	414	LF	0.041	19	22.69			1.77		$430		$750		$1,180
D	3/4" Decking, treated plywood	965	SF	0.012	13	22.69			0.81		$290		$810		$1,100
D	3/16" Chem Grip sheets	772	SF	0.012	11	22.69			8.15		$250		$6,480		$6,730
D	1 1/2" Aluminum handrail	333	LF	0.150	57	22.69			8.25		$1,290		$2,830		$4,120
D	12" dia concrete piers 4' deep	43	ea	0.183	9	22.43			7.00	3.15	$200		$310	$140	$650
	ROOF														
D	2x12 Stringers & girders	32	LF	0.029	1	22.69			2.35		$20		$80		$100
D	2x8 Rafters	65	LF	0.023	2	22.69			1.05		$50		$70		$120
D	4x4 Posts	47	LF	0.041	2	22.69			1.77		$50		$90		$140
D	12" dia concrete piers 4' deep	2	ea	0.183		22.43			7.00	3.15			$10	$10	$20
D	Corrugated roofing, .024" thk painted	80	SF	0.027	2	22.69			1.37		$50		$110		$160
	Take-off Allowance		%												
	05 MODIFICATION of RTAL's	1	LOT		744	$22.84					$16,890		$22,310	$150	$39,450

DETAIL ESTIMATE WORKSHEETS

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	06 CLOSEOUT & DEMOBILIZATION	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
06.1	**FINAL SITE GRADING AND SEEDING**														
D	Site fill - Load & haul from stockpile	385	CY	0.046	20	21.49				2.65	$430			$1,050	$1,480
D	Grade site	5879	SY	0.005	33	21.49				0.15	$710			$910	$1,620
D	Seeding, summer	53	MSF	0.300	18	21.49			25.00	7.85	$390		$1,360	$430	$2,180
D	Seeding, permanent	53	MSF	0.300	18	21.49			31.00	7.85	$390		$1,690	$430	$2,510
D	Seeding stokpile	3	MSF	0.300	1	21.49			31.00	7.85	$20		$110	$30	$160
06.2	**NEW PERIMETER FENCE and REMOVE SILT & CONSTR. FENCE**														
	Fencing														
D	Remove silt fence	1185	LF	0.008	10	21.49					$210				$210
D	Remove construction fence	905	LF	0.037	38	21.49					$820				$820
D	Install new permanent fence	158	LF	0.133	24	21.49			7.20	2.29	$520		$1,170	$370	$2,060
	Access Road														
D	Remove aggregate / load into trucks, 3 cy FEL track 130 cy/hr	723	BCY	0.014	11	21.49				0.86	$240			$640	$880
D	Haul to stockpile within .5 mi	868	LCY	0.032	31	21.49				1.79	$670			$1,600	$2,270
D	Dozer w/ spotter at stockpile	1	Day	16	18	21.49				712.25	$390			$730	$1,120
D	Remove geotextile fabric	4338	SY	0.006	30	21.49					$640				$640
D	Disposal of geotextile fabric				by Owner										
06.3	**TURNOVER PACKAGE**	1	Allow									$5,000			$5,000
	Asbuilts and documents														
06.4	**DEMOBILIZATION**														
	Move construction equipment and material off jobsite														
D	Equipment	9	ea	4.000	41	23.90		200.00			$980	$1,850			$2,830
D	Misc material	1	ls	20.000	23	23.90					$550				$550
D	50x10 office trailer furnished & hookup	1	ls	20.000	23	23.00					$550				$550
	Take-off Allowance		%												
	06 CLOSEOUT & DEMOBILIZATION	1	LOT		339	$22.15					$7,510	$6,850	$4,330	$6,190	$24,880

DETAIL ESTIMATE WORKSHEETS

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	07 SAFETY INCENTIVE	QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	FDF Safety Incentive Program (maximum)	1	Lot					3000				$3,090			$3,090
	Take-off Allowance		%												
	07 SAFETY INCENTIVE	1	LOT									$3,090			$3,090

DETAIL ESTIMATE WORKSHEETS

Fluor Fernald, Inc.

PROJECT: Re-evaluation of Lab White Paper - ALS
Estimate No.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ITEM NO.	CONTRACTOR SUPPORT COST		QTY	UNIT	MAN-HOURS Unit	MAN-HOURS Total	MAN-HOURS Rate	COST/UNIT Labor	COST/UNIT S/C	COST/UNIT Mat'l	COST/UNIT Equip	LABOR	S/C	MAT'L	EQUIP	TOTAL
	CONTRACTOR SUPPORT COST AND PER DIEM															
	A. Contractors' Staffing Plan															
	1. Project Manager						45.19									
	2. Project Superintendent	1	25	WKS	40.0	1000	31.92					$31,920				$31,920
	3. Project Engineer	1	25	WKS	40.0	1000	20.71					$20,710				$20,710
	4. Safety Engineer	1	25	WKS	40.0	1000	19.75					$19,750				$19,750
	5. QA/QC Manager	1	25	WKS	40.0	1000	18.51					$18,510				$18,510
	6. Office Administrator		25	WKS	40.0		15.75									
	7. Contract Admin./Scheduler	1	25	WKS	40.0	1000	27.10					$27,100				$27,100
	8. Clerk / Secretary	1	25	WKS	40.0	1000	12.00					$12,000				$12,000
	B. Per Diem/Subsistence	None		WKS					500.00							
	Forward Total To Estimate Summary Sheet															
	Indirects															
	Take-off Allowance			%												
	Contractor Support Cost		1	LOT		6,000	$21.67					$129,990				$129,990

PROJECT: Re-evaluation of Lab White Paper - ALS
ESTIMATE NO.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

SITE SPECIFIC

EFFICIENCY / MULTIPLIER ANALYSIS

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

	PERCENT OF INFLUENCE ON CHART MANHOURS											
	40%	50%	60%	70%	80%	90%	100%	105%	110%	% OF INFLUENCE	WT'D VALUE	PROD. RESULT
CRAFT SKILL (NOTE 1)	POOR			FAIR			STD	V.GOOD	EXCELLENT	100.0%	12.0%	0.12
CRAFT AVAIL.(NOTE 1)		POOR		FAIR			STD			100.0%	8.0%	0.08
CLIMATE (NOTE 2)	SEVERE	ICE/SNOW			RAIN		+40 TO +85			90.0%	20.0%	0.18
PLANT ELEVATION		OVER 10,000FT			5,000' TO 10,000 FT		UNDER 5,000 FT			100.0%	5.0%	0.05
WORK SPACE				200 SF	250 SF	300 SF	350 SF			100.0%	10.0%	0.1
	<---- MULTIPLE SHIFTS-											
WORK WEEK							4-10s / 5-8s			100.0%	15.0%	0.15
50 HOUR WORK WEEK	//// MULTIPLE-SHIFT ////			OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS				0.0%	0.0%	0
60 HOUR WORK WEEK			OVER 7 WEEKS	3 TO 7 WEEKS	UP TO 3 WEEKS					0.0%	0.0%	0
SHIFTWORK 2ND SHIFT 3RD SHIFT			 3RD SHIFT		2ND SHIFT		OR ONE SHIFT ONLY			 100.0% 100.0%	 3.0% 5.0%	 0.03 0.05
PROJECT SIZE					400M MH AND UP	300M TO 400M MH	200M TO 300M MH	200M MH OR LESS		105.0%	4.0%	0.042
PLANT TYPE				REVAMP ONLY	REVAMP & NEW	NEW IN EXIST PLT	GRASS ROOTS			90.0%	8.0%	0.072
AREA/UNION INFLUENCE	STRONG		MILD		SOME		NONE			40.0%	10.0%	0.04
											100.0%	91.4%

NOTES.....
1. TURNOVER HAS BEEN CONSIDERED
2. FOR EXTERIOR WORK ONLY

EFFICIENCY (AS A % OFF CHART MANHOURS) 91.4%

MULTIPLIER - (TO BE APPLIED TO CHART M.H.'S TO OBTAIN SITE M.H.'S) 1.09

EFFICIENCY FACTORS

PROJECT: Re-evaluation of Lab White Paper - ALS
TIMATE NO.: C6000401 Rev. 2 (4MLU + 3RTALs)
ENT: DOE
WBS NO.: 2.1.2.C

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

Fluor Fernald, Inc.

EXAMPLE:

STANDARD CHART MANHOURS =	NET	100
EFFICIENCY FACTORS:		
* SITE SPECIFIC (SEE APPENDIX A)	9%	9.0
S/T = BASE UNIT MANHOURS		109
OVERTIME PRODUCTIVITY FACTOR (SEE DETAIL WORKSHEET BACK-UP)	0.00%	0
		109
* TASK SPECIFIC (confined space, high elevation, congestion, etc.)	0.0%	0
		109
* PPE SPECIFIC (Based on current data and estimating knowledge)		

	PPE LEVEL									
	D		Mod."C"		C		C +		B	
PRODUCTIVITY HOURS		MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's	MULTIPLIER	MH's
(as a %) / ADD MH's	4.00%	0	64.00%	0	72.00%	0	130.00%	0	326.00%	0
S A MULTIPLIER)/TOTAL HRS	1.04	0	1.64	0	1.72	0	2.3	0	4.26	0
TOTAL MULTIPLIER w/SITE PROD.	1.1336		1.7876		1.8748		2.507		4.6434	

NOTE: Use the Default Productivity Factor of 'mC' for working in a contaminated area if the Safety Level cannot be determined.

(SEE FD FERNALD ESTIMATING SERVICES REFERENCE MANUAL IM-6006 8.10)

Total hours worked in a specific PPE level divided by 10 hour working days = (PPE) ManDays to determine material cost of PPE's.
(SEE APPENDIX C - HEALTH PHYSICS)

	0.0	Man Days	0.0	Man Days	0.0	Man Days	0.0	Man Days	0.0	Man Days

THESE EFFICIENCY FACTORS WERE APPLIED INDIVIDUALLY THROUGHOUT THE ESTIMATE AT A TASK SPECIFIC LEVEL. TO OBTAIN A MORE ACCURATE ACCOUNT OF OVERALL EFFICIENCY IMPACT DUE TO PPE REQUIREMENTS IN HANDLING CONTAMINATED AND HAZARDOUS WASTE.

EFFICIENCY FACTORS

OJECT: Re-evaluation of Lab White Paper - ALS
TIMATE NO.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

FLUOR DANIEL FERNALD

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

PPE MULTIPLIER DEVELOPEMENT

		D	mC	C	C +	B
CREW SIZE & MAKE-UP	STANDARD	7	7	7	7	7
	WORKER-BUDDY	0	0	0	0	0
	SUPPORT TEAM	0	0	0	0	3
	TOTAL CREW	7	7	7	7	10
CREW SIZE RATIO		1.00	1.00	1.00	1.00	0.70
AVAILABLE WORK TIME FACTOR		0.96	0.71	0.71	0.58	0.48
PPE LABOR PRODUCTIVITY FACTOR		1	0.86	0.82	0.75	0.70
NET PRODUCTIVITY RATIO		0.96	0.611	0.582	0.435	0.235
NET PRODUCTIVITY MULTIPLIER		1.04	1.64	1.72	2.30	4.26

These factors were based on Tables 6.1 and 6.2, Moderate Work Efforts, 66F to 85F temperature of "Hazardous Waste Cost Control" by R.A.Selg.
Modifications were made to reflect a 10 hour work day and no buddy system or support team for levels D, mC and C.
The worker-buddy and support team members, if required, may be covered under Construction Mgmt. (Rad Techs).

AVAILABLE WORK TIME FACTOR			D	mC	C	C +	B
TOTAL WORK MINUTES per DAY - 4 - 10's			600	600	600	600	600
ADDITN'L SITE SAFETY MEETINGS NOT INCLD. IN BASE MH's		QUANTITY	1	1	1	1	1
		MINUTES	25	25	25	25	25
	TOTAL		25	25	25	25	25
PPE DON & DOFFING		QUANTITY	0	2.6	2.6	3	4
(ADJUST LEVEL D per WORK PLAN)		MINUTES	0	15	15	20	25
	TOTAL			39	39	60	100
WORK BREAKS		QUANTITY	N/A	2	2	2	3
(ADJUST LEVEL D per WORK PLAN)		MINUTES	N/A	15	15	15	15
	TOTAL		0	30	30	30	45
MOBILIZATION - ROUND TRIPS		QUANTITY	N/A	4	4	4	4
(ADJUST LEVEL D per WORK PLAN)		MINUTES	N/A	15	15	15	15
	TOTAL		0	60	60	60	60
COOLDOWNS PER DAY		QUANTITY	N/A	4	4	8	8
** (4 OUT OF 12 MONTHS)	33.33%	MINUTES	N/A	15	15	15	15
	TOTAL		0	20	20	40	40
AIR TANK REPLACEMENT		QUANTITY	N/A	N/A	N/A	4	4
		MINUTES	N/A	N/A	N/A	10	10
	TOTAL		0	0	0	40	40
AVAILABLE WORK TIME			575	426	426	345	290
AVAILABLE WORK TIME FACTOR			0.96	0.71	0.71	0.58	0.48

NOTE: Adjust "Work Minutes per Day" basis to: 5 - 8's, or leave as 4 - 10's. Any other circumstances, over-ride the minutes per day.

** Assumption based on work performed in May, June, July & August, pro-rating cost over one year. Adjust % to individual circumstances.

HEALTH PHYSICS

PROJECT: Re-evaluation of Lab White Paper - ALS
ESTIMATE NO.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

PPE"s - PERSONAL PROTECTIVE EQUIPMENT

DESCRIPTION	UNIT	UNIT COST	* NO. OF CHANGE OUTS PER WORKER PER DAY	MAN DAYS	MAT'L.$'s	LEVEL	
			Man Days (TOTAL HOURS worked in PPE's Div. by WORK HOURS / DAY)				
PPE LEVEL C / C+ / B : F/HF MASK w/RESP.&CART.		$'s	*	MAN DAYS	MAT'L.$'s	LEVEL	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	4.46	3	0	$0	C / C+ / B	
TYVEK COVER-ALL w/HOOD & BOOTIES - DISPOSABLE	EA	4.46	3	0	$0	C / C+ / B	(DOUBLE PPE)
GLOVE LINER - DISPOSABLE	PR	0.24	3	0	$0	C / C+ / B	
GLOVE, LASTEX - DISPOSABLE	PR	0.26	3	0	$0	C / C+ / B	
GLOVE, WORK - DISPOSABLE	PR	1.02	3	0	$0	C / C+ / B	
APR CARTRIDGES - DISPOSABLE	PR	6.98	3	0	$0	C / C+ / B	
SUB-TOTAL		17.42	3		$0		
				$/MD =	ERR		

PPE LEVEL mC

FULL DRESS w/ FACE SHIELD		$'s		MAN DAYS	MAT'L.$'s	LEVEL
LT.WT. DISPOSABLE COVERALLS W/HOOD & BOOTIES	PR	4.46	3	0	$0	mC
GLOVE LINER - DISPOSABLE	PR	0.24	3	0	$0	mC
GLOVE, LASTEX - DISPOSABLE	PR	0.26	3	0	$0	mC
GLOVE, WORK - DISPOSABLE	PR	1.02	3	0	$0	mC
SUB-TOTAL		5.98	3		$0	
				$/MD =	ERR	

SUBCONTRACTOR REQUIRED PURCHASES	UNIT		QTY. PER WKR.	NO. OF WORKERS		
RUBBER BOOT COVERS-(1)PR.PER WORKER	PR	12.70	6	0	$0	D/C/B
APR w/HALF FACE MASK - (1) PER WORKER	EA	22.30	6	0	$0	C
APR w/FULL FACE MASK - (1) PER WORKER	EA	174.00	6	0	$0	C
SCBA	EA	1894.00	2	0	$0	B
COOL VESTS	EA	137.50	6	0	$0	C/B
THERMO STRIPS	EA	50.00	6	0	$0	C/B
SUB-TOTAL					$0	

MAT'L$'s
$0

TOTAL PPE's (FORWARD TO PAGE 2 OF 2)

OTHER PPE's SUCH AS HARD HAT, SAFETY GLASSES/GOGGLES, STEEL TOED SAFETY SHOES, HEARING PROTECTION, ARE CONSIDERED THE SUBCONTRACTORS RESPONSIBILITY AND ARE COVERED IN HIS OVERHEAD EXPENSE.
COSTS OF FD FERNALD SUPPLIED PPE's, SUCH AS COTTON COVERALLS, EXCHANGE OF RUBBER BOOT COVERS AND RESPIRATORS FOR CHANGEOUTS AND CLEANING OF SAME IS INCURRED BY FD FERNALD AND COSTS ARE NOT INCLUDED AS PART OF PROJECT COSTS AT THIS TIME.

HEALTH PHYSICS

PROJECT: Re-evaluation of Lab White Paper - ALS
ESTIMATE NO.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
WBS NO.: 2.1.2.C

FLUOR DANIEL FERNALD

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

-MEDICAL MONITORING -

MEDICAL - PHYSICAL and IN-VIVO MONITORING - LOST WORKER TIME for RAD II WORKERS ONLY

DESC. PHYSICAL (3hrs), IN-VIVO (1hr)	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BASELINE PHYSICALS	1	4	17	68	$22.56	$1,530
ANNUAL PHYSICALS	0	4	17	0	$22.56	$0
EXIT (TERMINATION) PHYSICALS (IN-VIVO)	1	1	17	17	$22.56	$380
SUB-TOTAL						$1,910

RADIATION IN-VITRO SURVEILLANCE - LOST WORKER TIME for RAD II WORKERS ONLY

DESC.	QTY	HRS	WKR	TOTAL HOURS	AVG. LABOR RATE	TOTAL LABOR $
BI-MONTHLY BIOASSAY	3	1	17	51	$22.56	$1,160
SUB-TOTAL						$1,160

RANDOM DRUG TESTING

	TESTS	HRS	TOTAL HRS	AVG. RATE	LABOR $'s
	0	2	0	$22.56	$0

NO. OF WKRS. TESTED	TESTING DAYS PER YR.	AVG. NO. OF TESTS PER DAY	CHANCE/ DAY FOR TEST	NO. OF WKRS. FOR THIS ESTIMATE	CHANCES /DAY FOR TEST FOR PROJECT	CONSTR WORKING DAYS
2500	226	11	0.0044	0	0	115

		LABOR $'s THRU SAFETY	LABOR $'s
WORK DELAYS CAUSED BY MONITORING	0.0%	$289,500	$0
			LABOR $'s
WORK DELAYS CAUSED BY RAD CHECKING	0.0%	$289,500	$0

	TOTAL LABOR	TOTAL MAT'L	GRAND TOTAL
TOTAL HEALTH PHYSICS - FORWARD TO ESTIMATE SUMMARY SHEET	$3,100	$0	$3,100

D:\LOTUS123\123R5W\WORK\C60401R2.WK4

ACTIVITY DURATIONS

ROJECT: Re-evaluation of Lab White Paper - ALS
ESTIMATE NO.: C6000401 Rev. 2 (4MLU + 3RTALs)
CLIENT: DOE
W&S NO.: 2.1.2.C

Fluor Fernald, Inc.

DATE: 15-May-2000
ESTIMATOR: T. Wagner
LOCATION: FERNALD
TASK NO.: EFAA1

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
CONSTRUCTION:	21-Mar-2000	01-May-2001	01-Aug-2001	01-Nov-2001	6.1	MONTHS
					0	MONTHS
TOTAL					6.1	MONTHS

	DATE of EST. to MID-POINT OF ACTIVITY DURATION	
a.	16.4	MONTHS
b.	0	MONTHS

ACTIVITY	EST. DATE	START DATE	MID POINT	COMPL. DATE	ACTIVITY	DURATION
OPERATIONS					0	MONTHS

DATE of EST. to MID-POINT OF ACTIVITY DURATION	
0	MONTHS

ACTIVITY DURATION IS USED IN DETERMINING NUMBER of WORKERS FOR CERCLA/SAT TRAINING and PHYSICS COSTS.

SECTION 5

5.0 RISK PLAN

Risk/Opportunity Identification and Analysis Form

Project: Analytical Lab Services		PBS Number: 04			Total Baseline Dollars (Minimum Case):			$20,932,484		
Evaluator:Amy Meyer	Date: 03-21-2001	WBS Number: 1.1.E.B								
CAM:Amy Meyer	Date: 03-21-2001	Control Account Number: EBAL								
Project Task	Risk and/or Opportunity	Potential Impact	Internal Or External Driver	Impact Cost $ (Maximum Case)	Risk Impact Level	Risk Probability %	Risk Probability Level	Probable Cost $ (Likeliest Case)	Risk Critical Value	Risk Handling Strategy
Lab operations	Unplanned instrumentation breakdown	Schedule - delay analyses report time to customer, materials - additional cost of repairs	Internal	$300,000	2	25	2	$75,000	2	Accept Risk
Lab operations	Site analytical needs changes and/or increases	materials, instrumentation, and supplies may need to be purchased.	Internal	$150,000	3	60	4	$90,000	5	Accept Risk
Lab operations	Fume hoods failure/laboratory building issues	Schedule - delay analyses report time to customer labor, materials - required for repairs	Internal	$400,000	3	75	5	$300,000	6	Accept Risk
Lab operations	Site schedule extended by one year	Labor and materials would be required to provide analytical service to site	Internal	$1,300,000	3	50	3	$650,000	4	Accept and reduce risk
			Total:	$2,150,000			Total:	$1,115,000		
Lab operations	New regulatory methods required to be developed	Schedule - delay analyses performed. Materials - cost of instrumentation, supplies and labor associated with implementing method.	External	$25,000	2	50	3	$12,500	2	

WBS DICTIONARY
CONTROL ACCOUNT/CHARGE NUMBER

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE	2. DATE OF CONTRACT
FEMP (DEFENSE)	12/01/2000

3. IDENTIFICATION NUMBER	4. INDEX LINE NO.
DE-AC24-01OH20115	36

5. WBS ELEMENT CODE	6. WBS ELEMENT TITLE
1.1.E.C	ENVIRONMENTAL MONITORING

7. APPROVED CP NO.	8. DATE OF CHANGES
NEW PER CP# FY01-0115-0004-00	12/01/2000

9. SYSTEM DESIGN DESCRIPTION	10. BUDGET AND REPORTING NUMBER
CERCLA/ACA	EW05H3040

11. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Subcontracts
Material
ODCs

b. TECHNICAL CONTENT:

The Environmental Monitoring (EM) Project's technical work scope ranges from full project management and execution of environmental programs (air monitoring, well maintenance, and IEMP reporting) to administrative management and training of a core environmental staff providing sampling and monitoring services (primarily groundwater and soil) to the remedial action projects. EM maintains an extensive training program to ensure that environmental field and analytical data is legally defensible by following stringent protocols for collection and documentation for all field activities. EM's air monitoring program ensures that the network of particulate and radon monitors and the data generated is technically valid and accurate to demonstrate regulatory compliance with USEPA air standards. EM controls the Integrated Environmental Monitoring Plan (IEMP) and coordinates reporting of technical data in quarterly and annual summaries. EM performs project management of the site's monitoring well maintenance and abandonment program including technical direction to subcontractors executing field activities.

c. SCOPE OF WORK:

The Environmental Monitoring (EM) WBS element includes the following scope and functions:

- Administratively managing and maintaining a trained technical staff and field resources to execute routine and non-routine field sampling and monitoring in accordance with the IEMP and sampling plans developed by the projects

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE OF CONTRACT 12/01/2000
3. IDENTIFICATION NUMBER DE-AC24-01OH20115	4. INDEX LINE NO. 36
5. WBS ELEMENT CODE 1.1.E.C	6. WBS ELEMENT TITLE ENVIRONMENTAL MONITORING
7. APPROVED CP NO. NEW PER CP# FY01-0115-0004-00	8. DATE OF CHANGES 12/01/2000
9. SYSTEM DESIGN DESCRIPTION CERCLA/ACA	10. BUDGET AND REPORTING NUMBER EW05H3040

11. ELEMENT TASK DESCRIPTION

- Technical management, daily resource planning/scheduling, including interfacing with the projects on sampling plan development and compliance, for all field sampling and monitoring operations
- Administration of a comprehensive well maintenance and abandonment program including the evaluation of monitoring wells as excavation and construction activities proceed during remediation to determine if the wells should be decommissioned.
- Technical oversight of subcontract drilling service company for well abandonment and maintenance activities (not including extraction/injection wells), approximately 5 to 40 per year; sampling of groundwater prior to well abandonment; inspect 150 wells per year
- Manage and track analytical costs for IEMP surface water data
- Full project management of the environmental air monitoring program including radiological particulate monitoring for National Emission Standards for Hazardous Air Pollutants (NESHAP) compliance and radon monitoring for compliance with DOE Order 5400.5, data assessment and reporting
- Maintain up to 41 air particulate and radon monitors to keep them operating at least 95% of the time (continuous operation); collect 19 filters biweekly and evaluate data for compliance purposes
- Collect quarterly thermo-luminescent detectors (TLDs), quarterly stack filters, annual sediment samples and biota (vegetables) every three years and evaluate data and summarize results in quarterly and annual reports
- Preparation of IEMP reports (quarterly and annual), revisions, and updates including a comprehensive presentation of environmental surveillance and effluent monitoring data for all environmental media.
- Preparation of environmental air data for presentations to stakeholders
- Maintain technical field sampling and monitoring procedures and periodic plans
- Management and control of the soil sample archives.

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE 12/01/2000	Page 1
3. WBS ELEMENT CODE 1.1.E.C	4. WBS ELEMENT TITLE/NAME ENVIRONMENTAL MONITORING	
5. PERFORMING DIV/DEPARTMENT CODE 52	6. ORIGINATOR NAME/PHONE MIKE FRANK	7. WBS ELEMENT MANAGER MARC JEWETT
8. BUDGET AND REPORTING NUMBER EW05H3040	9. BUDGET TITLE AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE? NEW PER CP# FY01-0115-0004-00		11. ESTIMATED START / COMPLETION DATE 12/01/00 - 12/27/09
12. TASK IDENTIFICATION (CONTROL ACCOUNT) ECEM	13. TASK DESCRIPTION (ONE LINE) ENVIRONMENTAL MONITORING	

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Subcontractors
Material
ODCs

b. TECHNICAL CONTENT:

The Environmental Monitoring (EM) Project's technical work scope ranges from full project management and execution of environmental programs (air monitoring, well maintenance, and IEMP reporting) to administrative management and training of a core environmental staff providing sampling and monitoring services (primarily groundwater and soil) to the remedial action projects. EM maintains an extensive training program to ensure that environmental field and analytical data is legally defensible by following stringent protocols for collection and documentation for all field activities. EM's air monitoring program ensures that the network of particulate and radon monitors and the data generated is technically valid and accurate to demonstrate regulatory compliance with USEPA air standards. EM controls the Integrated Environmental Monitoring Plan (IEMP) and coordinates reporting of technical data in quarterly and annual summaries. EM performs project management of the site's monitoring well maintenance and abandonment program including technical direction to subcontractors executing field activities.

c. SCOPE OF WORK:

The Environmental Monitoring (EM) WBS element includes the following scope and

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 2

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.C	ENVIRONMENTAL MONITORING	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	MIKE FRANK	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
ECEM	ENVIRONMENTAL MONITORING

14. ELEMENT TASK DESCRIPTION

functions:

- Administratively managing and maintaining a trained technical staff and field resources to execute routine and non-routine field sampling and monitoring in accordance with the IEMP and sampling plans developed by the projects
- Technical management, daily resource planning/scheduling, including interfacing with the projects on sampling plan development and compliance, for all field sampling and monitoring operations
- Administration of a comprehensive well maintenance and abandonment program including the evaluation of monitoring wells as excavation and construction activities proceed during remediation to determine if the wells should be decommissioned.
- Technical oversight of subcontract drilling service company for well abandonment and maintenance activities (not including extraction/injection wells), approximately 5 to 40 per year; sampling of groundwater prior to well abandonment; inspect 150 wells per year
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- Full project management of the environmental air monitoring program including radiological particulate monitoring for National Emission Standards for Hazardous Air Pollutants (NESHAP) compliance and radon monitoring for compliance with DOE Order 5400.5, data assessment and reporting
- Maintain up to 41 air particulate and radon monitors to keep them operating at least 95% of the time (continuous operation); collect 19 filters biweekly and evaluate data for compliance purposes
- Collect quarterly thermo-luminescent detectors (TLDs), quarterly stack filters, annual sediment samples and biota (vegetables) every three years and evaluate data and summarize results in quarterly and annual reports
- Preparation of IEMP reports (quarterly and annual), revisions, and updates including a comprehensive presentation of environmental surveillance and effluent monitoring data for all environmental media.
- Preparation of environmental air data for presentations to stakeholders
- Maintain technical field sampling and monitoring procedures and periodic plans
- Management and control of the soil sample archives.

d. WORK SPECIFICALLY EXCLUDED:

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 3

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.C	ENVIRONMENTAL MONITORING

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	MIKE FRANK	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
ECEM	ENVIRONMENTAL MONITORING

14. ELEMENT TASK DESCRIPTION

1. Labor for functions performed for other Aquifer Restoration Project departments (Aquifer Restoration and Wastewater Project, Sample & Data Management and Analytical Laboratory Services).
2. Field materials for groundwater sampling and monitoring services provided to the Aquifer Restoration and Wastewater Project.
3. Well maintenance and abandonment activities for extraction and injection wells are not included in the scope.
4. Maintenance of access roads to all monitoring wells is budgeted by the Well Field Operations account (EEWW1).
5. Emergency/unplanned surface water sampling (analytical budget) in response to spills or releases is not covered under this cost account.
6. No surface water certification activities are necessary or planned under this charge account.
7. Labor and management/supervision of the labor work force for the collection of Integrated Environmental Monitoring Plan (IEMP) surface water samples.
8. Any sample activities related to the collection of groundwater and surface water are excluded from this work scope.
9. Costs associated with the independent sample collection activities by OEPA i.e., actual collection of air filters and radon samples.
10. Work scope and costs associated with site media, miscellaneous sampling, waste characterization, groundwater monitoring, utilities monitoring, and radiological monitoring to determine occupational impacts. Maintenance upkeep, utilities, and leases associated with the administrative and field office facilities are also excluded. Project specific monitoring costs are supplied by the respective project tasked with monitoring the environment.
11. Equipment maintenance and calibrations that are vendor specific are not conducted under this work scope, but are established in material and subcontract costs.

Environmental Monitoring air monitoring scope does not include:
· scope and resources necessary to perform any potential EPA-mandated environmental air monitoring (none currently identified) at the dormant OSDF.
· scope and resources necessary to perform any additional radon monitoring beyond what currently exist to support the Silos Project and Waste Pits Remedial Action Project(WPRAP).

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 4

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.C	ENVIRONMENTAL MONITORING

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ECEM	ENVIRONMENTAL MONITORING

14. ELEMENT TASK DESCRIPTION

· scope and resources necessary to perform any project-specific air particulate monitoring, including supplemental environmental monitoring for building demolition, have not been included in the current re-baseline
· resources necessary to perform radon flux measurements in order to demonstrate compliance with 40 CFR Part 61 Subpart Q have not been included in this plan based on the assumption that the site would not be required to demonstrate compliance due to the OSDF waste acceptance criteria limits and the remedial strategy for OU1 and OU4.
· scope for additional particulate analyses (no more frequent than quarterly at the fenceline monitors) for radium isotopes and thorium isotopes will be required during the silo 1, 2 and 3 waste removal and treatment process.
· scope for laboratory contract coordination and quarterly data validation services and data entry of sample data packages (Sample and Data Management Project will centralize and budget these services).
· scope for new monitoring stations requested by OEPA (and operated by independently by them) in locations that requires installation of overhead or electrical power lines requiring new electrical poles, transformers, etc. (However, electrical connections and service is planned for up to three additional monitors where electrical supply currently exists.)

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ECEM1	ENVIRONMENTAL MONITORING MANAGEMENT

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Subcontractors
Material
ODCs

b. TECHNICAL CONTENT:

The technical content encompassed in the EM management account includes management, planning and technical oversight of EM Project activities in the following areas:

1. Management and training of the core EM technical and administrative project team, currently in the following five sections: Air Monitoring, Soils and Miscellaneous Media, Water Monitoring (Well Maintenance activities and Surface Water Monitoring), Project Development and Reports, IEMP Reporting, and Document Production and Records.

2. Development, maintenance and control of EM project procedures and plans governing the collection of environmental samples; revise procedures as site and project requirements necessitate.

3. Developing and conducting procedure training and on-the-job training for all EM staff on sampling methodologies, field sampling and monitoring equipment and instruments. Tracking the training status of each staff member and maintaining the EM Training and Qualification Program Description (TQPD).

4. Participate in audits of EM programs and perform annual management assessment.

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14. ELEMENT TASK DESCRIPTION

5. Perform strategic planning of EM responsibilities as site closure progresses and EM support needs change with the remediation progress.

6. Conduct quality self assessments, management-level safety walk-throughs, and implement the ISMS principles through the organization.

7. Obtain, coordinate and train subcontract resources to supplement the core environmental staff to meet peak sampling needs based on the schedules developed by the remediation projects.

8. Maintenance, calibration, and management of monitoring equipment and supplies, including safety supplies and vehicles necessary to conduct EM operations in support of remediation project activities.

9. Provide ad hoc project support in the development of project specific sampling plans, technical plans, procedure development to the remediation projects.

10. Management and control of the site archive soil inventory.

11. Provide the centralized sample collection services for collecting decontamination wash-down water for all D&D activities for FY02-FY10.

12. Budget and procure all field sampling equipment and supplies for all soil sampling support to SDFP (specialized Geoprobe maintenance by vendor, soil sampling equipment/tools, certified sample containers, decontamination supplies, and miscellaneous field sampling supplies).

13. Provide support for the excess/disposal of sampling equipment at the completion of the project.

c. SCOPE OF WORK:

The scope of work for the Environmental Monitoring project management account focuses primarily on preparing, maintaining and managing a core environmental

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14. ELEMENT TASK DESCRIPTION

field sampling team and technical "office" staff providing environmental sampling to both internal project responsibilities (environmental air monitoring program and well maintenance programs) and external sampling support services to the remediation projects. These EM services include both routine monitoring/ sampling programs (primarily groundwater sampling support for the ARWWP and the site's environmental air monitoring program, as prescribed in the IEMP) as well as project-specific monitoring. The work scope includes the management and training of EM staff to support a full range of environmental sampling, data management, technical procedure development, task-specific field training, and reporting of environmental monitoring activities to the DOE and regulatory agencies. This account covers basic site worker training, specialized technical training to ensure legal defensibility of sampling and monitoring activities (e.g., sampling methods to ensure representative samples, Geoprobeâ operation, instrument calibrations, etc.), staff meetings, field procedure development and training of EM staff, required management plans, personnel performance assessment and coaching, and professional development. The development, maintenance and control of technical procedures governing environmental sampling activities is a critical component of this work scope due to the data defensibility requirements placed on the collection of environmental data.

The EM project management account is inclusive of all labor and expenses to oversee and manage the personnel and material resources to execute the internal EM scope as well as EM services to the remedial projects. The labor budget includes all work performed by the Project Development & Reports Section (includes procedure and training administration) and a portion of all other EM personnel that pertains to site-required training, technical training (e.g., field sampling technicians), document production, and management functions. This account also covers material costs for sampling activities associated with the Soil & Disposal Facility Project.

d. WORK SPECIFICALLY EXCLUDED:

1. Labor for functions performed for other Aquifer Restoration Project departments (Aquifer Restoration and Wastewater Project, Sample & Data Management and Analytical Laboratory Services).

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14. ELEMENT TASK DESCRIPTION

2. Field materials for groundwater sampling and monitoring services provided to the Aquifer Restoration and Wastewater Project.

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12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
ECEM2	WELL MAINTENANCE & SURFACE WATER MONITORING

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Subcontractors
Material
ODCs

b. TECHNICAL CONTENT:

The technical content of the surface water and well maintenance account consists of the following:

- Maintenance of approximately 350 monitoring wells located on and off property. Well maintenance consists of annual inspections, replacing broken or cracked concrete pads, replacement or repair of broken locks or well lids, redevelopment or chemical rehabilitation of monitoring wells, down hole camera surveys.
- Plugging and abandonment of monitoring wells as site remediation progresses and wells are no longer needed for monitoring purposes, wells must be removed for soil remediation, or are no longer protective of the environment due to integrity problems.
- Groundwater sampling of monitoring wells prior to plugging and abandonment to collect the last data point from the well. Parameters for the sampling are based on the constituents of concern for the area.
- Maintenance of 37 DOE Real Estate Lease Agreements with private homeowners to maintain access to DOE-owned monitoring wells installed on private property.
- Laboratory analytical costs for the analysis of IEMP surface water samples collected at approximately 14 locations quarterly and monthly.

c. SCOPE OF WORK:

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14. ELEMENT TASK DESCRIPTION

The scope of work for this cost account encompasses activities associated with maintaining the FEMP monitoring well network as well as analytical costs for IEMP surface water sampling. Well maintenance consists of inspections of the monitoring well network, down hole camera surveys, redevelopment or chemical rehabilitation of the monitoring wells, general well repair, and abandonment of monitoring wells. The scope also includes sampling and analytical cost for sampling of the wells prior to plugging and abandonment. The costs for maintaining access agreements to the off-property wells is included in this cost account. The scope encompasses technical planning, coordination, scheduling and oversight of the activities described above.

d. WORK SPECIFICALLY EXCLUDED:

- Well maintenance and abandonment activities for extraction and injection wells are not included in the scope.
- Maintenance of access roads to all monitoring wells is budgeted by the Well Field Operations account (EEWW1).
- Emergency/unplanned surface water sampling (analytical budget) in response to spills or releases is not covered under this cost account.
- No surface water certification activities are necessary nor planned under this charge account.
- Labor and management/supervision of the labor work force for the collection of IEMP surface water samples.

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ECEM3	AIR MONITORING & IEMP REPORTING

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Subcontractors
ODC's
Materials

b. TECHNICAL CONTENT:

Air Monitoring - The air monitoring program includes project management activities, technical support for the planning/data analysis for environmental air, environmental radiation, biota and sediment samples, the evaluation of all data, trending air and sediment data and providing feedback to the remediation projects. Additionally, the Air Monitoring program calculates and tracks the radiological dose received at the property boundary from all pathways, and monitors and evaluates the Silos 1 and 2 headspace and site-wide radon concentrations. This activity also encompasses the installation, maintenance and calibration of air monitoring sample locations, both on and offsite. When an air monitor location is no longer needed, this account covers the removal of utilities, surrounding fence from the location. Procedures and plans are utilized and evaluated frequently prior to sample collection of any media. This charge number also covers any non-routine maintenance of air monitors operated by the Ohio Environmental Protection Agency (OEPA) at the FEMP. The air monitoring program includes the costs associated with on-site and off-site analytical laboratory support for sample analysis, sample preparation, sample handling and required laboratory data management activities. Costs associated with all environmental monitoring and surveillance sample collection activities related to air monitoring, including field support personnel, supplies and equipment, and data management are also included.

IEMP Reporting - The IEMP Reporting program is responsible for the coordination and development of Integrated Environmental Monitoring Plan (IEMP) documents,

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along with other work associated with these documents. The IEMP provides the rational behind the routine monitoring of groundwater, surface water, sediment, air and biota at the FEMP. Its purpose is to fulfill regulatory, DOE, remedial action and environmental monitoring requirements (e.g., groundwater remedy performance monitoring). The IEMP also establishes the sampling requirements for determining the sitewide collective impact of the ongoing remedial actions, and includes the plan for all associated field sampling work (i.e., it serves as the project-specific plan for IEMP sampling).

Maintenance of the approximately 300-page IEMP includes annual reviews and biennial revisions, as well as periodic program updates. Reporting of IEMP-generated data is accomplished through quarterly and annual environmental monitoring data presentation reports. The annual report is known as the Integrated Site Environmental Report (ISER). It includes a summary report (approximately 150 pages) intended primarily for the public, as well as several detailed appendices (approximately 500 pages) that are intended for a more technical audience such as the regulatory agencies. The quarterly reporting is accomplished through internet-based data reporting, as well as through hard copy "quarterly summaries", which are approximately 30 pages each. A key assumption to the manpower requirements is that the level of reporting to DOE and the regulatory agencies remains at a level equivalent to FY00, including consideration of the reduction in content of the quarterly IEMP reports (beginning in April 2001) as agreed to with the regulators.

c. SCOPE OF WORK:

Air Monitoring Technical Support and Field Activities

The scope encompasses the technical support for the planning and data analysis for environmental samples collected by the Air Monitoring project. Procedures and plans are reviewed and evaluated frequently prior to sample collection of any media. Several procedures have been developed in relation to sampling methodology. Additionally, procedures have been developed regarding logkeeping, data review and analysis, reporting airborne emissions and releases, estimating dose, and downloading radon data. All procedure activities are reviewed with

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respect to the Sitewide CERCLA Quality Assurance Project Plan (SCQ), IEMP, DOE Orders, ASTM, best management practices, and other established standards and guidelines.

Associated costs within the technical support and field activities, include labor (Environmental Scientists, Laboratory/Environmental Technicians, Management and Supervisory personnel, and Acquisitions personnel), material costs and ODCs.

Air Monitoring (AM) has responsibility and ownership for radon data management and the air monitoring project for boundary fenceline and off-site areas. AM collects samples of air, direct radiation (TLDs), and other media to estimate dose to the public and the environment from remediation activities at the FEMP and includes the monitoring of radon. The results of the measurements indicate the compliance status of the FEMP with respect to applicable environmental standards and guidelines. AM assesses the site's impact on the surrounding area, estimates ionizing radiation dose to the population from all exposure pathways, confirms predictions of public dose based models, provides data for spatial and temporal analyses, compiles data for the annual Environmental Report and supports the development and revision of the IEMP. AM is responsible for the development, implementation, and collection of data necessary to support and/or drive the efforts of other site projects, such as Facilities D&D, Soil and Water Projects and the Silo Project efforts. Any organization needing radon, thoron, or daughter product data from on or offsite acquire data by request from AM and supports certain aspects of CERCLA/RCRA activities such as Environmental Compliance Reporting. AM plays an active role in the determination of:

1) the effectiveness of remediation treatment and controls in reducing effluent and emissions
2) the long-term build-up and prediction of environmental trends from site released radioactive material,
3) the detection and quantification of unplanned releases,
4) planning of removal and remedial project with respect to ALARA and off-site dose limits. In addition, the AM project is required per DOE Orders 5400.1, 5400.5,

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The following maintenance activities are performed under this account:

· Routine maintenance and equipment inventory activities are also conducted under this scope of work. This includes the field calibration of high volume environmental air monitors, and periodic inspection and tracking of equipment utilized during sampling activities.

· Supply electrical power (including cable, conduit, and outlets), and mechanicals (fencing, platforms, etc.) necessary to provide a secure monitoring location at the selected OEPA monitoring locations, maintain and repair electrical and mechanical equipment as necessary.

· Specific installations include supplying 120V AC power and electrical outlets with GFCIs where necessary.

· Maintenance of the monitoring stations includes quarterly mowing of grass around the station, inspection and repair of worn or weathered electrical connections and mechanical fittings (hinges, gates, mounting brackets, etc.) and unscheduled maintenance to repair faulty electrical and mechanical equipment necessary for the operation and safety of the monitoring effort.

The field activities performed under this account include the collection of:

· Air samples - currently 19 high volume air monitoring stations are operated and maintained. Filters are exchanged biweekly from onsite, boundary site fenceline, and off-site locations. Each filter is analyzed for total uranium, total suspended particulate (TSP) and isotopic thorium and quarterly composites are analyzed for a select suite of radionuclides as specified in the IEMP.

· Stack samples - includes the monthly inspection of one stack onsite as well as the collection of filters for analysis. Annual composites are collected and analyzed for a series of radionuclides.

· Environmental TLDs - includes the collection of environmental TLDs at approximately 33 locations on a quarterly schedule. The environmental TLDs are used monitor direct radiation levels.

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· Radon data - includes the collection of environmental radon data from approximately 34 locations onsite, the boundary site fenceline, and selected off-site locations.

· Sediment samples - includes the collection of sediment samples from approximately 20 locations in nearby waterways once per year for a selected suite of radionuclides as specified in the IEMP.

· Biota samples - includes the collection of locally grown produce from approximately 15 locations every three years (2003, 2006, 2009). Produce samples include those vegetables most consumed in this area and produce grown for agricultural purposes such as field corn and soybean. All samples are submitted to an off-site laboratory for a selected suite of radionuclides as specified in the IEMP.

The sample analysis activities performed under this account include the analysis of environmental samples by both the onsite laboratory and offsite subcontract laboratory.

· On-site laboratory analyzes 20 on-site/boundary air monitoring station filters, changed out biweekly, approximately 99 environmental TLDs quarterly, and stack filter samples. Additional air filters collected weekly in support of project-specific monitoring activities.

· Off-site contracted laboratory analyzes quarterly composite air monitoring station filters, collected biweekly for target radionuclide series, approximately 75 vegetation samples, 20 sediment, and annual composite stack filters.

Integrated Environmental Monitoring Plan (IEMP) Activities

The IEMP provides a remediation-specific focus by redirecting environmental monitoring program elements toward sitewide remediation activities. The IEMP also incorporates any new regulatory requirements for sitewide monitoring, reporting, and remedy performance tracking that have been activated by the

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formal Applicable or Relevant and Appropriate Requirements (ARARs) that are part of the FEMP's remedy selection documents.

The IEMP has been formulated to serve several comprehensive functions for the site over the life of the FEMP's accelerated remediation program. General activities associated with the ongoing updates to the IEMP and the preparation of IEMP quarterly and annual reports are detailed below:

1. Maintaining the FEMP's continued commitment to an effective remediation focused environmental surveillance monitoring program that is consistent with DOE Orders 5400.1 and 5400.5.

2. Fulfill any additional sitewide monitoring and reporting requirements that are activated by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) ARARs for the FEMP's signed Records of Decision.

3. Provide a consolidated reporting mechanism for the FEMP's individual environmental regulatory compliance monitoring activities (e.g., Resource Conservation and Recovery Act (RCRA) property boundary and on-site disposal facility groundwater monitoring; Federal Facilities Consent Agreement (FFCA) and National Pollutant Discharge Elimination System (NPDES) discharge reporting; and the total dose and air-pathway-specific dose estimates required under National Emissions Standards for Hazardous Air Pollutants (NESHAP) Subparts H and Q with the environmental reporting for DOE order 5400.1

The IEMP is revised every two years. Yearly reviews will focus on appropriateness of the IEMP scope. This two-year revision cycle will provide for any change in program emphasis or allow for the scale back of monitoring activities deemed no longer appropriate based on project needs, accumulated results or stakeholder concerns. If necessary, immediate, specific modifications to the IEMP will be made as data are reviewed. The two-year revision cycle for the IEMP also will fulfill the formal commitment for revision of the FEMP's sitewide environmental monitoring program at least every three years as intended by DOE Order 5400.1.

The annual Site Integrated Environmental Report is required by DOE Orders and

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NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
ECEM3	AIR MONITORING & IEMP REPORTING

14. ELEMENT TASK DESCRIPTION

the IEMP to be completed and updated annually and due June 1 of each year for previous calendar year. Report is generated to provide summation of calendar year environmental activities as well as an update on site activities that may have an impact on the environment. This report is written specifically for the public and layman to understand, while meeting DOE guidance memoranda and the provisions in the IEMP. The annual report is reviewed and approved by the DOE-FEMP and is submitted to DOE-HQ, DOE-OH, and the EPA.

In addition to the annual report, quarterly summary reporting under the guidance of the IEMP is conducted within Air Monitoring. Quarterly summary reports are prepared to summarize environmental data for the EPA, DOE, and the public.

Associated costs with the reporting functions under the IEMP include labor (Administrative, Environmental Scientists, Drafting and Graphics support, Clerical and Health and Safety personnel), material costs and subcontract costs (service-oriented subcontractors for the layout and printing of the report and Teaming Partner costs).

d. WORK SPECIFICALLY EXCLUDED:

Any sample activities related to the collection of groundwater and surface water are excluded from this work scope.

Costs associated with the independent sample collection activities by OEPA i.e., actual collection of air filters and radon samples.

Work scope and costs associated with site media, miscellaneous sampling, waste characterization, groundwater monitoring, utilities monitoring, and radiological monitoring to determine occupational impacts. Maintenance upkeep, utilities, and leases associated with the administrative and field office facilities are also excluded. Project specific monitoring costs are supplied by the respective project tasked with monitoring the environment.

Equipment maintenance and calibrations that are vendor specific are not conducted under this work scope, but are established in material and subcontract

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.C	ENVIRONMENTAL MONITORING

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	MIKE FRANK 648-7597	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
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14. ELEMENT TASK DESCRIPTION

costs.

EM air monitoring scope does not include:

· scope and resources necessary to perform any potential EPA-mandated environmental air monitoring (none currently identified) at the dormant OSDF.
· scope and resources necessary to perform any additional radon monitoring beyond what currently exist to support the Silos Project and WPRAP.
· scope and resources necessary to perform any project-specific air particulate monitoring, including supplemental environmental monitoring for building demolition, have not been included in the current re-baseline
· resources necessary to perform radon flux measurements in order to demonstrate compliance with 40 CFR Part 61 Subpart Q have not been included in this plan based on the assumption that the site would not be required to demonstrate compliance due to the OSDF waste acceptance criteria limits and the remedial strategy for OU1 and OU4.
· scope for additional particulate analyses (no more frequent than quarterly at the fenceline monitors) for radium isotopes and thorium isotopes will be required during the silo 1, 2 and 3 waste removal and treatment process.
· scope for laboratory contract coordination and quarterly data validation services and data entry of sample data packages (Sample and Data Management Project will centralize and budget these services).
· scope for new monitoring stations requested by OEPA (and operated by independently by them) in locations that requires installation of overhead or electrical power lines requiring new electrical poles, transformers, etc. (However, electrical connections and service is planned for up to three additional monitors where electrical supply currently exists.)

SECTION 6

1.0 NARRATIVE

1. PROJECT TITLE: AQUIFER RESTORATION PROJECT	2. DATE: 09/10/01	3. PBS#: 04
4. WBS ELEMENT CODE: 1.1.E.C.	5. WBS ELEMENT TITLE: ENVIRONMENTAL MONITORING	
6. CAM NAME/ PHONE: MIKE FRANK	7. CAM SIGNATURE:	
8. ORIGINAL/ CHANGE SCOPE/ PER CP#:	9.CONTROL ACCOUNT: ECEM	

SECTION 6: ECEM - ENVIRONMENTAL MONITORING

1.0 NARRATIVE

1.1 OVERVIEW

The Environmental Monitoring (EM) Project control account consists of three charge numbers that encompass the work scope summarized as an overview in Sections 1.1.1 through 1.1.3 below.

1.1.1 ECEM3 - IEMP Reporting and Air Monitoring Programs

- Reporting and summarizing all environmental data collected under the Integrated Environmental Monitoring Plan (IEMP) and coordinating revisions to and verifying compliance with the IEMP document as required to meet agreement with regulatory agencies.

- All project management and implementation aspects of the environmental air monitoring program including technical and management labor, data evaluation, reporting and laboratory analytical costs to assess radiological dose at the site boundary; includes monitoring of silo headspace, K-65 area, and sitewide radon monitoring; also covers any FEMP support required to maintain or site any air monitors operated by OEPA at the FEMP. The IEMP air monitoring scope of work is fully managed and budgeted by EM including EM labor, support task labor, and subcontract analytical laboratory costs.

1.1.2 ECEM2 – Well Maintenance and IEMP Surface Water Monitoring

- Maintenance and inspection of groundwater monitoring wells and plugging/abandonment of monitoring wells performed by both internal technical staff (field inspections, downhole camera surveys) and subcontractor (drilling rig services used to plug/abandon monitoring wells).

- Routine monthly and quarterly surface water monitoring activities in various drainage areas as specified in the IEMP including analytical costs and evaluation of data.

1.1.3 ECEM1 – Management/Administrative Activity

- Management, administration and general field training of the entire EM staff assigned to the six organizational sections comprising EM. The majority of the EM staff provide technical field sampling services to the remedial projects and therefore are budgeted by those projects based on their field sampling schedules through the end of the contract. The primary purpose of this "project management/administrative" EM charge number is to maintain a trained, core field staff, consolidated under one organization, that has the technical expertise to execute the vast majority of the site's environmental sampling and monitoring needs.

  The EM organization, comprised of both technical field and "office" staff, is responsible for 1) conducting field sampling in support of the remedial projects (groundwater, soil, and miscellaneous media sampling budgeted by the projects), 2) conducting field sampling in support of IEMP programs managed by EM (environmental air programs and sediment), and 3) environmental data reporting functions managed by EM; also includes administering EM training program to the EM staff to ensure compliance with regulatory-driven, legally-defensible procedures, and maintenance/revisions of project procedures. Additionally, maintenance and disposal of future soil samples placed in archive storage is included.

1.2 ASSUMPTIONS/EXCLUSIONS

1.2.1 Assumptions

1.2.1.1 ECEM3 - IEMP Reporting and Air Monitoring Programs

1. The remediation projects have identified all of their activities that will directly determine the number of air monitoring stations (no additions or deletions), monitor types, analytical program and sample frequency that will need to be incorporated into the IEMP and, hence, the Air Monitoring program through the end of the contract (primarily the WPRAP and Silos Project). The current IEMP (Revision 2, January 2001) defines the scope of the Air Monitoring Program through December 2002. Subsequent biennial revisions to the IEMP will further define the future scope as estimated herein.

2. Quarterly and annual IEMP reporting will continue through site closure with the same content, as defined in the IEMP, Revision 2 (January 2001). The current quarterly summaries reflect a reduced reporting effort from previous reporting, as negotiated with the regulators, and are assumed to be sufficient for the regulators and stakeholders through site closure. However, the number of environmental media being sampled each year will directly translate into the volume of the quarterly and annual reports which determine the staff requirements and FTEs. IEMP Reporting will continue to be accomplished through both paper (hard copy) and electronic (Internet) formats and the IEMP Data Information Site will continue

to be utilized for providing data to the regulatory agencies as it is approved by the FF project leads. The number and frequency of IEMP reports and revisions are detailed in Section 1.5.1.

3. The level of OEPA and EPA involvement in the IEMP Reporting process (that requires labor for responding to comments and requests for information) will remain at the same level as experienced in FY00 through site closure. DOE will review IEMP documents within two weeks of receipt and provide comments to the IEMP Reporting group for incorporation. The regulatory agencies will provide written responses on IEMP documents within 30 days or 60 days, dependent on the type of deliverable as defined in the Amended Consent Agreement of 1991.

4. The electrical infrastructure that supplies existing fenceline and onsite air monitors will remain in place through FY10 without additional costs for re-routing of new electrical power. The electrical infrastructure should not be required past the end of the contract because no significant fugitive emission sources will remain.

5. No regulatory changes will occur that will impact the current IEMP air monitoring strategy for either additional monitors or more stringent compliance requirements. Also, no changes or additions of regulatory drivers (the current regulatory drivers are listed under the Drivers section) will occur through FY10.

6. The environmental monitoring strategy specified in the Integrated Environmental Monitoring Plan (Revision 2) will not be revised to increase or decrease the current level of monitoring except for 1) a reduction in the number of radon monitors beginning in approximately FY08 when the silo wastes will have been disposed of at an off-site facility, and 2) elimination of biweekly thorium sampling and analysis as discussed in Assumption 8 below.

7. The manpower level in this plan for air monitoring is based on successful implementation of the wireless communication system for radon monitor data and operational data (pump on/off) for particulate monitors. This system is currently being developed by a subcontractor to provide office-based, computerized monitoring of these data in real-time in addition to data logging. By the end of FY02, all 34 radon monitors and 17 particulate monitors are planned to have on-line review capability via the wireless system or existing hard-wired data lines.

8. Biweekly sampling of isotopic thorium particulate at the 18 boundary and background monitors will be eliminated when WPRAP completes all shipment of waste pit material (scheduled for completion in FY06). Assumed that thorium monitoring at the boundary monitors is not required for the Silo 3 treatment process.

9. Any additional radon equipment or resources, beyond what has been purchased as of FY01, required to support the Silos Project will be budgeted by the Silos Project.

10. The environmental dosimetry program will be scaled down in FY08 (all significant direct radiation sources removed from the site) to a level consistent with the stewardship and long term monitoring requirements for the site.

11. Any additional costs associated with project-specific air particulate monitoring beyond what is in this closure plan will be budgeted by the remedial projects.

12. All of the current onsite analytical capabilities for air filter analyses would continue to be performed by Fluor Fernald ALS through FY10 (not by a subcontracted laboratory or outsourcing arrangement that may increase costs and the data turn-around time).

13. No additional USEPA regulatory or DOE requirements will be imposed for sample collection and analyses.

14. Uninterrupted service by subcontracted laboratories (e.g., for the quarterly composite filter analyses) will continue in order to meet reporting deadlines.

15. No additional and/or more stringent shipping requirements for environmental samples.

16. The support to OEPA monitoring stations will not require any routine sample collection or maintenance time by Fluor Fernald personnel.

17. Support to OEPA's existing air monitoring stations will be conducted through FY10 at the current level of effort (see exclusions section).

1.2.1.2 <u>ECEM2 - Well Maintenance and IEMP Surface Water Monitoring</u>

1. The remediation projects', primarily the Aquifer Restoration/Wastewater Project and Soil and Disposal Facility Project, schedule forms the basis for the well abandonment schedule for each year as presented in Section 1.5.2.

2. Environmental Monitoring staff will continue to provide well maintenance activities through the end of the contract.

3. No new regulatory requirements will be placed on well maintenance activities.

4. No unplanned monitoring wells that are not included in the Aquifer Restoration/Wastewater Projects' schedule will be installed.

5. Well maintenance and plugging and abandonment will be conducted by a subcontract drilling service company with Fluor Fernald oversight.

6. The costs for subcontract drilling services are based on the current subcontract which expires in 2001. Some specific line item costs that are known to be well below industry standard costs are or will be based on higher rates to more accurately budget.

7. Plugging and abandonment of the existing and proposed monitoring wells used for aquifer remedy performance tracking and certification (i.e., Type 2, 3, and 4 monitoring wells) cannot be completed until aquifer certification is complete (beyond the site closure contract period).

8. No new off-site monitoring wells that require additional property access agreements will be installed.

9. Resource and manpower planning for surface water sampling through FY10 is based on the current (as identified in the revision 2 of the IEMP) and projected level of IEMP surface water samples, laboratory analyses and data validation based on the detailed scopes generated by the remediation projects.

10. The costs for functions such as surface water data entry, validation and data tracking will be centralized in the Sample and Data Management organization.

11. Surface water monitoring (analytical budget included under ECEM2 will continue at the current level until WPRAP, SDFP, Silos, and D&D projects are complete. Surface water monitoring at a reduced level will continue beyond the end of the contract period.

12. The applicable regulatory drivers listed under the Requirements section of this document will not change.

13. Maintenance efforts for continuous multilevel tubing (CMT) wells will be comparable to standard monitoring wells. CMT wells are new technology chosen by ARWWP to be used at the FEMP; therefore, practical knowledge about the maintenance requirements of the CMT wells is lacking.

14. For estimating purposes, analytes for sampling prior to plugging and abandonment are assumed to be a full suite of analytes (i.e.,g metals, pesticides, polychlorinated biphenols, general chemistry, radionuclides, semi-volatiles, and volatiles). Analytes will be based on the constituents of concern for the area and will be chosen by the SDFP.

1.2.1.3 ECEM1 – Management/Administrative Activity

1. The remediation projects will provide detailed baseline information to enable EM to plan the appropriate number of trained field staff to support soil, groundwater and air monitoring operations required by each project through first quarter of FY10. Similarly, the same assumption applies to the number of IEMP reporting staff required to carry out the reporting function.

2. Soil and groundwater sampling services are budgeted by the remediation projects, primarily the Aquifer Restoration/Wastewater Project, Soil and Disposal Facility Project, and Demolition and Decontamination Projects. The projects will budget for project-specific sampling labor, analytical costs, field sampling equipment and instrumentation and field supplies. The Aquifer Restoration and Wastewater Project will budget for all costs associated with direct-push (Geoprobe®) aquifer sampling activities including EM labor, Geoprobe® maintenance and equipment purchases, and field supplies.

3. This EM account will include budget for all site-required training and technical training to field sampling procedures of all EM sampling personnel in order to maintain a team of technical managers and trained sampling professionals under one department.

4. This EM account will also provide for essential and basic field supplies that are routinely used in the execution of all field sampling and support activities. This includes all-weather clothing and gear and any office/field supplies generally used on all projects to execute the work.

5. When possible, EM's FTEs for routine work tasks covered by this account (primarily training) is linked to the number of soil, groundwater and air samples specified in the baseline schedules from the remediation projects and estimated to be required by the IEMP through FY09 or FY10.

6. EM includes a document production and records management group responsible for final editing and final word processing/production of documents for EM, the Aquifer Project and other remedial projects. It is assumed that labor for these services is budgeted by the individual remedial projects with ECEM1 covering only site training, meetings and management-type activities.

7. Adequate four-wheel drive, Geoprobe®, lab trucks and other vehicles are available and/or budgeted by ARWWP (for groundwater sampling activities) and by Environmental Monitoring (for soil sampling activities). Maintenance of the Geoprobe® vehicles will be budgeted by the Transportation group. Maintenance of special hydraulic unit accessories will be budgeted by EM and ARWWP for soil and groundwater activities, respectively.

8. The EM soil sampling group (Soil and Miscellaneous Media Projects section), will require a significant increase in trained sampling staff (technician level) in FY04, which will require either extensive retraining of current technical staff from other projects or hiring subcontract technicians. Initial training of this staff is expected to take approximately three months to attain the knowledge and experience required to initiate field activities. After the initial training, it will take approximately six months to one year of actual field sampling experience to reach maximum productivity. This is in addition to the experienced sampling team that presently exists. If EM loses all of the expertise of our current sampling technicians during the planned suspension of soil characterization activities (FY01 through FY03), then additional staff beyond the current manpower projections for FY04-FY10 will be necessary to meet sampling milestone dates due to lower productivity with an inexperienced staff.

9. A portion of the FTEs planned under this account will take the form of subcontract, level of effort sampling technicians.

10. The collection of archive soil samples through site closure will be minimized by the projects; EM will rely on the project's detailed sample projections to develop the archive soil sample maintenance budget for each year.

11. The disposal of the current inventory of archive soil samples (not including core samples from drilled boreholes) will be budgeted by Waste Generator Services. For all newly generated archive soil samples, EM will budget for storage, maintenance, inventory and disposal of these samples when they are deemed no longer necessary by the remediation projects.

12. Environmental sample and data collection activities will require the same level of legal defensibility, traceability and document control currently employed in field sampling and monitoring.

13. EM will provide the centralized sample collection services and budget for collecting decontamination wash-down water for all D&D activities for FY01-FY10. The laboratory analytical budget will be the responsibility of the D&D project.

14. At a minimum, the consolidation of at least two of the three EM field sampling sections (Water Monitoring, Air Monitoring, and Soil & Misc. Media Projects) into one general office and storage location (one building or adjacent buildings) is essential to accomplish the EM field functions under the manpower levels of this closure plan. This facility should be within three miles of the FEMP due to multiple trips to the site each day. This physical consolidation of two or three field technician groups will enable managers to fully utilize field staff across all EM organizations as needed to meet field schedules.

1.2.2 Exclusions

1.2.2.1 ECEM3 – IEMP Reporting and Air Monitoring Programs

1. EM air monitoring scope does not include occupational air monitoring of site workers.

2. The scope and resources necessary to perform any potential EPA-mandated environmental air monitoring (none currently identified) at the dormant OSDF.

3. Does not include the scope and resources necessary to perform any additional radon monitoring beyond what currently exist to support the Silos Project and WPRAP.

4. The scope and resources necessary to perform any project-specific air particulate monitoring, including supplemental environmental monitoring for building demolition, have not been included in the current re-baseline.

5. The resources necessary to perform radon flux measurements in order to demonstrate compliance with 40 CFR Part 61 Subpart Q have not been included in this plan based on the assumption that the site would not be required to demonstrate compliance due to the OSDF waste acceptance criteria limits and the remedial strategy for OU1 and OU4.

6. Additional particulate analyses (no more frequent than quarterly at the fenceline monitors) for radium isotopes and thorium isotopes will be required during the Silos 1, 2 and 3 waste removal and treatment process.

7. Laboratory contract coordination and quarterly data validation services and data entry of sample data packages (Sample and Data Management Project will centralize and budget these services).

8. New monitoring stations requested by OEPA (and operated by independently by them) in locations that requires installation of overhead or electrical power lines requiring new electrical poles, transformers, etc. (However, electrical connections and service is planned for up to three additional monitors where electrical supply currently exists.)

1.2.2.2 ECEM2 – Well Maintenance and IEMP Surface Water Analyses

1. Well maintenance or abandonment activities for extraction and injection wells are not included in the scope.

2. Maintenance of access roads to all monitoring wells is budgeted by the Well Field Operations account (EEWW1) due to most access roads leading to injection/extraction wells.

3. Emergency/unplanned surface water sampling (analytical budget) in response to spills or releases not covered under this charge account.

4. No surface water certification activities are necessary nor planned under this charge account (analytical budget).

5. Labor and the management/supervision of the labor work force for the collection of IEMP surface water samples.

1.2.2.3 ECEM1 – Management/Administrative Activity

1. Labor for other Aquifer Restoration Projects departments (Aquifer Restoration and Wastewater Project, Sample & Data Management and Analytical Laboratory Services).

2. Field materials for groundwater sampling and monitoring services provided to the Aquifer Restoration and Wastewater Project.

1.2.3 Government-Furnished Equipment/Services

None.

1.3 DRIVERS

1. The manpower level of trained field sampling staff (technicians and scientists) that EM maintains to execute sampling programs is directly linked to the number of groundwater and soil samples required by the remedial projects (primarily SDFP and ARWWP; see Table 13 for number of samples planned for collection) and the need to demonstrate regulatory compliance with air emission standards (air particulate and radon as specified below).

2. For IEMP Reporting, the Aquifer Restoration Project's (and the EM subproject) groundwater, surface water, sediment and air monitoring requirements form the basis for determining the volume of environmental monitoring and sampling data generated (total number of samples by media program) through FY10 (1Q). These data will be published through IEMP reports to the regulators and stakeholders, as specified in the current and future IEMP revisions. Likewise, the Silos Project, Soil Disposal Facility Project and Waste Pits Remedial Action Project have detailed any environmental sampling (that is within the IEMP scope) which will dictate the level of effort needed to coordinate and produce the IEMP reports.

3. The site's emission sources (primarily fugitive particulate/dust and radon) from the remedial projects (i.e., WPRAP, SDFP and D&D) invoke the need to demonstrate that airborne emissions are in compliance with the Clean Air Act, 40 CFR 61 Subpart H (NESHAP) regulations. Compliance is monitored through the operation and maintenance of the current network of environmental air monitors and the

site's boundary as well as in the K-65 vicinity. Under NESHAP, the FEMP is required to determine the maximum radiological dose from site emissions to the nearest resident or member of the public.

4. The site-wide and Silos Project requirements to demonstrate that radon emissions are in compliance with DOE Order 5400.5 are addressed through the operation and maintenance of the current network of radon monitors. When the silo material has been removed from the FEMP and the silo remediation facilities have been dismantled in FY08, nearly all of the radon monitors within the Silos Project boundary will be eliminated. The remaining property boundary radon monitoring program will be scaled down to a level consistent with the long term monitoring requirements for the site as negotiated with the regulatory agencies. Changes to the monitoring strategy, particularly a reduction in monitoring locations, must be approved by the DOE and the USEPA.

5. In addition to the NESHAP requirements to determine radiological dose to the public, DOE Order 5400.5 requires that all pathways be monitored at sites having potential emissions sources. The requirements to demonstrate that doses to members of the public are in compliance with DOE Order 5400.5 will be addressed through the established network of environmental dosimeters and will be necessary until the remediation and offsite shipment of the K-65 silo material and demolition of facilities is complete (in FY08).

6. The remedial activities at the site result in variable fugitive emission rates due to the number of projects excavating materials and performing field activities over the course of site remediation combined with varying field moisture and wind conditions. This variability of emissions, the need to maintain emissions as low as reasonably achievable, project activities and stakeholder concerns drive the need to perform biweekly air particulate (uranium and thorium) sampling at the boundary air monitors for tracking of air emissions against NESHAP dose limits as specified in the IEMP.

7. The potential for the site's excavation activities and other remedial projects to influence the radiological concentrations in sediment, as well as stakeholder concerns, drive the need to assess the sediment on an annual basis under the IEMP for radiological isotopes.

8. Quarterly and annual IEMP reporting will continue through site closure with approximately the same content, as defined in the IEMP, Revision 2 (January 2001). The current quarterly summaries reflect a reduced reporting effort from previous reporting, as negotiated with the regulators, and are assumed to be sufficient for the regulators and stakeholders through site closure. However, the number of environmental media being sampled each year will directly translate into the volume of the quarterly and annual reports which determine the staff requirements and FTEs.

9. A monitoring well maintenance program is required by the regulatory drivers and must continue until completion of aquifer restoration and certification activities which are currently scheduled after the end of the site closure contract. Nearly all monitoring wells must remain in place in order for the Aquifer Restoration and Wastewater Project to monitor performance of the remedy.

10. Due to soil excavation activities conducted by SDFP and other remedial projects, plugging and abandonment of existing shallow monitoring wells (i.e., Type 1 monitoring wells) will typically be removed a few months prior to soil excavation, construction or building demolition activities. This activity is directly linked to the soil excavation and D&D schedule.

1.4 PROJECT PHYSICAL DESCRIPTION

The Environmental Monitoring Project's work scope consists of two types of functions as follows:

- Centralized project management and execution responsibility (all project phases budgeted and managed by EM) and

- Environmental technical support services, including field sampling and monitoring, matrixed to the remediation projects (and budgeted by the projects). In summary, EM performs the following functions:

  - All facets of project management for environmental sampling of air (non-occupational), biota and sediment sampling including data evaluation and reporting as required by regulatory drivers and commitments with stakeholders through the IEMP,

  - IEMP reporting (quarterly and annually) of environmental data to the regulators and all stakeholders, control of the IEMP document (work plan) and tracking of environmental program data for groundwater, surface water, air and other media-specific programs,

  - Project management of the monitoring well maintenance program and the IEMP surface water sampling program (IEMP characterization locations only; samples collected by the represented work force) as required by regulatory drivers and the IEMP commitments,

  - Manage and maintain a trained technical staff to provide a full range of field soil and groundwater sampling and monitoring services matrixed to the remediation projects; primary customers are the Aquifer Restoration and Wastewater Project and the Soil & Disposal Facility Project. EM budgets for the training and administration of the sampling/technical staff and the remediation projects budget for the actual implementation of these services on their specific projects.

The EM Project staff is organized into the following six sections according to functional responsibilities:

- Air Monitoring
- Water Monitoring
- Soil & Miscellaneous Media Projects
- IEMP Reporting
- Project Development and Reports
- Document Production and Records

The EM Project work scope is divided across three charge numbers as described in Section 1.0 (Overview) and as further explained in the following detailed scopes of work for each charge number.

1.5 PROJECT PLAN/TECHNICAL SCOPE AND QUANTIFICATION

1.5.1 ECEM3 – IEMP Reporting and Air Monitoring Programs

1) Task #1 – IEMP Reporting

1.1) Plan/Scope – IEMP Reporting

IEMP Reporting is responsible for the coordination and development of Integrated Environmental Monitoring Plan (IEMP) documents, along with other work associated with these documents. The IEMP provides the rational behind the routine monitoring of groundwater, surface water, sediment, air and biota at the FEMP. Its purpose is to fulfill regulatory, DOE, remedial action and environmental monitoring requirements (e.g., groundwater remedy performance monitoring). The IEMP also establishes the sampling requirements for determining the sitewide collective impact of the ongoing remedial actions, and includes the plan for all associated field sampling work (i.e., it serves as the project-specific plan for IEMP sampling).

Maintenance of the approximately 300-page IEMP includes annual reviews and biennial revisions, as well as periodic program updates. Reporting of IEMP-generated data is accomplished through quarterly and annual environmental monitoring data presentation reports. The annual report is known as the Integrated Site Environmental Report (ISER). It includes a summary report (approximately 150 pages) intended primarily for the public, as well as several detailed appendices (approximately 500 pages) that are intended for a more technical audience such as the regulatory agencies. The quarterly reporting is accomplished through internet-based data reporting, as well as through hard copy "quarterly summaries", which are approximately 30 pages each.

Table 1 summarizes the manpower requirements (both "charge-in" and "charge-out" resources) and schedule for the significant functions performed by the IEMP Reporting section. A key assumption to the manpower requirements is that the level of reporting to

DOE and the regulatory agencies remains at a level equivalent to FY00, including consideration of the reduction in content of the quarterly IEMP reports (beginning in April 2001) as agreed to with the regulators. General activities associated with the ongoing updates to the IEMP and the preparation of IEMP quarterly and annual reports are detailed below:

- Develop schedules for preparation and completion of each IEMP document
- Meet and communicate with report section/media leads (in remedial action projects) on the schedule, status, program updates/changes, and other related issues
- Interface with the Sample and Data Management organization to integrate data analysis, validation, and entry requirements into document preparation schedules
- Query data from the FEMP data systems for use in IEMP documents
- Maintain a database of regulatory requirements and commitments for their query and integration into IEMP documents
- Develop graphical and tabular presentations of IEMP data into IEMP documents
- Write several sections of each document
- Coordinate with Computer Aided Design (CAD) specialists to create/maintain maps and figures
- Identify, plan and implement improvements to the method and quality of IEMP reporting
- Interface with DOE contact to verify all concerns are addressed proactively
- Review IEMP documents for reporting quality, as well as internal consistency
- Coordinate with document preparation personnel to prepare a high quality document on schedule
- Coordinate formal document reviews
- Respond to or coordinate response to Ohio and U.S. EPA comments, and review of the responses
- Communicate with the regulatory agencies to proactively address their concerns regarding IEMP documents

- Compose letters transmitting IEMP documents to DOE and the EPAs and coordinate distribution.

Activities specific to development of the IEMP Biennial Revisions and ongoing maintenance of the IEMP are as follows:

- Assist section/media (e.g., groundwater, surface water and air) experts with the development of their media specific programs and sampling plans, and incorporate them into the IEMP framework

- Update the Introduction and Reporting sections of this document to incorporate improvements

- Prepare Page Change Notices (PCNs) for programmatic changes (e.g., adding a permanent sampling location) to the IEMP that take place between revisions

- Coordinate the annual review of the IEMP, and summarize changes in tabular form for simplicity and incorporation into the IEMP program.

Activities specific to the development of the annual Integrated Site Environmental Reports are as follows:

- Establish criteria and requirements for subcontract printing/publishing company

- Coordinate the print bid process with the Government Printing Office (GPO)

- Coordinate with the subcontract printer to ensure document quality, accuracy, and efficiency in production and reproduction

- Oversee the conversion from CAD or MS Word files to Adobe Pagemaker files for transmittal to the subcontract printer

- Oversee the distribution of the color version of the Integrated Site Environmental Reports to the public, the regulatory agencies, as well as to internal stakeholders

- Prepare electronic files for uploading to the Fernald.gov Internet site

- Coordinate with Information Management (IM) and Graphics departments to upload these files to the Internet.

Activities specific to the development of the IEMP Quarterly Summaries are as follows:

- Work with Sample and Data Management personnel to maintain the IEMP Data Information Site, and provide input into it's continued development. This will be based on EPA, OEPA and internal feedback and suggestions

- Track IEMP Data through Fernald site data systems and loading onto the IEMP Data Information Site

- Communicate with media leads to prioritize data for inclusion into a quarterly summary
- Define report content and structure. This includes communicating with the section/media leads on what data are included, what items need to be discussed in the summaries, and what tabular/graphical representations of data are required

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- ~~Prepare files for the IEMP developmental web site and coordinate with IM and Graphics to upload them to the site to the Fernald.gov site.~~

- Prepare files for the IEMP intranet site and coordinate with IM and Graphics to upload them to the Fernald.gov site."

The following bullets summarize the plans to upgrade the IEMP Data Information Site However, the EM IEMP Reporting Section supports these upgrade efforts only in terms of supplying data files and providing input to the development of the IEMP Data Information Site. Then Information Management and Sample & Data Management organizations are responsible for the remaining work scope (including budget) to accomplish these upgrades:

- Automating the process for getting downloadable files out of the extranet site
- Developing a method for easily tracking the time frame and movement of data on the extranet site
- Having meteorological data available real time
- Identifying air data that could be stored in a database format so that it could be queried
- Getting the product GeoMedia® on the extranet site to enable users to query data based on a map illustrating monitoring well locations or other sampling locations
- Producing graphs defined by the user
- Expanding queries to meet user preferences
- The consistent use of the "comment" field for analytical results for each sample media

1.2) Quantification – IEMP Reporting

The detailed tasks outlined above for the IEMP Reporting functions are summarized in Table 1 below with the associated manpower requirements for each phase of IEMP reporting. This information was utilized to determine the manpower levels input to the manpower planning system database for each resource type necessary to execute the IEMP Reporting functions through FY10. The material and subcontract costs associated with the IEMP reporting process is limited to an annual subcontract to a printing/publication services firm for approximately $20,000 for color publication of the annual Integrated Site Environmental Report.

Table 1
Manpower Estimates to Complete Integrated Environmental Monitoring Documents through FY09

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Document	Due Date	Resource Code	FTEs per Year
Biennial IEMP Revision	January 1 of 2003, 2005, 2007, 2009	Env. Science Manager (ENSMGR)	0.1
		Env. Scientist (ENSREP)	~~0.2~~ 0.15
		Info. Records Rep. (INRREP)	0.03
		Clerk (CLERK)	0.07
		Program Manager (TPSMGR)	0.03
		Sub-Total	~~0.43~~ 0.38
IEMP Review	January 1 of 2002, 2004, 2006, 2008	Env. Science Manager (ENSMGR)	~~0.07~~ 0.05*
		Env. Scientist (ENSREP)	~~0.1~~ 0.05*
		Clerk (CLERK)	~~0.03~~ 0.05*
		Program Manager (TPSMGR)	0.02
		Sub-Total	~~0.22~~ 0.17
Annual Integrated Site Environmental Reports	June 1 of every year (black & white version to EPA; color version issued in July)	Env. Science Manager (ENSMGR)	0.35
		Env. Scientist (ENSREP)	~~0.6~~ 0.4
		Info. Records Representative (INRREP)	0.2
		Clerk (CLERK)	0.1
		Program Manager (TPSMGR)	0.05
		Sub-Total	~~1.3~~ 1.1
IEMP Quarterly Data Summaries	January 31, April 30, July 31, and October 31 of every year.	Env. Science Manager (ENSMGR)	~~0.25~~ 0.3
		Env. Scientist (ENSREP)	~~0.6~~ 0.3
		Clerk (CLERK)	0.05
		Program Manager (TPSMGR)	0.05
		Sub-Total	~~0.95~~ 0.75
		TOTAL FTEs FOR IEMP REPORTS:	~~2.9~~ 2.4

* Includes time required for periodic IEMP Updates (Page Change Notices, and Variance/Field Change Notices).

2) Task #2 – Air Monitoring

2.1) Plan/Scope – Air Monitoring Program

The air monitoring program includes project management activities, technical support for the planning/data analysis for environmental air, biota and sediment samples, the evaluation of all data, trending air and sediment data and providing feedback to the remediation projects. Additionally, the Air Monitoring program calculates and tracks the radiological dose received at the property boundary from all pathways, and monitors and evaluates the Silos 1 and 2 headspace and site-wide radon concentrations. This activity also encompasses the installation, maintenance and calibration of air monitoring sample locations, both on and offsite. When an air monitor location is no longer needed, this account covers the removal of utilities, surrounding fence from the location. Procedures and plans are utilized and evaluated frequently prior to sample collection of any media. This charge number also covers any non-routine maintenance of air monitors operated by the Ohio Environmental Protection Agency (OEPA) at the FEMP.

The Air Monitoring program staff is comprised of the following technical personnel (manpower levels for each year are detailed in the Manpower Planning Section):

- Environmental science technicians (ENSTEC) who operate and maintain the sampling equipment and collect all the samples.

- Environmental scientists (ENSREP) who design, modify, and direct the air monitoring sampling programs in accordance with the site and project-specific needs. In addition, the scientists review and interpret all data collected under the air monitoring program.

- The field supervisor (ENSMGR) ensures that all sampling activities are conducted and documented per the training, procedural, schedule, equipment, and program requirements; additionally, the supervisor coordinates with other groups and vendors to maintain the air monitoring network.

The Air Monitoring Section Manager (ENSMGR) is responsible for overseeing the daily operations conducted by the staff outlined above including data evaluation processes, air monitoring system operations, and providing technical leadership to the staff as follows:

- Plans and executes work within the Air Monitoring Section of EM and integrating activities across project boundaries; establishes the priorities and technical direction for the section.

- Communicates and coordinates with other departments and project managers to plan and execute all field activities and enlist the required support to accomplish the required project objectives.

- Ensures that project planning is integrated so that all resources, permits, work plans, and support groups are coordinated for successful project implementation.

- Ensures that the execution of field sampling and support tasks are completed in compliance with work procedures, site procedures, safety plans, and other driving documents.

- Lead in the development and testing of new field methodology and technology within the organization to perform operations cheaper, faster, better, and safer.

- Oversees section responsibilities such as field data management, field training, inventory control, equipment maintenance program, waste disposition and other support functions.

- Ensures procedures are in place and training is conducted for all critical work processes.

- Identifies the need for and requests QA surveillance and conducts internal assessment activities to ensure quality standards are met.

- Oversees completion of the air sections of the quarterly and annual IEMP reports ensuring that all data reported are accurate and data interpretations are technically correct.

2.2) Quantification – Air Monitoring Program

The following Table 2 contains additional details on the specific tasks, resources, and approximate FTEs associated with the Air Monitoring program. Table 2 primarily summarizes the tasks required for FY01-FY02; however, the tasks that will be reduced, including the approximate percent reduction in FTEs, following the completion of particular remedial projects are identified as footnotes.

Table 2
Summary of Manpower Requirements for Primary Air Monitoring Tasks (ECEM3)

	Specific Air Monitoring Task	Resource Code	Approx. FTE to perform task
1	Daily performance checks at 19 high volume environmental air monitoring stations. Daily checks are required to ensure that the monitoring stations are operating at least 95% of time per the requirements of 40 CFR 61 Subpart H,	ENSTEC	0.3[a]
2	Repair, recalibrate and replace air monitoring stations as necessary, and at least annually, in order maintain 95% operability. This requires overtime hours during weekends and holidays.	ENSTEC	0.3
3	Repair, recalibrate and replace air monitoring stations as necessary, and at least annually, in order maintain 95% operability. This requires overtime hours during weekends and holidays.	ENSMGR	0.1
4	Bi-weekly exchange of filters from 19 boundary fenceline and offsite locations, total of 494 filters per year,	ENSTEC	0.2
5	Collect from the field and submit samples to the onsite laboratory for analyses per the requirements of the IEMP (Rev. 2); approximately 1,500 air filter analyses requested per year.	ENSTEC	0.1
6	Review, track, and report changes and trends in airborne concentrations to internal and external clients on a bi-weekly, quarterly, and annual basis per the requirements of the IEMP (Rev. 2).	ENSREP	0.3[c]
7	Review and investigate project operations and meteorological data on a continual basis to account for changes in fenceline concentrations; includes graphing and statistical analysis of data and distributing data and interpretations to various projects and stakeholders.	ENSREP	0.1

Table 2
Summary of Manpower Requirements for Primary Air Monitoring Tasks (ECEM3)

	Specific Air Monitoring Task	Resource Code	Approx. FTE to perform task
8	Assess sitewide project air monitoring data collected by the remediation projects and radiological control group to assess data collectively and identify emissions sources when possible.	ENSREP	0.2
9	Monthly inspection and quarterly collection of Bldg. 71 stack filter based on project needs as determined by Environmental Compliance group.	ENSTEC	0.1
10	Quarterly exchange of 32 environmental TLDs from on-and offsite locations	ENSTEC	0.2[b]
11	Track and report changes and trends in environmental radiation levels to internal and external clients on quarterly and annual basis per the requirements of the IEMP (Rev. 2)	ENSREP	0.2[b]
12	Operate, maintain, and perform weekly data downloads at approximately 34 continuous environmental radon monitors near the K-65 silos and at on- and off-site locations	ENSTEC	0.3[a]
13	Same as above.	ENSREP	0.1
14	Repair, recalibrate and replace 34 radon air monitoring stations as necessary, and at least annually, in order maintain operability of network	ENSREP	0.3[b]
~~15~~	~~Same as above.~~	~~ENSMGR~~	~~0.1~~
16	Review, track, and report changes and trends in radon concentrations to internal and external clients on a monthly, quarterly and annual basis per the requirements of the IEMP Rev. 2	ENSREP	0.4[a,b]
17	Troubleshoot and maintain real-time, on-line radon monitoring system which provides Communications Center and Emergency Preparedness organizations with information on the current radon levels in and around the K-65 Silos;	ENSREP	0.2[a]
18	Same as above.	ENSTEC	0.1[b]
19	Same as above.	INSREP	0.2[b]
~~20~~	~~Same as above.~~	~~ENSMGR~~	~~0.1[b]~~
21	Collect and evaluate silo headspace samples twice per month.	ENSTEC	0.2[b]
22	Collect and evaluate silo headspace samples twice per month.	ENSREP	0.1[b]
23	Collection of annual sediment samples from approximately 20 locations in nearby waterways for a selected suite of radionuclides as specified in the IEMP; sediment samples are shipped to an offsite contracted laboratory for analysis	ENSTEC	0.1
24	Review, interpret and report changes and trends in sediment concentrations to internal and external clients per the requirements of the IEMP (rev. 2)	ENSREP	0.1

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Table 2
Summary of Manpower Requirements for Primary Air Monitoring Tasks (ECEM3)

	Specific Air Monitoring Task	Resource Code	Approx. FTE to perform task
25	Biota (produce) samples are collected from approximately 15 locations every three years. The next scheduled collection round is in 2003. Samples are shipped to an offsite contracted laboratory for approximately 90 radiological analyses	ENSTEC	0.2
26	Review, interpret and report changes and trends in produce concentrations to internal and external clients per the requirements of the IEMP (rev. 2)	ENSREP	0.2
27	Schedule, coordinate, and document all work performed through the use of field logs, sample chain of custody, equipment calibration and maintenance logs, data forms, and procedural records, maintain, track, and purchase field sampling equipment, tools, safety supplies, and miscellaneous supplies necessary to support sampling activities.	~~ENSMGR~~ ENSREP	~~0.5[b,c]~~ 0.3[b,c]
~~28~~	~~Maintain, track, and purchase field sampling equipment, tools, safety supplies, and miscellaneous supplies necessary to support sampling activities.~~	~~ENSMGR~~	~~0.1~~
29	Train and supervise technicians to ensure sampling activities are conducted and documented per the training, procedural, schedule, equipment, and program requirements.	~~ENSMGR~~ ENSREP	0.1
30	The laboratory preparation and analysis of 19 bi-weekly air filters per the IEMP Rev 2.	LABCHM	1.2[c]
31	Formation and shipment of quarterly composite samples per the IEMP Rev 2. Samples are shipped to offsite laboratories through established subcontracts with qualified labs on a quarterly basis; approximately 864 analyses per year assuming 18 air monitoring locations.	LABCHM	0.1
32	Compiling and storing data packages in accordance with the requirements of the USEPA per 40 CFR 61 Subpart H	LABTEC	0.1
33	Onsite Analytical Laboratory and Sample and Data Management personnel process the environmental samples through to the appropriate laboratory and then report the results back to Air Monitoring	LABTEC	0.1
34	Same as above.	LABMGR	0.1
35	Analytical results are sent back to the site Sample and Data Management project for review and validation (centralized SDM budget),	LABTEC	0.0
36	Preparation, maintenance, and purchase of equipment and supplies necessary for the analysis of air filters.	LABCHM	0.1
37	Periodic audits of contract labs to resolve difficulties or concerns with analytical programs (lead role for this is budgeted by Sample and Data Management)	ENSREP	0.1

Table 2
Summary of Manpower Requirements for Primary Air Monitoring Tasks (ECEM3)

	Specific Air Monitoring Task	Resource Code	Approx. FTE to perform task
38	Provide and coordinate the necessary support in establishing locations for implementing air and radon monitoring by the OEPA as identified in the existing agreement between the DOE and the State of Ohio. Included in this activity are resource costs associated with estimating, planning utilities, equipment, maintenance and electrical personnel in performing the necessary work to allow for the installation and maintenance for OEPA environmental equipment onsite; this activity does not support the costs associated with independent sample collection activities by OEPA.	ENSREP	0.1
	TOTAL AIR MONITORING FTEs		7.5

[a] FTEs required to perform task will be reduced by approximately 25% pending the successful implementation of wireless radon data system.
[b] FTEs required to perform task will be reduced by approximately 50% following completion of Silos Project.
[c] FTEs required to perform task will be reduced by approximately 30% following completion of WPRAP Project.

The manpower planning sheets include the FTEs required in each year to complete the Air Monitoring tasks detailed in Table 2 based on the remedial project schedules. The rationale for FY01 manpower is based on the charge-in and charge-out practices that were in effect as of the start of the Fluor Fernald contract in December 2000.

The manpower level in this plan for Air Monitoring is based on successful implementation of the wireless communication system for radon monitor data and operational data (pump on/off) for particulate monitors. This system is currently being developed by a subcontractor to provide office-based, computerized monitoring of these data in real-time in addition to data logging. By the end of FY02 , all 34 radon monitors and 17 particulate monitors are planned to have on-line review capability via the wireless communication system or existing hard-wired data lines.

The following tables (Table 3, 4 and 5) contain cost details on the materials, subcontract and other direct costs (ODC) associated with the Air Monitoring Program including cost projections through the end of the contract. The assumptions discussed in Section 1.2.1.1 related to radiological air particulate and radon monitoring through the out years provide the justification for these costs. The detailed annual costs and resources are included in the Activity-Based Estimating forms.

In addition to these materials, subcontract costs and expenses detailed below, the following travel and overhead expenses are covered by this charge account through FY09:

- Includes all travel and training costs for the air monitoring program environmental scientists and program manager (three, one-week trips per year at $1,650 each for airfare, expenses, car rental, and hotel for a total of $4,950).

- Training and seminar registration fees at $1,500/year.

- Includes professional memberships reimbursement per site guidelines (2 personnel at $200 each per year) and professional periodicals ($150/year) for a total of $550/year.

Table 3
Subcontract Laboratory Costs for Air Filter Analyses (ECEM3)

Sampling Program	Frequency	Estimated Annual Costs (FY01 – FY10)
IEMP Air monitoring	Quarterly	$34,000
Sediment sampling	Annual	$5,000
Biota (produce)	Every 3 years (2003,2006, 2009)	$18,000
	Total	**$57,000**

Table 4
Air Monitoring - Material, Equipment, and Calibration Costs (ECEM3)

Sampling Program	Material, Equipment, and Calibration	Estimated Annual Costs FY01	Estimated Annual Costs FY02-FY05	Estimated Annual Costs FY06-FY07	Estimated Annual Costs FY08-FY10
IEMP Air Partic. Monitoring	Air monitor repair, replacement, calibration	$30,000	$30,000	$30,000	$30,000
IEMP Air Partic. Monitoring	Filters, sampling supplies, packaging, etc	$7,000	$7,000	$6,000	$5,000
IEMP Radon Monitoring	Radon monitor repair, replacement, calibration	$50,000	$50,000	$50,000	$25,000
IEMP Radon Monitoring	Communication components, printers, signal cables, Data loggers,and software upgrades etc	$26,000	$26,000	$26,000	$10,000
IEMP Radon Monitoring	Purchase of 16 additional wireless data logger/transmitter/signal transducer modules	$80,000	$0	$0	$0
	Total	**$193,000.00**	**$113,000.00**	**$112,000.00**	**$70,000.00**

Table 5
Summary of Routine Samples/Field Inspections for Air Monitoring (ECEM3)

Routine Samples / Monitor Inspections	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
Total Air Particulate Monitoring Stations	19	19	19	19	19	18	18	18	18	18
Biweekly Particulate Filters for Total Uranium & TSP Analyses	494	494	494	494	494	468	468	468	468	126
Biweekly Particulate Filters for Isotopic Thorium [1]	494	494	494	494	494	0	0	0	0	0
Quarterly Composite Particulate Filter	72	72	72	72	72	72	72	72	72	18
Daily Inspections on Air Particulate Monitoring Stations [2]	365	90	52	52	52	52	52	52	52	16
Total Radon Monitoring Stations [3]	34	34	34	34	34	34	34	18	18	18
Radon Monitor Data Collections & Downloads	1768	884	589	589	589	589	589	312	312	78
TLD Locations [3]	32	32	32	32	32	32	32	23	23	23
Quarterly TLD Collections/Exchanges	128	128	128	128	128	128	128	92	92	23
Biota (produce) samples	0	0	30	0	0	30	0	0	30	0
Sediment samples (IEMP scope)	20	20	20	20	20	20	20	20	20	0

[1] FY06 WPRAP is scheduled for D&D in 2006, decrease in analytical requirements and level of effort required to maintain program
[2] FY02- fourth quarter; successful implementation of wireless radon data system and remote monitoring of particulate samples will reduce level of effort to operate and maintain monitoring systems.
[3] FY07 Silos project is scheduled for completion. Radon monitoring can be reduced approximately 50% in the number of monitors and level of effort required tomaintain program. Decrease in number of TLD locations as well.

1.5.2 ECEM2 – Well Maintenance and IEMP Surface Water Analyses

1) Task #1 – Well Maintenance

Note: The plan, scope and quantification components are combined for this task because the nature of these work tasks is better suited for this type presentation.

1.1) Plan/Scope and Quantification – Well Maintenance

1.1)1 Project Management

This charge number includes labor for management (ENSMGR) coordination by the Section Manager and Field Supervisor of the EM Water Monitoring Section to provide coordination, scheduling and oversight of the activities described in this scope. Labor is also included to provide interfacing between the ARWWP and SDFP for scheduling of plugging and abandonment and well maintenance activities.

1.1)2 Well Maintenance

The monitoring well network consists of approximately 350 monitoring wells on- and off-property which are utilized to monitor the performance of the groundwater remedy. Approximately 150 of these monitoring wells are inspected at least annually for well integrity purposes to ensure that a contaminant pathway to the aquifer or subsurface is not created due a poor surface seal as outlined in the IEMP. Well maintenance work identified during these inspections or during routine sampling events may consist of general well repair (replacing broken or cracked concrete pads to provide effective surface seals, replacement or repair of broken locks or well lids, etc.), redevelopment or chemical rehabilitation of monitoring wells, surveying the well with a down hole camera to determine well integrity, and/or installation and maintenance of dedicated sampling equipment. Well maintenance may be completed by EM personnel (ENSTECH or ENSREP) or the drilling subcontractor with oversight and documentation completion required by EM (ENSREP). Also included is labor for represented personnel to mow around the monitoring wells to provide safe access to each monitoring well. Well maintenance work is completed based on the requirements of the scope of work and applicable permits prepared by EM. The permits and plans required for these tasks include a radiological work permit, penetration permit, and a health and safety matrix plan. The following table summarizes the typical well maintenance activities and hours to complete each task.

Table 6
Summary of Typical Well Maintenance Activities & Estimates (FY01-FY10)

Activity	Drilling subcontractor needed?	Average Hours to Complete Each	Estimated Number per Year
Repair monitoring well lid (e.g., replace locks, repair hinges, etc.)	No	2 hrs[1]	40
Redevelopment/rehabilitation of monitoring well - Prepare Wastewater Discharge Permit - Oversee redevelopment activity - Discharge wastewater - Decontaminate equipment - Complete field documentation	Yes ($60,000 per year)	60 hrs[2]	6
Downhole Camera Survey	No	6 hrs[1]	10
Replace cracked pad - prepare penetration/work permits - remove and dispose of pad - replace pad - inspect pad 24 hrs after completion	Yes ($7,000 per year)	4 hrs[2]	10
Modification of monitoring wells - Prepare penetration/work permits - Remove bollards, if necessary - Oversee modification - Resurvey well and update database - Complete field documentation	Yes ($10,000 per year)	20 hrs [2]	5
Inspection of monitoring well network	No	40 hrs[1]	1
Installation/maintenance of dedicated sampling equipment	No	10 hrs[1]	20

[1] Work scope completed by ENSTECH.
[2] In addition to the subcontracted costs, full oversight by an ENSREP is required.

1.1)3 Plugging and Abandonment of Monitoring Wells

Wells are plugged and abandoned as site remediation progresses and wells are no longer needed for monitoring the aquifer, wells must be removed for soil remediation, or are no longer protective of the environment due to integrity problems. Work is outlined in plugging and abandonment scope of work packages and site permits prepared by Environmental Monitoring. The same permits and plans described for Well Maintenance normally apply to this activity as well. The work is performed by the drilling subcontractor with oversight by an Environmental Monitoring geologist (ENSREP). Documentation of the field activities is completed, reviewed, and submitted for entry into the sitewide database.

Labor is also included for Waste Acceptance Organization to provide oversight of plugging and abandonment material disposal.

A letter (regulatory driven) is submitted annually to the Ohio Department of Natural Resources, OEPA, USEPA, and Ohio Department of Health as notification of monitoring well plugging and abandonment. The following Table 7 summarizes the activities involved with a typical plugging and abandonment project.

Table 7
Summary of Well Plugging and Abandonment Activity Estimates (FY01-FY10)

Well Plugging/Abandonment Activity	Drilling subcontractor needed?	Average Hours to Complete
Preparation, review and finalization of project documentation: - work/penetration permits - scope of work - safety walkdown	No	40 hrs per year[1]
Plugging and abandonment	Yes (see Table 8 below)	10 hrs per well[2]
Preparation, review and finalization of field documentation	No	10 hrs per year[1]

[1] Work scope completed by ENSREP.
[2] In addition to the subcontracted costs, full oversight by an ENSREP is required.

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Plugging and abandonment of monitoring wells not used for aquifer remediation certification (i.e., Type 1 monitoring wells screened in perched water zones) will be abandoned as soil excavation proceeds. Monitoring wells required for aquifer remediation certification will not be abandoned until after FY10 (except those which are no longer protective of the environment due to integrity problems). Table 8 provides an estimate of the number of ~~Type 1~~ monitoring wells to be abandoned, estimated drilling subcontractor costs and groundwater sample analytical cost (discussed under Section 1.1)4 below).

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Abandonment costs for FY05, as well as FY06 and FY07 to a lesser extent, are disproportionate to the remaining years due to the fact that wells scheduled for abandonment in these years are mostly shallow wells located in the former production area (Area 3B/4B) in the same general vicinity. These conditions allow for a faster rate of well abandonment (more wells abandoned in a shorter timeframe) than wells located in various areas across the site. The costs for well plugging and abandonment activities are based on an hourly rate rather than footage. In addition, all of the wells can be abandoned under a single mobilization and demobilization charge ($2,500 round trip) for the drilling equipment compared to a significantly less number of wells per mobilization in other years.

Table 8
Planned Number of Wells to be Abandoned and Costs

Fiscal Year	Number of Wells to be Abandoned	Estimated Drilling Subcontractor Cost	Estimated Sample Analytical Costs
01	5	$20,000	$5000
02	5	$20,000	$5000
03	5	$20,000	$5000
04	5	$20,000	$5000
05	40	$75,000	$40,000
06	8	$25,000	$8,000
07	7	$25,000	$7,000
08	5	$20,000	$5,000
09	0	NA	NA
10	0	NA	NA

Note: Estimated drilling subcontrator costs are based on one mobilization charge per year. Analytical costs are for final groundwater sample analyses prior to abandonment.

1.1)4 Groundwater Sampling of Monitoring Wells Prior to Plugging and Abandonment

Sampling is typically performed at the wells prior to abandonment in order to collect the last available perched groundwater. Analyitcal constituents are based on the constituents of concern for the area as prescribed by the SDFP for soils in the area; the constituents are approved by the ARWWP hydrogeology manager. This activity consists of preparing sampling plans, placing off-site laboratory contracts, scheduling of samples, collecting samples, shipping samples, and analyzing samples. The following table summarizes the activities associated with groundwater sampling prior to abandonment:

Table 9
Sampling of Wells Planned for Abandonment

Activity	Average Hours to Complete
Prepare, review and finalize project specific plan	40 hrs[1]
Schedule samples in database	4 hrs[2]
Equipment maintenance and calibration	4 hrs[2]
Collect samples	5 hrs[2]
Ship samples	8 hrs[2]
Prepare, review and finalize field documentation	10 hrs[2]
Analyze samples	Subcontract Lab (see Table 8)

[1] Work scope completed by ENSREP
[2] Work scope completed by ENSTECH

Table 8 above (Planned Number of Wells to be Abandoned and Costs) includes the estimated laboratory analytical costs per fiscal year based on the number of shallow wells

(Type 1 wells) estimated to be plugged and abandoned based on the soil excavation and building demolition schedule.

1.1)5 Maintenance of Approximately 37 DOE Real Estate Lease Agreements

Real Estate Lease Agreements with private landowners are necessary to maintain access to DOE-owned monitoring wells installed on private property. This activity consists of tracking the expiration and status of leases, coordinating with landowners in conjunction with the Real Estate group, researching the property to determine the landowner, negotiating the lease agreements with the landowner, and payment of the funds to the landowner. The current DOE-approved lease agreement cost paid to private landowners is $2000 per well for a 5-year access agreement.

Table 10
Number of Wells with Lease Payments

Fiscal Year	Number of Wells	Total Real Estate Lease Payments
01	10	$20,000
02	9	$18,000
03	12	$36,000
04	6	$18,000
05	2	$6,000
06	10	$30,000
07	9	$27,000
08	12	$36,000
09	6	$18,000
10	2	$6,000

The above scope of work pertaining to monitoring well maintenance is expected to extend beyond the end of the contract as this activity parallels the remediation and monitoring of the groundwater extraction and re-injection program.

2) Task #2 – Surface Water Analyses

2.1) Plan/Scope and Quantification – Surface Water Analyses

This account includes the laboratory analytical costs for the monthly and quarterly analysis of IEMP surface water samples collected at approximately 14 locations. Surface water samples are collected by the represented work force and their labor and management costs are covered under a separate cost account within PBS04. The management labor consist of coordination and specification for the placement of off-site laboratory contracts and interfacing with the Sample and Data Management department. Because the data is tracked, evaluated and reported by the ARWWP group, labor for these functions are not included. The subcontract analytical costs for the IEMP surface water program during

FY00 was $71,000. Because the level of monitoring is planned to be the same through the end of the contract, the FY00 cost was used to estimate the annual costs for each year.

The above scope of work will extend beyond the end of the contract, most likely at a reduced level in terms of number of sample locations, frequency and analytical constituents.

1.5.3 ECEM1 – Environmental Monitoring/Project Management

1) Task #1 – Environmental Monitoring/Project Management

1.1) Plan/Scope – Environmental Monitoring/Project Management

The scope of work for the Environmental Monitoring Project's administrative/management control account focuses primarily on preparing, maintaining and managing a core environmental field sampling team and technical "office" staff providing environmental sampling to both internal project responsibilities (environmental air monitoring program and well maintenance programs) and external sampling support services to the remediation projects. These EM services include both routine monitoring/sampling programs (primarily groundwater sampling support for the ARWWP and the site's environmental air monitoring program, as prescribed in the IEMP) as well as project-specific monitoring. The work scope includes the management and training of EM staff to support a full range of environmental sampling, data management, technical procedure development, task-specific field training, and reporting of environmental monitoring activities to the DOE and regulatory agencies. This account covers basic site worker training, specialized technical training to ensure legal defensibility of sampling and monitoring activities (e.g., sampling methods to ensure representative samples, Geoprobe® operation, instrument calibrations, etc.), staff meetings, field procedure development and training of EM staff, required management plans, personnel performance assessment and coaching, and professional development. The development, maintenance and control of technical procedures governing environmental sampling activities is a critical component of this work scope due to the data defensibility requirements placed on the collection of environmental data.

The EM management charge number is inclusive of all labor and expenses to oversee and manage the personnel and material resources to execute the internal EM scope as well as EM services to the remedial projects. The labor budget includes all work performed by the Project Development & Reports Section (includes procedure and training administration) and a portion of all other EM personnel that pertains to site-required training, technical training (e.g., field sampling technicians) and management functions. The account includes all responsibilities performed by the EM Project Manager as follows:

- Conduct safety walk-throughs, ensure full participation in safety work groups and addresses project-wide safety concerns in collaboration with the ARP safety representative.

- Promote the Safety First culture throughout the EM organization.

- Perform reviews of incidents and occurrences and ensure that corrective actions are implemented to prevent recurrence.

- Ensure that project work is performed in accordance with work plans and EM procedures by ensuring the quality and integrity of the training program and verbatim compliance with procedures.

- Interface with the DOE lead for environmental monitoring on all programmatic issues pertaining to the IEMP and data reports.

- Ensure EM milestones for IEMP documents are met and that documents are of high quality through final review process.

- Maintain EM costs within acceptable variance and identify and implement process improvements throughout the work duration.

- Provide ad hoc support to various projects for development of technical reports and plans pertaining to EM and the IEMP program.

- Lead the EM management team by providing frequent direction on work performance and guidance on staffing and budget exercises.

- Set the example for high quality technical products generated by EM.

- Interface with the remedial project directors to forecast field sampling services provided by EM to ensure that staffing requirements and skills mix will be met and completion dates achieved.

The Project Development and Reports Section, also fully budgeted under this EM management account through the end of the contract, is responsible for the following functions:

- Maintenance of EM operating and management procedures including annual or biannual revisions to approximately 30 procedures (as of FY01) and change notices as required.

- Interface and guide the subject matter experts on revisions or development of procedures to reflect the changing field work practices.

- Develop and conduct self-assessments of EM operations to verify compliance with operating procedures.

- Administer the EM training program including development of training lesson plans, on-the-job training plans and technical evaluations; streamline training and procedure program as work scope fluctuates.

- Maintain the EM Training Qualification Plan through annual review and updates.

- Maintain the EM Project Management Plan (or equivalent internal document) through annual review and updates.

- Conduct classroom training to various EM procedures for EM field and technical staff.

- Conducts site-wide training of sampling personnel for Chain-of-Custody documentation as well as revisions and site-wide review of the procedure.

- Serves as contact for external assessments of EM pertaining to training qualification.

- Maintains the EM CONOPS matrix through annual reviews and revisions as necessary.

The technical content encompassed in the EM management account includes management, planning and technical oversight of EM Project activities in the following areas:

1. Management and training of the core EM technical and administrative project team, currently in the following five sections: Air Monitoring, Soils and Miscellaneous Media, Water Monitoring (Well Maintenance activities and Surface Water Monitoring), Project Development and Reports and IEMP Reporting. The organizational structure will be re-organized and modified as necessary through site closure to most effectively implement the work.

2. Development, maintenance and control of EM project procedures and plans governing the collection of environmental samples; revise procedures as site and project requirements necessitate.

3. Developing and conducting procedure training (initial and refresher) and on-the-job training for all EM staff on sampling methodologies, field sampling and monitoring equipment and instruments. Tracking the training status of each staff member and maintaining the EM Training and Qualification Program Description (TQPD) as required by DOE Order 5480.20A and various FEMP site training procedures.

4. Develop and maintain the EM Conduct of Operations matrix and the EM Project Management Plan.

5. Participate in audits of EM programs that are conducted by Quality Assurance, DOE Conduct of Operations; perform annual management assessment.

6. Perform strategic planning of EM responsibilities as site closure progresses and EM support needs change with the remediation progress.

7. Implement lessons learned, required reading, and records management programs, review various site plans and procedures, coordinate with space management as necessary.

8. Conduct quality self assessments, management-level safety walk-throughs, and implement the ISMS principles through the organization.

9. Provide updates to and reviews of the Sitewide CERCLA Quality Assurance Manual (SCQ) related to environmental sampling methods and requirements.

10. Obtaining, coordinating and training subcontract resources to supplement the core environmental staff to meet peak sampling needs based on the schedules developed by the remediation projects.

11. Maintenance, calibration, and management of monitoring equipment and supplies, including safety supplies and vehicles necessary to conduct EM operations in support of remediation project activities; coordinating the optimal use of vehicles across the EM project for field activities; planned maintenance costs and fuel for vehicles is budgeted by the Transportation group.

12. Providing ad hoc project support in the development of project specific sampling plans, technical plans, procedure development to the remediation projects.

13. Perform all control account management and baseline management functions.

14. Management and control of the site archive soil inventory. This requires maintaining records on sample collection, storage facilities, locating and retrieving samples and arranging for disposal of excess sample media.

15. EM will provide the centralized sample collection services and budget (not analytical budget) for collecting decontamination wash-down water for all D&D activities for FY01-FY10. A complete column of sample is typically collected from the top port of a nominal 5,000 gallon tank using a column sampler to capture multi-phase liquids.

16. Budget and procure all field sampling equipment and supplies for all soil sampling support to SDFP (specialized Geoprobe® maintenance by vendor, soil sampling equipment/tools, certified sample containers, decontamination supplies, and miscellaneous field sampling supplies).

17. Provide support for the excess/disposal of sampling equipment at the completion of the project.

1.2) Quantification – EM Project Management

The EM project management account functions detailed in the scope section above is quantified in Table 11 for each fiscal year. The percent of time budgeted for a specific position is based on several factors including the level of EM field training required (using EM technical procedures and training plans), the management/supervisory responsibilities (if any) of the position, the amount of work considered to be a required service to all of EM and thus an overhead type of function (procedure, plans and training program) and the amount of time charged out to other projects. The information in Table 13 pertaining to the percent of each FTE budgeted to ECEM1 forms the basis of the manpower requirements summarized in the manpower planning sheets. The rationale for FY01 manpower is based on the charge-in and charge-out practices that were in effect as of the start of the Fluor Fernald contract in December 2000.

The following Table 12 includes the estimated indirect costs (materials, ODCs) for the EM project management account. EM is responsible for costs associated with the purchase of soil sampling equipment and supplies used to support the SDFP sampling scope and is included in Table 12. However, sampling supplies utilized for groundwater and OSDF water sampling support to the ARWWP is budgeted by that project account.

Table 13 summarizes the number of samples planned for collection by the EM staff through the first quarter of FY10 based on information provided by the remedial projects and EM's air monitoring program. The number of planned samples directly determines the number of field sampling and technical/management personnel required to be maintained (e.g., initial training program, refresher training, procedure development and maintenance, administrative/scheduling meetings, etc.) within the EM organization. Although the field sampling personnel are centralized under EM for utilization across all sampling projects, the majority of their labor is charged out to the remedial projects.

Table 11
Basis for EM Project Mgt. Account (ECEM1) Manpower Estimates for EM Staff

Resource Code (Position)	Percent Budgeted to ECEM1 Per FTE	Basis of Estimate	Fiscal Years/FTEs									
			01	02	03	04	05	06	07	08	09	10
ENVMGR (Project Manager)	100%	Overall project mgt. Of EM	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
ENVMGR (PDR Manager)	100%	Admin. of procedures, training program, project plans	1.0	~~1.0~~ 0.8	~~1.0~~ 0.8	~~1.0~~ 0.8	~~0.8~~ 0.7	0.5	0.5	0.5	0.5	0.5
ENVMGR (SMMP & WM Mgrs.)	35%	Technical proced. And site training, proced. development, admin. Meetings	0.7	~~0.7~~ 0.5	~~0.7~~ 0.4	~~0.7~~ 0.5	~~0.7~~ 0.4	~~0.7~~ 0.4	~~0.7~~ 0.5	~~0.7~~ 0.5	~~0.7~~ 0.5	~~0.7~~ 0.4
ENVMGR (AM & IEMP Mgr.)	10%	Technical proced. And site training, proced. development, admin. Meetings	0.2	0.2	0.2	0.2	0.2	~~0.2~~ 0.1	~~0.2~~ 0.1	~~0.2~~ 0.1	~~0.2~~ 0.1	~~0.2~~ 0.1
ENVMGR (Field Supervisors)	20%	Technical proced. And site training, proced. development, admin. Meetings with section mgr. and others, long term scheduling of resources	0.2	~~0.5~~ 0.3	0.2	~~0.8~~ 0.6	0.3	~~0.3~~ 0.2	~~0.3~~ 0.2	~~0.3~~ 0.2	~~0.3~~ 0.2	~~0.3~~ 0.2
ENSREP (Env. Scientists) (field and office staff)	15%	Technical proced. And site training, proced. Development, admin. meetings with section mgr. and others, work on project mgt. tasks	2.5	~~2.0~~ 1.3	~~2.8~~ 2.0	~~3.8~~ 2.8	~~2.2~~ 2.1	1.8	1.8	1.8	1.8	1.8
ENSTEC (Field Env. Sci. Technicians)	10%*	Technical proced. And site training, admin. meetings, work on project mgt. tasks	2.0	~~1.2~~ 0.9	~~2.3~~ 2.7	~~4.5~~ 5.1	2.0	~~1.8~~ 2.2	~~1.8~~ 2.0	~~1.8~~ 2.0	1.8	1.8
ENSTEC (Office Env. Sci. Technician)	100%	Procedure development, training material development, project plan revisions	1.0	~~1.0~~ 0.8	~~1.0~~ 0.8	~~1.0~~ 0.8	0.7	0.7	0.7	0.7	0.7	0.7
INRREP (Document/RecordsMgr.)	30%	Supv., formatting/production work on EM admin. Documents and documents not budgeted by projects; admin. Meetings	0	~~0.6~~ 0.5	~~0.6~~ 0.5	~~0.6~~ 0.5	~~0.6~~ 0.5	~~0.6~~ 0.4	~~0.4~~ 0.3	~~0.3~~ 0.2	~~0.3~~ 0.2	~~0.3~~ 0.2
CLERK (admin. assistant)	100%	Department secretarial services to PM and all of EM staff	1.0	~~1.0~~ 0.6	~~1.0~~ 0.6	~~1.0~~ 0.6	~~1.0~~ 0.6	~~1.0~~ 0.6	~~1.0~~ 0.6	~~1.0~~ 0.6	~~1.0~~ 0.6	~~1.0~~ 0.6
CLERK (document clerk)	30%	Formatting/production work on EM admin. Documents and documents not budgeted by projects	0.3	~~0.3~~ 0.6	~~0.3~~ 0.6	~~0.3~~ 0.5	0.3	0.3	0.2	0.2	0.1	0.1
INRREP (Records Specialist – Projectized)	0%	None (budgeted by Records Mgt. Department)	0	0	0	0	0	0	0	0	0	0
		TOTAL	9.9	~~9.5~~ 7.5	~~11.1~~ 9.8	~~14.9~~ 13.4	~~9.8~~ 8.8	~~8.9~~ 8.2	~~8.6~~ 7.9	~~8.4~~ 7.8	~~8.4~~ 7.5	~~8.4~~ 7.4

*Note: Significant increase in FY04 for ENSTEC, ENSREP and ENSMGR due to soil sampling (SDFP) activities resuming and EM responsibility for filling positions and training of new env. technicians and field env. scientists.

Table 12
Indirect Costs for EM Project Management Account (ECEM1)

Indirect Costs	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
Soil Sampling Material Costs in Support of SDFP: - Geoprobe equipment/supplies - Geoprobe hydraulic overhaul (3) - Sample containers - Photoionization detectors (7) - Manual sampling tools - Misc. supplies	N/A	$0	$937	$39,842	$21,994	$7,787	$9,925	$8,154	$7,698	$0
General Eqpt. And Supplies - Specialty winter clothing - Computer Equipment Upgrades - Office and Field supplies	$14,000	$14,000	$14,000	$14,000	$14,000	$14,000	$14,000	$14,000	$14,000	$0
ODCs - Professional registrations - Technical course/training enrollment fees	N/A	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$1,500	$0
ODC (Travel) - Travel cost for EM technical discipline training and seminars (airfare, expenses, car rental, hotel)		$6,600	$6,600	$6,600	$6,600	$6,600	$6,600	$6,600	$6,600	$0
TOTAL	$14,000	$22,100	$23,037	$61,942	$44,094	$29,887	$32,025	$30,254	$29,798	$0

Table 13
Number of Samples to be Collected by EM Staff through FY10

Project/Program	Budget Source [1]	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	Totals
ARP - Misc. GW	ARWWP	761	414	345	313	404	300	331	297	204	0	**3,369**
OSDF – Water	ARWWP	712	702	956	1,484	1,712	2,067	2,168	1,783	1,698	0	**13,282**
IEMP GW	ARWWP	4,541	4,232	4,262	4,232	4,232	5,091	4,752	4,752	4,782	1,184	**42,060**
Soils Project (SDFP)	SDFP	0	0	30	8,906	2,733	1,969	5,314	4,139	4,427	850	**28,368**
D&D Wastewater	EM	12	12	12	12	12	12	12	4	4	0	**96**
IEMP – Air Monitoring	EM	1,136	1,136	1,166	1,136	1,136	646	616	580	610	149	**8,311**
	Total	**7,162**	**6,496**	**6,771**	**16,083**	**10,229**	**10,085**	**13,193**	**11,555**	**11,725**	**2,187**	**95,486**

[1] The labor costs for planning of field sampling activities, sample collection and field documentation are budgeted by ARWWP and SDFP except for initial and continuing training and administration (meetings, procedure development, etc.) of field personnel which is budgeted under the EM Project Management account (ECEM1); see Table 12.

SECTION 6

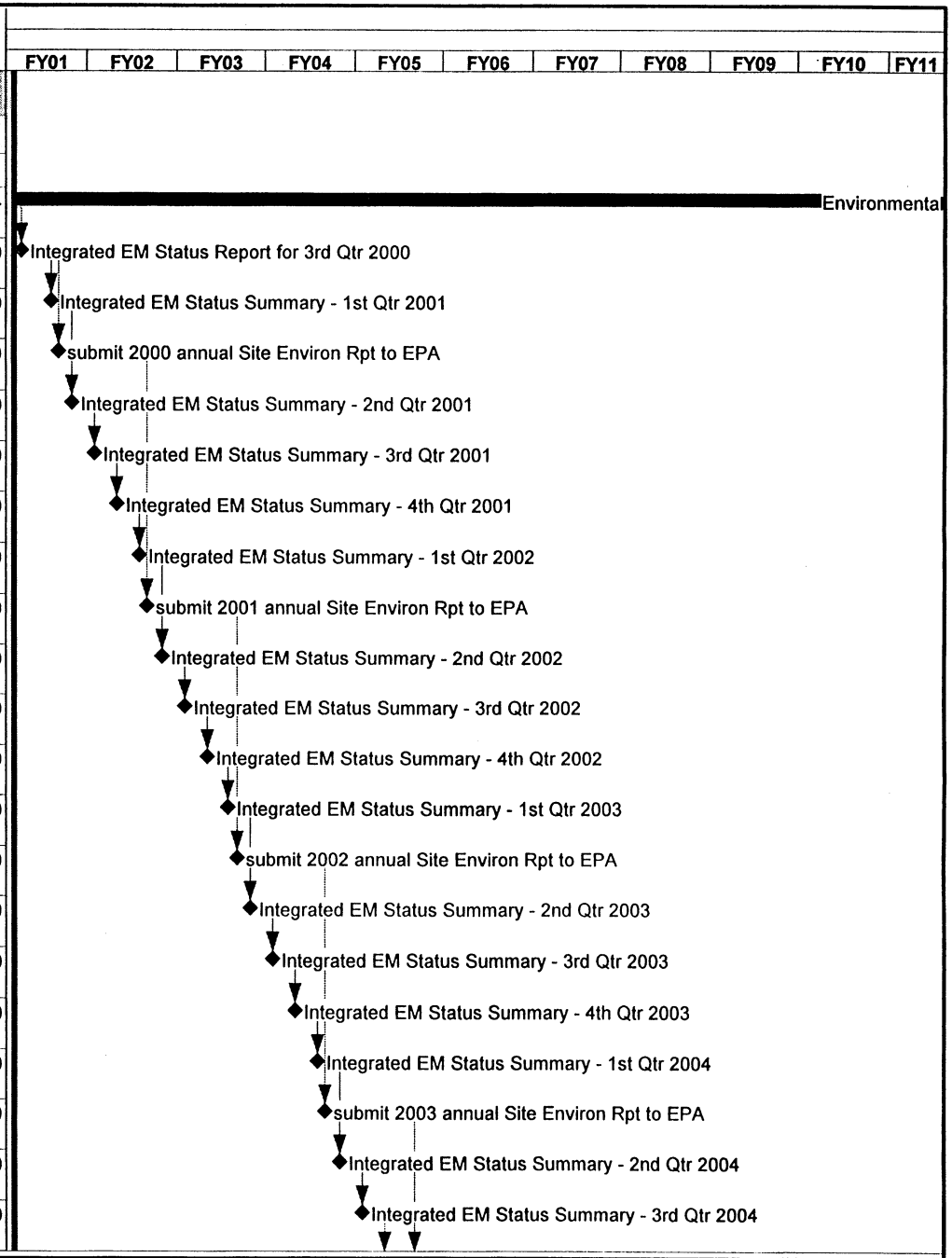
2.0 SCHEDULE

E PBS 04 - AQUIFER RESTORATION

1.1.E.C ENVIRONMENTAL MONITORING

ECEM3 Air Monitoring & IEMP Reporting

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
ECCEM30000	Environmental Monitoring	01DEC00	27DEC09	3,314
ECCEM3M103	Integrated EM Status Report for 3rd Qtr 2000		29DEC00	0
ECCEM3M111	Integrated EM Status Summary - 1st Qtr 2001		30APR01	0
ECCEM3M000	submit 2000 annual Site Environ Rpt to EPA		01JUN01	0
ECCEM3M112	Integrated EM Status Summary - 2nd Qtr 2001		30JUL01	0
ECCEM3M113	Integrated EM Status Summary - 3rd Qtr 2001		30OCT01	0
ECCEM3M114	Integrated EM Status Summary - 4th Qtr 2001		30JAN02	0
ECCEM3M121	Integrated EM Status Summary - 1st Qtr 2002		30APR02	0
ECCEM3M001	submit 2001 annual Site Environ Rpt to EPA		01JUN02	0
ECCEM3M122	Integrated EM Status Summary - 2nd Qtr 2002		30JUL02	0
ECCEM3M123	Integrated EM Status Summary - 3rd Qtr 2002		30OCT02	0
ECCEM3M124	Integrated EM Status Summary - 4th Qtr 2002		30JAN03	0
ECCEM3M131	Integrated EM Status Summary - 1st Qtr 2003		30APR03	0
ECCEM3M002	submit 2002 annual Site Environ Rpt to EPA		01JUN03	0
ECCEM3M132	Integrated EM Status Summary - 2nd Qtr 2003		30JUL03	0
ECCEM3M133	Integrated EM Status Summary - 3rd Qtr 2003		30OCT03	0
ECCEM3M134	Integrated EM Status Summary - 4th Qtr 2003		30JAN04	0
ECCEM3M141	Integrated EM Status Summary - 1st Qtr 2004		30APR04	0
ECCEM3M003	submit 2003 annual Site Environ Rpt to EPA		01JUN04	0
ECCEM3M142	Integrated EM Status Summary - 2nd Qtr 2004		30JUL04	0
ECCEM3M143	Integrated EM Status Summary - 3rd Qtr 2004		30OCT04	0



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Start Date	01DEC00
Finish Date	27DEC09
Data Date	01DEC00
Run Date	05SEP01 15:11

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AQUIFER RESTORATION

1.1.E.C ENVIRONMENTAL MONITORING

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved

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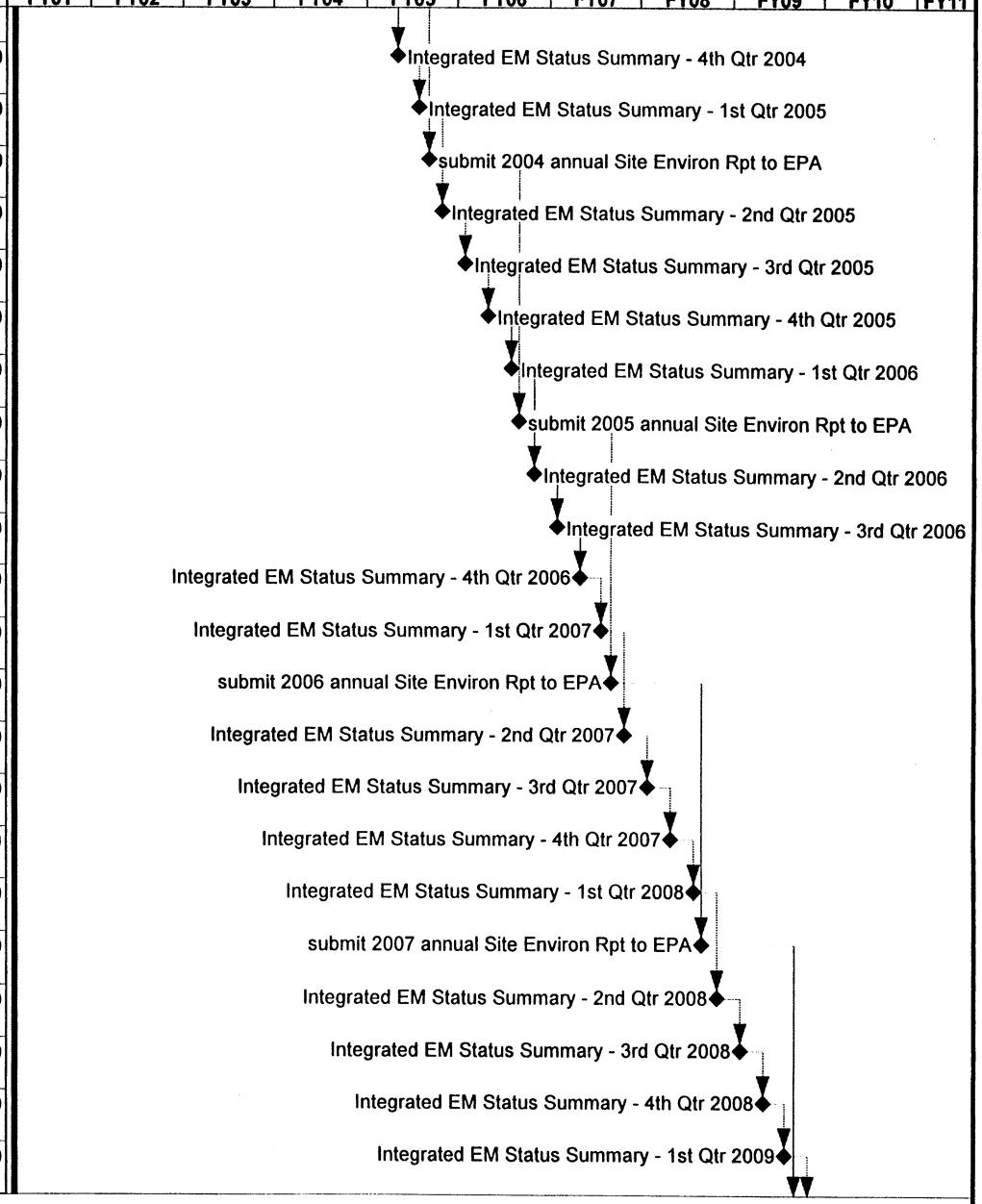
Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
ECEM3 Air Monitoring & IEMP Reporting				
ECCEM3M144	Integrated EM Status Summary - 4th Qtr 2004		30JAN05	0
ECCEM3M151	Integrated EM Status Summary - 1st Qtr 2005		30APR05	0
ECCEM3M004	submit 2004 annual Site Environ Rpt to EPA		01JUN05	0
ECCEM3M152	Integrated EM Status Summary - 2nd Qtr 2005		30JUL05	0
ECCEM3M153	Integrated EM Status Summary - 3rd Qtr 2005		30OCT05	0
ECCEM3M154	Integrated EM Status Summary - 4th Qtr 2005		30JAN06	0
ECCEM3M161	Integrated EM Status Summary - 1st Qtr 2006		30APR06	0
ECCEM3M005	submit 2005 annual Site Environ Rpt to EPA		01JUN06	0
ECCEM3M162	Integrated EM Status Summary - 2nd Qtr 2006		30JUL06	0
ECCEM3M163	Integrated EM Status Summary - 3rd Qtr 2006		30OCT06	0
ECCEM3M164	Integrated EM Status Summary - 4th Qtr 2006		30JAN07	0
ECCEM3M171	Integrated EM Status Summary - 1st Qtr 2007		30APR07	0
ECCEM3M006	submit 2006 annual Site Environ Rpt to EPA		01JUN07	0
ECCEM3M172	Integrated EM Status Summary - 2nd Qtr 2007		30JUL07	0
ECCEM3M173	Integrated EM Status Summary - 3rd Qtr 2007		30OCT07	0
ECCEM3M174	Integrated EM Status Summary - 4th Qtr 2007		30JAN08	0
ECCEM3M181	Integrated EM Status Summary - 1st Qtr 2008		30APR08	0
ECCEM3M007	submit 2007 annual Site Environ Rpt to EPA		01JUN08	0
ECCEM3M182	Integrated EM Status Summary - 2nd Qtr 2008		30JUL08	0
ECCEM3M183	Integrated EM Status Summary - 3rd Qtr 2008		30OCT08	0
ECCEM3M184	Integrated EM Status Summary - 4th Qtr 2008		30JAN09	0
ECCEM3M191	Integrated EM Status Summary - 1st Qtr 2009		30APR09	0



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Start Date	01DEC00
Finish Date	27DEC09
Data Date	01DEC00
Run Date	05SEP01 15:11

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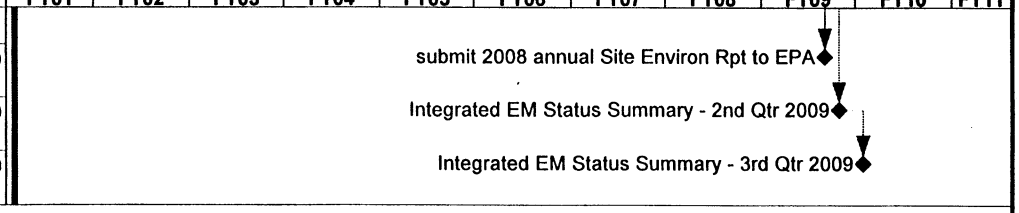
AQUIFER RESTORATION

1.1.E.C ENVIRONMENTAL MONITORING

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
ECEM3 Air Monitoring & IEMP Reporting				
ECCEM3M008	submit 2008 annual Site Environ Rpt to EPA		01JUN09	0
ECCEM3M192	Integrated EM Status Summary - 2nd Qtr 2009		30JUL09	0
ECCEM3M193	Integrated EM Status Summary - 3rd Qtr 2009		30OCT09	0



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Start Date	01DEC00
Finish Date	27DEC09
Data Date	01DEC00
Run Date	05SEP01 15:11

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AQUIFER RESTORATION

1.1.E.C ENVIRONMENTAL MONITORING

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved

SECTION 6

3.0 MANPOWER PLANS

Manpower Planning Sheet (CR2)

MPS # 1EC01 ENVIRONMENTAL MONITORING MANAGEMENT

DRIVERS	START DATE	END DATE	FY 2001 Q1	FY 2001 Q2	FY 2001 Q3	FY 2001 Q4	FY 2002 Q1	FY 2002 Q2	FY 2002 Q3	FY 2002 Q4	FY 2003 Q1	FY 2003 Q2	FY 2003 Q3	FY 2003 Q4	FY 2004 Q1	FY 2004 Q2	FY 2004 Q3	FY 2004 Q4	FY 2005 Q1	FY 2005 Q2	FY 2005 Q3	FY 2005 Q4	FY 2006 Q1	FY 2006 Q2	FY 2006 Q3	FY 2006 Q4
201 D&D Summary	10/02/2000	03/30/2007	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
301 OSDF Summary Schedule	04/01/2004	12/23/2009															xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
502 WASTE PIT SHIP/DISPOSAL OPERATIONS	10/02/2000	08/01/2005	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xx				
602 Area 3B Excavation	10/03/2005	03/31/2008																					xxx	xxx	xxx	xxx
604 Area 4A: Excavation	04/01/2004	09/30/2005															xxx	xxx	xxx	xxx	xxx	xxx				
606 Area 4B Excavation	10/03/2005	03/31/2008																					xxx	xxx	xxx	xxx
611 Area 6: Excavation	10/02/2006	09/28/2007																								
616 Area 7, Sector 1 and 4 Excavation	01/02/2008	09/30/2008																								
629 Area 3A: Excavation	04/01/2004	06/30/2005															xxx	xxx	xxx	xxx	xxx					
632 Area 5: Excavation	10/03/2005	03/31/2008																					xxx	xxx	xxx	xxx

			TOT	FY 2001 Q1	FY 2001 Q2	FY 2001 Q3	FY 2001 Q4	FY 2002 Q1	FY 2002 Q2	FY 2002 Q3	FY 2002 Q4	FY 2003 Q1	FY 2003 Q2	FY 2003 Q3	FY 2003 Q4	FY 2004 Q1	FY 2004 Q2	FY 2004 Q3	FY 2004 Q4	FY 2005 Q1	FY 2005 Q2	FY 2005 Q3	FY 2005 Q4	FY 2006 Q1	FY 2006 Q2	FY 2006 Q3	FY 2006 Q4
	Environmental	Environmental Scientist Mgr.	104.10	2.8	2.8	2.8	3.2	2.6	2.6	2.6	2.6	2.6	2.6	2.6	3.8	3.8	3.8	3.8	3	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7
	Environmental	Environmental Scientist Rep.	74.20	2.9	2.2	2.3	2.4	1.5	1.3	1.3	1.3	1.3	1.3	1.3	5	3	2.8	2.7	2.7	2.7	2	1.8	1.8	1.8	1.8	1.8	1.8
	Environmental	Environmental Scientist Tech.	91.00	1.2	1.9	2.5	2.5	2	1.6	1.6	1.6	1.6	1.6	1.6	6	10	3.5	3.5	3.5	2	2	2	2	2.2	2.2	2.2	2
	Administration	Secretaries	22.80	0.1	0.9	1	1	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
	Administration	Department Administrator	13.50	1.3	0	0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4
	Environmental Safety & H	Safety Tech.	3.50	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Information Management	Information Records Rep.	0.30	0	0	0.1	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Administration	Clerks	11.10	0	0	0	0	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	QA/QC	QA Manager	0.20	0	0.1	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Project Controls	Cost Analyst	0.30	0.1	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0
	Craft Labor	Industrial Mechanic	0.50	0.2	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
archive disp.	Waste Management	Waste Engineer	0.90	0	0	0	0.1	0.1	0	0	0	0.1	0	0	0	0.1	0	0	0	0.1	0	0	0	0.1	0	0	0
archive storage	Craft Labor	Carpenter	0.80	0	0	0	0.1	0	0	0	0.1	0	0	0	0.1	0	0	0	0	0	0	0	0.1	0	0	0	0.1
archive storage	Craft Labor	Millwright	0.60	0	0	0	0.1	0	0	0	0.1	0	0	0	0.1	0	0	0	0.1	0	0	0	0	0	0	0	0
archive storage	Environmental Safety & H	Rad Tech	0.40	0	0	0	0.1	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Sheet Totals:	324.20	8.60	8.00	9.00	10.00	8.00	7.30	7.40	7.50	7.40	7.30	7.30	16.80	18.70	11.90	11.50	10.80	9.20	8.30	8.10	8.20	8.20	8.10	8.10	8.00

Manpower Planning Sheet (CR2)

MPS # 1EC01 ENVIRONMENTAL MONITORING MANAGEMENT

DRIVERS	START DATE	END DATE	FY 2007 Q1	FY 2007 Q2	FY 2007 Q3	FY 2007 Q4	FY 2008 Q1	FY 2008 Q2	FY 2008 Q3	FY 2008 Q4	FY 2009 Q1	FY 2009 Q2	FY 2009 Q3	FY 2009 Q4	FY 2010 Q1	FY 2010 Q2	FY 2010 Q3	FY 2010 Q4	FY 2011 Q1	FY 2011 Q2	FY 2011 Q3	FY 2011 Q4
201 D&D Summary	10/02/2000	03/30/2007	xxx	xxx																		
301 OSDF Summary Schedule	04/01/2004	12/23/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
502 WASTE PIT SHIP/DISPOSAL OPERATION	10/02/2000	08/01/2005																				
602 Area 3B Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
604 Area 4A: Excavation	04/01/2004	09/30/2005																				
606 Area 4B Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
611 Area 6: Excavation	10/02/2006	09/28/2007	xxx	xxx	xxx	xxx																
616 Area 7, Sector 1 and 4 Excavation	01/02/2008	09/30/2008						xxx	xxx	xxx												
629 Area 3A: Excavation	04/01/2004	06/30/2005																				
632 Area 5: Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
Environmental	Environmental Scientist Mgr.		2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.5	2.5	2.5	2.5	2.5	0	0	0	0	0	0	0
Environmental	Environmental Scientist Rep.		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0	0	0	0	0	0	0
Environmental	Environmental Scientist Tech.		2.2	2.2	2.2	2.2	2.2	2.2	2	2.2	2.2	2.2	2.2	2.2	2	0	0	0	0	0	0	0
Administration	Secretaries		0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0	0	0	0	0	0	0
Administration	Department Administrator		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0	0	0	0	0	0	0
Environmental Safety & Health	Safety Tech.		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0
Information Management	Information Records Rep.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Clerks		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0
QA/QC	QA Manager		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Controls	Cost Analyst		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Craft Labor	Industrial Mechanic		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Waste Management	Waste Engineer		0.1	0	0	0	0.1	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0
Craft Labor	Carpenter		0	0	0	0.1	0	0	0	0.1	0	0	0	0.1	0	0	0	0	0	0	0	0
Craft Labor	Millwright		0	0	0	0	0	0	0	0.1	0	0	0	0.1	0	0	0	0	0	0	0	0
Environmental Safety & Health	Rad Tech		0	0	0	0	0	0	0.1	0	0	0	0.1	0	0	0	0	0	0	0	0	0
		Sheet Totals:	7.90	7.80	7.80	7.90	7.90	7.80	7.70	8.00	7.60	7.50	7.60	7.70	7.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Manpower Planning Sheet (CR2)

MPS # 1EC02 WELL MAINTENANCE & SURFACE WATER MONIT

DRIVERS	START DATE	END DATE	FY 2001 Q1	FY 2001 Q2	FY 2001 Q3	FY 2001 Q4	FY 2002 Q1	FY 2002 Q2	FY 2002 Q3	FY 2002 Q4	FY 2003 Q1	FY 2003 Q2	FY 2003 Q3	FY 2003 Q4	FY 2004 Q1	FY 2004 Q2	FY 2004 Q3	FY 2004 Q4	FY 2005 Q1	FY 2005 Q2	FY 2005 Q3	FY 2005 Q4	FY 2006 Q1	FY 2006 Q2	FY 2006 Q3	FY 2006 Q4
201 D&D Summary	10/02/2000	03/30/2007	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
301 OSDF Summary Schedule	04/01/2004	12/23/2009															xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
502 WASTE PIT SHIP/DISPOSAL OPERATIONS	10/02/2000	08/01/2005	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xx				
602 Area 3B Excavation	10/03/2005	03/31/2008																					xxx	xxx	xxx	xxx
604 Area 4A: Excavation	04/01/2004	09/30/2005															xxx	xxx	xxx	xxx	xxx	xxx				
606 Area 4B Excavation	10/03/2005	03/31/2008																					xxx	xxx	xxx	xxx
611 Area 6: Excavation	10/02/2006	09/28/2007																								
616 Area 7, Sector 1 and 4 Excavation	01/02/2008	09/30/2008																								
629 Area 3A: Excavation	04/01/2004	06/30/2005															xxx	xxx	xxx	xxx	xxx					
632 Area 5: Excavation	10/03/2005	03/31/2008																					xxx	xxx	xxx	xxx

			TOT	FY 2001 Q1	FY 2001 Q2	FY 2001 Q3	FY 2001 Q4	FY 2002 Q1	FY 2002 Q2	FY 2002 Q3	FY 2002 Q4	FY 2003 Q1	FY 2003 Q2	FY 2003 Q3	FY 2003 Q4	FY 2004 Q1	FY 2004 Q2	FY 2004 Q3	FY 2004 Q4	FY 2005 Q1	FY 2005 Q2	FY 2005 Q3	FY 2005 Q4	FY 2006 Q1	FY 2006 Q2	FY 2006 Q3	FY 2006 Q4
	Environmental	Environmental Scientist Mgr.	11.60	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Environmental	Environmental Scientist Rep.	17.00	1.4	0.6	1	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.6	0.6	0.6	0.6	0.4	0.4	0.4	0.4
	Environmental	Environmental Scientist Tech.	10.80	0.3	0.9	0.7	0.7	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
b. collier	Administration	Department Administrator	0.80	0.2	0.2	0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
wao	Waste Management	Waste Engineer	1.30	0.5	0	0	0	0	0	0.1	0	0	0	0.1	0	0	0	0.1	0	0	0	0.1	0	0	0	0.1	0
mowers	General Labor	General Laborer	0.90	0	0	0.1	0	0	0	0.1	0	0	0	0.1	0	0	0	0.1	0	0	0	0.1	0	0	0	0.1	0
		Sheet Totals:	42.40	2.90	2.10	2.40	1.60	0.90	0.90	1.10	0.90	0.90	0.90	1.10	0.90	0.90	0.90	1.10	0.90	1.20	1.20	1.40	1.20	1.00	1.00	1.20	1.00

Manpower Planning Sheet (CR2)

MPS # 1EC02 WELL MAINTENANCE & SURFACE WATER MONIT

DRIVERS	START DATE	END DATE	FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
201 D&D Summary	10/02/2000	03/30/2007	xxx	xxx																		
301 OSDF Summary Schedule	04/01/2004	12/23/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
502 WASTE PIT SHIP/DISPOSAL OPERATION	10/02/2000	08/01/2005																				
602 Area 3B Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
604 Area 4A: Excavation	04/01/2004	09/30/2005																				
606 Area 4B Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
611 Area 6: Excavation	10/02/2006	09/28/2007	xxx	xxx	xxx	xxx																
616 Area 7, Sector 1 and 4 Excavation	01/02/2008	09/30/2008						xxx	xxx	xxx												
629 Area 3A: Excavation	04/01/2004	06/30/2005																				
632 Area 5: Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
Environmental	Environmental Scientist Mgr.		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0	0	0	0	0	0	0
Environmental	Environmental Scientist Rep.		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.5	0	0	0	0	0	0	0
Environmental	Environmental Scientist Tech.		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0	0	0	0	0	0	0
Administration	Department Administrator		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Waste Management	Waste Engineer		0	0	0.1	0	0	0	0.1	0	0	0	0.1	0	0	0	0	0	0	0	0	0
General Labor	General Laborer		0	0	0.1	0	0	0	0.1	0	0	0	0.1	0	0	0	0	0	0	0	0	0
		Sheet Totals:	1.00	1.00	1.20	1.00	1.00	1.00	1.20	1.00	0.80	0.80	1.00	0.80	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Manpower Planning Sheet (CR2)

MPS # 1EC03 AIR MONITORING & IEMP REPORTING

DRIVERS	START DATE	END DATE	TOT	FY 2001 Q1	FY 2001 Q2	FY 2001 Q3	FY 2001 Q4	FY 2002 Q1	FY 2002 Q2	FY 2002 Q3	FY 2002 Q4	FY 2003 Q1	FY 2003 Q2	FY 2003 Q3	FY 2003 Q4	FY 2004 Q1	FY 2004 Q2	FY 2004 Q3	FY 2004 Q4	FY 2005 Q1	FY 2005 Q2	FY 2005 Q3	FY 2005 Q4	FY 2006 Q1	FY 2006 Q2	FY 2006 Q3	FY 2006 Q4
201 D&D Summary	10/02/2000	03/30/2007		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
301 OSDF Summary Schedule	04/01/2004	12/23/2009																xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
411 AWWT Operations	10/02/2000	12/31/2009		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
502 WASTE PIT SHIP/DISPOSAL OPERATIONS	10/02/2000	08/01/2005		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xx				
602 Area 3B Excavation	10/03/2005	03/31/2008																						xxx	xxx	xxx	xxx
604 Area 4A: Excavation	04/01/2004	09/30/2005																xxx	xxx	xxx	xxx	xxx	xxx				
606 Area 4B Excavation	10/03/2005	03/31/2008																						xxx	xxx	xxx	xxx
611 Area 6: Excavation	10/02/2006	09/28/2007																									
616 Area 7, Sector 1 and 4 Excavation	01/02/2008	09/30/2008																									
629 Area 3A: Excavation	04/01/2004	06/30/2005																xxx	xxx	xxx	xxx	xxx					
632 Area 5: Excavation	10/03/2005	03/31/2008																						xxx	xxx	xxx	xxx
Environmental	Environmental Scientist Mgr.		75.40	3	3	3	3	2.8	2.8	2.8	2.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Environmental	Environmental Protection Rep.		4.00	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
iemp Environmental	Environmental Scientist Rep.		111.90	3.7	2.7	3.7	3.4	2.7	2.7	2.6	2.5	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.2	3.1	3.1
Environmental	Environmental Scientist Tech.		47.90	2.1	2.9	1.8	1.8	2	1.8	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Lab	Lab Manager		3.90	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Lab	Chemist		37.30	0.8	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	0.8	0.8	0.8	0.8
Information Management	Information Records Rep.		0.50	0	0.3	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Clerks		12.20	0.7	0.6	0.5	0.2	0.3	0.5	0.2	0.2	0.5	0.5	0.2	0.2	0.3	0.5	0.2	0.2	0.5	0.5	0.2	0.2	0.3	0.5	0.2	0.2
F.J. / D.D./etc Project Management	Tech/Program Support Mgr.		4.80	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1
Information Management	Information Systems Rep.		0.60	0.1	0.1	0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Human Resources & Publ	Public Affairs Rep.		0.40	0	0.2	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
maint. General Labor	General Laborer		3.80	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Craft Labor	Electrician		0.30	0	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Department Administrator		7.90	1	0.4	0.4	0.4	0.1	0.3	0.2	0.1	0.1	0.3	0.2	0.1	0.1	0.3	0.2	0.1	0.1	0.3	0.2	0.1	0.1	0.3	0.2	0.1
Lab	Lab Tech.		5.60	0	0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
Lab	Lab Tech.		0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Sheet Totals:	316.50	12.90	13.10	12.70	12.10	9.60	9.90	8.80	8.50	8.80	9.10	8.60	8.30	8.40	8.90	8.40	8.30	8.60	8.90	8.40	8.30	8.00	8.40	7.80	7.60

Manpower Planning Sheet (CR2)

MPS # 1EC03 AIR MONITORING & IEMP REPORTING

DRIVERS	START DATE	END DATE	FY 2007 Q1	FY 2007 Q2	FY 2007 Q3	FY 2007 Q4	FY 2008 Q1	FY 2008 Q2	FY 2008 Q3	FY 2008 Q4	FY 2009 Q1	FY 2009 Q2	FY 2009 Q3	FY 2009 Q4	FY 2010 Q1	FY 2010 Q2	FY 2010 Q3	FY 2010 Q4	FY 2011 Q1	FY 2011 Q2	FY 2011 Q3	FY 2011 Q4
201 D&D Summary	10/02/2000	03/30/2007	xxx	xxx																		
301 OSDF Summary Schedule	04/01/2004	12/23/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
502 WASTE PIT SHIP/DISPOSAL OPERATION	10/02/2000	08/01/2005																				
602 Area 3B Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
604 Area 4A: Excavation	04/01/2004	09/30/2005																				
606 Area 4B Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
611 Area 6: Excavation	10/02/2006	09/28/2007	xxx	xxx	xxx	xxx																
616 Area 7, Sector 1 and 4 Excavation	01/02/2008	09/30/2008						xxx	xxx	xxx												
629 Area 3A: Excavation	04/01/2004	06/30/2005																				
632 Area 5: Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
Environmental	Environmental Scientist Mgr.		1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	0	0	0	0	0	0	0
Environmental	Environmental Protection Rep.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental	Environmental Scientist Rep.		3.1	3.1	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.4	2	2	0	0	0	0	0	0	0
Environmental	Environmental Scientist Tech.		1.2	1.2	1.2	1.2	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Lab	Lab Manager		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0
Lab	Chemist		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0	0	0	0	0	0	0
Information Management	Information Records Rep.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Clerks		0.5	0.5	0.2	0.2	0.3	0.5	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0	0	0	0	0	0	0
Project Management	Tech/Program Support Mgr.		0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0
Information Management	Information Systems Rep.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Human Resources & Public Affairs	Public Affairs Rep.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General Labor	General Laborer		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0
Craft Labor	Electrician		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Department Administrator		0.1	0.3	0.2	0.1	0.1	0.3	0.2	0.1	0.1	0.3	0.2	0.1	0.1	0	0	0	0	0	0	0
Lab	Lab Tech.		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0
Lab	Lab Tech.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Sheet Totals:	7.90	8.20	7.40	7.30	7.20	7.70	7.20	7.10	7.30	7.40	6.80	6.30	6.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SECTION 6

4.0 ESTMATE

ECEM1

ENVIRONMENTAL MONITORING MANAGEMENT

09/06/2001
12:51 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: ECEM
CHARGE NO: ECEM1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: MIKE FRANK
FISCAL YEAR: 2001-2010

Resource: CLERKS — CLERKS — EOC: LABOR
Res Dept: 952 — Overtime: — Class: SAL

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	0	1,048.20	1,048.20	783.3	524.1	524.1	349.4	349.4	174.7	42.1
Cum Hours:	0	1,048.20	2,096.40	2,879.70	3,403.80	3,927.90	4,277.30	4,626.70	4,801.40	4,843.50
Yr Total Cost:	0	26,358	27,919	22,093	15,659	16,730	12,091	12,744	7,081	1,759
Cum Total Cost:	0	26,358	54,277	76,370	92,029	108,758	120,849	133,593	140,674	142,433

Resource: CRPNTR — CARPENTER — EOC: LABOR
Res Dept: — Overtime: — Class: HOU

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	44.1	44.2	44.1	0	47.7	47.6	47.6	44.1	44.1	0
Cum Hours:	44.1	88.3	132.4	132.4	180.1	227.7	275.3	319.4	363.5	363.5
Yr Total Cost:	1,366	1,441	1,523	0	1,847	1,970	2,135	2,085	2,317	0
Cum Total Cost:	1,366	2,807	4,329	4,329	6,177	8,147	10,282	12,367	14,684	14,684

Resource: CSTANL — COST ANALYST — EOC: LABOR
Res Dept: — Overtime: — Class: SAL

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	56.8	0	0	0	38.7	0	0	0	0	0
Cum Hours:	56.8	56.8	56.8	56.8	95.5	95.5	95.5	95.5	95.5	95.5
Yr Total Cost:	2,210	0	0	0	1,883	0	0	0	0	0
Cum Total Cost:	2,210	2,210	2,210	2,210	4,092	4,092	4,092	4,092	4,092	4,092

Resource: DEPADM — DEPT ADMINISTRATOR — EOC: LABOR
Res Dept: — Overtime: — Class: SAL

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	163.8	873.5	873.5	873.5	873.5	698.8	349.4	349.4	349.4	77.4
Cum Hours:	163.8	1,037.30	1,910.80	2,784.30	3,657.80	4,356.60	4,706.00	5,055.40	5,404.80	5,482.20
Yr Total Cost:	5,194	29,155	30,881	32,702	34,640	29,608	16,048	16,915	18,798	4,292
Cum Total Cost:	5,194	34,349	65,230	97,932	132,572	162,180	178,228	195,144	213,941	218,234

INCLUDES ESCALATION COSTS

09/06/2001
12:51 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: ECEM
CHARGE NO: ECEM1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: MIKE FRANK
FISCAL YEAR: 2001-2010

Resource: ENSMGR — ENVIR SCIENTIST MGR — EOC: LABOR
Res Dept: — Overtime: — Class: SAL

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	4,242.00	4,542.20	5,071.40	6,285.80	4,891.60	4,716.90	4,716.90	4,716.90	4,367.50	967.5
Cum Hours:	4,242.00	8,784.20	13,855.60	20,141.40	25,033.00	29,749.90	34,466.80	39,183.70	43,551.20	44,518.70
Yr Total Cost:	223,723	252,151	298,195	391,393	322,637	332,392	360,339	379,801	390,801	89,239
Cum Total Cost:	223,723	475,875	774,070	1,165,463	1,488,101	1,820,492	2,180,831	2,560,632	2,951,433	3,040,673

Resource: ENSREP — ENVIR SCIENCE REP — EOC: LABOR
Res Dept: — Overtime: — Class: SAL

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	3,415.00	2,355.30	3,902.80	4,887.50	3,579.90	3,144.60	3,144.60	3,144.60	3,144.60	757.8
Cum Hours:	3,415.00	5,770.30	9,673.10	14,560.60	18,140.50	21,285.10	24,429.70	27,574.30	30,718.90	31,476.70
Yr Total Cost:	143,293	104,025	182,576	242,122	187,858	176,301	191,124	201,447	223,864	55,610
Cum Total Cost:	143,293	247,318	429,895	672,017	859,875	1,036,176	1,227,300	1,428,747	1,652,610	1,708,221

Resource: ENSTEC — ENVIR SCIENTIST TECH — EOC: LABOR
Res Dept: — Overtime: — Class: SAL

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	3,200.40	2,963.60	4,735.60	8,851.00	3,494.00	3,748.20	3,843.40	3,753.80	3,843.40	842
Cum Hours:	3,200.40	6,164.00	10,899.60	19,750.60	23,244.60	26,992.80	30,836.20	34,590.00	38,433.40	39,275.40
Yr Total Cost:	90,635	88,342	149,521	295,936	123,748	141,830	157,661	162,302	184,668	41,703
Cum Total Cost:	90,635	178,977	328,498	624,434	748,183	890,013	1,047,674	1,209,976	1,394,644	1,436,347

Resource: INDMEC — INDUSTRIAL MECHANIC — EOC: LABOR
Res Dept: — Overtime: — Class: HOU

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	157.8	0	0	0	0	0	0	0	0	0
Cum Hours:	157.8	157.8	157.8	157.8	157.8	157.8	157.8	157.8	157.8	157.8
Yr Total Cost:	4,964	0	0	0	0	0	0	0	0	0
Cum Total Cost:	4,964	4,964	4,964	4,964	4,964	4,964	4,964	4,964	4,964	4,964

INCLUDES ESCALATION COSTS

09/06/2001
12:51 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: ECEM
CHARGE NO: ECEM1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: MIKE FRANK
FISCAL YEAR: 2001-2010

Resource: MAT300 MATERIAL OBJCLASS300 EOC: MATERIAL
Res Dept: Overtime: Class: MAT

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Units:	14,906.00	18,024.00	32,728.00	61,140.00	61,032.00	39,012.00	25,368.00	23,496.00	22,992.00	4,771.00
Cum Units:	14,906.00	32,930.00	65,658.00	126,798.00	187,830.00	226,842.00	252,210.00	275,706.00	298,698.00	303,469.00
Yr Total Cost:	14,906	18,511	34,519	66,292	68,028	44,745	29,939	28,534	28,732	6,135
Cum Total Cost:	14,906	33,417	67,936	134,228	202,255	247,000	276,939	305,473	334,205	340,340

Resource: MILWRT MILLWRIGHT EOC: LABOR
Res Dept: Overtime: Class: HOU

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	44.1	44.2	44.1	44.1	0	0	0	44.1	44.1	0
Cum Hours:	44.1	88.3	132.4	176.5	176.5	176.5	176.5	220.6	264.7	264.7
Yr Total Cost:	1,378	1,454	1,536	1,627	0	0	0	2,104	2,338	0
Cum Total Cost:	1,378	2,832	4,368	5,996	5,996	5,996	5,996	8,100	10,438	10,438

Resource: ODC700 ODC 700 EOC: ODC
Res Dept: Overtime: Class: ODC

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Units:	1,106.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00	0
Cum Units:	1,106.00	2,606.00	4,106.00	5,606.00	7,106.00	8,606.00	10,106.00	11,606.00	13,106.00	13,106.00
Yr Total Cost:	1,106	1,541	1,582	1,626	1,672	1,720	1,770	1,822	1,874	0
Cum Total Cost:	1,106	2,647	4,229	5,855	7,527	9,247	11,018	12,839	14,714	14,714

Resource: ODCTRVL TRAVEL RESOURCE EOC: ODC
Res Dept: 952 Overtime: Class: ODC

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Units:	0	6,600.00	6,600.00	6,600.00	6,600.00	6,600.00	6,600.00	6,600.00	6,600.00	0
Cum Units:	0	6,600.00	13,200.00	19,800.00	26,400.00	33,000.00	39,600.00	46,200.00	52,800.00	52,800.00
Yr Total Cost:	0	6,778	6,961	7,156	7,356	7,570	7,789	8,015	8,248	0
Cum Total Cost:	0	6,778	13,739	20,896	28,252	35,822	43,611	51,626	59,874	59,874

INCLUDES ESCALATION COSTS

09/06/2001
12:51 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: ECEM
CHARGE NO: ECEM1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: MIKE FRANK
FISCAL YEAR: 2001-2010

Resource: QACMGR QA MANAGER EOC: LABOR
Res Dept: Overtime: Class: SAL

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	88.4	0	0	0	0	0	0	0	0	0
Cum Hours:	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4	88.4
Yr Total Cost:	4,758	0	0	0	0	0	0	0	0	0
Cum Total Cost:	4,758	4,758	4,758	4,758	4,758	4,758	4,758	4,758	4,758	4,758

Resource: RADTEC RAD TECH EOC: LABOR
Res Dept: Overtime: Class: SAL

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	44.1	44.8	0	0	0	0	0	44.8	44.2	0
Cum Hours:	44.1	88.9	88.9	88.9	88.9	88.9	88.9	133.7	177.9	177.9
Yr Total Cost:	1,503	1,607	0	0	0	0	0	2,331	2,556	0
Cum Total Cost:	1,503	3,110	3,110	3,110	3,110	3,110	3,110	5,441	7,997	7,997

Resource: S&HTEC SAFETY TECH EOC: LABOR
Res Dept: Overtime: Class: SAL

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	88.3	174.7	174.7	174.7	174.7	174.7	174.7	174.7	174.7	42.1
Cum Hours:	88.3	263	437.7	612.4	787.1	961.8	1,136.50	1,311.20	1,485.90	1,528.00
Yr Total Cost:	2,553	5,316	5,631	5,963	6,316	6,748	7,316	7,711	8,569	2,129
Cum Total Cost:	2,553	7,869	13,500	19,463	25,779	32,527	39,843	47,554	56,123	58,251

Resource: SECRET SECRETARIES EOC: LABOR
Res Dept: Overtime: Class: SAL

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	1,294.30	1,048.20	1,048.20	1,048.20	1,048.20	1,048.20	1,048.20	1,048.20	1,048.20	232.2
Cum Hours:	1,294.30	2,342.50	3,390.70	4,438.90	5,487.10	6,535.30	7,583.50	8,631.70	9,679.90	9,912.10
Yr Total Cost:	28,902	24,637	26,096	27,634	29,272	31,274	33,904	35,735	39,711	9,068
Cum Total Cost:	28,902	53,539	79,634	107,268	136,541	167,815	201,719	237,453	277,165	286,233

INCLUDES ESCALATION COSTS

09/06/2001
12:51 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: ECEM
CHARGE NO: ECEM1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: MIKE FRANK
FISCAL YEAR: 2001-2010

Resource: SERVSUB SUBS EOC: SUBCONTRACTORS
Res Dept: Overtime: Class: SUB

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Units:	1,686.00	1,200.00	1,200.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	2,000.00	0
Cum Units:	1,686.00	2,886.00	4,086.00	6,086.00	8,086.00	10,086.00	12,086.00	14,086.00	16,086.00	16,086.00
Yr Total Cost:	1,686	1,232	1,266	2,169	2,229	2,294	2,360	2,429	2,499	0
Cum Total Cost:	1,686	2,918	4,184	6,353	8,582	10,876	13,236	15,665	18,164	18,164

Resource: WSTENG WASTE ENGINEER EOC: LABOR
Res Dept: Overtime: Class: SAL

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	44.1	42.1	42.1	42.1	38.7	39.4	39.4	42.2	42.1	0
Cum Hours:	44.1	86.2	128.3	170.4	209.1	248.5	287.9	330.1	372.2	372.2
Yr Total Cost:	2,250	2,261	2,395	2,536	2,470	2,686	2,912	3,288	3,645	0
Cum Total Cost:	2,250	4,512	6,907	9,443	11,913	14,600	17,512	20,800	24,445	24,445

GRAND TOTALS:

	Oct 00-01-Sep	Oct 01-02-Sep	Oct 02-03-Sep	Oct 03-04-Sep	Oct 04-05-Sep	Oct 05-06-Sep	Oct 06-07-Sep	Oct 07-08-Sep	Oct 08-09-Sep	Oct 09-10-Sep
Yr Hours:	12,883.20	13,181.00	16,984.70	22,990.20	14,711.10	14,142.50	13,713.60	13,712.20	13,277.00	2,961.10
Cum Hours:	12,883.20	26,064.20	43,048.90	66,039.10	80,750.20	94,892.70	108,606.30	122,318.50	135,595.50	138,556.60
Yr Total Cost:	530,427	564,810	770,601	1,099,250	805,616	795,867	825,390	867,262	925,701	209,936
Cum Total Cost:	530,427	1,095,237	1,865,838	2,965,088	3,770,705	4,566,572	5,391,961	6,259,224	7,184,925	7,394,861

CAM _____ for MJ CONTROL TEAM _____

INCLUDES ESCALATION COSTS

ECEM2

WELL MAINTENANCE & SURFACE WATER MONITOR

09/06/2001
1:05 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: ECEM
CHARGE NO: ECEM2
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: MIKE FRANK
FISCAL YEAR: 2001-2010

Resource: DEPADM **DEPT ADMINISTRATOR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	290.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	290.4	290.4	290.4	290.4	290.4	290.4	290.4	290.4	290.4	290.4
Yr Total Cost:	9,209	0	0	0	0	0	0	0	0	0
Cum Total Cost:	9,209	9,209	9,209	9,209	9,209	9,209	9,209	9,209	9,209	9,209

Resource: ENSMGR **ENVIR SCIENTIST MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	593.4	524.1	524.1	524.1	524.1	524.1	524.1	524.1	524.1	126.3
Cum Hours:	593.4	1,117.5	1,641.6	2,165.7	2,689.8	3,213.9	3,738.0	4,262.1	4,786.2	4,912.5
Yr Total Cost:	31,296	29,094	30,817	32,634	34,568	36,932	40,038	42,200	46,896	11,650
Cum Total Cost:	31,296	60,390	91,207	123,841	158,409	195,342	235,379	277,579	324,475	336,125

Resource: ENSREP **ENVIR SCIENCE REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,016.5	698.8	698.8	698.8	1,048.2	698.8	698.8	698.8	524.1	210.5
Cum Hours:	1,016.5	1,715.3	2,414.1	3,112.9	4,161.1	4,859.9	5,558.7	6,257.5	6,781.6	6,992.1
Yr Total Cost:	42,652	30,863	32,690	34,618	55,005	39,178	42,472	44,766	37,311	15,447
Cum Total Cost:	42,652	73,516	106,206	140,824	195,829	235,007	277,479	322,245	359,556	375,003

Resource: ENSTEC **ENVIR SCIENTIST TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,054.6	349.4	349.4	349.4	524.1	524.1	524.1	524.1	349.4	84.2
Cum Hours:	1,054.6	1,404.0	1,753.4	2,102.8	2,626.9	3,151.0	3,675.1	4,199.2	4,548.6	4,632.8
Yr Total Cost:	29,866	10,415	11,032	11,682	18,562	19,832	21,499	22,660	16,788	4,170
Cum Total Cost:	29,866	40,282	51,313	62,996	81,558	101,390	122,889	145,549	162,337	166,508

INCLUDES ESCALATION COSTS

09/06/2001
1:05 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: ECEM
CHARGE NO: ECEM2
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: MIKE FRANK
FISCAL YEAR: 2001-2010

Resource: GLMNT **GEN LABOR MAINT** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	44.2	44.8	44.2	44.2	44.8	44.2	44.2	44.8	44.2	0.0
Cum Hours:	44.2	89.0	133.2	177.4	222.2	266.4	310.6	355.4	399.6	399.6
Yr Total Cost:	1,080	1,152	1,204	1,275	1,369	1,443	1,565	1,672	1,833	0
Cum Total Cost:	1,080	2,233	3,437	4,712	6,082	7,525	9,090	10,761	12,594	12,594

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	6,760.0	8,484.0	8,484.0	8,484.0	10,596.0	8,484.0	8,484.0	5,304.0	5,304.0	330.0
Cum Units:	6,760.0	15,244.0	23,728.0	32,212.0	42,808.0	51,292.0	59,776.0	65,080.0	70,384.0	70,714.0
Yr Total Cost:	6,760	8,713	8,948	9,199	11,811	9,731	10,013	6,441	6,628	424
Cum Total Cost:	6,760	15,473	24,421	33,620	45,431	55,161	65,174	71,616	78,244	78,668

Resource: SERVSUB **SUBS** **EOC:** SUBCONTRACTORS
Res Dept: **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	176,842.0	190,992.0	208,992.0	190,992.0	269,004.0	210,996.0	207,000.0	208,992.0	166,008.0	38,502.0
Cum Units:	176,842.0	367,834.0	576,826.0	767,818.0	1,036,822.0	1,247,818.0	1,454,818.0	1,663,810.0	1,829,818.0	1,868,320.0
Yr Total Cost:	176,842	196,149	220,430	207,085	299,837	242,001	244,303	253,807	207,452	49,509
Cum Total Cost:	176,842	372,991	593,421	800,506	1,100,343	1,342,344	1,586,647	1,840,453	2,047,905	2,097,415

Resource: WSTENG **WASTE ENGINEER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	63.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0
Yr Total Cost:	3,215	0	0	0	0	0	0	0	0	0
Cum Total Cost:	3,215	3,215	3,215	3,215	3,215	3,215	3,215	3,215	3,215	3,215

INCLUDES ESCALATION COSTS

09/06/2001
1:05 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: ECEM
CHARGE NO: ECEM2
COMMENT NO:

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: MIKE FRANK
FISCAL YEAR: 2001-2010

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	3,062.1	1,617.1	1,616.5	1,616.5	2,141.2	1,791.2	1,791.2	1,791.8	1,441.8	421.0
Cum Hours:	3,062.1	4,679.2	6,295.7	7,912.2	10,053.4	11,844.6	13,635.8	15,427.6	16,869.4	17,290.4
Yr Total Cost:	300,920	276,387	305,122	296,493	421,153	349,117	359,889	371,546	316,908	81,201
Cum Total Cost:	300,920	577,308	882,429	1,178,923	1,600,076	1,949,193	2,309,082	2,680,628	2,997,535	3,078,736

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

ECEM3

AIR MONITORING & IEMP REPORTING

09/06/2001
2:15 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: ECEM
CHARGE NO: ECEM3
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: MIKE FRANK
FISCAL YEAR: 2001-2010

Resource: CLERKS **CLERKS** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	663.2	522.3	608.6	524.4	596.0	519.3	598.1	522.4	435.8	84.2
Cum Hours:	663.2	1,185.5	1,794.1	2,318.5	2,914.5	3,433.8	4,031.9	4,554.3	4,990.1	5,074.3
Yr Total Cost:	15,844	13,134	16,210	14,791	17,807	16,576	20,697	19,054	17,664	3,518
Cum Total Cost:	15,844	28,978	45,188	59,978	77,785	94,362	115,058	134,112	151,776	155,294

Resource: DEPADM **DEPT ADMINISTRATOR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	656.4	306.7	174.7	307.5	306.5	305.9	305.9	306.7	307.5	38.7
Cum Hours:	656.4	963.1	1,137.8	1,445.3	1,751.8	2,057.7	2,363.6	2,670.3	2,977.8	3,016.5
Yr Total Cost:	20,814	10,237	6,176	11,512	12,155	12,961	14,050	14,848	16,543	2,146
Cum Total Cost:	20,814	31,051	37,227	48,740	60,894	73,855	87,906	102,754	119,297	121,443

Resource: ELECTN **ELECTRICIAN** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	132.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	132.6	132.6	132.6	132.6	132.6	132.6	132.6	132.6	132.6	132.6
Yr Total Cost:	4,156	0	0	0	0	0	0	0	0	0
Cum Total Cost:	4,156	4,156	4,156	4,156	4,156	4,156	4,156	4,156	4,156	4,156

Resource: ENPREP **ENVIR PROTECTION REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,452.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	1,452.0	1,452.0	1,452.0	1,452.0	1,452.0	1,452.0	1,452.0	1,452.0	1,452.0	1,452.0
Yr Total Cost:	70,190	0	0	0	0	0	0	0	0	0
Cum Total Cost:	70,190	70,190	70,190	70,190	70,190	70,190	70,190	70,190	70,190	70,190

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: ECEM
CHARGE NO: ECEM3
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: MIKE FRANK
FISCAL YEAR: 2001-2010

Resource: ENSMGR **ENVIR SCIENTIST MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	4,356.0	4,891.6	3,144.6	3,144.6	3,144.6	3,144.6	3,144.6	3,144.6	3,144.6	757.8
Cum Hours:	4,356.0	9,247.6	12,392.2	15,536.8	18,681.4	21,826.0	24,970.6	28,115.2	31,259.8	32,017.6
Yr Total Cost:	229,735	271,548	184,901	195,802	207,410	221,594	240,226	253,201	281,377	69,897
Cum Total Cost:	229,735	501,283	686,184	881,986	1,089,396	1,310,990	1,551,216	1,804,417	2,085,794	2,155,691

Resource: ENSREP **ENVIR SCIENCE REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	4,797.1	4,566.9	6,026.3	5,765.1	5,765.1	5,498.6	5,140.3	4,891.6	4,362.0	774.0
Cum Hours:	4,797.1	9,364.0	15,390.3	21,155.4	26,920.5	32,419.1	37,559.4	42,451.0	46,813.0	47,587.0
Yr Total Cost:	201,286	201,703	281,916	285,598	302,528	308,277	312,420	313,362	310,530	56,799
Cum Total Cost:	201,286	402,989	684,905	970,503	1,273,031	1,581,308	1,893,728	2,207,089	2,517,619	2,574,419

Resource: ENSTEC **ENVIR SCIENTIST TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	3,138.7	2,739.6	2,096.4	2,096.4	2,096.4	2,096.4	2,096.4	1,747.0	1,747.0	421.0
Cum Hours:	3,138.7	5,878.3	7,974.7	10,071.1	12,167.5	14,263.9	16,360.3	18,107.3	19,854.3	20,275.3
Yr Total Cost:	88,888	81,665	66,191	70,094	74,249	79,327	85,997	75,535	83,940	20,852
Cum Total Cost:	88,888	170,553	236,744	306,838	381,087	460,414	546,411	621,945	705,885	726,737

Resource: GLMNT **GEN LABOR MAINT** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	189.4	174.7	174.7	174.7	174.7	174.7	174.7	174.7	174.7	42.1
Cum Hours:	189.4	364.1	538.8	713.5	888.2	1,062.9	1,237.6	1,412.3	1,587.0	1,629.1
Yr Total Cost:	4,629	4,494	4,760	5,041	5,340	5,705	6,185	6,519	7,244	1,799
Cum Total Cost:	4,629	9,123	13,883	18,924	24,264	29,969	36,153	42,672	49,916	51,715

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: ECEM
CHARGE NO: ECEM3
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: MIKE FRANK
FISCAL YEAR: 2001-2010

Resource: INRREP **INFO RECORDS REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	221.2	261.9	263.3	263.3	261.7	261.7	261.7	174.7	174.7	42.1
Cum Hours:	221.2	483.1	746.4	1,009.7	1,271.4	1,533.1	1,794.8	1,969.5	2,144.2	2,186.3
Yr Total Cost:	6,565	8,182	8,713	9,226	9,714	10,378	11,251	7,916	8,797	2,185
Cum Total Cost:	6,565	14,747	23,460	32,686	42,400	52,778	64,029	71,945	80,742	82,927

Resource: INSREP **INFO SYSTEMS REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	233.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	233.5	233.5	233.5	233.5	233.5	233.5	233.5	233.5	233.5	233.5
Yr Total Cost:	11,626	0	0	0	0	0	0	0	0	0
Cum Total Cost:	11,626	11,626	11,626	11,626	11,626	11,626	11,626	11,626	11,626	11,626

Resource: LABCHM **CHEMIST** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,736.3	2,096.4	2,096.4	2,096.4	2,096.4	1,397.6	1,397.6	1,397.6	1,397.6	336.8
Cum Hours:	1,736.3	3,832.7	5,929.1	8,025.5	10,121.9	11,519.5	12,917.1	14,314.7	15,712.3	16,049.1
Yr Total Cost:	67,299	85,529	90,592	95,934	101,620	72,380	78,466	82,704	91,907	22,831
Cum Total Cost:	67,299	152,828	243,420	339,354	440,974	513,354	591,820	674,524	766,431	789,262

Resource: LABMGR **LAB MANAGER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	202.1	174.7	174.7	174.7	174.7	174.7	174.7	174.7	174.7	42.1
Cum Hours:	202.1	376.8	551.5	726.2	900.9	1,075.6	1,250.3	1,425.0	1,599.7	1,641.8
Yr Total Cost:	10,331	9,400	9,957	10,544	11,169	11,933	12,936	13,635	15,152	3,764
Cum Total Cost:	10,331	19,732	29,688	40,232	51,401	63,334	76,270	89,904	105,056	108,820

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: ECEM
CHARGE NO: ECEM3
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: MIKE FRANK
FISCAL YEAR: 2001-2010

Resource: LABTEC **LAB TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	176.6	349.4	349.4	349.4	349.4	301.8	174.7	174.7	174.7	42.1
Cum Hours:	176.6	526.0	875.4	1,224.8	1,574.2	1,876.0	2,050.7	2,225.4	2,400.1	2,442.2
Yr Total Cost:	4,908	10,220	10,825	11,464	12,143	11,206	7,032	7,412	8,237	2,046
Cum Total Cost:	4,908	15,128	25,953	37,417	49,560	60,767	67,799	75,211	83,448	85,494

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	166,368.0	76,320.0	76,320.0	76,320.0	76,320.0	75,260.0	75,260.0	49,290.0	49,290.0	10,335.0
Cum Units:	166,368.0	242,688.0	319,008.0	395,328.0	471,648.0	546,908.0	622,168.0	671,458.0	720,748.0	731,083.0
Yr Total Cost:	166,368	78,381	80,497	82,751	85,068	86,319	88,822	59,859	61,595	13,290
Cum Total Cost:	166,368	244,749	325,246	407,996	493,064	579,383	668,206	728,065	789,660	802,950

Resource: ODC700 **ODC 700** **EOC:** ODC
Res Dept: **Overtime:** **Class:** ODC

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	2,150.0	1,650.0	1,650.0	1,650.0	1,650.0	1,650.0	1,650.0	1,650.0	1,650.0	411.0
Cum Units:	2,150.0	3,800.0	5,450.0	7,100.0	8,750.0	10,400.0	12,050.0	13,700.0	15,350.0	15,761.0
Yr Total Cost:	2,150	1,695	1,740	1,789	1,839	1,892	1,947	2,004	2,062	529
Cum Total Cost:	2,150	3,845	5,585	7,374	9,213	11,105	13,053	15,057	17,119	17,647

Resource: ODCTRVL **TRAVEL RESOURCE** **EOC:** ODC
Res Dept: **Overtime:** **Class:** ODC

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	2,472.0	4,950.0	4,950.0	4,950.0	4,950.0	4,950.0	4,950.0	4,950.0	4,950.0	1,236.0
Cum Units:	2,472.0	7,422.0	12,372.0	17,322.0	22,272.0	27,222.0	32,172.0	37,122.0	42,072.0	43,308.0
Yr Total Cost:	2,472	5,084	5,221	5,367	5,517	5,677	5,842	6,011	6,186	1,589
Cum Total Cost:	2,472	7,556	12,777	18,144	23,661	29,338	35,180	41,192	47,378	48,967

INCLUDES ESCALATION COSTS

09/06/2001
2:15 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: ECEM
CHARGE NO: ECEM3
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: MIKE FRANK
FISCAL YEAR: 2001-2010

Resource: PAREP **PUBLIC AFFAIRS REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	176.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	176.9	176.9	176.9	176.9	176.9	176.9	176.9	176.9	176.9	176.9
Yr Total Cost:	6,673	0	0	0	0	0	0	0	0	0
Cum Total Cost:	6,673	6,673	6,673	6,673	6,673	6,673	6,673	6,673	6,673	6,673

Resource: SERVSUB **SUBS** **EOC:** SUBCONTRACTORS
Res Dept: **Overtime:** **Class:** SUB

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	82,557.0	100,004.0	118,004.0	100,004.0	100,004.0	118,004.0	100,004.0	82,496.0	100,496.0	14,374.0
Cum Units:	82,557.0	182,561.0	300,565.0	400,569.0	500,573.0	618,577.0	718,581.0	801,077.0	901,573.0	915,947.0
Yr Total Cost:	82,557	102,704	124,462	108,430	111,467	135,344	118,025	100,186	125,585	18,483
Cum Total Cost:	82,557	185,261	309,723	418,154	529,620	664,964	782,990	883,176	1,008,760	1,027,244

Resource: TPSMGR **TECH/PROG SUPT MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	246.2	218.3	219.0	219.0	218.2	218.2	218.2	218.3	216.8	42.1
Cum Hours:	246.2	464.5	683.5	902.5	1,120.7	1,338.9	1,557.1	1,775.4	1,992.2	2,034.3
Yr Total Cost:	15,373	14,347	15,245	16,144	17,039	18,204	19,735	20,810	22,967	4,597
Cum Total Cost:	15,373	29,720	44,966	61,110	78,149	96,353	116,088	136,898	159,865	164,462

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	18,378.2	16,302.5	15,328.1	15,115.5	15,183.7	14,093.5	13,686.9	12,927.0	12,310.1	2,623.0
Cum Hours:	18,378.2	34,680.7	50,008.8	65,124.3	80,308.0	94,401.5	108,088.4	121,015.4	133,325.5	135,948.5
Yr Total Cost:	1,011,864	898,322	907,407	924,487	975,064	997,774	1,023,631	983,054	1,059,786	224,326
Cum Total Cost:	1,011,864	1,910,186	2,817,593	3,742,080	4,717,144	5,714,919	6,738,550	7,721,604	8,781,391	9,005,717

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

SECTION 6

5.0 RISK PLAN

Risk/Opportunity Identification and Analysis Form

Project: Environmental Monitoring		PBS Number: 04			Total Baseline Dollars (Minimum Case):			$19,479,314		
Evaluator: M. Frank	Date: 4/26/01	WBS Number: 1.1.E.C								
CAM: Frank/Voisard/Byrne	Date: 4/26/01	Control Account Number: ECEM								
Project Task	Risk and/or Opportunity	Potential Impact	Internal Or External Driver	Impact Cost $ (Maximum Case)	Risk Impact Level	Risk Probability %	Risk Probability Level	Probable Cost $ (Likeliest Case)	Risk Critical Value	Risk Handling Strategy
Environmental Monitoring	Remediation of the site is extended by one year.	Labor, materials,and ODCs for EM-managed budget would be incurred for the extension period.	Internal	$2,047,500	3	50	3	$1,023,750	4	Accept
Environmental Monitoring	More wells need plugged and abandoned (10 wells per year) than planned and/or more well integrity evaluations are required (two per year). Assumes FY02 through FY10.	Labor, materials, ODCs and subcontract costs for EM .	Internal	$600,000	2	20	2	$120,000	2	Reduce
Environmental Monitoring	Continuous Multilevel Tubing (CMT) wells require more maintenance than conventional wells (primarily well re-development costs of surging and pumping wells). Assumes increase costs are incurred FY02 - FY09.	Increase in labor, ODC, and possibly subcontract costs.	Internal	$225,000	2	40	3	$90,000	2	Accept
Environmental Monitoring	Level of sampling support from EM for the remediation projects (primarily SDFP and ARWWP) increases by 50% in any year or an increase in EM sampling staff is needed in part of a year due to some field sampling being moved up in schedule in any given year, thus requiring more resources than planned in part of a year. (Impact cost is for one year.)	Labor, materials,and ODCs for EM would increase due to additional staff (EM budgets for field training and mgnt. activities only) and materials.	Internal	$75,000	1	40	3	$30,000	1	Accept
Environmental Monitoring	Soil sampling equipment, primarily a Geoprobe vehicle, requires replacment due to irrepairable wear through nornal use (two Geoprobes in use since 1996).	Purchase new Geoprobe sampling vehicle.	Internal	$120,000	2	50	3	$60,000	2	Accept
Environmental Monitoring	No experienced personnel available from within FF with knowledge of Geoprobe operations and equipment as well as general environmental sampling practices.	Increase in labor cost from hiring a subcontracted Geoprobe operations instructor; plus increase training costs (additional 2 months) due to inexperienced staff.	Internal	$95,000	1	70	4	$66,500	2	Accept
			Total:	$3,162,500			Total:	$1,390,250		
Environmental Monitoring	Increase in IEMP surface water sample parameters or locations imposed by DOE or regulatory agencies (assumes increase begins in FY02 and continues through end of contract).	Increase in subcontract analytical costs (labor for sampling is under separate account).	External	$435,000	2	30	3	$130,500	2	

Risk/Opportunity Identification and Analysis Form

Project: Environmental Monitoring		PBS Number: 04				Total Baseline Dollars (Minimum Case):		$19,479,314		
Evaluator: M. Frank	Date: 4/26/01	WBS Number: 1.1.E.C								
CAM: Frank/Voisard/Byrne	Date: 4/26/01	Control Account Number: ECEM								
Project Task	Risk and/or Opportunity	Potential Impact	Internal Or External Driver	Impact Cost $ (Maximum Case)	Risk Impact Level	Risk Probability %	Risk Probability Level	Probable Cost $ (Likeliest Case)	Risk Critical Value	Risk Handling Strategy
Environmental Monitoring	Enactment of proposed 10 CR 834	Labor, materials,and ODCs for Environmental Monitoring would increase in order to meet the lower fenceline radon limits in draft 10 CFR 834	External	$176,000	2	10	2	$17,600	2	
Environmental Monitoring	EPA and/or OEPA requires additional monitoring of OSDF during 2 yr. shutdown	Labor, materials,and ODCs for Environmental Monitoring would increase due to additional montiroing requirements.	External	$48,500	1	20	2	$9,700	1	
Environmental Monitoring	Opportunity: Remove field blank sample requirement from surface water sampling programs through DOE and EPAs concurrence on change to the IEMP.	Lower labor and subcontract analytical costs.	Opportunity	-$400,000	2	70	4	-$280,000	3	
Environmental Monitoring	Opportunity: Reduce number of fenceline air monitoring stations from 16 to 10 beginning in FY02 with DOE and USEPA concurrence (for NESHAP Subpart D compliance purposes).	Savings in labor, materials, and ODCs	Opportunity	-$200,800	2	35	3	-$70,280	2	
Environmental Monitoring	Opportunity: Reduce frequency of environmental air sample analysis from biweekly to monthly beginning in FY02 with DOE, USEPA, and Ohio EPA concurrence.	Savings in labor	Opportunity	-$116,800	2	20	2	-$23,360	2	
Environmental Monitoring	Opportunity: Reduce frequency of composite air sample analysis from quarterly to semi-annually beginning in FY02 with DOE and USEPA concurrence (for NESHAP Subpart D compliance purposes).	Savings in ODCs	Opportunity	-$160,000	2	35	3	-$56,000	2	

Sample and Data Management

WBS DICTIONARY
CONTROL ACCOUNT/CHARGE NUMBER

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE OF CONTRACT 12/01/2000
3. IDENTIFICATION NUMBER DE-AC24-01OH20115	4. INDEX LINE NO. 37
5. WBS ELEMENT CODE 1.1.E.D	6. WBS ELEMENT TITLE SAMPLE & DATA MANAGEMENT
7. APPROVED CP NO. NEW PER CP# FY01-0115-0004-00	8. DATE OF CHANGES 12/01/2000
9. SYSTEM DESIGN DESCRIPTION CERCLA/ACA	10. BUDGET AND REPORTING NUMBER EW05H3040

11. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Subcontracts
Materials
ODC's

b. TECHNICAL CONTENT:

The WBS Element for Sample and Data Management (SDM) provides support for the overall establishment, execution, and maintenance of a controlled and consistent analytical data management process. More specifically, this WBS Element encompasses work that ensures the legal defensibility of FEMP remediation data; the electronic database storing and management of data; the project management of data including cradle-to-grave data tracking and the coordination of data flow between project users and analytical laboratories; the reporting and interpretation of data in support of projects; the acquisition of commercial laboratory services and the management and oversight of those commercial laboratories. Lastly, this WBS Element provides support for the implementation of work process improvements that will allow the data management process to be carried out more efficiently while maintaining data quality and defensibility.

c. SCOPE OF WORK:

This WBS Element includes the following work scope:

Development of the Annual Laboratory Utilization Plan
Preparation of scopes of work for off-site laboratory subcontracts
Management of off-site analytical laboratory subcontracts
Invoice reconciliation, approval, and accrual assessments
Tracking of samples from collection through disposition
Tracking of analytical-related data from sample collection through database entry

U.S. DEPARTMENT OF ENERGY
WORK BREAKDOWN STRUCTURE DICTIONARY
PART II - ELEMENT DEFINITION

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE OF CONTRACT 12/01/2000
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7. APPROVED CP NO. NEW PER CP# FY01-0115-0004-00	8. DATE OF CHANGES 12/01/2000
9. SYSTEM DESIGN DESCRIPTION CERCLA/ACA	10. BUDGET AND REPORTING NUMBER EW05H3040

11. ELEMENT TASK DESCRIPTION

Data entry of analytical-related data
Management of hard-copy analytical records, data packages, and data files
Scheduling of sample collection
Data validation and verification
Audits and surveillances of on-site and off-site laboratories
Management and administration of the data quality objective program
Statistical analysis of data, data interpretation, and data reporting
Development and implementation of data management process improvements

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE 12/01/2000	Page 1
3. WBS ELEMENT CODE 1.1.E.D	4. WBS ELEMENT TITLE/NAME SAMPLE & DATA MANAGEMENT	
5. PERFORMING DIV/DEPARTMENT CODE 52	6. ORIGINATOR NAME/PHONE CHRIS SUTTON 648-7502	7. WBS ELEMENT MANAGER MARC JEWETT
8. BUDGET AND REPORTING NUMBER EW05H3040	9. BUDGET TITLE AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE? NEW PER CP# FY01-0115-0004-00		11. ESTIMATED START / COMPLETION DATE 12/01/00 - 12/27/09
12. TASK IDENTIFICATION (CONTROL ACCOUNT) EDSD	13. TASK DESCRIPTION (ONE LINE) SAMPLE & DATA MANAGEMENT	

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

Labor
Subcontracts
Material
ODCs

b. TECHNICAL CONTENT:

This control account provides for a series of critical project support activities that are essential to the data collection and evaluation efforts required for the successful completion of the site's remediation projects. Sample & Data Management (SDM) supports the analytical needs of all Fluor Fernald remediation projects. The control account scope of work is divided into two charge numbers. Charge number EDSD1 encompasses four areas of responsibility: 1) management and administrative tasks, 2) contract management and oversight responsibilities for subcontracted laboratories, 3) data entry and ancillary responsibilities, and 4) remediation data quality and data defensibility responsibilities. Charge number EDSD2 encompasses project data oversight and coordination responsibilities, technical support for data interpretation and data reporting responsibilities, and development of data management process improvements.

c. SCOPE OF WORK:

Management and Administration

SDM management and administrative responsibilities include supervision of clerical, technical, administrative, subcontractor, and teaming partner personnel. Activities include attendance at staff meetings; operations and

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.D	SAMPLE & DATA MANAGEMENT

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	CHRIS SUTTON 648-7502	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
EDSD	SAMPLE & DATA MANAGEMENT

14. ELEMENT TASK DESCRIPTION

strategic planning activities; budgeting and baselining activities; salary administration, performance evaluations, and career development; health and safety responsibilities, development, revision, and maintenance of procedures; and other administrative tasks.

Contract Management and Oversight Responsibilities for Subcontracted Laboratories

Routine responsibilities entail administering the technical and financial aspects of SDM commercial laboratory activities. Such aspects include all technical activities necessary to place and maintain contracts, all required subcontractor representative activities, invoice reconciliation and accrual assessment, and all activities necessary to ensure that commercial subcontracted laboratories fulfill their contractual obligations.

Data Entry and Ancillary Activities

Routine data entry and ancillary responsibilities include double keyed (the process of entering data twice in the same system by different people---a standard data entry quality control measure) entering of environmental analytical data into the Fernald Analytical Computerized Tracking System (FACTS) and double keyed entering of field data into (Site-wide Environmental Database) the SED database. Data entry quality control activities, data entry tracking and monitoring activities, scheduling samples in FACTS, entering sample profiles for projects, management of original record data files, and data entry support of the Waste Pits Project are also included in this control account.

Data Quality and Data Defensibility Responsibilities

Routine data quality and data defensibility responsibilities include the verification and validation of all site-wide environmental data as required. Other quality assurance activities related to data management include provision of technical resources for the administration of the Site-Wide CERCLA Quality Assurance Project Plan, technical and administrative management of the Data Quality Objective Program, the planning and participating in audits of off-site and on-site analytical laboratories, and support and data quality oversight for the Waste Pits Project.

WORK SCOPE DEFINITION
(Control Account)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 3

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.D	SAMPLE & DATA MANAGEMENT

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	CHRIS SUTTON 648-7502	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (CONTROL ACCOUNT)	13. TASK DESCRIPTION (ONE LINE)
EDSD	SAMPLE & DATA MANAGEMENT

14. ELEMENT TASK DESCRIPTION

Data Coordination, Tracking, Management, Reporting, and Interpretation

Routine activities entail coordination with the projects to identify their data management requirements for analyses to be performed both on-site and off-site, tracking data (e.g., analytical, operational, field, health and safety) from cradle to grave, ensuring that data requirements are met prior to sample collection, ensuring data integrity subsequent to database entry, facilitating data reporting and data reporting; and statistical analysis of data and interpretation of data. Non-routine tasks relative to database administration and other project data management support activities as well as process improvement tasks designed to streamline current work processes thereby resulting in downstream cost efficiencies are also covered by this control account.

d. WORK SPECIFICALLY EXCLUDED:

The following activities are excluded from this control account:

* Data management activities accounted for in Projects' control accounts.
* Data Management related work scope defined and accounted for by the Information Management (IM) organization.
* Work scope for any services supplied by the following organizations:

Administrative Services
Document Control/Procedures Administration
Records Management
Training
Environmental compliance
Environmental, Safety, Health, and Quality Integration
Operations Assurance
Quality Assurance
Project controls
Infrastructure Services
Property Management
Transportation

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(Control Account)

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE 12/01/2000	Page 4
3. WBS ELEMENT CODE 1.1.E.D	4. WBS ELEMENT TITLE/NAME SAMPLE & DATA MANAGEMENT	
5. PERFORMING DIV/DEPARTMENT CODE 52	6. ORIGINATOR NAME/PHONE CHRIS SUTTON 648-7502	7. WBS ELEMENT MANAGER MARC JEWETT
8. BUDGET AND REPORTING NUMBER EW05H3040	9. BUDGET TITLE AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE? NEW PER CP# FY01-0115-0004-00		11. ESTIMATED START / COMPLETION DATE 12/01/00 - 12/27/09
12. TASK IDENTIFICATION (CONTROL ACCOUNT) EDSD	13. TASK DESCRIPTION (ONE LINE) SAMPLE & DATA MANAGEMENT	

14. ELEMENT TASK DESCRIPTION

Waste Acceptance Organization
Acquisitions/Procurement Services
Maintenance

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE FEMP (DEFENSE)	2. DATE 12/01/2000	Page 1
3. WBS ELEMENT CODE 1.1.E.D	4. WBS ELEMENT TITLE/NAME SAMPLE & DATA MANAGEMENT	
5. PERFORMING DIV/DEPARTMENT CODE 52	6. ORIGINATOR NAME/PHONE CHRIS SUTTON 648-7502	7. WBS ELEMENT MANAGER MARC JEWETT
8. BUDGET AND REPORTING NUMBER EW05H3040	9. BUDGET TITLE AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE? NEW PER CP# FY01-0115-0004-00		11. ESTIMATED START / COMPLETION DATE 12/01/00 - 12/27/09
12. TASK IDENTIFICATION (WORK PACKAGE) EDSD1	13. TASK DESCRIPTION (ONE LINE) SAMPLE & DATA MANGEMENT	

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

LABOR
SUBCONTRACTS
MATERIALS
ODC's

b. TECHNICAL CONTENT:

Charge number EDSD1 encompasses four areas of SDM responsibility: 1) management and administrative tasks, 2) contract management and oversight responsibilities for subcontracted laboratories, 3) data entry and ancillary responsibilities, and 4) remediation data quality and data defensibility responsibilities.

c. SCOPE OF WORK:

Management and Administrative Tasks

Specific activities include, but are not limited to:

Perform all control account management and baseline management functions
Develop, implement, review, revise, and maintain SDM procedures, SDM Conduct of Operations Matrix, SDM Project Management plan, and SDM Training Qualification Plan.
Lead or participate in strategic and annual operations planning initiatives.
Initiate purchase requisitions for office supplies computer hardware, and other materials.
Schedule team members for training and/or attend required training.
Perform Annual Management Assessment.

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.D	SAMPLE & DATA MANAGEMENT

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	CHRIS SUTTON 648-7502	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EDSD1	SAMPLE & DATA MANGEMENT

14. ELEMENT TASK DESCRIPTION

Implement Lessons Learned Programs.
Implement and track required reading program.
Maintain, track, and archive project records.
Administer or participate in performance evaluations
Administer or attend career development initiatives.
Administer annual salary, promotion, and equity programs.
Review and comment on numerous site plans and procedures.
Manage SDM letter log and other documents.
Attend staff meetings.
Support Integrated Safety Management by performing Safety Walk-Throughs and attending safety-first work groups and other periodic safety meetings.
Conduct self-assessments to identify and implement quality improvements.
Track sensitive property and perform other related property management activities

Contract Management and Oversight Responsibilities

Specific activities and tasks include:

Serve as the Technical Experts/Representatives for the procurement of subcontract chemical and radiological analytical laboratory services for the site.
Conduct training classes covering terms and conditions, statements of work, and deliverables for the subcontracts awarded above.
Act as technical resource in support of project sampling, shipping and analytical efforts including the preparation of Project Specific Plans (PSPs) and waste dispositioning efforts.
Interface with the projects to develop statements of work for analyses to be performed both on-site and off-site.
Develop the technical scopes of work for all analytical work performed by on-site and off-site laboratories in support of Fluor Fernald projects, including all site environmental sampling (soil, water, air and biological), waste characterization, industrial hygiene samples, and samples taken to support Decontamination and Decommissioning (D&D) efforts.
Prepare analytical task orders encompassing the above scopes of work.
Serve as the primary interface between analytical labs and Fluor Fernald projects.

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.D	SAMPLE & DATA MANAGEMENT

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	CHRIS SUTTON 648-7502	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EDSD1	SAMPLE & DATA MANGEMENT

14. ELEMENT TASK DESCRIPTION

Help develop annual Laboratory Utilization Plan Updates in accordance with clause H-7.C of the new Fluor Fernald prime contract.
Provide technical direction to off-site labs during the analysis of samples.
Monitor the performance of all analytical laboratories, conduct continuing analytical laboratory performance oversight, including annual audits. Evaluate analytical capacity to ensure that Fluor Fernald requirements, such as method requirements and turn around time requirements, can be met.
Verify that analytical data packages meet task order requirements.
Notify the AEDO and implement the reporting requirements of OP-1006 when any situation that would constitute a violation of DOT regulations occurs during the shipment of samples to an off-site laboratory.
Conduct analytical laboratory qualification oversight, including pre-award audits and the management of the Approved Laboratories List.
Execute the make/buy decision process for laboratory analysis, helping the projects and determining whether to have sample analysis done off-site or on-site.
Track financial obligation for subcontract laboratories, including invoice reconciliation and approval, and accrual assessments.
Provide SMO support for Industrial Hygiene projects.
Provide support in developing and maintaining site-wide CERCLA Quality Assurance Plan (SCQ).
Coordinate and track Request for Information Resubmittals (RIRs).
Upload electronic data deliverables from off-site laboratories.
Oversee the return and disposition of samples or residues from off-site commercial laboratories.
Develop standard analyte lists to be used in PSPs, FACTS, Windows Integrated Sample and Data Management (WISDM) and task.

Data Entry and Ancillary Tasks

Data entry activities include the following:

Enter analytical data for analyses performed by on-site and off-site laboratories into FACTS or SED databases.
Enter header data for field records for all projects into the SED.
Enter water quality information for well locations into the SED.
Enter lithologic logs, borings, ground elevations, coordinates, and

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 4

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME
1.1.E.D	SAMPLE & DATA MANAGEMENT

5. PERFORMING DIV/DEPARTMENT CODE	6. ORIGINATOR NAME/PHONE	7. WBS ELEMENT MANAGER
52	CHRIS SUTTON 648-7502	MARC JEWETT

8. BUDGET AND REPORTING NUMBER	9. BUDGET TITLE
EW05H3040	AQUIFER RESTORATION

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EDSD1	SAMPLE & DATA MANGEMENT

14. ELEMENT TASK DESCRIPTION

plugging/abandonment data into the SED.
Enter validation data and qualifiers into FACTS.
Monitor electronic data loading of lab and validation data into site databases.
Manage analytical and field packages until transfer to Records Center.
Perform data corrections in SED database.
Perform data management trouble-shooting activities in support of projects.
Input sample and validation data package tracking information into WISDM database to facilitate project's tracking of data for samples and data packages.
Log release sample information into FACTS for off-site shipments of groundwater samples.
Perform completeness review of release files before transferring them to the Records Center.
Project records custodian activities for records, which includes the document management for all original field records, as well as validation and analytical data from off-site laboratories.
Store and maintain all NESHAPS data for five years.
Schedule samples for Groundwater, Surface Water and NPDES.
Set up Project Profile templates in FACTS.
Monitor FACTS to SED daily transfers.
Move data from FACTS to SED for special projects.
Troubleshoot data entry problems in FACTS and WISDM.
Modify and update FACTS database with respect to new units, new laboratories, new sampling kits and kit containers, new preservatives, and new materials.
Load Waste Pits Remedial Action Project (WPRAP) analytical data packages into SED through Access
Enter data for WPRAP analyses into the SED.
Export data for WPRAP analyses from the SED to Excel files for quality control checking.
Assign, enter, transfer, and copy WPRAP Tracking Log data for railcars.
Develop and implement the inputting of analytical data directly into the SED database, using FACTS only for logging samples and tracking purposes.
Develop and Implement the capability to automatically load field header data from FACTS into SED.

Remediation Data quality and Data Defensibility Activities

Specific remediation data quality and data defensibility activities include, but

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
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3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.D	SAMPLE & DATA MANAGEMENT	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	CHRIS SUTTON 648-7502	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		**11. ESTIMATED START / COMPLETION DATE**
NEW PER CP# FY01-0115-0004-00		12/01/00 - 12/27/09
12. TASK IDENTIFICATION (WORK PACKAGE)	**13. TASK DESCRIPTION (ONE LINE)**	
EDSD1	SAMPLE & DATA MANGEMENT	

14. ELEMENT TASK DESCRIPTION

are not limited to:

Maintain the Site-wide CERCLA Quality Assurance Project Plan (SCQ), including periodic revisions and change requests.
Administer the external laboratory audit program including interfacing with the DOE EMCAP program, conducting surveillances, external assessments, issuance of non-conformance reports, and verification of corrective actions.
Administer analytical laboratory qualification, including pre-award audits and the management of the Approved Laboratories List. Conduct 4 analytical laboratory initial qualification oversight assessments per year, including pre-award audits.
Conduct continuing analytical laboratory performance oversights including: 1) annual audits, evaluation of laboratory performance in USEPA, DOE, state, and private Performance Evaluation programs; and 2) tracking external laboratory performance indicators specified in contract statements of work and in the SCQ.
Oversee and review various site activities including the review and approval site/division procedures and other project documents, the issuance of non-conformance reports and verification of corrective actions, surveillances of FEMP organizations, and internal quality audits of site activities and procedures.
Assist Projects in the development of Data Quality Objectives and review and approve Data Quality Objectives.
Provide technical support for environmental sampling, waste characterization, industrial hygiene samples, and samples taken to support D&D efforts.
Perform analytical data package (including Chemical, Radiochemical, and Conventional) validation and verification in accordance with project quality requirements.
Verify and validate field data and associated documentation for completeness, for compliance with Project Specific Plans and in accordance with applicable quality requirements.
Perform reviews of all analytical services requisitions, including task orders and statements of work.
Conduct data surveillances and Conduct of Operations (CONOPs) surveillances of International Technology (IT)-WPRAP in support of WPRAP.
Review new IT-WPRAP procedures and plans and revisions to existing IT-WPRAP procedures and plans for compliance with project needs and requirements.
Support the IT-WPRAP analytical laboratory by providing technical support and

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 6

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.D	SAMPLE & DATA MANAGEMENT	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	CHRIS SUTTON 648-7502	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	

10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?	11. ESTIMATED START / COMPLETION DATE
NEW PER CP# FY01-0115-0004-00	12/01/00 - 12/27/09

12. TASK IDENTIFICATION (WORK PACKAGE)	13. TASK DESCRIPTION (ONE LINE)
EDSD1	SAMPLE & DATA MANGEMENT

14. ELEMENT TASK DESCRIPTION

guidance regarding analytical, regulatory, and data usability issues.
Develop and implement the capability to perform electronic data validation.

d. WORK SPECIFICALLY EXCLUDED:

The following activities are excluded from this control account:

Data management activities accounted for in Projects' control accounts.
Data Management related work scope defined and accounted for by the Information Management (IM) organization.
Work scope for any services supplied by the following organizations:
Administrative Services
Document Control/Procedures Administration
Records Management
Training
Environmental compliance
Environmental, Safety, Health, and Quality Integration
Operations Assurance
Quality Assurance
Project controls
Infrastructure Services
Property Management
Transportation
Waste Acceptance Organization
Acquisitions/Procurement Services
Maintenance

WORK SCOPE DEFINITION
(Work Package)

1. PROJECT TITLE	2. DATE	
FEMP (DEFENSE)	12/01/2000	Page 1

3. WBS ELEMENT CODE	4. WBS ELEMENT TITLE/NAME	
1.1.E.D	SAMPLE & DATA MANAGEMENT	
5. PERFORMING DIV/DEPARTMENT CODE	**6. ORIGINATOR NAME/PHONE**	**7. WBS ELEMENT MANAGER**
52	CHRIS SUTTON 648-7502	MARC JEWETT
8. BUDGET AND REPORTING NUMBER	**9. BUDGET TITLE**	
EW05H3040	AQUIFER RESTORATION	
10. ORIGINAL SCOPE? / CHANGE TO WORK SCOPE? / NEW SCOPE?		**11. ESTIMATED START / COMPLETION DATE**
NEW PER CP# FY01-0115-0004-00		12/01/00 - 12/27/09
12. TASK IDENTIFICATION (WORK PACKAGE)	**13. TASK DESCRIPTION (ONE LINE)**	
EDSD2	PROJECT DATA OVERSIGHT	

14. ELEMENT TASK DESCRIPTION

a. ELEMENTS OF COST:

LABOR

b. TECHNICAL CONTENT:

Charge number EDSD2 encompasses project data oversight and coordination activities, technical support for data interpretation and data reporting, non-routine activities associated with database management, data management, and data interpretation and reporting; and development of data management process improvements.

c. SCOPE OF WORK:

Specific activities include, but are not limited to:

Coordinate with the projects to identify their data management requirements for analyses to be performed both on-site and off-site for:
1. Tracking data (e.g., analytical, operational, field, health and safety)
2. Ensuring that data requirements are met prior to sample collection
3. Ensuring data integrity subsequent to database entry
4. Facilitating data reporting
5. Interpreting data.

Help develop Annual Laboratory Utilization Plan Updates in accordance with clause H-7.C of the new Fluor Fernald prime contract.
Produce and run data queries to support biennial revisions of Integrated Environmental Monitoring Plan (IEMP), associated quarterly reports, and annual Integrated Site Environmental report.
Track and report various other data (e.g., meteorological, survey, field, operational, health and safety) that are collected and managed in association

Project Manager	Control Account Manager	Control Team Manager
for MJ	for MJ	

SECTION 7

1.0 NARRATIVE

1. PROJECT TITLE: AQUIFER RESTORATION PROJECT	2. DATE: 09/10/01	3. PBS#: 04
4. WBS ELEMENT CODE: 1.1.E.D.	5. WBS ELEMENT TITLE: SAMPLE AND DATA MANAGEMENT	
6. CAM NAME/ PHONE: MARC JEWETT	7. CAM SIGNATURE:	
8. ORIGINAL/ CHANGE SCOPE/ PER CP#:	9.CONTROL ACCOUNT: EDSD	

SECTION 7: EDSD – SAMPLE AND DATA MANAGEMENT

1.0 NARRATIVE

1.1 OVERVIEW

Sample and Data Management (SDM) provides a series of critical project support activities that are essential for the overall establishment, execution, and maintenance of a controlled and consistent analytical data management process that ensures the legal defensibility of FEMP remediation data. SDM supports the analytical needs of all Fluor Fernald remediation projects requiring environmental or health and safety related chemical analyses. The detailed scope of work for control account EDSD governing SDM activities is divided into two charge numbers. Charge number EDSD1 encompasses four areas of responsibility: SDM management and administrative responsibilities, Sample Management Office contract management and oversight responsibilities for subcontracted laboratories, data entry and ancillary responsibilities, and remediation data quality and data defensibility responsibilities. Charge number EDSD2 encompasses project data oversight and coordination responsibilities, project data management, technical support for data interpretation, data reporting responsibilities, and development of data management process improvements.

1.2 ASSUMPTIONS/EXCLUSIONS

1.2.1 Assumptions

1. No change occurs after November 20, 2000 in regulatory agency [U.S. Environmental Protection Agency (USEPA), Ohio Environmental Protection Agency (OEPA), U.S. Department of Energy (DOE)] regulations or guidance governing the legal defensibility of data, data verification and validation, and quality assurance requirements governing data base operations.

2. The number of analyses projected to be required through site closure is assumed to be substantially correct and only relatively minor revisions or deviations from Table 1 will occur. To the degree that this assumption is correct, revisions to the manpower planning presented in this closure plan are not anticipated.

1.2.1.1 EDSD1

1. Implementation of SDM work processes based upon a knowledge management system [as described in Section 1.4.3-2)1] will enable EDSD1 work scope to be accomplished with significantly less manpower.

1.2.1.2 EDSD2

1. SDM performance and schedules for process improvement work are contingent upon resource availability in the Information Management Organization. The assumption is that those resources will be available in FY2001 and FY2002 so that most process improvement work will have been completed by the end of the second quarter FY2002. Debugging and QA/QC activities relative to the new work processes will primarily occur in the third and fourth quarters of FY2002.

1.2.1 Exclusions

1. This plan does not include and is not based upon the outsourcing of any SDM work processes or functions.

2. Data management activities accounted for in projects' rebaseline efforts are not duplicated in this control account.

3. Data management related work scope accounted for by the Information Management (IM) organization is not duplicated in this control account.

4. Because the control account governing SDM activities is "centralized" and is not "charge-in/charge-out", this control account does not contain work scope or provide support for any services supplied by the following organizations except as noted in the work scope section.

- Administrative Services
- Document Control/Procedures Administration
- Information Management
- Records Management
- Training
- Environmental compliance
- Environmental, Safety, Health, and Quality Integration
- Operations Assurance
- Quality Assurance
- Project controls
- Infrastructure Services
- Property Management
- Transportation
- Waste Acceptance Organization

- Acquistions/Procurement Services
- Maintenance
- Technical Programs

1.2.2.1 EDSD1

1. Emergency, unplanned, and unforeseen analyses are not included in this work scope. However, such analyses usually constitute between 5 and 15% of the total analyses performed each year. Such analyses will be handled as a risk element and are not budgeted for in this charge number.

2. Overtime is assumed not to be necessary and is excluded as a cost element in this charge number. Should overtime actually be necessary, it will be treated as a variance.

1.2.2.2 EDSD2

1. Emergency, unplanned, and unforeseen analyses are not included in this work scope. However, such analyses usually constitute between 5 and 15% of the total analyses performed each year. Such analyses will be handled as a risk element and are not budgeted for in this charge number.

2. Overtime is assumed not to be necessary and is excluded as a cost element in this charge number. Should overtime actually be necessary, it will be treated as a variance.

1.2.3 Government-Furnished Equipment/Services

None

1.3 DRIVERS

1. The primary driver for SDM is the number of analyses to be performed for the various projects and programs (Aquifer Restoration groundwater samples, Waste Pits Remedial Action Project [WPRAP], On-site Disposal Facility [OSDF] Project, Demolition Projects, National Pollution Discharge Elimination system [NPDES] Program, Soil Project, Silo 1&2 Project, Silo 3 Project, and the Industrial Hygiene Program). These dictate the magnitude of SDM work associated with data and sample management. The number of estimated projected analyses per year by project is shown in Table 1.

2. The actual analytical type, data management, and data quality requirements of each project or program are also drivers for SDM.

3. Project requirements to report data in various documents (e.g., Certification reports) are drivers for EDSD2 charge number work scope. These requirements determine the degree of support that Projects require in pulling data from databases in proper format.

4. Project requirements for assistance with data reporting, data interpretation, and report generation are drivers for the EDSD2 work scope.

5. Project, FEMP, and DOE requirements for traceability and defensibility of data is the major driver for the manner in which SDM work processes are performed. Those work processes are performed in accordance with requirements in the Sitewide CERCLA Quality Assurance Project Plan (SCQ), FD-1000, Revision 1, September 1998, which is approved by USEPA and OEPA.

6. Clause H-7.C of the new Fluor Fernald prime contract with DOE is the driver that mandates the annual Laboratory Plan Utilization Update.

7. All work relative to placing contracts with commercial laboratories is performed in accordance with the Federal Acquisitions Regulations.

1.4 PROJECT PLAN/TECHNICAL SCOPE AND QUANTIFICATION

Control account EDSD is divided into two charge numbers: EDSD1 and EDSD2. The work scope for each charge number can be logically subdivided into subtasks, which are delineated below and quantified with respect to labor FTEs.

1.4.1 EDSD – Sample and Data Management

1) Task #1 – Sample and Data Management

1.1) Plan/Scope – Sample and Data Management

1. SDM manpower requirements are based upon the projected number of analyses required by the various Projects and Programs through contract closure. The number of analyses per year per project from December 1,2000 through December 31, 2009 is given in Table 1. These analytical needs estimates have been specified as part of the rebaseline effort for each project or program.

2. SDM work scope is primarily tied to the 161,670 non-process control analyses shown on the bottom row of Table 1.

3. SDM work scope is tied to a much lesser degree to the 404,000 Aquifer Restoration process control analyses shown in Table 1. The Aquifer Restoration project will assume primary responsibility for the management of data resulting from those analyses.

4. The analyses presented in Table 1 contain those associated with the remediation of Silos 1, 2, and 3. Given the current early stages of planning and engineering design for those projects, the number and types of analyses could change upward significantly. Thus, additional manpower required to support Silos 1, 2, and 3 could be needed. The possible need for additional manpower is addressed in the risk section of this document.

5. As noted in Table 1, SDM operations must be maintained through December 31, 2009 to support Environmental Monitoring and Aquifer Restoration Work Scope.

6. Certain site operations will require analytical data beyond contract closure on December 31, 2009. These include operations associated with long-term stewardship, aquifer restoration, and environmental monitoring. Therefore, an SDM infrastructure must be present to assume operations after December 31, 2009.

7. In addition to analytical data, various other data (e.g., meteorological, survey, field, operational, health and safety) that are collected and managed in association with analytical data will be tracked and reported to the projects as applicable between December 1, 2000 and December 31, 2009.

8. No overtime is assumed to be necessary to handle the work scope associated with any of the analyses given in Table 1. Any overtime actually needed will be handled as a positive variance.

9. Beginning in FY2002, this is a "centralized" LOE control account and not a "charge-in/charge-out" LOE control account, as was the case previously. Therefore, all work performed by personnel in SDM is charged to this control account; no work is billed to other control accounts (unless accounted for in projects' control accounts and not accounted for in the SDM control account).

Table 1
Analyses to be Performed through December 31, 2009

Project/Program	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10	Total
NPDES	2,307	2,363	2,307	2,307	2,307	2,307	2,363	2,307	2,307	577	**21,452**
Aquifer Restoration-Process control	46,539	46,539	46,539	46,539	46,539	41,807	41,807	38,895	38,895	9,724	**403,823**
Aquifer Restoration-Various Groundwater	761	414	345	313	404	300	331	297	204	0	**3,369**
WPRAP	4,824	3,798	3,738	3,638	1,798	0	0	0	0	0	**17,796**
OSDF	712	702	956	1,484	1,712	2,067	2,168	1,783	1,698	0	**13,282**
Demolition Projects	373	868	1,445	568	209	215	215	0	0	0	**3,893**
Soil Project	0	0	30	8,906	2,733	1,969	5,314	4,139	4,427	850	**28,368**
IEMP	5,621	5,312	5,372	5,312	5,312	5,681	5,312	5,312	5,372	1,328	**49,934**
Silos 1 and 2	200	0	0	0	0	3,006	3,006	0	0	0	**6,212**
Silo 3	486	390	390	843	0	0	0	0	0	0	**2,109**
Waste Generator Services	1,405	2,807	955	15	0	0	0	0	0	0	**5,182**
Industrial Hygiene/Asbestos	1,031	1,008	908	944	1,626	904	728	388	58	6	**7,601**
Special Projects	358	240	400	410	185	418	225	135	85	16	**2,472**
Total	**64,617**	**64,411**	**63,385**	**71,279**	**62,825**	**58,674**	**61,469**	**53,256**	**53,046**	**12,501**	**565,493**
Total Excluding Aquifer Restoration Process Control*	**18,078**	**17,902**	**16,846**	**24,740**	**16,286**	**16,867**	**19,662**	**14,361**	**14,151**	**2,777**	**161,670**

* The magnitude of SDM work scope is primarily tied to the number of these non-process control analyses.

1.2) Quantification – Sample and Data Management

1. As discussed above, Table 1 shows the number of analyses that are projected to be needed through site closure. Table 1 also indicates the number of analyses that primarily drive the magnitude of SDM work scope.

Figure 1 shows how SDM manpower is linked to the number of analyses in Table 1. The details of this linkage are specified in later sections. Despite the fact that the number of analyses is approximately level from FY01 through FY07 (with the exception of the peak year in FY04), SDM manpower needed to perform the work scope associated with the analyses decreases due to the process improvements discussed in Section 1.4.3-2)1. (Note in Figure 1 that the 8556 analyses given for FY2010 are the number of non-process control analyses for the entire year, while the 2777 non-process control analyses in Table 1 are only those that will be performed in the first quarter of FY2010.)

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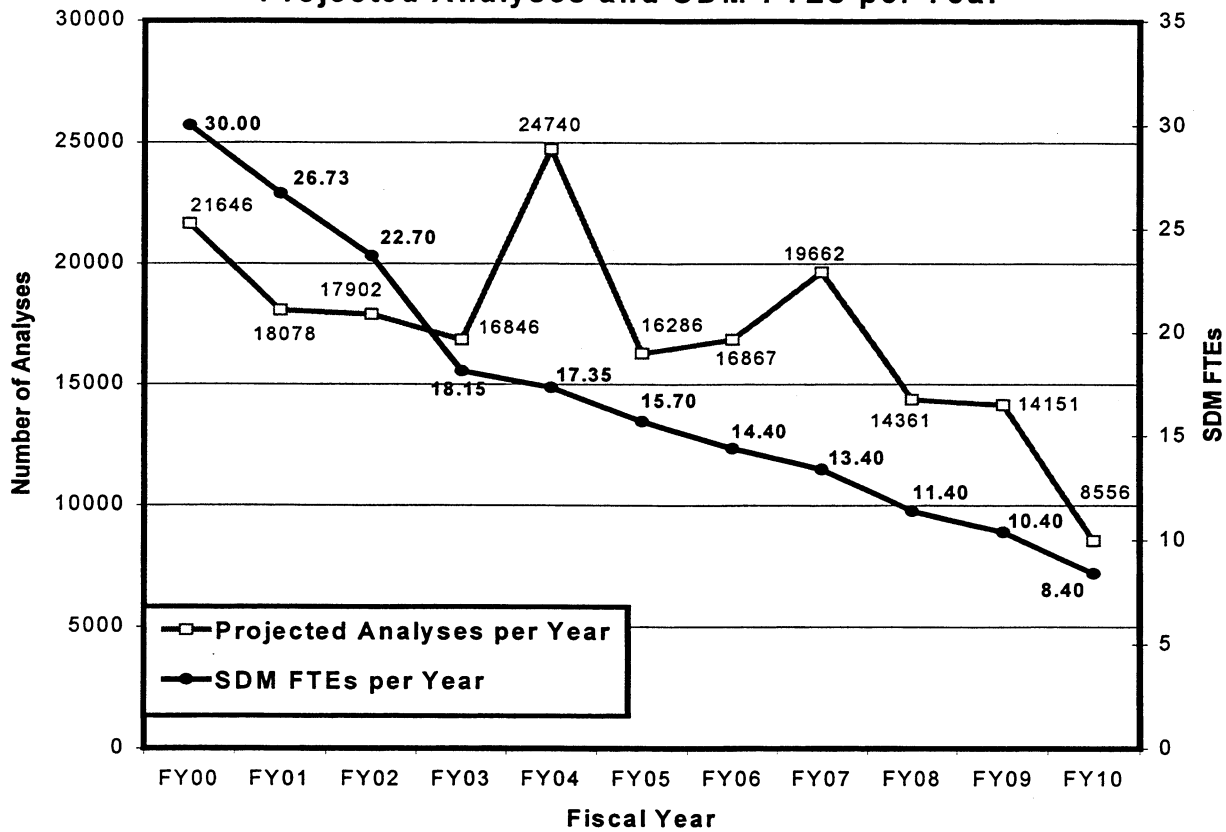
Figure 1
Projected Analyses and SDM FTEs per Year



2. The assumptions for costing travel and ODC 700 items associated with travel are outlined below in Table 2 to avoid the duplication of detailing the same information in multiple sections.

3. All FY01 costs are Actuals plus ETCs or are estimated Actuals plus ETCs. However, in all tables and figures, FY01 FTEs are shown on a "centralized" basis for better comparison with FY02 through FY10 FTEs.

Table 2
Assumptions Used to Cost Travel and Associated ODC 700 Items

Assumption	Business Travel Cost ($)	Conference Attendance Cost ($)	Specialized Training Cost ($)
Lodging at $100 per night	300	300	500
Per Diem at $35 per day	140	140	210
Rental car at $50 per day	200	200	300
Airfare	1,000	1,000	1,000
Miscellaneous at $15 per day	60	60	60
Mileage at $0.325 per mile	40	40	
Conference registration		400	
Training cost			1,500
Allocation to ODC travel	1,100	1,100	1,100
Allocation to ODC 700	700	1,100	2,200

1.4.2 EDSD1 – Sample and Data Management

1) Task #1 – **Management and Administrative Responsibilities**

1.1) Plan/Scope – Management and Administrative Responsibilities

SDM management and administrative responsibilities include supervision of approximately thirty (plus an additional eleven matrixed personnel—these eleven people are budgeted for in Information Management) technical, administrative, subcontractor, and teaming partner personnel. Activities include attendance at staff meetings; operations and strategic planning activities; budgeting and baselining activities; salary administration, performance evaluations and career development; health and safety responsibilities; development, revision, and maintenance of procedures; and SDM e-desk activities. Specific tasks include, but are not limited to:

- Perform all control account management and baseline management functions
- Develop, implement, review, revise, and maintain SDM procedures, SDM Project Management Plan, and SDM Training Qualification Plan
- Lead or participate in strategic and annual operations planning initiatives

- Initiate purchase requisitions for office supplies computer hardware, and other materials

- Schedule team members for training and/or attend required training

- Perform Annual Management Assessment

- Implement Lessons Learned Programs

  - Implement and track required reading program
  - Maintain, track, and archive project records
  - Administer or participate in performance evaluations
  - Administer or attend career development initiatives
  - Administer annual salary, promotion, and equity programs
  - Review and comment on numerous site plans and procedures
  - Manage SDM letter log and other documents
  - Attend staff meetings
  - Support Integrated Safety Management by performing Safety Walk-Throughs and attending safety-first work groups and other periodic safety meetings
  - Conduct self-assessments to identify and implement quality improvements
  - Track sensitive property and perform other related property management activities
  - Perform and oversee SDM e-desk activities.

1.2) <u>Quantification – Management and Administrative Responsibilities</u>

1. Each non-manager is estimated to spend 5% of their time performing the administrative functions listed above. Each supervisor is estimated to spend 25% of their time performing the above functions. The SDM Manager and and the SDM administrator spend 100% of their time performing the above functions. The procedure support person is estimated to spend 20% of their time administratively. Table 3 indicates the FTE's per year engaged in management and support activities. Note that these FTEs are based upon a roll-up of FTEs necessary to perform other work scope in EDSD1 and EDS2.

Table 3
Elements of Cost for EDSD1 Management and Administrative Subtask

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Labor Category	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
ENGINR	0.65	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEPADM	1.00	~~0.75~~0.50	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.15
ENSMGR	0.70	0.75	0.75	0.75	0.75	0.75	0.75	0.25	0.25	0.10
ENSREP	1.30	~~0.85~~0.75	0.65	0.60	0.60	0.55	0.50	0.50	0.45	0.1
ENSTEC	0.25	0.20	0.15	0.15	0.15	0.10	0.10	0.10	0.10	0.05
CLERKS	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
QACENG	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.0
TPSREP	0.05	0.05	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**4.10**	**~~2.65~~2.35**	**2.15**	**2.05**	**2.05**	**1.95**	**1.90**	**1.40**	**1.35**	**0.50**
Subcontracts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials($)	10,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	250
Travel($)	2,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	0
ODC 700 ($)	100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	0
Total ($)	**12,200**	**3,200**	**3,200**	**3,200**	**3,200**	**3,200**	**3,200**	**3,200**	**3,200**	**250**

1. Five hundred dollars per year for office supplies and equipment are allocated to the SDM Manager and to the SDM Departmental Administrator.
2. Travel to one conference per year is budgeted.

2) Task #2 – Sample Management Office

2.1) Plan/Scope – Sample Management Office

Routine Sample Management Office (SMO) responsibilities entail administering the technical and financial aspects of SDM commercial laboratory activities. Such aspects include all technical activities necessary to place and maintain contracts, all required subcontractor representative activities, invoice reconciliation and accrual assessment, and all activities necessary to ensure that commercial subcontracted laboratories fulfill their contractual obligations. Specific routine tasks include, but are not limited to:

- Serve as the Technical Experts/Representatives for the procurement of subcontract chemical and radiological analytical laboratory services for the site. The following contracts are anticipated though 2010:

    1. Basic Ordering Agreement for Radiological Analyses:
       Contracts to be awarded 4/1/2001 and 4/1/2006 (4 option years per contract).

    2. Basic Ordering Agreement for Chemical Analyses:
       Contract awarded 10/31/1999 (2 option years remaining). New contract to be awarded in 2003.

3. Basic Ordering Agreement for Industrial Hygiene Analyses:
   Contracts to be awarded 4/1/2001 and 4/1/2006 (4 option years per contract).
4. Basic Ordering Agreement for Asbestos Hygiene Analyses
   Contracts to be awarded 4/1/2001 and 4/1/2006 (4 option years per contract).

5. Indefinite Deliverable Indefinite Quantity contract in support of IEMP to be awarded by 9/30/2001 and by 9/30/2006 (4 option years per contract).

- Conduct 22 training classes at the FEMP covering terms and conditions, statements of work, and deliverables for the subcontracts awarded above.

- Act as technical resource in support of project sampling, shipping and analytical efforts including the preparation of Project Specific Plans (PSPs) and waste dispositioning efforts.

- Interface with the projects to develop statements of work for 77,000 analyses to be performed on-site and 85,000 analyses to be performed off-site:

  1. Develop the technical scopes of work for all analytical work performed by on-site and off-site laboratories in support of Fluor Fernald projects, including all site environmental sampling (soil, water, air and biological), waste characterization, industrial hygiene samples, and samples taken to support Decontamination and Decommissioning (D&D) efforts.

  2. Prepare analytical task orders encompassing the above scopes of work.

- Serve as the primary interface between analytical labs and Fluor Fernald projects.

- Help develop annual Laboratory Utilization Plan Updates in accordance with clause H-7.C of the new Fluor Fernald prime contract.

- Provide technical direction to off-site labs during the analysis of samples.

- Monitor the performance of all analytical laboratories, conduct continuing analytical laboratory performance oversight, including annual audits. Evaluate analytical capacity to ensure that Fluor Fernald requirements, such as method requirements and turn around time requirements, can be met.

- Verify that analytical data packages meet task order requirements.

- Notify the AEDO and implement the reporting requirements of OP-1006 when any situation that would constitute a violation of DOT regulations occurs during the shipment of samples to an off-site laboratory.

- Conduct analytical laboratory qualification oversight, including pre-award audits and the management of the Approved Laboratories List.

- Execute the make/buy decision process for laboratory analysis, helping the projects and determining whether to have sample analysis done off site or on site.

- Track financial obligation for subcontract laboratories, including invoice reconciliation and approval, and accrual assessments.

  1. Approve approximately 9,600 invoices from off-site laboratories

- Provide SMO support for Industrial Hygiene projects.

- Provide support in developing and maintaining Sitewide CERCLA Quality Assurance Plan (SCQ).

- Coordinate and track an anticipated 3,600 Request for Information Resubmittals (RIRs).

- Upload an estimated 9,600 electronic data deliverables from off-site laboratories.

- Oversee the return and disposition of samples or residues from off-site commercial laboratories.

2.2) <u>Quantification – Sample Management Office</u>

1. Table 4 shows the FTEs, materials, and travel per year to support the above work scope. The reduction in FTEs is a result of the process improvements described under EDSD2.

2. Two hundred dollars per year are allocated for office supplies and equipment per employee.

3. Two business trips per year to subcontracted laboratories are scheduled each year except for FY06, when five trips are scheduled. Attendance at one conference per year is scheduled.

Table 4
Elements of Cost for EDSD1 Sample Management Office Subtask

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Labor Category	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
ENSREP	3.25	~~3.103.60~~	2.35	1.85	0.95	0.95	0.95	0.95	0.95	0.0
ENSTEC	0.85	~~0.700.90~~	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
QACENG	0.0	0.0	0.25	0.50	0.50	0.50	0.50	0.50	0.50	0.50
TOTAL	**4.10**	**~~3.804.50~~**	**2.60**	**2.35**	**1.45**	**1.45**	**1.45**	**1.45**	**1.45**	**0.15**
Subcontracts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials ($)	5,600	800	600	400	400	400	400	400	400	200
Travel ($)	5,500	2,200	2,200	2,200	2,200	6,600	2,200	2,200	2,200	0
ODC 700 ($)	100	1,800	1,800	1,800	1,800	4,600	1,800	1,800	1,800	0
Total ($)	**11,200**	**4,800**	**4,600**	**4,400**	**4,400**	**~~4,400~~ 11,600**	**4,400**	**4,400**	**4,400**	**200**

3) Task #3 – Data Entry

3.1) Plan/Scope – Data Entry

Routine data entry and ancillary responsibilities include double keyed (the process of entering data twice in the same system by different people---a standard data entry quality control measure) entering of environmental analytical data into the FACTS database, double keyed entering of field data into (Site-wide Environmental Database) SED database. Data entry QC activities, data entry tracking and monitoring activities, scheduling samples in FACTS, entering sample profiles for projects, management of original record data files, and data entry support of the WPRAP project are also included in this control account. Specific routine tasks include:

- Enter analytical data for approximately 162,000 analyses performed by on-site and off-site laboratories into FACTS or SED databases.
- Enter header data for approximately 145,000 field records for all projects into the SED.
- Enter information for approximately 60,000 well and sample locations for the next ten years into the SED.
- Enter lithologic logs, borings, ground elevations, coordinates, and plugging/abandonment data for approximately 27,100 locations into the SED.
- Enter validation data and qualifiers for approximately 68,100 analyses into FACTS.
- Monitor electronic data loading of lab and validation data into site databases.
- Manage an estimated 3,400 analytical and 7,300 field packages until transfer to the Records Center.

- Perform an estimated 16,200 data corrections in SED database.
- Perform data management trouble-shooting activities in support of projects.
- Input sample and validation data package tracking information into WISDM database to facilitate project's tracking of data for an estimated 145,000 samples and an estimated 3,400 data packages.
- Log release sample information into FACTS for off-site shipments of groundwater samples.
- Perform completeness review of an estimated 8,100 release files before transferring them to the Records Center.
- Project records custodian for an estimated 6,500 records per year, which includes the document management for all original field records, as well as validation and analytical data from off-site laboratories.
- Store and maintain all NESHAPS data for five years.
- Schedule 53,500 samples for Groundwater, Surface Water and NPDES.
- Set up Project Profile template in FACTS.
- Monitor FACTS to SED daily transfers.
- Move data from FACTS to SED for special projects.
- Troubleshoot data entry problems in FACTS and WISDM.
- Modify and update FACTS database with respect to new units, new laboratories, new sampling kits and kit containers, new preservatives, and new materials.
- Load 1,100 Waste Pits Remedial Action Project (WPRAP) analytical data packages into SED through Access.
- Enter data for 28,600 WPRAP analyses into side "B" of the SED.
- Export data for 28,600 WPRAP analyses from the SED to Excel files for quality control checking.
- Assign, enter, transfer, and copy WPRAP Tracking Log data for 6,000 railcars.

3.2) Quantification – Data Entry

1. Table 5 shows the FTEs, materials, and travel per year to support the above work scope. The reduction in FTEs is a result of the process improvements described under EDSD2.

2. Two hundred dollars per year are allocated for office supplies and eqipment per employee. Additionally, $2,000 per year are budgeted for special file folders to hold all hard copy records for each analytical release.

3. One specialized computer training course is budgeted for every other year. Attendance at local conferences ($100 for travel and $500 for ODC 700 items) is budgeted for every other year.

Table 5
Elements of Cost for EDSD1 Data Entry Subtask

R1-F04-008

Labor Category	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
ENSMGR	0.55	0.65	0.75	0.75	0.75	0.75	0.75	0.00	0.00	0.00
ENSREP	0.95	0.95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENSTEC	2.80	~~3.20~~3.65	2.85	2.85	2.85	1.90	1.90	1.90	1.90	0.50
CLERKS	0.30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**4.60**	**~~4.80~~5.25**	**3.60**	**3.60**	**3.60**	**2.65**	**2.65**	**1.90**	**1.90**	**0.50**
Subcontracts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials ($)	3,000	3,000	2,800	2,800	2,800	2,600	2,600	2,400	2,400	600
Travel($)	100	1,100	100	1,100	100	1,100	100	1,100	100	0.00
ODC 700 ($)	0	2,100	500	2,100	500	2,100	500	2,100	500	0.00
Total ($)	**3,600**	**6,200**	**3,400**	**6,000**	**3,400**	**6,000**	**3,200**	**5,600**	**3,000**	**600**

4) Task #4 – Remediation Data Quality

4.1) Plan/Scope – Remediation Data Quality

Routine data quality and data defensibility responsibilities include the verification and validation of all site-wide environmental data as required. Other quality assurance activities related to data management include provision of technical resources for the administration of the Site-Wide CERCLA Quality Assurance Project Plan, technical and administrative management of the Data Quality Objective Program, planning and participating in audits of off-site and on-site analytical laboratories, and support and data quality oversight of the WPRAP Project. Specific tasks include:

- Maintain the Site-wide CERCLA Quality Assurance Project Plan (SCQ), including periodic revisions and change requests.

- Administer the external laboratory audit program including the performance of six external laboratory audits per year, interfacing with the DOE EMCAP program, conducting twelve surveillances per year, five external assessments per year, issuance of non-conformance reports, and verification of corrective actions.

- Administer analytical laboratory qualification, including pre-award audits and the management of the Approved Laboratories List. Conduct four analytical laboratory initial qualification oversight assessments per year, including pre-award audits.

- Conduct ten continuing analytical laboratory performance oversights per year, including annual audits, evaluation of laboratory performance in USEPA, DOE, state, and private Performance Evaluation programs; and tracking external laboratory performance indicators specified in contract statements of work and in the SCQ.

- Oversee and review various site activities including the review and approval site/division procedures and other project documents, the issuance of non-conformance reports and verification of corrective actions, twelve surveillances per year of FEMP organizations, and six internal quality audits per year of site activities and procedures.

- Assist Projects in the development of Data Quality Objectives and review and approve an anticipated 15 Data Quality Objectives per year.

- Provide technical support for environmental sampling, waste characterization, industrial hygiene samples, and samples taken to support D&D efforts.

- Perform analytical data package (including Chemical, Radiochemical, and Conventional) validation and verification in accordance with project quality requirements for an estimated 4,800 analyses.

- Verify and validate field data and associated documentation for completeness, for compliance with PSPs and in accordance with applicable quality requirements for an estimated 7,200 analyses.

- Perform an estimated ten reviews per year of all analytical services requisitions, including task orders and statements of work.

- Conduct 20 to 24 data surveillances and 12 Conduct of Operations (CONOPs) surveillances of International Technology (IT)-WPRAP annually in support of WPRAP.

- Review new IT-WPRAP procedures and plans and revisions to existing IT-WPRAP procedures and plans for compliance with project needs and requirements.

- Support the IT-WPRAP analytical laboratory by providing technical support and guidance regarding analytical, regulatory, and data usability issues.

4.2) Quantification – Remediation Data Quality

1. Table 6 shows the FTEs, materials, and travel per year to support the above work scope. The reduction in FTEs is a result of the process improvements described under EDSD2.

2. Two hundred dollars per year are allocated for office supplies and equipment per employee.

3. Five trips to radiological laboratories and five trips to chemical laboratories are scheduled each year for audit and surveillance activities. Attendance at one conference per year is budgeted.

Table 6
Elements of Cost for EDSD1 Remediation Data Quality Subtask

R1-F04-008

Labor Category	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
ENSMGR	0.55	0.70	0.75	0.75	0.75	0.75	0.75	0.0	0.0	0.0
ENSREP	3.45	~~3.60~~1.90	2.85	2.85	2.85	2.85	2.85	2.85	2.85	0.50
CLERKS	0.35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
QACENG	0.95	0.95	0.70	0.45	0.45	0.40	0.45	0.45	0.45	0.45
Overtime	0.00	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	**5.30**	**~~5.25~~3.50**	**4.30**	**4.05**	**4.05**	**4.05**	**4.05**	**3.30**	**3.00**	**0.60**
Subcontracts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials ($)	7,000	1,000	800	800	800	800	800	600	600	200
Travel ($)	22,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	0
ODC 700 ($)	400	9,000	9,000	9,000	9,000	9,000	9,000	9,000	9,000	0
Total ($)	**31,400**	**22,000**	**21,800**	**21,800**	**21,800**	**21,800**	**21,800**	**21,600**	**21,600**	**200**

1.4.2 EDSD1 – SDFM Management/Administrative, SM Office Contract Management and Oversight for Subcontracted Labs, Data Entry, and Remediation Data Quality and Data Defensibility

1.4)1 Plan/Scope –

1. EDSD1 is an LOE charge number. By far the largest costs associated with EDSD1 are labor costs; ODCs and travel are comparatively small. However, the labor FTEs associated with EDSD1 must be sufficient to handle the SDM work scope delineated above for the number of analyses in Table 2.

2. Extensive experience with SDM operations since December 1, 1992 indicates that nineteen FTEs are necessary to handle the EDSD1 work scope associated with the approximately 17,000 to 19,000 analyses projected for 2001 through 2006, exclusive of 2004. Experience suggests that these nineteen FTEs cannot be reduced without impairing schedule or the legal defensibility of data unless the significant process improvement changes to work scope described in EDSD2 are realized.

3. There is no experience with using the knowledge management system described in EDSD2. However, it is assumed that once fully implemented, three less FTEs will be needed by the end of FY03 to perform EDSD1 work scope.

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4. The number of analyses performed will substantially increase in FY04 relative to FY0~~3~~2 and FY0~~2~~3. ~~Therefore~~ Nonetheless, no additional manpower will be required ~~to~~ for the EDSD1 work scope associated with the approximately 25,000 analyses projected for FY004. The assumption is that with the work process improvements, ~~one~~ no additional FTE~~s~~ will be required.

5. By the end of FY2005 the process improvements are assumed to allow another two FTEs to be reduced in EDSD1 without a corresponding drop in the number of analyses.

6. By the end of FY2006 the process improvements will allow one additional FTE to be reduce from EDSD1 without a corresponding drop in the number of analyses.

7. A reduction in the number of analyses in FY08, FY09, and FY10 is reflected by a corresponding reduction in EDSD1 FTEs.

1.4)2 Quantification –

1. Table 7 below shows the number of FTEs (rounded to the nearest whole FTE) as a function of the number of analyses projected for EDSD1 through contract closure. (The number of FTEs represents the average for the fiscal year).

Table 7
EDSD1 FTEs Related to Number of Projected Analyses

R1-F04-008

Item	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
Analyses	18,078	17,902	16,846	24,740	16,286	16,867	19,662	14,361	14,151	2,777*
FTEs	18. 0	~~16.4~~15.6	12.6	12.0	11.2	10.1	10.0	8.0	8.0	6.0

* Number of analyses reflects first quarter FY2010. For the full year approximately 11,000 analyses will be taken. The eight FTEs represent the labor required to handle 11,000 analyses.

1.4.3 EDSD2 – Project Data Oversight

1) Task #1 – Data Coordination, Tracking, Management, Reporting and Interpretation

1.1) Plan/Scope – Data Coordination, Tracking, Management, Reporting and Interpretation

Routine activities entail coordination with the Projects to identify their data management requirements for analyses to be performed both on- and off-site, tracking data (e.g., analytical, operational, field, applicable health and safety,) from cradle to grave, ensuring that data requirements are met prior to sample collection, ensuring data integrity subsequent to database entry, facilitating data reporting and data reporting; and statistical analysis and interpretation of data. Specific tasks include:

- Coordinate with the projects to identify their data management requirements for 77,000 analyses to be performed on-site and 85,000 analyses to be performed off-site relative to:

    1. Tracking data (e.g., analytical, operational, field, health and safety)
    2. Ensuring that data requirements are met prior to sample collection
    3. Ensuring data integrity subsequent to database entry
    4. Facilitating data reporting
    5. Interpreting data.

- Interface with other SDM organizations as applicable to ensure that project data management requirements and schedules are met.
- Help develop Annual Laboratory Utilization Plan Updates in accordance with clause H-7.C of the new Fluor Fernald prime contract.

- Produce and run data queries to support biennial revisions of Integrated Environmental Monitoring Plan (IEMP), associated quarterly reports, and annual Integrated Site Environmental reports through 2009.

- Track and report various other data (e.g., meteorological, survey, field, operational, health and safety) that are collected and managed in association with analytical data.

- Perform statistical analyses to support project data (i.e., WPRAP, Waste Generator Services, SDFP, Aquifer, and Silos) reporting activities.

- Perform data reporting (e.g., supporting text and graphical/tabular display) for project document production (e.g., Soil Background Report, WPRAP start-up documentation, On-site Disposal Facility Baseline Reports).

- Coordinate the development and maintenance of various data reporting tools such as extranet data site for IEMP and post closure activities.

- Provide support to the projects in terms of technical interpretation of data and reporting to support Fluor-Fernald, DOE, and regulatory reporting commitments.

Data coordination, management, reporting, and interpretation activities also include, but are not limited to, the following non-routine work tasks:

- Interface with IM (e.g., Remediation Systems) to develop queries, reporting mechanisms, data storage and data retrieval mechanisms in order to meet projects' and site commitments.

- Assist in the five-year review of FEMP Remedial Actions as required under CERCLA (2001 and 2006).

- Produce and run data queries to support various projects reports associated with aquifer restoration, soil remediation, and waste characterization activities.

- Produce and run data queries, and perform statistical analyses in support of On-Site Disposal Facility baseline groundwater conditions for each of the nine planned disposal cells.

- Report data collected during sampling activities to DOE and regulatory agencies per project requirements and direction.

- Assist projects with development of sample plans and PSPs.

- Assist projects with Safe Start-up Reviews to ensure defensible, and retrievable data.
- Perform acceptance testing of applications and modification of existing work practices and procedures (which includes assisting in the verification and validation of various software).

- Ensure Silos project data management issues are addressed prior to full operation of remediation.

- Assist WPRAP with data management process improvements to ensure that there is defensible and retrievable data and that data flow processes are streamlined to achieve cost savings.

- Assist Aquifer Project with the transition of data from spreadsheet format to an Access database.

- Coordinate with and assist Remediation Systems in transferring the FACTS system from a VMS to NT operating system. This is required as IM is phasing out existing equipment in order to reduce support costs for hardware and personnel.

- Coordinate with and assist Remediation Systems with the migration SED, IIMS, SWIFTS/WCRP, IIMS/WPRAP off the VMS platform to NT. This is required as IM is phasing out existing equipment in order to reduce support costs for hardware and personnel.

- Coordinate with and assist Remediation Systems with the data migration and shutdown of SED, IIMS, SWIFTS/WCRP, IIMS/WPRAP, FACTS to appropriate data warehouse repository after need for active system is gone.

- Provide data management guidance and system specifications to change FACTS/SED/WISDM operational parameters in response to changes in site requirements.

1.2) Quantification – Data **Coordination, Tracking, Management, Reporting and Interpretation**

1. Table 8 shows the FTEs, materials, and travel per year to support the above work scope. The reduction in FTEs is a result of the process improvements described in Section 1.5.2.2.

2. Two hundred dollars per year are allocated for office supplies and equipment per employee.

3. Attendance at one non-local conference per year is budgeted. Additionally, $100 for travel and $500 for ODC 700 items are budgeted per year for local meeting and conferences.

Table 8
Elements of Cost for EDSD2 Data Coordination, Tracking, Management, Reporting and Interpretation Subtask

Labor Category	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
ENGINR	0.30	0.95	1.00	0.70	0.70	0.70	0.70	0.70	0.70	0.20
ENSMGR	0.70	0.70	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.20
ENSREP	3.20	3.30	2.85	3.85	3.10	2.85	1.90	1.90	0.95	0.25
TPSREP	0.95	0.95	0.95	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	**5.15**	**5.85**	**5.55**	**5.30**	**4.55**	**4.30**	**3.35**	**3.35**	**2.40**	**0.65**
Subcontracts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Materials ($)	1,000	1,200	1,200	1,000	1,000	1,000	800	800	600	200
Travel ($)	0.00	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	0
ODC 700 ($)	0.00	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	0
Total ($)	**1,000**	**4,000**	**4,000**	**3,800**	**3,800**	**3,800**	**3,600**	**3,600**	**3,400**	**200**

2) Task #2 – Process Improvements

2.1) Plan/Scope – Process Improvements

Process improvement tasks designed to streamline current work processes thereby resulting in downstream cost efficiencies are listed below. All process improvement work specified below shows a positive benefit in which downstream FTE savings exceed development FTE costs by a factor of 3 or more.

1. Develop standard analyte lists to be used in PSPs, FACTS, Windows Integrated Sample and Data Management (WISDM) and task orders (up-front development time of 0.2 FTE will result in downstream savings of 0.5 FTE per year).

3. Develop and implement the inputting of analytical data directly into the SED database, using FACTS only for logging samples and tracking purposes (total up-front development time of 1.0 FTE will result in downstream savings of as much as 2.0 FTE per year).

4. Automatically load field header data from FACTS into SED to easily generate reports relative to what, where, and when samples have been taken (total up-front development time of 0.25 FTE will result in downstream FTE savings of 0.2 FTE per year).

5. Work with Analytical Laboratory Services, Remediation Systems, and IM Groups to automate the transfer of data between laboratory instruments and databases to eliminate manual transcription and data entry (up-front development time of 1.0 FTE will result in downstream FTE savings of 1.0 FTE per year).

6. Work with Sample Management Office, Data Entry, Remediation Data Quality, Remediation Data Systems, and IM Groups to implement overall Sample and Data Management knowledge management system to facilitate and streamline overall tracking, entry, transfer, reporting, and management of data. Specific tasks include:

   A. Develop and implement processes that allow for the integration of PSPs, procedures, sample plans, FACTS, SED, WISDM, IPEX, and Doc Manager. This will eliminate duplication of effort between the projects and the sections within SDM and allow information to be easily shared between groups (up-front development time of 1.5 FTE will result in downstream savings of 1 FTE per year in SDM and significant additional savings throughout projects).

   B. Integrate current WISDM functionality into the KM platform system and integrate with off-site labs (up-front development time of 1 FTE with downstream savings of 1.5 FTE per year).

C. Implement electronic laboratory data packages, linked to data and work processes (up-front development time of .2 FTE will result in downstream savings of .2 FTE per year).

D. Develop ability to post RIR responses on SDM group drive (up-front development FTE time of .2 FTE will result in downstream FTE savings of .2 FTE per year).

E. Develop customized screens and reports to aid in tracking lab performance and financial commitments, such as the Lab Utilization Plan Update (up-front development time of .25 FTE will result in downstream savings of .25 FTE/year).

F. Develop electronic contract compliance capabilities (up-front development FTE time of .5 FTE will result in downstream savings of .25 FTE/year).

G. Expand automation of data validation process. Up-front development time of 0.5 FTE will result in downstream savings of 0.5 FTE/year.

6. Work with Data entry, Remediation Data systems, and Environmental Monitoring groups to implement and use electronic data capturing devices (e.g. laptops, palm tops) for field data collection. This will allow for a more timely review and electronic transfer of the data into the SED. Integrate into overall knowledge management system described above (up-front development time of 0.5 FTE will result in downstream savings of 0.5 FTE per year).

2.2) <u>Quantification – Process Improvements</u>

1. Table 9 shows the FTEs, materials, and travel per year to support the above process improvement work scope. The process improvement work is scheduled to be largely completed by the end of FY2002. FY2003 will be a year of extensive testing, procedure writing, and debugging workflow processes.

2. Materials for FY02 include 21-inch computer monitors at $1,000 each to facilitate electronic data validation and e-desk activities.

Table 9
Elements of Cost for EDSD2 Process Improvement Subtask

R1-F04-008

Labor Category	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
ENGINR	0.00	0.05								
ENSMGR	0.55	0.20								
ENSREP	1.85	~~0.95~~0.80								
ENSTEC	1.10	0.20								
TOTAL	3.55	~~1.40~~1.25								
Subcontracts	0.00	0.00								
Materials ($)	5,000	5,000								
Travel ($)	3,000	0.00								
Total ($)	**8,000**	**5,000**								

2) EDSD2 – Planning and Quantification

2.1) Plan/Scope – EDSD2

1. EDSD2 is an LOE charge number. By far the largest costs associated with EDSD2 are labor costs; ODCs and travel are comparatively small. The labor FTEs associated with EDSD2 must be sufficient to handle the EDSD2 work scope associated with the number of analyses given in Table 1 as well as the process improvements described above.

2. Extensive experience with SDM operations since December 1, 1999 indicates that two to three FTEs are necessary to handle the EDSD2 work scope associated with IEMP, NPDES, and OSDF analyses. As these three programs have an approximately constant number (~9,500) of analyses through FY2010, the number of FTEs required to support EDSD2 work scope is likewise constant throughout FY2010. Similarly, experience indicates that one to two FTEs are required to support EDSD2 work scope associated with analyses from the remaining projects. The reason that fewer FTEs are required for the remaining projects is that projects such as the Soils Project, WPRAP, Waste Generator Services, and the Silos have their own data management groups, and therefore require less support. Finally, experience indicates that one FTE is required to handle non-routine or process improvement work scope specified below in EDSD2.

3. One Additional FTE will be required in FY04 and the first quarter of FY05 to support the large number of samples (~25,000) that will be taken by the Soil Project.

4. In the third and fourth quarters of FY2001 and in the first and second quarters of FY2002, additional manpower will be required to implement the process improvements described later in this plan. These additional resources are either SDM employees not otherwise accounted for in EDSD1 or personnel in other projects whose time is not otherwise accounted for. Based upon the type and amount of work to be performed, from one to four additional FTEs are estimated to be required in the time frames mentioned above.

5. Because of crosswalk difficulties between charge numbers existing prior to 12/1/2000, the work scope allocated to the new EDSD2 charge number will be assigned to EDSD1 throughout FY01. Beginning in FY02, the work scope specified for EDSD2 will be charged to EDSD2.

1.2) Quantification – EDSD2

Table 10 below shows the number of FTEs required to perform EDSD2 work scope specified in this document.

Table 10
FTEs Required to Perform EDSD2 Work Scope

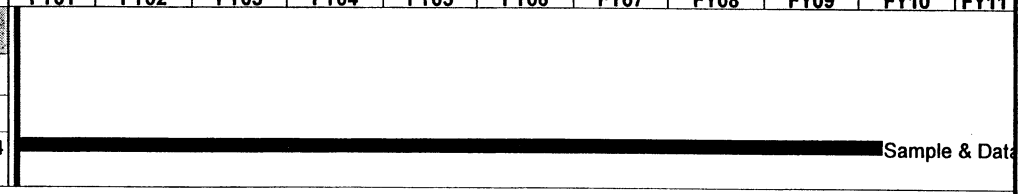
R1-F04-008

Item	FY01	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
FTEs	8.7	~~7.37~~ 1	5.6	5.3	4.6	4.3	3.4	3.4	2.4	0.6

SECTION 7

2.0 SCHEUDLE

Activity ID	Activity Description	Early Start	Early Finish	Orig Dur
E PBS 04 - AQUIFER RESTORATION				
1.1.E.D SAMPLE & DATA MANAGEMENT				
EDSD1 Sample & Data Management				
ECDSD10000	Sample & Data Management	01DEC00	27DEC09	3,314



FLUOR FERNALD

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Start Date	01DEC00
Finish Date	27DEC09
Data Date	01DEC00
Run Date	05SEP01 15:12

BLCF - EC01

Sheet 1 of 1

AQUIFER RESTORATION

1.1.E.D SAMPLE & DATA MANAGEMENT

Early Bar
Progress Bar
Critical Activity

Date	Revision	Checked	Approved

SECTION 7

3.0 MANPOWER PLANS

Manpower Planning Sheet (CR2)

MPS # 1ED01 SAMPLE & DATA MANAGEMENT

DRIVERS	START DATE	END DATE	TOT	FY 2001 Q1	FY 2001 Q2	FY 2001 Q3	FY 2001 Q4	FY 2002 Q1	FY 2002 Q2	FY 2002 Q3	FY 2002 Q4	FY 2003 Q1	FY 2003 Q2	FY 2003 Q3	FY 2003 Q4	FY 2004 Q1	FY 2004 Q2	FY 2004 Q3	FY 2004 Q4	FY 2005 Q1	FY 2005 Q2	FY 2005 Q3	FY 2005 Q4	FY 2006 Q1	FY 2006 Q2	FY 2006 Q3	FY 2006 Q4
201 D&D Summary	10/02/2000	03/30/2007		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
301 OSDF Summary Schedule	04/01/2004	12/23/2009																xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
411 AWWT Operations	10/02/2000	12/31/2009		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
502 WASTE PIT SHIP/DISPOSAL OPERATIONS	10/02/2000	08/01/2005		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xx				
602 Area 3B Excavation	10/03/2005	03/31/2008																						xxx	xxx	xxx	xxx
604 Area 4A: Excavation	04/01/2004	09/30/2005																xxx	xxx	xxx	xxx	xxx	xxx				
606 Area 4B Excavation	10/03/2005	03/31/2008																						xxx	xxx	xxx	xxx
608 Area 3A Precert/Certification	10/03/2005	09/29/2006																						xxx	xxx	xxx	xxx
609 Area 3B Precert/Certification	04/02/2008	02/09/2009																									
610 Area 2 Predesign/Design	10/01/2004	06/29/2006																		xxx	xxx	xxx	xxx	xxx	xxx	xxx	
611 Area 6: Excavation	10/02/2006	09/28/2007																									
612 Area 2 Phase 2 Precert/Cert	10/04/2004	04/10/2007																		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
613 Area 3A Predesign/Design	10/02/2000	07/27/2001		xxx	xxx	xxx	x																				
614 Area 4A Predesign/Design	10/02/2000	07/27/2001		xxx	xxx	xxx	x																				
615 Area 3B/4B/5 Predesign/Design	10/01/2003	09/28/2005														xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx				
616 Area 7, Sector 1 and 4 Excavation	01/02/2008	09/30/2008																									
626 Lime Sludge Pond Excavation	04/01/2004	09/30/2004																xxx	xxx								
629 Area 3A: Excavation	04/01/2004	06/30/2005																xxx	xxx	xxx	xxx	xxx					
632 Area 5: Excavation	10/03/2005	03/31/2008																						xxx	xxx	xxx	xxx
634 Area 4A Precert/Certification	10/03/2005	09/29/2006																						xxx	xxx	xxx	xxx
635 Area 6: Predsign/Design	10/03/2005	09/29/2006																						xxx	xxx	xxx	xxx
636 Area 6: Precert/Cert	07/02/2007	06/30/2008																									
637 Area 7: Predesign/Design	10/02/2006	09/28/2007																									

Procurement	Procurement	Buyer/Contracts Administrator	3.40	0.4	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lab	Lab	Chemist	1.30	0	0.6	0.5	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Administration	Clerks	0.80	0	0.6	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Controls	Project Controls	Cost Analyst	0.40	0	0.2	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Administration	Department Administrator	21.50	0.5	1.3	1.6	1.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Engineering and	Engineering & Design	Engineer	2.70	0	0.7	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental	Environmental	Environmental Scientist Mgr.	60.70	0.6	1	1	1	2.1	2.1	2.1	2.1	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Environmental	Environmental	Environmental Scientist Rep.	185.10	1.4	5	8.2	9	6.7	6.9	7.2	7.2	6.3	6.3	5.3	5.3	5.3	5.3	5.3	5.3	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
Environmental	Environmental	Environmental Scientist Tech.	89.70	0	0	0.2	0.2	4.8	4.9	4.8	4.8	3	3	3	3	3	3	3	3	3	3	3	3	2	2	2	2
Lab	Lab	Lab Tech.	0.30	0	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QA/QC	QA/QC	QA Engineer	35.20	0.1	0.5	0.9	0.7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Project Manage	Project Management	Tech/Program Support Rep.	0.80	0	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	0

Manpower Planning Sheet (CR2)

MPS # 1ED01 SAMPLE & DATA MANAGEMENT

DRIVERS	START DATE	END DATE	FY 2007 Q1	FY 2007 Q2	FY 2007 Q3	FY 2007 Q4	FY 2008 Q1	FY 2008 Q2	FY 2008 Q3	FY 2008 Q4	FY 2009 Q1	FY 2009 Q2	FY 2009 Q3	FY 2009 Q4	FY 2010 Q1	FY 2010 Q2	FY 2010 Q3	FY 2010 Q4	FY 2011 Q1	FY 2011 Q2	FY 2011 Q3	FY 2011 Q4
201 D&D Summary	10/02/2000	03/30/2007	xxx	xxx																		
301 OSDF Summary Schedule	04/01/2004	12/23/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
502 WASTE PIT SHIP/DISPOSAL OPERATION	10/02/2000	08/01/2005																				
602 Area 3B Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
604 Area 4A: Excavation	04/01/2004	09/30/2005																				
606 Area 4B Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
608 Area 3A Precert/Certification	10/03/2005	09/29/2006																				
609 Area 3B Precert/Certification	04/02/2008	02/09/2009							xxx	xxx	xxx	xx										
610 Area 2 Predesign/Design	10/01/2004	06/29/2006																				
611 Area 6: Excavation	10/02/2006	09/28/2007	xxx	xxx	xxx	xxx																
612 Area 2 Phase 2 Precert/Cert	10/04/2004	04/10/2007	xxx	xxx	x																	
613 Area 3A Predesign/Design	10/02/2000	07/27/2001																				
614 Area 4A Predesign/Design	10/02/2000	07/27/2001																				
615 Area 3B/4B/5 Predesign/Design	10/01/2003	09/28/2005																				
616 Area 7, Sector 1 and 4 Excavation	01/02/2008	09/30/2008						xxx	xxx	xxx												
626 Lime Sludge Pond Excavation	04/01/2004	09/30/2004																				
629 Area 3A: Excavation	04/01/2004	06/30/2005																				
632 Area 5: Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
634 Area 4A Precert/Certification	10/03/2005	09/29/2006																				
635 Area 6: Predsign/Design	10/03/2005	09/29/2006																				
636 Area 6: Precert/Cert	07/02/2007	06/30/2008				xxx	xxx	xxx	xxx													
637 Area 7: Predesign/Design	10/02/2006	09/28/2007	xxx	xxx	xxx	xxx																
Procurement	Buyer/Contracts Administrator		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lab	Chemist		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Clerks		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Controls	Cost Analyst		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administration	Department Administrator		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	0	0	0	0	0
Engineering & Design	Engineer		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Environmental	Environmental Scientist Mgr.		2.3	2.3	2.3	2.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0	0	0	0	0	0	0
Environmental	Environmental Scientist Rep.		4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	2.3	0	0	0	0	0	0	0
Environmental	Environmental Scientist Tech.		2	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0
Lab	Lab Tech.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
QA/QC	QA Engineer		1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
Project Management	Tech/Program Support Rep.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Manpower Planning Sheet (CR2)

MPS # 1ED01 SAMPLE & DATA MANAGEMENT

DRIVERS	START DATE	END DATE	TOT	FY 2001				FY 2002				FY 2003				FY 2004				FY 2005				FY 2006			
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
		Sheet Totals:	401.90	3.00	11.00	14.80	14.90	15.20	15.50	15.70	15.70	13.20	13.20	12.20	12.20	12.10	12.10	12.10	12.10	11.20	11.20	11.20	11.20	10.20	10.20	10.20	10.20

Manpower Planning Sheet (CR2)

MPS # 1ED01 SAMPLE & DATA MANAGEMENT

DRIVERS	START DATE	END DATE	FY 2007				FY 2008				FY 2009				FY 2010				FY 2011			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
		Sheet Totals:	10.10	10.10	10.10	10.10	8.10	8.10	8.10	8.10	8.10	8.10	8.10	8.10	6.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Manpower Planning Sheet (CR2)

MPS # 1ED02 PROJECT DATA OVERSIGHT

DRIVERS	START DATE	END DATE	TOT	FY 2001 Q1	FY 2001 Q2	FY 2001 Q3	FY 2001 Q4	FY 2002 Q1	FY 2002 Q2	FY 2002 Q3	FY 2002 Q4	FY 2003 Q1	FY 2003 Q2	FY 2003 Q3	FY 2003 Q4	FY 2004 Q1	FY 2004 Q2	FY 2004 Q3	FY 2004 Q4	FY 2005 Q1	FY 2005 Q2	FY 2005 Q3	FY 2005 Q4	FY 2006 Q1	FY 2006 Q2	FY 2006 Q3	FY 2006 Q4
201 D&D Summary	10/02/2000	03/30/2007		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
301 OSDF Summary Schedule	04/01/2004	12/23/2009																xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
411 AWWT Operations	10/02/2000	12/31/2009		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
502 WASTE PIT SHIP/DISPOSAL OPERATIONS	10/02/2000	08/01/2005		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xx				
602 Area 3B Excavation	10/03/2005	03/31/2008																						xxx	xxx	xxx	xxx
604 Area 4A: Excavation	04/01/2004	09/30/2005																xxx	xxx	xxx	xxx	xxx	xxx				
606 Area 4B Excavation	10/03/2005	03/31/2008																						xxx	xxx	xxx	xxx
608 Area 3A Precert/Certification	10/03/2005	09/29/2006																						xxx	xxx	xxx	xxx
609 Area 3B Precert/Certification	04/02/2008	02/09/2009																									
610 Area 2 Predesign/Design	10/01/2004	06/29/2006																		xxx	xxx	xxx	xxx	xxx	xxx	xxx	
611 Area 6: Excavation	10/02/2006	09/28/2007																									
612 Area 2 Phase 2 Precert/Cert	10/04/2004	04/10/2007																		xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
613 Area 3A Predesign/Design	10/02/2000	07/27/2001		xxx	xxx	xxx	x																				
614 Area 4A Predesign/Design	10/02/2000	07/27/2001		xxx	xxx	xxx	x																				
615 Area 3B/4B/5 Predesign/Design	10/01/2003	09/28/2005														xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx				
616 Area 7, Sector 1 and 4 Excavation	01/02/2008	09/30/2008																									
626 Lime Sludge Pond Excavation	04/01/2004	09/30/2004																xxx	xxx								
629 Area 3A: Excavation	04/01/2004	06/30/2005																xxx	xxx	xxx	xxx	xxx					
632 Area 5: Excavation	10/03/2005	03/31/2008																						xxx	xxx	xxx	xxx
634 Area 4A Precert/Certification	10/03/2005	09/29/2006																						xxx	xxx	xxx	xxx
635 Area 6: Predsign/Design	10/03/2005	09/29/2006																						xxx	xxx	xxx	xxx
636 Area 6: Precert/Cert	07/02/2007	06/30/2008																									
637 Area 7: Predesign/Design	10/02/2006	09/28/2007																									
Engineering and Engineering & Design Engineer			25.50	0	0	0	0	1	1	1	1	1	1	1	1	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Environmental Environmental Environmental Scientist Mgr.			26.90	0	0	0	0	1	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Environment Environmental Environmental Scientist Rep.			87.90	0	0	0	0	4.3	4.1	4	3.9	2.9	2.9	2.9	2.9	3.9	3.9	3.9	3.9	3.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
Environment Environmental Environmental Scientist Tech.			0.70	0	0	0	0	0.2	0.2	0.1	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Manage Project Management Tech/Program Support Rep.			8.00	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Sheet Totals:			149.00	0.00	0.00	0.00	0.00	7.50	7.20	7.00	7.00	5.70	5.70	5.70	5.70	5.40	5.40	5.40	5.40	5.40	4.40	4.40	4.40	4.40	4.40	4.40	4.40

Manpower Planning Sheet (CR2)

MPS # 1ED02 PROJECT DATA OVERSIGHT

DRIVERS	START DATE	END DATE	FY 2007 Q1	FY 2007 Q2	FY 2007 Q3	FY 2007 Q4	FY 2008 Q1	FY 2008 Q2	FY 2008 Q3	FY 2008 Q4	FY 2009 Q1	FY 2009 Q2	FY 2009 Q3	FY 2009 Q4	FY 2010 Q1	FY 2010 Q2	FY 2010 Q3	FY 2010 Q4	FY 2011 Q1	FY 2011 Q2	FY 2011 Q3	FY 2011 Q4
201 D&D Summary	10/02/2000	03/30/2007	xxx	xxx																		
301 OSDF Summary Schedule	04/01/2004	12/23/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
411 AWWT Operations	10/02/2000	12/31/2009	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx							
502 WASTE PIT SHIP/DISPOSAL OPERATION	10/02/2000	08/01/2005																				
602 Area 3B Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
604 Area 4A: Excavation	04/01/2004	09/30/2005																				
606 Area 4B Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
608 Area 3A Precert/Certification	10/03/2005	09/29/2006																				
609 Area 3B Precert/Certification	04/02/2008	02/09/2009							xxx	xxx	xxx	xx										
610 Area 2 Predesign/Design	10/01/2004	06/29/2006																				
611 Area 6: Excavation	10/02/2006	09/28/2007	xxx	xxx	xxx	xxx																
612 Area 2 Phase 2 Precert/Cert	10/04/2004	04/10/2007	xxx	xxx	x																	
613 Area 3A Predesign/Design	10/02/2000	07/27/2001																				
614 Area 4A Predesign/Design	10/02/2000	07/27/2001																				
615 Area 3B/4B/5 Predesign/Design	10/01/2003	09/28/2005																				
616 Area 7, Sector 1 and 4 Excavation	01/02/2008	09/30/2008						xxx	xxx	xxx												
626 Lime Sludge Pond Excavation	04/01/2004	09/30/2004																				
629 Area 3A: Excavation	04/01/2004	06/30/2005																				
632 Area 5: Excavation	10/03/2005	03/31/2008	xxx	xxx	xxx	xxx	xxx	xxx														
634 Area 4A Precert/Certification	10/03/2005	09/29/2006																				
635 Area 6: Predsign/Design	10/03/2005	09/29/2006																				
636 Area 6: Precert/Cert	07/02/2007	06/30/2008				xxx	xxx	xxx	xxx													
637 Area 7: Predesign/Design	10/02/2006	09/28/2007	xxx	xxx	xxx	xxx																
Engineering & Design	Engineer		0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0	0	0	0	0	0	0
Environmental	Environmental Scientist Mgr.		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0	0	0	0	0	0	0
Environmental	Environmental Scientist Rep.		1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1	1	1	1	1	0	0	0	0	0	0	0
Environmental	Environmental Scientist Tech.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Project Management	Tech/Program Support Rep.		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Sheet Totals:	3.40	3.40	3.40	3.40	3.40	3.40	3.40	3.40	2.50	2.50	2.50	2.50	2.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00

SECTION 7

4.0 ESTIMATE

EDSD1

SAMPLE & DATA MANAGEMENT

09/06/2001
1:33 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EDSD
CHARGE NO: EDSD1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: CHRIS SUTTON
FISCAL YEAR: 2001-2010

Resource: BUYCON **BUYER/CONTRACTS ADMN** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,461.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	1,461.6	1,461.6	1,461.6	1,461.6	1,461.6	1,461.6	1,461.6	1,461.6	1,461.6	1,461.6
Yr Total Cost:	61,243	0	0	0	0	0	0	0	0	0
Cum Total Cost:	61,243	61,243	61,243	61,243	61,243	61,243	61,243	61,243	61,243	61,243

Resource: CLERKS **CLERKS** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	250.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	250.8	250.8	250.8	250.8	250.8	250.8	250.8	250.8	250.8	250.8
Yr Total Cost:	5,991	0	0	0	0	0	0	0	0	0
Cum Total Cost:	5,991	5,991	5,991	5,991	5,991	5,991	5,991	5,991	5,991	5,991

Resource: CSTANL **COST ANALYST** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Yr Total Cost:	3,891	0	0	0	0	0	0	0	0	0
Cum Total Cost:	3,891	3,891	3,891	3,891	3,891	3,891	3,891	3,891	3,891	3,891

Resource: DEPADM **DEPT ADMINISTRATOR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,866.7	873.5	873.5	873.5	873.5	873.5	873.5	873.5	873.5	210.5
Cum Hours:	1,866.7	2,740.2	3,613.7	4,487.2	5,360.7	6,234.2	7,107.7	7,981.2	8,854.7	9,065.2
Yr Total Cost:	59,194	29,155	30,881	32,702	34,640	37,009	40,121	42,288	46,994	11,674
Cum Total Cost:	59,194	88,349	119,230	151,932	186,573	223,582	263,703	305,991	352,985	364,659

INCLUDES ESCALATION COSTS

09/06/2001
1:33 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EDSD
CHARGE NO: EDSD1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: CHRIS SUTTON
FISCAL YEAR: 2001-2010

Resource: ENGINR **ENGINEER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,231.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	1,231.0	1,231.0	1,231.0	1,231.0	1,231.0	1,231.0	1,231.0	1,231.0	1,231.0	1,231.0
Yr Total Cost:	84,644	0	0	0	0	0	0	0	0	0
Cum Total Cost:	84,644	84,644	84,644	84,644	84,644	84,644	84,644	84,644	84,644	84,644

Resource: ENSMGR **ENVIR SCIENTIST MGR** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	1,699.3	3,647.7	3,930.8	3,930.8	3,930.8	3,930.8	3,930.8	436.8	436.8	105.3
Cum Hours:	1,699.3	5,346.9	9,277.7	13,208.4	17,139.2	21,069.9	25,000.7	25,437.4	25,874.2	25,979.4
Yr Total Cost:	89,621	202,492	231,126	244,753	259,262	276,993	300,283	35,167	39,080	9,708
Cum Total Cost:	89,621	292,113	523,239	767,992	1,027,254	1,304,247	1,604,529	1,639,696	1,678,776	1,688,484

Resource: ENSREP **ENVIR SCIENCE REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	10,227.8	12,410.2	10,123.1	9,259.1	7,686.8	7,599.5	7,512.1	7,512.1	7,424.8	947.3
Cum Hours:	10,227.8	22,637.9	32,761.0	42,020.1	49,706.9	57,306.4	64,818.5	72,330.6	79,755.3	80,702.6
Yr Total Cost:	429,157	548,110	473,568	458,687	403,371	426,060	456,574	481,234	528,567	69,513
Cum Total Cost:	429,157	977,267	1,450,835	1,909,522	2,312,893	2,738,953	3,195,528	3,676,761	4,205,328	4,274,841

Resource: ENSTEC **ENVIR SCIENTIST TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	227.5	8,429.2	5,241.0	5,241.0	5,241.0	3,494.0	3,494.0	3,494.0	3,494.0	842.0
Cum Hours:	227.5	8,656.7	13,897.7	19,138.7	24,379.7	27,873.7	31,367.7	34,861.7	38,355.7	39,197.7
Yr Total Cost:	6,443	251,267	165,478	175,235	185,623	132,212	143,328	151,069	167,880	41,703
Cum Total Cost:	6,443	257,709	423,187	598,422	784,044	916,256	1,059,584	1,210,653	1,378,533	1,420,236

INCLUDES ESCALATION COSTS

09/06/2001
1:33 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EDSD
CHARGE NO: EDSD1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: CHRIS SUTTON
FISCAL YEAR: 2001-2010

Resource: GLMNT **GEN LABOR MAINT** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	39.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.4
Yr Total Cost:	962	0	0	0	0	0	0	0	0	0
Cum Total Cost:	962	962	962	962	962	962	962	962	962	962

Resource: LABCHM **CHEMIST** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	301.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	301.5	301.5	301.5	301.5	301.5	301.5	301.5	301.5	301.5	301.5
Yr Total Cost:	11,686	0	0	0	0	0	0	0	0	0
Cum Total Cost:	11,686	11,686	11,686	11,686	11,686	11,686	11,686	11,686	11,686	11,686

Resource: LABTEC **LAB TECH** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	224.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	224.5	224.5	224.5	224.5	224.5	224.5	224.5	224.5	224.5	224.5
Yr Total Cost:	6,238	0	0	0	0	0	0	0	0	0
Cum Total Cost:	6,238	6,238	6,238	6,238	6,238	6,238	6,238	6,238	6,238	6,238

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	29,241.0	6,492.0	5,976.0	5,724.0	5,724.0	5,532.0	5,532.0	4,956.0	4,956.0	1,113.0
Cum Units:	29,241.0	35,733.0	41,709.0	47,433.0	53,157.0	58,689.0	64,221.0	69,177.0	74,133.0	75,246.0
Yr Total Cost:	29,241	6,667	6,303	6,206	6,380	6,345	6,529	6,019	6,193	1,431
Cum Total Cost:	29,241	35,908	42,211	48,418	54,798	61,143	67,672	73,690	79,884	81,315

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EDSD
CHARGE NO: EDSD1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: CHRIS SUTTON
FISCAL YEAR: 2001-2010

Resource: MNTREP **MAINTENANCE REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	65.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4	65.4
Yr Total Cost:	2,272	0	0	0	0	0	0	0	0	0
Cum Total Cost:	2,272	2,272	2,272	2,272	2,272	2,272	2,272	2,272	2,272	2,272

Resource: ODC700 **ODC 700** **EOC:** ODC
Res Dept: **Overtime:** **Class:** ODC

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	4,837.0	14,100.0	12,600.0	14,100.0	12,600.0	17,100.0	12,600.0	14,100.0	12,600.0	2,400.0
Cum Units:	4,837.0	18,937.0	31,537.0	45,637.0	58,237.0	75,337.0	87,937.0	102,037.0	114,637.0	117,037.0
Yr Total Cost:	4,837	14,481	13,290	15,288	14,044	19,613	14,871	17,123	15,746	3,086
Cum Total Cost:	4,837	19,318	32,607	47,895	61,940	81,552	96,423	113,546	129,292	132,378

Resource: ODCTRVL **TRAVEL RESOURCE** **EOC:** ODC
Res Dept: **Overtime:** **Class:** ODC

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	26,780.0	16,800.0	15,700.0	16,800.0	15,700.0	21,000.0	15,700.0	16,800.0	15,700.0	3,000.0
Cum Units:	26,780.0	43,580.0	59,280.0	76,080.0	91,780.0	112,780.0	128,480.0	145,280.0	160,980.0	163,980.0
Yr Total Cost:	26,780	17,254	16,559	18,216	17,500	24,086	18,529	20,402	19,620	3,858
Cum Total Cost:	26,780	44,034	60,593	78,808	96,308	120,394	138,923	159,326	178,945	182,803

Resource: PMCOPR **PRIV MOTOR CARRIER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** HOU

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	24.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6
Yr Total Cost:	768	0	0	0	0	0	0	0	0	0
Cum Total Cost:	768	768	768	768	768	768	768	768	768	768

INCLUDES ESCALATION COSTS

09/06/2001
1:33 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EDSD
CHARGE NO: EDSD1
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: CHRIS SUTTON
FISCAL YEAR: 2001-2010

Resource: QACENG **QA ENGINEER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	845.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	1,747.0	421.0
Cum Hours:	845.0	2,592.0	4,339.0	6,086.0	7,833.0	9,580.0	11,327.0	13,074.0	14,821.0	15,242.0
Yr Total Cost:	38,834	84,514	89,517	94,795	100,414	107,282	116,302	122,584	136,225	33,840
Cum Total Cost:	38,834	123,348	212,865	307,660	408,075	515,357	631,659	754,242	890,467	924,307

Resource: TPSREP **TECH/PROG SUPT REP** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	7.9	87.4	87.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	7.9	95.2	182.6	182.6	182.6	182.6	182.6	182.6	182.6	182.6
Yr Total Cost:	409	4,777	5,060	0	0	0	0	0	0	0
Cum Total Cost:	409	5,187	10,247	10,247	10,247	10,247	10,247	10,247	10,247	10,247

Resource: WSTENG **WASTE ENGINEER** **EOC:** LABOR
Res Dept: **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	68.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	68.8	68.8	68.8	68.8	68.8	68.8	68.8	68.8	68.8	68.8
Yr Total Cost:	3,509	0	0	0	0	0	0	0	0	0
Cum Total Cost:	3,509	3,509	3,509	3,509	3,509	3,509	3,509	3,509	3,509	3,509

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	18,641.7	27,194.9	22,002.7	21,051.4	19,479.1	17,644.7	17,557.4	14,063.4	13,976.0	2,526.0
Cum Hours:	18,641.7	45,836.5	67,839.2	88,890.6	108,369.6	126,014.3	143,571.7	157,635.0	171,611.0	174,137.0
Yr Total Cost:	865,721	1,158,717	1,031,782	1,045,882	1,021,234	1,029,599	1,096,537	875,886	960,304	174,813
Cum Total Cost:	865,721	2,024,437	3,056,219	4,102,101	5,123,335	6,152,935	7,249,472	8,125,358	9,085,662	9,260,475

CAM_____ per CST _____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

EDSD2

PROJECT DATA OVERSIGHT

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EDSD
CHARGE NO: EDSD2
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: CHRIS SUTTON
FISCAL YEAR: 2001-2010

Resource: ENGINR **ENGINEER** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	1,747.0	1,747.0	1,222.9	1,222.9	1,222.9	1,222.9	1,222.9	1,222.9	294.7
Cum Hours:	0.0	1,747.0	3,494.0	4,716.9	5,939.8	7,162.7	8,385.6	9,608.5	10,831.4	11,126.1
Yr Total Cost:	0	126,440	133,925	99,275	105,160	112,352	121,798	128,377	142,662	35,439
Cum Total Cost:	0	126,440	260,365	359,640	464,800	577,151	698,950	827,326	969,989	1,005,428

Resource: ENSMGR **ENVIR SCIENTIST MGR** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	1,593.4	1,310.3	1,310.3	1,310.3	1,310.3	1,310.3	1,310.3	1,310.3	315.8
Cum Hours:	0.0	1,593.4	2,903.6	4,213.9	5,524.1	6,834.4	8,144.6	9,454.9	10,765.1	11,080.9
Yr Total Cost:	0	88,452	77,042	81,584	86,421	92,331	100,094	105,500	117,240	29,124
Cum Total Cost:	0	88,452	165,494	247,078	333,499	425,830	525,924	631,424	748,665	777,788

Resource: ENSREP **ENVIR SCIENCE REP** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	7,134.5	4,979.0	6,726.0	4,979.0	4,979.0	3,319.3	3,319.3	1,659.7	400.0
Cum Hours:	0.0	7,134.5	12,113.4	18,839.4	23,818.3	28,797.3	32,116.6	35,435.9	37,095.5	37,495.5
Yr Total Cost:	0	315,102	232,920	333,198	261,274	279,143	201,742	212,638	118,150	29,350
Cum Total Cost:	0	315,102	548,022	881,219	1,142,494	1,421,636	1,623,378	1,836,017	1,954,167	1,983,517

Resource: ENSTEC **ENVIR SCIENTIST TECH** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	305.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	0.0	305.8	305.8	305.8	305.8	305.8	305.8	305.8	305.8	305.8
Yr Total Cost:	0	9,116	0	0	0	0	0	0	0	0
Cum Total Cost:	0	9,116	9,116	9,116	9,116	9,116	9,116	9,116	9,116	9,116

INCLUDES ESCALATION COSTS

09/06/2001
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PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EDSD
CHARGE NO: EDSD2
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: CHRIS SUTTON
FISCAL YEAR: 2001-2010

Resource: MAT300 **MATERIAL OBJCLASS300** **EOC:** MATERIAL
Res Dept: 952 **Overtime:** **Class:** MAT

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	6,572.0	1,272.0	1,140.0	1,140.0	1,140.0	888.0	888.0	636.0	159.0
Cum Units:	0.0	6,572.0	7,844.0	8,984.0	10,124.0	11,264.0	12,152.0	13,040.0	13,676.0	13,835.0
Yr Total Cost:	0	6,749	1,342	1,236	1,271	1,308	1,048	1,078	795	204
Cum Total Cost:	0	6,749	8,091	9,327	10,598	11,905	12,953	14,032	14,827	15,031

Resource: ODC700 **ODC 700** **EOC:** ODC
Res Dept: 952 **Overtime:** **Class:** ODC

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	1,680.0	1,680.0	1,680.0	1,680.0	1,680.0	1,680.0	1,680.0	1,680.0	420.0
Cum Units:	0.0	1,680.0	3,360.0	5,040.0	6,720.0	8,400.0	10,080.0	11,760.0	13,440.0	13,860.0
Yr Total Cost:	0	1,725	1,772	1,822	1,873	1,927	1,983	2,040	2,099	540
Cum Total Cost:	0	1,725	3,497	5,319	7,191	9,118	11,101	13,141	15,241	15,781

Resource: ODCTRVL **TRAVEL RESOURCE** **EOC:** ODC
Res Dept: 952 **Overtime:** **Class:** ODC

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Units:	0.0	1,200.0	1,200.0	1,200.0	1,200.0	1,200.0	1,200.0	1,200.0	1,200.0	300.0
Cum Units:	0.0	1,200.0	2,400.0	3,600.0	4,800.0	6,000.0	7,200.0	8,400.0	9,600.0	9,900.0
Yr Total Cost:	0	1,232	1,266	1,301	1,338	1,376	1,416	1,457	1,500	386
Cum Total Cost:	0	1,232	2,498	3,799	5,137	6,513	7,929	9,387	10,886	11,272

Resource: TPSREP **TECH/PROG SUPT REP** **EOC:** LABOR
Res Dept: 952 **Overtime:** **Class:** SAL

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	1,659.7	1,659.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cum Hours:	0.0	1,659.7	3,319.3	3,319.3	3,319.3	3,319.3	3,319.3	3,319.3	3,319.3	3,319.3
Yr Total Cost:	0	90,770	96,143	0	0	0	0	0	0	0
Cum Total Cost:	0	90,770	186,913	186,913	186,913	186,913	186,913	186,913	186,913	186,913

INCLUDES ESCALATION COSTS

09/06/2001
2:21 PM

PBS: OHFN04
WBS: 1.1.E.
CTRL ACCT: EDSD
CHARGE NO: EDSD2
COMMENT NO: F04-008

Fluor Fernald, Inc.

ESTIMATE SUPPORT WORKSHEET
FOR ACTIVITY BASED ESTIMATING
(1 FTE EQUALS 1747 HOURS)

DATE: 06-Sep-01
PROJECT MGR: MARC JEWETT
CAM: MARC JEWETT
PREPARED BY: CHRIS SUTTON
FISCAL YEAR: 2001-2010

GRAND TOTALS:

	Oct 00-Sep 01	Oct 01-Sep 02	Oct 02-Sep 03	Oct 03-Sep 04	Oct 04-Sep 05	Oct 05-Sep 06	Oct 06-Sep 07	Oct 07-Sep 08	Oct 08-Sep 09	Oct 09-Sep 10
Yr Hours:	0.0	12,440.3	9,695.9	9,259.1	7,512.1	7,512.1	5,852.5	5,852.5	4,192.8	1,010.4
Cum Hours:	0.0	12,440.3	22,136.1	31,395.2	38,907.3	46,419.4	52,271.9	58,124.3	62,317.1	63,327.5
Yr Total Cost:	0	639,586	544,409	518,416	457,336	488,436	428,082	451,091	382,447	95,043
Cum Total Cost:	0	639,586	1,183,995	1,702,411	2,159,746	2,648,183	3,076,264	3,527,356	3,909,802	4,004,846

CAM_____ CONTROL TEAM_____

INCLUDES ESCALATION COSTS

SECTION 7

5.0 RISK PLAN

Risk/Opportunity Identification and Analysis Form

Project: Sample and Data Management		PBS Number: 04			Total Baseline Dollars (Minimum Case):			$13,265,320		
Evaluator: Chris Sutton	Date: 3/23/01	WBS Number: 1.1.E.D								
CAM: Chris Sutton	Date: 3/23/01	Control Account Number: EDSD								
Project Task	Risk and/or Opportunity	Potential Impact	Internal Or External Driver	Impact Cost $ (Maximum Case)	Risk Impact Level	Risk Probability %	Risk Probability Level	Probable Cost $ (Likeliest Case)	Risk Critical Value	Risk Handling Strategy
Sample and Data Management	Site operations are extended by one year.	Labor, materials, and ODCs for Sample and Data Management would be accrued for one additional year.	Internal	$1,600,000	3	50	3	$800,000	4	Reduce risk
Sample and Data Management	Number of analyses exceeds the projected number by more than 50% in any given year	Additional labor cost or schedule slippage	Internal	$320,000	2	40	3	$128,000	2	Accept risk
Sample and Data Management	Commercial plus on-site lab capacity is not available in FY04 to handle radiologic samples	results in inefficient operations and schedule slippage three months.	Internal	$800,000	3	30	2	$240,000	3	Accept risk
Sample and Data Management	Data validation expertise is not available in for any one year in FY05 through FY08 to validate all the rad samples per year per Soil Project schedule	Schedule slips three months per year for each year that insufficient data validation expertise is available	Internal	$35,000	3	30	2	$10,500	3	Accept risk
Sample and Data Management	Data validation expertise is not available in FY04 to validate all the rad samples per Soil Project schedule	Schedule slips six months	Internal	$75,000	4	40	3	$30,000	7	Accept risk
Sample and Data Management	Excessive loss of critical manpower skills in chemistry and database	Additional expert level training required for replacement staff	Internal	$450,000	2	30	3	$135,000	2	Accept risk
Sample and Data Management	Information Management Systems support is not available to implement SDM's proposed process improvement efficiencies per schedule	Additional labor costs due to schedule slip less than one year	Internal	$500,000	4	50	3	$250,000	7	Accept risk
			Total:	$3,780,000			Total:	$1,593,500		