

# *Project Baseline Summary Report*

Data Source: **EM CDB**

Operations/Field Office: **Richland**

Site Summary Level: **Hanford Site**

Project **RL-ER08 / Groundwater Management**

Report Number: **GEN-01b**

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

HQ ID: **0422**

---

## **General Project Information**

### **Project Description Narratives**

#### **Purpose, Scope, and Technical Approach:**

Purpose: This PBS provides for the management and integration of groundwater management for the Hanford Site.

Work scope within this PBS includes the following:

Assessing the groundwater to determine the type and extent of contamination so that a Record of Decision for remediation of the groundwater can be prepared.

Preparing the remedial design and performing the remedial actions necessary to implement the ROD.

Managing and integrating sitewide groundwater monitoring requirements.

Managing and integrating groundwater well maintenance and decommissioning and drilling .

Scope: The Columbia River crosses the northern portion of the Hanford Site and essentially forms the eastern boundary. Groundwater under the 100, 200, 300, 400, 600, and 1100 Areas has been contaminated through discharge of waste liquids to cribs, ditches, trenches, ponds, french drains, and retention basins. Currently, approximately 85 square miles of groundwater exceed drinking water standards, and portions of this contaminated groundwater have reached the Columbia River.

The overall goal of the Groundwater Management Project is to restore groundwater to its intended beneficial uses in terms of protection of human health and the environment. The strategy is to contain the spread of contamination and to reduce the mass of contamination in the major groundwater plumes. Remediation of groundwater will generally consist of in-situ methods, groundwater extraction, surface treatment, and reinjection to the aquifer. Along with remediation the Groundwater Management Project will coordinate and perform the required groundwater monitoring, well decommissioning, and drilling.

Technical Approach: The Groundwater Management Project will produce waste from the treatment of groundwater. These wastes will be disposed of in the ER Disposal Facility and other approved facilities. The 200-UP-1 groundwater transfer to 200 Area Effluent Treatment Facility will be terminated at the end of FY99.

Technology needs are determined at the project level. These needs are subsequently endorsed by the Site Technology Coordination Group. Matching funding by EM-50 will be provided for deployment of Insitu Redox Manipulation in FY99/FY00.

The following technology needs have been identified as high priority for ground water remediation:

- Detection and characterization of radioactive contaminants and metals in groundwated.
- In-situ treatment of radioactive contaminants and metals in groundwater.

#### **Project Status in FY 2006:**

---

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

# *Project Baseline Summary Report*

Data Source: **EM CDB**

Operations/Field Office: **Richland**

Site Summary Level: **Hanford Site**

Project **RL-ER08 / Groundwater Management**

Report Number: **GEN-01b**

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

HQ ID: **0422**

---

## **Project Description Narratives**

Groundwater monitoring, drilling, well maintenance and well decommissioning will continue  
100 N Area pump and treat will continue to operate  
Additional remediation may be ongoing pending a decision on the disposition of the groundwater in the FY2000 - FY2002 timeframe

### **Post-2006 Project Scope:**

The Groundwater Management Project will continue past FY06. Groundwater remediation activities will continue for 100 NR-2 through FY2007, and sitewide groundwater monitoring activities will continue through FY2043.

### **Project End State**

The Groundwater Management Project will support the goals and end states for the areas referenced in the Hanford Site Strategic Plan as the Reactors on the River, the Central Plateau, the South 600 Area and Central Core.

Reactors on the River Goal: Remove and/or stabilize spent fuel, surplus facilities, and waste sites to protect groundwater and the Columbia River and to ensure protection of people, the environment, and natural/cultural resources. Pending Congressional action on the Wild and Scenic River designation, use will continue to be restricted; sensitive ecological, cultural, and native American resources will be protected.

Groundwater End State: Groundwater use remains restricted for a yet to be determined period; major groundwater plumes will be intercepted or contained to protect the Columbia River and the environment. All plumes will be monitored to determine plume movement. Final cleanup levels will be established within individual RODs or permit modifications.

Central Plateau Goal: The 200 Areas and central plateau will be used for the management of nuclear materials and the collection and disposal of waste materials that remain onsite and for other related and compatible uses. Cleanup levels and disposal standards will be established that are consistent with these long-term uses.

Groundwater End State: Groundwater use remains restricted for a yet to be determined period; major groundwater plumes will be intercepted or contained to within designated boundaries. All plumes will be monitored to determine plume movement. Final cleanup levels will be established within individual RODs or permit modifications.

South 600 Area Goal: The 300 Area waste sites, materials, and facilities will be remediated to allow industrial and economic diversification opportunities. The federal government will retain ownership of land in and adjacent to the 300 and 400 Areas, but will lease land for private and public uses to support regional industrial and economic development. Excess land within the 1100 area will be targeted for transition to non-Federal ownership.

Groundwater End State: Groundwater use remains restricted for a yet to be determined period; existing site plumes will continue to be monitored. Final cleanup levels will be established within individual RODs or permit modifications.

Central Core Area Goal: This area will remain in federal ownership consistent with safety analysis boundaries and continued waste management operations in the 200 Area. These areas will be available for other federal programs or leased for non-Federal uses, consistent with appropriate

---

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

Page 2 of 20

# Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Richland**

Site Summary Level: **Hanford Site**

Project **RL-ER08 / Groundwater Management**

Report Number: **GEN-01b**

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

HQ ID: **0422**

---

## Project Description Narratives

recognition of cultural and ecosystem values.

Groundwater End State: Monitor existing groundwater site plumes; intercept or contain as necessary to protect the Columbia River. Groundwater use remains restricted for a yet to be determined period.

### Cost Baseline Comments:

The cost estimates for the ER Project are developed through the use of MCACES and RACER models and activity based estimates for project activities like groundwater monitoring and program management and support.

The contingency for outyears was developed through the use of a "Monte Carlo" analysis and selection of an acceptable level of risk.

### Safety & Health Hazards:

The Richland Environmental Restoration (ER) Project's primary responsibilities are the cleanup of past-practice waste sites, addressing the contaminated groundwater, and decontamination and decommissioning of surplus facilities. In 1987 the Hanford Site Federal Facility Agreement and Consent Order (TPA) was signed by EPA, Ecology, and DOE. This agreement is the primary driver for essentially all of ERC's remediation and D&D activities.

This PBS addresses ES&H and mission components associated interception and containment of contaminated groundwater. The Groundwater (GW) Management Project contains a number of subprojects involving groundwater remediation, monitoring and characterization, well maintenance, and decommissioning activities. This GW Management project is divided into three major areas: 100 Area Groundwater, 200 Area Groundwater, and Hanford Site Groundwater Management.

#### 100 Area Groundwater

The 100 Area Groundwater consists of five groundwater operable units (OUs) (100-BC-5, 100-KR-4, 100-NR-2, 100-HR-3, and 100-FR-3). Remediation of 100-KR-4, 100-HR-3, and 100-NR-2 will generally consist of in-situ methods, groundwater extraction, surface treatment, and reinjection to the aquifer. Process and groundwater monitoring will be performed to evaluate system efficiency and aquifer response. Operation, maintenance, and waste management activities will be performed in accordance with appropriate safety and health standards listed below. Operations for 100-HR-3 were initiated in FY97 and will continue through FY02. Operations for 100-KR-4 was initiated in FY98 and will continue through FY02. System upgrades for 100-NR-2 were completed in FY97. System operations will continue through FY07. Deployment of ISRM will be completed in the 100-HR-3 OU by FY00. Monitoring activities will continue through FY43.

#### 200 Area Groundwater

The 200 Area Groundwater consists of four groundwater operable units (200-UP-1, 200-ZP-1, 200-BP-5, AND 200-PO-1). One source operable unit (200-ZP-2) has been included in the Groundwater Management project in order to coordinate remediation activities with 200-ZP-1. 200-UP-1 remediation activities will be completed in FY99. Remediation of 200-ZP-1 will generally consist of groundwater extraction, surface treatment, and reinjection to the aquifer. Process and groundwater monitoring will be performed to evaluate system efficiency and aquifer response. Operation, maintenance, and waste management activities will be performed in accordance with appropriate safety and health standards listed below. System

---

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

Page 3 of 20

# *Project Baseline Summary Report*

Data Source: **EM CDB**

Operations/Field Office: **Richland**

Site Summary Level: **Hanford Site**

Project **RL-ER08 / Groundwater Management**

Report Number: **GEN-01b**

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

HQ ID: **0422**

---

## **Project Description Narratives**

upgrades for the 200-ZP-1 were completed in FY97 to increase production capabilities. Operations will continue through FY02. Soil vapor extraction activities will continue at 200-ZP-2 through FY01. General groundwater monitoring will continue for 200-BP-5 and 200-PO-1 to detect contaminant plume spread. These activities will be implemented through the Hanford Site Groundwater Management. Monitoring activities will continue through FY43.

### **Hanford Site Groundwater Management**

The Hanford Site Groundwater Management activity provides an integrated, sitewide (100 Area, 200 Area, 300 Area, 1100 Area, and Sitewide program) assessment of groundwater quality on the Hanford Site, and an assessment of potential offsite impacts of DOE operations. Sitewide groundwater monitoring, assessment, and post-closure activities will continue through FY43. Major aspects include program management; well maintenance and decommissioning; RCRA reporting; groundwater well installation; seismic monitoring; and vadose zone monitoring.

Each subproject will conduct a hazard analysis evaluation or an operational readiness review, as necessary.

### **Safety & Health Work Performance:**

The resources necessary to accomplish the work safely are provided through the Authorization Basis, the Site Health and Safety Program requirements, and through the resources allocated to the site's integrated safety management system in the following functional categories: radiological controls, emergency management, fire protection, industrial hygiene, industrial safety, occupation medical services, management and oversight, transportation safety, nuclear safety and management oversight.

ER resources are planned and allocated into these categories by functional responsibility through the work breakdown structure and resource loaded into the project for each fiscal year. Average hourly labor rates vary among projects based on the work scope and related skills mix.

The Emergency Preparedness functional task includes inspection of emergency facilities and equipment; emergency response team personnel training, drills and exercises relative to personnel contamination; construction accident response; maintaining/updating the current emergency plan based on site-specific hazards; coordination with state and local authorities and federal agencies; responses to worker injuries; and recordable occurrences and of normal events.

The Fire Protection functional task includes related inspections and testing; flammable and explosive material control; review design plans/specifications for compliance with regulations, codes, and standards; and review and concurrence of work packages.

The Industrial Hygiene functional task includes the Chemical Management system, anticipation, recognition, evaluation and control of health hazards; redesign of equipment and tasks; review and approval of work packages; design of airborne fiber wetting systems; respiratory protection standards; respiratory protection equipment supplies; substitution of less hazardous materials; written and verbal communication of real and perceived hazards; personnel protection, and asbestos fiber counts and sample analysis.

---

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

Page 4 of 20

# Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Richland**

Site Summary Level: **Hanford Site**

Project **RL-ER08 / Groundwater Management**

Report Number: **GEN-01b**

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

HQ ID: **0422**

---

## Project Description Narratives

The Industrial Safety functional area includes electrical safety; machinery and pressure system safety; hoisting; rigging, and material handling, lockout/tagout; confined space controls; platform, man-lift and scaffolding usage; safe surfaces for walking and working; hand and portable power tool safety; explosives and hazardous material handling, construction safety; review of work packages; site surveillances or subcontractor review.

The Management and Oversight functional task includes S&H documentation, action tracking; S&H self assessment activities; internal audits and surveillance; external S&H program reviews; operational readiness reviews; and Voluntary Protection Program (VPP); trend analysis; lessons learned; coordination and communication with DOE, state and local authorities.

The Management, Oversight, and Reporting functional task includes the coordination of project environmental protection plans, documentation and control, information management, compliance and corrective action tracking, appraisals and self assessments and general environmental monitoring and coordination.

The Occupational Medical Services functional task includes medical scheduling, labor and industries, and OSHA reporting; oversight of the Site Occupational Medical provider; hazardous worker or asbestos worker pre/post-job medical screening coordination, tracking; and case management.

The Nuclear Safety functional task includes providing direction to the ER Projects for the implementation of DOE Orders and Standards related to nuclear safety. In addition, the functional group assists the projects in the development, implementation, and oversight of the safety analysis process.

The Radiation Protection functional task includes radiation monitoring equipment and procedures for radiation controls, oversight of personnel and facilities, radiation control monitoring, interlocks, instrumentation for shielding for radiation-generating devices; equipment and procedures used to minimize or mitigate external exposures; and personnel dosimetry, bioassay program, and radiation-exposure records.

The Transportation Safety functional task includes the activities required to ensure safe packaging and transportation of asbestos, radioactive and hazardous materials, and approval of D.O.T. shippers and container documentation. NOTE: The amount of funding made available for this PBS in any fiscal year will determine the work that will be performed, which will, in turn, be a basis for adjustment in the associated S&H requirements.

### PBS Comments:

The current groundwater remediation activities are being performed under interim Records of Decision. In the FY 2000 -FY 2002 timeframe the groundwater remediations, with the exception 100 N Area, are scheduled to be completed. The final disposition of the groundwater is not determined at this time.

### Baseline Validation Narrative:

Baseline validation by Team Associates for DOE.

Validation Report - Richland Environmental Restoration Project FY 1996 Baseline Validation, May 1996.

The DOE requested an independent contractor, Team Associates, to perform a validation of the Richland Environmental Restoration Project. This validation was a follow up of the validation performed for the FY 1995 Baseline. Estimate models with near-term implementation schedules and total project summary costs were reviewed. The validation was broken down into three distinct efforts consistent with the validation objectives.

1) An in-depth review of MCACES models provided by DOE was performed

---

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

Page 5 of 20

# Project Baseline Summary Report

Data Source: **EM CDB**  
 Operations/Field Office: **Richland**  
 Site Summary Level: **Hanford Site**  
 Project **RL-ER08 / Groundwater Management**

Report Number: **GEN-01b**  
 Print Date: **3/9/2000**  
 HQ ID: **0422**

## Project Description Narratives

- 2) A review of near-term schedules for 100 BC and 300 FF areas to evaluate reasonableness and feasibility of achievement.
  - 3) A top down assessment of the cost estimating process for consistency of approach to identify opportunities for improvement.
- There is a formal validation of the current baseline (developed in October 1998 and approved in January 1999) scheduled for March 1999.

## General PBS Information

**Project Validated?** Yes      **Date Validated:** 5/31/1996  
**Has Headquarters reviewed and approved project?** Yes  
**Date Project was Added:** 12/1/1997  
**Baseline Submission Date:**  
**FEDPLAN Project?** Yes

<b>Drivers:</b>	<b>CERCLA</b>	<b>RCRA</b>	<b>DNFSB</b>	<b>AEA</b>	<b>UMTRCA</b>	<b>State</b>	<b>DOE Orders</b>	<b>Other</b>
	Y	Y						

## Project Identification Information

**DOE Project Manager:** K. M. Thompson  
**DOE Project Manager Phone Number:** 509-373-0750  
**DOE Project Manager Fax Number:** 509-376-4360  
**DOE Project Manager e-mail address:** k\_m\_mike\_thompson@rl.gov  
**Is this a High Visibility Project (Y/N):**

## Planning Section

### Baseline Costs (in thousands of dollars)

	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)	184,392	695,687	880,079	18,975	16,352	18,996	20,661	19,343	21,480	19,569	20,321	16,433	15,754	16,581	16,940

# Project Baseline Summary Report

Data Source: **EM CDB**

Report Number: **GEN-01b**

Operations/Field Office: **Richland**

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

Site Summary Level: **Hanford Site**

HQ ID: **0422**

Project **RL-ER08 / Groundwater Management**

## Baseline Costs (in thousands of dollars)

	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 (constant 1999 dollars)	172,084	356,357	528,441	18,975	16,352	18,996	20,661	19,343	20,915	18,554	18,742	14,743	13,736	14,077	14,003	
PBS EM Baseline (current year dollars)	184,392	695,687	880,079	18,975	16,352	18,996	20,661	19,343	21,480	19,569	20,321	16,433	15,754	16,581	16,940	
PBS EM Baseline (constant 1999 dollars)	172,084	356,357	528,441	18,975	16,352	18,996	20,661	19,343	20,915	18,554	18,742	14,743	13,736	14,077	14,003	
	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)	15,993	14,034	14,322	14,948	95,009	106,044	82,512	100,495	104,778	92,811	54,741	0				
PBS Baseline (constant 1999 dollars)	12,873	10,999	10,930	11,108	65,223	63,719	43,396	46,262	42,218	32,732	16,897	0				
PBS EM Baseline (current year dollars)	15,993	14,034	14,322	14,948	95,009	106,044	82,512	100,495	104,778	92,811	54,741	0				
PBS EM Baseline (constant 1999 dollars)	12,873	10,999	10,930	11,108	65,223	63,719	43,396	46,262	42,218	32,732	16,897	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%	2.70%	2.80%	2.80%	2.90%	2.70%	2.70%	2.70%	2.70%	2.70%
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

Dataset Name: **FY 1999 Planning Data**

Page 7 of 20

Date of Dataset: **9/20/1999**

# Project Baseline Summary Report

Data Source: **EM CDB**

Report Number: **GEN-01b**

Operations/Field Office: **Richland**

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

Site Summary Level: **Hanford Site**

HQ ID: **0422**

Project **RL-ER08 / Groundwater Management**

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
2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%	2.70%

## Project Reconciliation

### Project Completion Date Changes:

Previously Projected End Date of Project: 10/30/2043

Current Projected End Date of Project: 9/30/2044

Explanation of Project Completion Date Difference (if applicable):

### Project Cost Estimates (in thousands of dollars)

Previously Estimated Lifecycle Cost (1997 - 2070, 1998 Dollars):	538,447	Actual 1997 Cost:	16,352	Actual 1998 Cost:	20,661
Previously Estimated Lifecycle Cost of Project (1999 - 2070, 1998 Dollars):	501,434	Inflation Adjustment (2.7% to convert 1998 to 1999 dollars):			13,539
Previously Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):	514,973				

### Project Cost Changes

	Cost Adjustments	Reconciliation Narratives
Cost Change Due to Scope Deletions (-):		
Cost Reductions Due to Efficiencies (-):		
Cost Associated with New Scope (+):		
Cost Growth Associated with Scope Previously Reported (+):		
Cost Reductions Due to Science & Technology Efficiencies (-):		
<b>Subtotal:</b>	514,973	
<b>Additional Amount to Reconcile (+):</b>	-24,503	
<b>Current Estimated Lifecycle Cost (1999 - 2070, 1999 Dollars):</b>	<b>490,470</b>	

## Milestones

Dataset Name: **FY 1999 Planning Data**

Page 8 of 20

Date of Dataset: **9/20/1999**

# Project Baseline Summary Report

Data Source: **EM CDB**

Report Number: **GEN-01b**

Operations/Field Office: **Richland**

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

Site Summary Level: **Hanford Site**

HQ ID: **0422**

Project **RL-ER08 / Groundwater Management**

Milestone/Activity	Field Milestone Code	Original Date	Baseline Date	Legal Date	Forecast Date	Actual Date	EA	DNFSB	Mgmt. Commit.	Key Decision	Intersite
INSTALL RCRA GRNDWTR MONITORING WELLS AT RATE OF UP TO 50 IN CY00	M-24-00L	12/31/2000	12/31/2000	12/31/2000	12/31/2000		Y				
INSTALL RCRA GRNDWTR MONITORING WELLS AT RATE UP TO 50 IN CY01	M-24-00M	12/31/2001	12/31/2001	12/31/2001	12/31/2001		Y				
INSTALL RCRA GRNDWTR MONITORING WELLS AT RATE UP TO 50 IN CY02	M-24-00N	12/31/2002	12/31/2002	12/31/2002	12/31/2002		Y				
INSTALL RCRA GRNDWTR MONITORING WELLS AT RATE UP TO 50 IN CY03	M-24-00O	12/31/2003	12/31/2003	12/31/2003	12/31/2003		Y				
INSTALL ONE REPLACEMENT RCRA WELL FOR 216-U-12 CRIB	M-24-36	12/31/1998	12/31/1998	12/31/1998	11/13/1998	11/25/1998	Y				
INSTALL TWO REPLACEMENT RCRA WELLS FOR SST WMA T	M-24-37	12/31/1998	12/31/1998	12/31/1998	11/13/1998	11/25/1998	Y				
INSTALL FOUR REPLACEMENT RCRA WELLS FOR THE SST WMA TX-TY	M-24-38	12/31/1998	12/31/1998	12/31/1998	11/13/1998	11/25/1998	Y				
INSTALL TWO RCRA WELLS (ONE NEW/ONE REPLACEMENT) FOR SST WMA U	M-24-39	12/31/1998	12/31/1998	12/31/1998	11/13/1998	11/25/1998	Y				
INSTALL ONE ADDITIONAL RCRA WELL FOR THE SST WMA B-BX-BY	M-24-40	12/31/1998	12/31/1998	12/31/1998	11/13/1998	11/25/1998	Y				
INSTALL RCRA GROUNDWTR MONITOR WELLS AT RATE OF UP TO 50 IN CY 98	M-24-00J	12/31/1998	12/31/1998	12/31/1998	11/13/1998	11/25/1998	Y				
INSTALL RCRA GROUNDWTR MONITOR WELLS AT RATE OF UP TO 50 IN CY 99	M-24-00K	12/31/1999	12/31/1999	12/31/1999	12/31/1999		Y				
Begin Groundwater Management Project	PBS-97-029		2/28/1997								
PBS Mission Completion	PBS-MC-029		9/30/2044								
PBS Project End	PBS-PE-029		9/30/2044								

## 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
--------------------	----------------------	-------------------	-----------------------	---------------	-------------	------------------	-----------	-----------------	----------------	-----------	-----------------------

Dataset Name: **FY 1999 Planning Data**

Page 9 of 20

Date of Dataset: **9/20/1999**

# Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Richland**

Site Summary Level: **Hanford Site**

Project **RL-ER08 / Groundwater Management**

Report Number: **GEN-01b**

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

HQ ID: **0422**

## 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
INSTALL RCRA GRNDWTR MONITORING WELLS AT RATE OF UP TO 50 IN CY00	M-24-00L										
INSTALL RCRA GRNDWTR MONITORING WELLS AT RATE UP TO 50 IN CY01	M-24-00M										
INSTALL RCRA GRNDWTR MONITORING WELLS AT RATE UP TO 50 IN CY02	M-24-00N										
INSTALL RCRA GRNDWTR MONITORING WELLS AT RATE UP TO 50 IN CY03	M-24-00O										
INSTALL ONE REPLACEMENT RCRA WELL FOR 216-U-12 CRIB	M-24-36										
INSTALL TWO REPLACEMENT RCRA WELLS FOR SST WMA T	M-24-37										
INSTALL FOUR REPLACEMENT RCRA WELLS FOR THE SST WMA TX-TY	M-24-38										
INSTALL TWO RCRA WELLS (ONE NEW/ONE REPLACEMENT) FOR SST WMA U	M-24-39										
INSTALL ONE ADDITIONAL RCRA WELL FOR THE SST WMA B-BX-BY	M-24-40										
INSTALL RCRA GROUNDWTR MONITOR WELLS AT RATE OF UP TO 50 IN CY 98	M-24-00J										This TPA Interim Milestone, M-24-00J, reflects annual progress toward completion of the TPA Major Milestone M-24-00 and is an

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

# Project Baseline Summary Report

Data Source: **EM CDB**

Report Number: **GEN-01b**

Operations/Field Office: **Richland**

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

Site Summary Level: **Hanford Site**

HQ ID: **0422**

Project **RL-ER08 / Groundwater Management**

## 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
INSTALL RCRA GROUNDWTR MONITOR WELLS AT RATE OF UP TO 50 IN CY 99	M-24-00K										Enforceable Agreement milestone. It requires the installation during Calendar Year 1998 of GW wells as established and agreed up  This TPA Interim Milestone, M-24-00K, reflects annual progress toward completion of the TPA Major Milestone M-24-00 and is an Enforceable Agreement milestone. It requires the installation during Calendar Year 1999 of GW wells as established and agreed up
Begin Groundwater Management Project	PBS-97-029			Y							Administrative input to document the start of this PBS.
PBS Mission Completion	PBS-MC-029					Y					Administrative input to document the mission completion of this PBS.
PBS Project End	PBS-PE-029				Y						Administrative input to document the project end of this PBS.

## 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
<b>Tech.</b>														
Deployed	Ntd	1.00	0.00	1.00						1.00				
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	
<b>Tech.</b>														
Deployed	Ntd													

Dataset Name: **FY 1999 Planning Data**

Page 11 of 20

Date of Dataset: **9/20/1999**

# Project Baseline Summary Report

Data Source: **EM CDB**

Report Number: **GEN-01b**

Operations/Field Office: **Richland**

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

Site Summary Level: **Hanford Site**

HQ ID: **0422**

Project **RL-ER08 / Groundwater Management**

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
<b>Tech.</b>										
<b>Deployed</b>	Ntd								2.00	3.00

## Technology Needs

Site Need Code: RL-SS01

Site Need Name: Cost-effective, In Situ Remediation of Carbon Tetrachloride in the Vadose Zone and Groundwater

Focus Area Work Package ID: SS-11

Focus Area Work Package: Validation, Verification, & Long-Term Monitoring of Containment & Treatment

Focus Area: SCFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

### Technologies

### Cost Savings (in thousands of dollars)

### Range of Estimate

Dynamic Underground Stripping

In Situ Chemical Oxidation Using Potassium Permanganate

Fenton's Reagent

### Related CCP Milestones

### Related Waste Streams

### Agree?

### Change?

01483: ER-18 - MLLW GW 100/200 Areas

Y

N

01482: ER-14 - LLW Soils 200 Area

Y

N

Dataset Name: **FY 1999 Planning Data**

Page 12 of 20

Date of Dataset: **9/20/1999**

# Project Baseline Summary Report

Data Source: **EM CDB**  
Operations/Field Office: **Richland**  
Site Summary Level: **Hanford Site**  
Project **RL-ER08 / Groundwater Management**

Report Number: **GEN-01b**  
Print Date: **3/9/2000**  
HQ ID: **0422**

---

## Technology Needs

**Site Need Code:** RL-SS02  
**Site Need Name:** Improved, Real-Time, In-line Detection of Carbon Tetrachloride in Process Water  
**Focus Area Work Package ID:** SS-01      **Focus Area Work Package:** Characterization, Monitoring, Modeling and Analysis  
**Focus Area:** SCFA      **Agree with Technology Link:** Y  
**Benefits (Cost, Risk Reduction, Both):** Cost

Technologies      Cost Savings (in thousands of dollars)      Range of Estimate

### Related CCP Milestones

### Related Waste Streams

Agree?      Change?

01483: ER-18 - MLLW GW 100/200 Areas      Y      N

**Site Need Code:** RL-SS03  
**Site Need Name:** Improved, Real-Time, In-Situ Detection of Carbon Tetrachloride in Groundwater  
**Focus Area Work Package ID:** SS-01      **Focus Area Work Package:** Characterization, Monitoring, Modeling and Analysis  
**Focus Area:** SCFA      **Agree with Technology Link:** Y  
**Benefits (Cost, Risk Reduction, Both):** Both

Technologies      Cost Savings (in thousands of dollars)      Range of Estimate

### Related CCP Milestones

### Related Waste Streams

Agree?      Change?

01483: ER-18 - MLLW GW 100/200 Areas      Y      N

# Project Baseline Summary Report

Data Source: **EM CDB**  
Operations/Field Office: **Richland**  
Site Summary Level: **Hanford Site**  
Project **RL-ER08 / Groundwater Management**

Report Number: **GEN-01b**  
Print Date: **3/9/2000**  
HQ ID: **0422**

---

## Technology Needs

Site Need Code: RL-SS04

Site Need Name: Cost-Effective, In Situ Remediation of Hexavalent Chromium in Groundwater

Focus Area Work Package ID: SS-05

Focus Area Work Package: In Situ Reactive Treatment Barriers

Focus Area: SCFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

### Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

In Situ Redox Manipulation

### Related CCP Milestones

### Related Waste Streams

Agree?

Change?

01483: ER-18 - MLLW GW 100/200 Areas

Y

N

Site Need Code: RL-SS05

Site Need Name: Improved, Real-Time, In-line Detection of Hexavalent Chromium in Process Water

Focus Area Work Package ID: SS-01

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

Focus Area: SCFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Cost

### Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

---

Dataset Name: **FY 1999 Planning Data**

Page 14 of 20

Date of Dataset: **9/20/1999**

# Project Baseline Summary Report

Data Source: **EM CDB**  
Operations/Field Office: **Richland**  
Site Summary Level: **Hanford Site**  
Project **RL-ER08 / Groundwater Management**

Report Number: **GEN-01b**  
Print Date: **3/9/2000**  
HQ ID: **0422**

---

## Technology Needs

**Site Need Code:** RL-SS06  
**Site Need Name:** Improved, Real-Time, In-Situ Detection of Hexavalent Chromium in Groundwater  
**Focus Area Work Package ID:** SS-01      **Focus Area Work Package:** Characterization, Monitoring, Modeling and Analysis  
**Focus Area:** SCFA      **Agree with Technology Link:** Y  
**Benefits (Cost, Risk Reduction, Both):** Both

Technologies      Cost Savings (in thousands of dollars)      Range of Estimate

### Related CCP Milestones

### Related Waste Streams

Agree?      Change?

01483: ER-18 - MLLW GW 100/200 Areas      Y      N

**Site Need Code:** RL-SS07  
**Site Need Name:** Cost-Effective, In Situ Remediation of Strontium-90 in Groundwater  
**Focus Area Work Package ID:** SS-08      **Focus Area Work Package:** Saturated Zone Treatment Systems  
**Focus Area:** SCFA      **Agree with Technology Link:** Y  
**Benefits (Cost, Risk Reduction, Both):** Both

Technologies      Cost Savings (in thousands of dollars)      Range of Estimate

Reactive Barrier for Strontium-90

### Related CCP Milestones

### Related Waste Streams

Agree?      Change?

01483: ER-18 - MLLW GW 100/200 Areas      Y      N

# Project Baseline Summary Report

Data Source: **EM CDB**

Operations/Field Office: **Richland**

Site Summary Level: **Hanford Site**

Project **RL-ER08 / Groundwater Management**

Report Number: **GEN-01b**

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

HQ ID: **0422**

---

## Technology Needs

Site Need Code: RL-SS08

Site Need Name: Improved, Real-Time, In-line Detection of Strontium-90 in Process Water

Focus Area Work Package ID: SS-01

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

Focus Area: SCFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Cost

### Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

### Related CCP Milestones

### Related Waste Streams

Agree?

Change?

01483: ER-18 - MLLW GW 100/200 Areas

Y

N

Site Need Code: RL-SS09

Site Need Name: Improved, Real-Time, In-Situ Detection of Strontium-90 in Groundwater

Focus Area Work Package ID: SS-01

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

Focus Area: SCFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

### Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

### Related CCP Milestones

### Related Waste Streams

Agree?

Change?

01483: ER-18 - MLLW GW 100/200 Areas

Y

N

---

Dataset Name: **FY 1999 Planning Data**

Date of Dataset: **9/20/1999**

Page 16 of 20

# Project Baseline Summary Report

Data Source: **EM CDB**  
Operations/Field Office: **Richland**  
Site Summary Level: **Hanford Site**  
Project **RL-ER08 / Groundwater Management**

Report Number: **GEN-01b**  
Print Date: **3/9/2000**  
HQ ID: **0422**

---

## Technology Needs

**Site Need Code:** RL-SS23  
**Site Need Name:** Improved, Ex Situ Treatment of Chromium in Groundwater

**Focus Area Work Package ID:** SS-08      **Focus Area Work Package:** Saturated Zone Treatment Systems

**Focus Area:** SCFA      **Agree with Technology Link:** N

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

**Technologies**      **Cost Savings (in thousands of dollars)**      **Range of Estimate**

### Related CCP Milestones

### Related Waste Streams

**Agree?**      **Change?**

01483: ER-18 - MLLW GW 100/200 Areas      Y      N

**Site Need Code:** RL-SS32

**Site Need Name:** Understand and Quantify the Relationship Between Contaminant Sources, Vadose Zone Plume Properties and Groundwater Plume Properties with a Focus on the Groundwater-Vadose Zone Interface

**Focus Area Work Package ID:** SS-09      **Focus Area Work Package:** Access and Delivery Systems

**Focus Area:** SCFA      **Agree with Technology Link:** Y

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

**Technologies**      **Cost Savings (in thousands of dollars)**      **Range of Estimate**

# Project Baseline Summary Report

Data Source: EM CDB

Operations/Field Office: Richland

Site Summary Level: Hanford Site

Project RL-ER08 / Groundwater Management

Report Number: GEN-01b

Print Date: 3/9/2000

HQ ID: 0422

---

## Technology Needs

Site Need Code: RL-SS33

Site Need Name: Provide Means to Delineate Regional Groundwater Plumes in Three Dimensions and Define a Scientific Basis for Addressing Scaling Issues in Hanford Groundwater

Focus Area Work Package ID: SS-01

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

Focus Area: SCFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

Site Need Code: RL-SS34

Site Need Name: Understand, Quantify and Develop Descriptions of Biogeochemical Reactions and Interactions Between Contaminants of Concern and Aquifer Sediments to Describe Biochemical Reactive Transport

Focus Area Work Package ID: SS-01

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

Focus Area: SCFA

Agree with Technology Link: Y

Benefits (Cost, Risk Reduction, Both): Both

Technologies

Cost Savings (in thousands of dollars)

Range of Estimate

---

Dataset Name: FY 1999 Planning Data

Date of Dataset: 9/20/1999

Page 18 of 20



# Project Baseline Summary Report

Data Source: EM CDB

Operations/Field Office: Richland

Site Summary Level: Hanford Site

Project RL-ER08 / Groundwater Management

Report Number: GEN-01b

Print Date: 3/9/2000

HQ ID: 0422

---

## Technology Needs

## Technology Deployments

<u>Deployment Status</u>	<u>Deployment Year</u>		
	<u>Planned</u>	<u>Forecast</u>	<u>Actual Date</u>
<b>Technology Name:</b> In Situ Redox Manipulation Deployment Commitment			
<b>Technology Name:</b> Reactive Barrier for Strontium-90 Potential Deployment		2000	
<b>Technology Name:</b> On-line Chromium (6+) Monitor Deployment Commitment			