

Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Oakland**

Site Summary Level: **Stanford Linear Accelerator Center**

Project **OK-005 / Stanford Linear Accelerator Center (Environmental Restoration)**

Report Number: **GEN-01b**

Print Date: **3/9/2000**

HQ ID: **0262**

General Project Information

Project Description Narratives

Purpose, Scope, and Technical Approach:

Definition of Scope: Work toward the completion of a Remedial Investigation/ Feasibility Study (RI/FS) is underway. Clean-up at eight soil contaminated sites has been completed as Removal Actions. Through the Removal Action process, 67% of identified contaminated sites have been cleaned to completion. Removal Actions yet to be done include remediation of soil contaminated sites at the Lower Salvage Yard, Substation 505, Collider Injector Development, and IR-6 Drainage Channel. During the assessment phase SLAC will characterize the lateral and vertical extent of contamination at four groundwater and four remaining soil sites. Characterization efforts will attempt to identify source areas, and define the extent of contamination. Characterization will include borehole and monitoring well drilling, soil gas survey, slug tests, tests for background levels of metals, and historical searches and interviews. SLAC plans to negotiate implementation of a "long term monitoring" approach due to the characteristics of the site and technical impracticality of groundwater cleanup. Where appropriate, contaminated soil sites will be remediated through additional Removal Actions.

Technical Approach: SLAC is generally following CERCLA technical guidance in their approach to cleanup of groundwater. Through this process they have maximized the use of Removal Actions which helps minimize the project life cycle costs and duration. These removal actions involve the excavation of contaminated soil to remove the source followed by sampling to confirm that cleanup standards have been met. SLAC has focused its investigation efforts on obtaining data that will support initial data that suggests that local site geology has low permeability and naturally occurring high solid content of existing groundwater. A need for innovative technology needed for groundwater and soil cleanup in fractured rock is described in Oakland Site Technology Coordination Group Need No. 25. In order to implement this strategy, a network of wells were installed and monitored to investigate groundwater contamination. If initial findings are confirmed, SLAC will propose a long term monitoring program at the groundwater sites.

Project Status in FY 2006:

This project is anticipated to be completed by FY2002. All characterization and interim removal actions will be complete. Long term monitoring responsibilities will be transferred to the site landlord, the Office of Science.

Post-2006 Project Scope:

This project is anticipated to be completed by FY2002. All characterization and interim removal actions will be complete. Long term monitoring responsibilities will be transferred to the site landlord, the Office of Science.

Project End State

The SLAC facility will remain an active research facility upon the completion of the EM mission. Additional projects are anticipated at SLAC to reach the end state, however these projects will be completed by the site landlord when the facility's mission is completed. Long term monitoring will be performed by the landlord after FY 2002.

Land - Restrictions on excavation will be placed near the Former Solvent Underground Storage Tank Area. Contaminants will remain in the soil at depths of five to greater than twenty feet. In addition contaminants will remain beneath an actively utilized building.

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Project Description Narratives

Groundwater - In the area of highest contamination, a groundwater extraction system is planned in the Former Solvent Underground Storage Tank Area. Long term groundwater sampling and analysis will be required to monitor the four groundwater sites. Groundwater monitoring will be completed by the site landlord, the Office of Science, after FY 2002.

Facilities - There are no facilities under the restoration program at this time.

Cost Baseline Comments:

The SLAC ER cost baseline is developed from a bottoms up approach using resource loaded activity based cost estimates. SLAC has developed life cycle scope definition, costs and schedules in support of their program. The outyear cost estimates include escalation rates that have been approved by DOE/HQ. Cost estimates include risk based contingency. The SLAC cost baseline assumes that DOE/OAK is performing several program management duties. This approach allows for the project to be streamlined. It also allows for more dollars to be spent on cleanup instead of oversight which helps accelerate the project and reduce mortgage costs. It is assumed that DOE's Office of Science will take over all monitoring activities and assume all monitoring costs upon project completion in FY2002. Additionally, disposal costs and volumes for waste have been estimated based on preliminary site data. Cost could either increase or decrease based on actual characteristics and quantity.

Safety & Health Hazards:

The primary hazards at this site are chemical and industrial. A Site Health and Safety Plan was prepared in May 1996, titled "Health and Safety Plan for the Remedial Investigation." Major hazards were identified including chemical concentrations. In addition to the site health and safety plan, project specific Health and Safety Plans are developed by subcontractors as needed for specific tasks. Standard Operating Procedures have been prepared for the environmental restoration program and are updated on an annual/as needed basis. The source area near the Former Solvent Underground Storage Tank poses a hazard to workers who may excavate near the area for other purposes, however procedures are in place to prevent excavation without the prior approval by Environmental Protection personnel. Normal occupational hazards associated with site characterization and soil and groundwater remediation will persist through the duration of the project.

Safety & Health Work Performance:

Restoration personnel utilize the site specific health and safety plan and environmental restoration standard operating procedures to ensure activities are performed safely. Project specific Health and Safety Plans are developed by subcontractors as needed. SLAC personnel are empowered with "stop work authority" when an unsafe condition is observed.

Operational awareness inspections are performed by SLAC management and DOE to ensure workers are complying with health and safety requirements. Health and Safety Specialist in various disciplines are available on the SLAC staff as part of the M&O contract, and are utilized on an "as needed" basis. These specialists are provided as indirects, and are not directly charged to the environmental restoration program.

PBS Comments:

The following issues are considered major cost drivers. Extent of contamination at the sites. Regulator and public interest groups have major concern over potential releases of contaminants to waterways within the SLAC watershed. To mitigate this threat, SLAC ER has completed several IRA's.

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HQ ID: 0262

Project Description Narratives

Implementation of a long term monitoring program for the groundwater sites is critical, as no cleanup action is currently proposed. The current plan is to maintain monitoring. If clean-up is required, costs would increase greatly. Implementation and continued funding through the "Small Site Initiative" Program as it has accelerated the project allowing the project to be completed 13 years ahead of schedule with significant cost savings in outyear program management and monitoring. Acceptance of monitoring responsibilities by Stanford Universities Energy Research Program following closure in FY2000 is a cost driver as the SLAC ER program has not included this scope in their program.

Baseline Validation Narrative:

In August 1995 DOE Oakland performed an independent review of the SLAC baseline, focusing on the FY1997 scope and estimate. Using this review a comprehensive comparison was made with the estimate prepared by SLAC. A report was prepared that discussed major differences point by point.

General PBS Information

Project Validated? Yes Date Validated: 8/1/1995

Has Headquarters reviewed and approved project? Yes

Date Project was Added: 12/1/1997

Baseline Submission Date: 7/13/1999

FEDPLAN Project? No

Drivers:	CERCLA	RCRA	DNFSB	AEA	UMTRCA	State	DOE Orders	Other
	N	N	N	N	N	Y	Y	Y

Project Identification Information

DOE Project Manager: Jay Tomlin

DOE Project Manager Phone Number: 510-637-1637

DOE Project Manager Fax Number: 510-637-2031

DOE Project Manager e-mail address: jay.tomlin@oak.doe.gov

Is this a High Visibility Project (Y/N):

Planning Section

Baseline Costs (in thousands of dollars)

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	1997-2006 Total	2007-2070 Total	1997-2070 Total	1997	Actual 1997	1998	Actual 1998	1999	2000	2001	2002	2003	2004	2005	2006	
PBS Baseline (current year dollars)	7,390	0	7,390	995	906	995	937	1,000	1,400	1,400	1,600	0	0	0	0	
PBS Baseline (constant 1999 dollars)	7,183	0	7,183	995	906	995	937	1,000	1,363	1,335	1,495	0	0	0	0	
PBS EM Baseline (current year dollars)	7,390	0	7,390	995	906	995	937	1,000	1,400	1,400	1,600	0	0	0	0	
PBS EM Baseline (constant 1999 dollars)	7,183	0	7,183	995	906	995	937	1,000	1,363	1,335	1,495	0	0	0	0	
	2007	2008	2009	2010	2011- 2015	2016- 2020	2021- 2025	2026- 2030	2031- 2035	2036- 2040	2041- 2045	2046- 2050	2051- 2055	2056- 2060	2061- 2065	2066- 2070
PBS Baseline (current year dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS Baseline (constant 1999 dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (current year dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBS EM Baseline (constant 1999 dollars)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Baseline Escalation Rates

1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
0.00%	0.00%	0.00%	2.70%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%
2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070

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2010	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040	2041-2045	2046-2050	2051-2055	2056-2060	2061-2065	2066-2070
2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%	2.10%

Project Reconciliation

Project Completion Date Changes:

Previously Projected End Date of Project: 9/7/2000

Current Projected End Date of Project: 9/30/2002

Explanation of Project Completion Date Difference (if applicable):

Budget reductions from previous ACPC targets and addition of new scope has caused the need to extend the project two years.

Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	5,081	Actual 1997 Cost:	906	Actual 1998 Cost:	937
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	3,238	Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):			87
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	3,325				

Project Cost Changes

	Cost Adjustments	Reconciliation Narratives
Cost Change Due to Scope Deletions (-):		
Cost Reductions Due to Efficiencies (-):		
Cost Associated with New Scope (+):	1,868	Three new release sites (CID, Substation 505, and IR-6 Phase II) were added to the PBS.
Cost Growth Associated with Scope Previously Reported (+):		
Cost Reductions Due to Science & Technology Efficiencies (-):		
Subtotal:	5,193	
Additional Amount to Reconcile (+):	0	
Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	5,193	

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Milestones

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
End of FHWSA Remediation	OK005-14		6/28/2002								
End of FS Plating Shop	OK005-12		6/28/2001								
End of Lower Salvage Yard IRA	OK005-07		2/17/2000								
End of Master Sub IRA, Phase II	OK005-09		9/6/2000								
End of Monitoring	OK005-41		9/30/2002								
End of Plating Shop IRA	OK005-02		1/27/1999								
End of RI FHWSA	OK005-10		2/23/2001								
End of RI/FS TL/CL	OK005-05		9/14/1999								
End of Remedial Action FSUST	OK005-3		9/30/2002								
Project Mission Complete (Submit Long Term Monitoring Plan to Regulators)	OK-005-0041		9/30/2002								
Start of FHWSA Remediation	OK005-13		10/1/2001								
Start of FS FHWSA	OK005-05		1/27/2000								
Start of FS Plating Shop	OK005-08		2/23/2000								
Start of Lower Salvage Yard IRA	OK005-01		10/1/1998								
Start of Master Sub IRA, Phase II	OK005-04		10/1/1999								
Start of RI Final Phase	OK005-15		7/1/2002								
Submit RI/FS Report FHWSA to Regulators	OK005-38		2/23/2001								
Submit RI/FS Report Plating Shop to Regulators	OK-005-006		6/28/2001								
Project Start			10/1/1991								
End Substation 505/Collider Injector Development IRA	OK-005-046		9/7/2001								
End IR-6 Phase II IRA			9/10/2001								

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Milestones - Part II

Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
End of FHWSA Remediation	OK005-14	Y	Y				2	3	1		
End of FS Plating Shop	OK005-12									Y	
End of Lower Salvage Yard IRA	OK005-07	Y									
End of Master Sub IRA, Phase II	OK005-09									Y	
End of Monitoring	OK005-41									Y	
End of Plating Shop IRA	OK005-02										
End of RI FHWSA	OK005-10									Y	
End of RI/FS TL/CL	OK005-05	Y									
End of Remedial Action FSUST	OK005-3	Y									
Project Mission Complete (Submit Long Term Monitoring Plan to Regulators)	OK-005-0041		Y		Y	Y	1	3	1		
Start of FHWSA Remediation	OK005-13									Y	
Start of FS FHWSA	OK005-05									Y	
Start of FS Plating Shop	OK005-08									Y	
Start of Lower Salvage Yard IRA	OK005-01									Y	
Start of Master Sub IRA, Phase II	OK005-04									Y	
Start of RI Final Phase	OK005-15									Y	
Submit RI/FS Report FHWSA to Regulators	OK005-38	Y	Y				2	3	1		
Submit RI/FS Report Plating Shop to Regulators	OK-005-006	Y									
Project Start				Y							
End Substation 505/Collider	OK-005-046	Y									

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Milestone/Activity	Field Milestone Code	Critical Decision	Critical Closure Path	Project Start	Project End	Mission Complete	Tech Risk	Work Scope Risk	Intersite Risk	Cancelled	Milestone Description
Injector Development IRA											
End IR-6 Phase II IRA		Y									

Performance Measure Metrics

Category/Subcategory	Units	1997-2006 Total	2007-2070 Total	1997-2070 Total	Actual Pre-1997	Planned 1997	Actual 1997	Planned 1998	Planned 1999	Planned 2000	Planned 2001	Planned 2002	Planned 2003	Planned 2004
RS														
Assess.	NR	9.00	0.00	9.00				2.00	2.00		5.00			
RS														
Cleanup	NR	9.00	0.00	9.00					2.00	1.00	4.00	2.00		
Rem. Waste														
Disposed	M3	3,527.50	149.60	3,677.10				2,563.00	574.00	38.00	341.00	2.30	2.30	2.30
Category/Subcategory	Units	Planned 2004	Planned 2005	Planned 2006	Planned 2007	Planned 2008	Planned 2009	Planned 2010	Planned 2011 - 2015	Planned 2016 - 2020	Planned 2021 - 2025	Planned 2026 - 2030	Planned 2031 - 2035	
RS														
Assess.	NR													
RS														
Cleanup	NR													
Rem. Waste														
Disposed	M3	2.30	2.30	2.30	2.30	2.30	2.30	2.30	11.70	11.70	11.70	11.70	11.70	
Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2065	Planned 2066 - 2070	Exceptions	Lifecycle Total				
Disposed	M3													

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Category/Subcategory	Units	Planned 2036 - 2040	Planned 2041 - 2045	Planned 2046 - 2050	Planned 2051 - 2055	Planned 2056 - 2060	Planned 2061 - 2035	Planned 2066 - 2070	Exceptions	Lifecycle Total				
RS														
Assess.	NR								1.00	9.00				
RS														
Cleanup	NR								1.00	9.00				
Rem. Waste														
Disposed	M3	11.70	11.70	11.70	11.70	11.70	11.70	11.70		540.10				
Release Sites														
Site Code	RSF ID	Change Flag	Description	Class/Subclass Name	Planned Assess. Year	Forecast Assess. Year	Actual Assess. Date	Planned Comp. Year	Forecast Comp. Year	Actual Comp. Date	Acc. Year	No Action	Comp. Status	RAD
SLAC	0002		FORMER SOLVENT UNDERGROUND STORAGE TANK SITE	Surface and Groundwater/Groundwater Plumes	1998	1998	3/1/1998	2002	2002			N		N
SLAC	0005		MASTER SUBSTATION	Spills and Leaks/Surface Spills	1998	1998	3/1/1998	1999	1999	2/3/1999		Y		N
SLAC	0006		PLATING SHOP	Surface and Groundwater/Groundwater Plumes	2001	2001		2001	2001			N		N
SLAC	0007		LOWER SALVAGE YARD	Spills and Leaks/Surface Spills	1999	2000	3/5/1999	2000	2000			N		N
SLAC	0013		FORMER HAZARDOUS WASTE STORAGE AREA	Surface and Groundwater/Groundwater Plumes	2001	2001		2002	2002			N		N
SLAC	0014		TEST LAB/CENTRAL LAB (MONITORING WELL 24 AREA)	Surface and Groundwater/Groundwater Plumes	1999	2000		1999	2000			N		N
SLAC	0015		COLLIDER INJECTOR DEVELOPMENT	Spills and Leaks/Surface Spills	2001	2001		2001	2001			N		N
SLAC	0016		SUBSTATION 505	Spills and	2001	2001		2001	2001			N		N

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Release Sites

Site Code	RSF ID	Change Flag	Description	Class/Subclass Name	Planned Assess. Year	Forecast Assess. Year	Actual Assess. Date	Planned Comp. Year	Forecast Comp. Year	Actual Comp. Date	Acc. Year	No Action	Comp. Status	RAD
SLAC	0017		IR-6 OFF-SITE DRAINAGE CHANNEL (PHASE II)	Leaks/Surface Spills Spills and Leaks/Surface Spills	2001	2001		2001	2001			N		N

Technology Needs

Site Need Code: **OK99-11**

Site Need Name: **A method to determine that the sodium loop piping and system components no longer exhibit the hazardous waste characteristic of corrosivity after they are cleaned**

Focus Area Work Package ID:

Focus Area Work Package:

Focus Area:

Agree with Technology Link: **N**

Benefits (Cost, Risk Reduction, Both): **Cost**

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

Site Need Code: **OK99-07**

Site Need Name: **Technology for Geology and Groundwater Flow and Characteristics in Fractured Rock**

Focus Area Work Package ID: **SS-01**

Focus Area Work Package: **Characterization, Monitoring, Modeling and Analysis**

Focus Area: **SCFA**

Agree with Technology Link: **N**

Benefits (Cost, Risk Reduction, Both): **Risk Reduction**

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

Surface Acoustic Wave Array Detectors

600

High

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Technology Needs

Related CCP Milestones

Related Waste Streams

Agree?

Change?

: -

01837: AC - Contaminated GW FSUST, FHWSA, TL/CL, & Plating Shop

Y

N