

## **NOTICE**

The attached Boeing Redacted Proposal for “Extension of Services for Environmental Restoration and Remediation of the Former Energy Technology Engineering Center (ETEC) Site”

Dated August 5, 2011 is based on the 2007 approved Baseline.

### **DOE Release and Statement of Warning:**

The Department of Energy (DOE) is providing this document for informational purposes only. DOE is not in any way warrant the accuracy or reliability of any information contained in this attached document.



### 3.3 Waste Management:

LLW and MLLW will be generated during soil removal and building demolition at RMHF in the following expected streams and volumes:

#### LLW Stream (519 shipments):

- o 4,644 tons of concrete (e.g., vaults and foundations)
- o 1,135 tons of steel and equipment (e.g., Hot Gas Compression Room equipment)
- o 1,974 tons of asphalt (RMHF Yard)
- o 38 tons of miscellaneous building debris

#### MLLW Stream (2 shipments):

- o 440 cubic feet of HEPA filters, lead, and paint chips
- o 200 cubic feet of asbestos

Boeing intends to procure contractors that are NNSC-certified generators.

### 4.0 Government Furnished Services and Items (GFSI)

Activities executed by Boeing will be integrated with activities executed by the DOE. The relationship between the Boeing and DOE activities are summarized here and captured in the project schedule. GFSI that impact when Boeing can finish activities include:

- a) The DOE issues a Notice to Proceed allowing demolition, and off-site disposal of debris.
- b) The DTSC will approve the RMHF Work Plan submitted by Boeing.

### 5.0 Uncertainties

**Table 1: Technical Approach, Schedule, and Cost by WBS Element**

**1.2.2.1.3**

**Radioactive Materials Handling Facility (RMHF)**

- 379 - RMHF Planning Start
- 408 - RMHF D&D Start

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.3.1**

**Project Management, Planning and Controls**

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.3.1.1**

**Project Support**

- 384 - Update RMHF Closure Plan
  - Schedule Relationships The RMHF Closure Plan update will start concurrently with development of the RMHF Work Plan.
- 385 - RMHF Engineering Support to Procurement
  - Schedule Relationships Support for procurement will start once the work plan is approved and will occur prior to any demolition or disposal activity.
  - Technical Approach Support procurement for demolition and stabilization work, including requests for bid package preparation and subcontractor selection. Subcontractor is assumed to be an NNSC-certified generator. Boeing will review and approve all planning documentation for subcontractor operations.
- 386 - Permits
  - Schedule Relationships Applications for permits will begin once the work plan is approved.
  - Technical Approach Includes Ventura County grading permit.
- 387 - SWPP Permit
  - Schedule Relationships The application for the SWPP permit will begin once the work plan is approved.
  - Technical Approach Storm Water Pollution Prevention Permit application & fees.
- 388 - Boeing Provide Contractor Oversight
  - Schedule Relationships Oversight will last for the duration of all DD&D and stabilization activities.
  - Technical Approach Worksite project management support; includes Boeing oversight of subcontractor planning and operations. All subcontractor operations will be supervised by Boeing and appropriate safety personnel. Also includes supervision and quality assurance for monitoring project implementation, radiation protection, and environmental protection.
- 389 - RMHF Contractor Project Management Costs
  - Schedule Relationships Project management will last for the duration of all DD&D and stabilization activities.
  - Technical Approach Subcontractor project oversight and program management.
- 398 - RMHF Final Demolition Report

**Schedule Relationships** This report is expected to be completed 20 days after the final site stabilization activity is finished.

**Technical Approach** Boeing will prepare a Final Demolition Report following debris disposal and site stabilization. The report will include the results of the subcontractor's post-excavation characterization survey, EPA's radiological characterization survey, and DTSC's chemical verification survey.

624 - RMHF Radiological End State Achieved

**End State** All RMHF buildings, foundations, vaults, and utilities are removed; the 4022 vault excavation is confirmed to be below background levels through EPA characterization and DTSC verification sampling and backfilled; and RMHF site is handed over to site wide soils investigation and cleanup process.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.1.2

Utilities

399 - Disconnect All Utilities

**Schedule Relationships** All utilities removal work will occur concurrently with hazardous materials removal and 4021 & 4022 D&D.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.1.3

Hazardous Materials Planning and Removal

391 - Characterization

**Schedule Relationships** All waste characterization will be completed prior to any removal, packaging, or disposal of hazardous materials.

**Technical Approach** Hazardous materials may include lead, mercury, and asbestos. Waste characterization sampling will be required to determine whether any of the waste needs to be disposed of as MLLW.

392 - Removal and Packaging

**Schedule Relationships** Removal and packaging of hazardous materials will begin once all characterization is completed.

**Technical Approach** Includes removal of hazardous materials such as lead-based paint, mercury switches, containerized liquids, and asbestos-containing materials. Following characterization, waste will be packaged as MLLW (according to Energy Solutions' requirements) or LLW (according to NNSS requirements).

393 - Disposal

**Schedule Relationships** Hazardous materials disposal will occur concurrently with removal and packaging and be completed at approximately the same time.

**Technical Approach** Characterization sampling will be required to determine whether any of the waste needs to be disposed of as MLLW. All MLLW waste will be shipped to Energy Solutions. All non-MLLW waste will be disposed as LLW at NNSS.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.2

Building 4021 Demolition

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.3.2.1**

**Project Support**

401 - 4021 Start  
 Schedule Relationships Building 4021 DD&D begins once all engineering support to procurement is completed.

402 - 4021 Finish

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.3.2.2**

**Surveys**

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.3.2.3**

**Hazardous Materials Removal**

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.3.2.6**

**Demolish Building**

- 412 - Remove Internal Non-Structural Walls and Ceilings  
 Schedule Relationships This will be the first DD&D activity of Building 4021.  
 Technical Approach All internal structures will be demolished by conventional means, and all debris will be managed and disposed at NNS as LLW.
- 413 - Saw-Cut Slab and Around Sumps  
 Technical Approach All concrete will be saw-cut and removed in blocks and will be managed and disposed at NNS as LLW.
- 414 - Remove Internal 4021 HEPA Ducting  
 Technical Approach Demolition of the HEPA filter system includes removal, size reduction, and packaging of the exhaust ducting and filter plenums.
- 415 - Remove Drain Lines, Two Internal Sumps, Incidental Soils and Related Concrete Blocks  
 Technical Approach RCRA Permitted Unit Closure sampling will be conducted as soils are exposed.
- 416 - Fix Loose Contamination  
 Technical Approach Walls and concrete will be painted to fix loose contamination.
- 417 - Remove External HEPA Components
- 418 - Dismantle and Size Reduce Structural Components  
 Technical Approach Building will be demolished by conventional means. The steel floor in the packaging room will likely require sectioning prior to removal and packaging.
- 419 - Fix Contamination on Slab  
 Technical Approach The concrete slab will be painted to fix loose contamination, and then saw-cut and removed in blocks to minimize the risk of loose contamination.
- 420 - Remove Concrete Slabs and Footings

**Technical Approach** Concrete will be saw-cut and removed in blocks to minimize the risk of loose contamination.

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.3.3**

**Building 4022 Demolition**

427 - 4022 Start  
Schedule Relationships

Building 4022 DD&D begins concurrently with 4021 DD&D, once all engineering support to procurement is completed.

428 - 4022 Finish

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.3.3.1**

**Project Support**

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.3.3.2**

**Utilities**

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.3.3.3**

**Hazardous Material Removal**

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.3.3.4**

**Piping and Equipment Removal**

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.3.3.6**

**Demolish Building**

438 - Demolish and Size Reduce Stack

439 - Demolish Above-Ground Building and Contents

Schedule Relationships Demolition of the above-ground building will start 10 days after the beginning of stack demolition and size reduction.

443 - Demolish Vaults

Schedule Relationships Vault removal will occur after all above-ground buildings have been demolished.

Technical Approach Will include excavation of soil around the vaults.

444 - Remove 4022 Sump, Incidental Soils, and Drain Lines

Schedule Relationships Removal of 4022 sump, soils, and drain lines will occur once the vaults are demolished.

445 - Contractor Performs Post-Excavation Characterization Survey

Schedule Relationships The internal post-excavation survey will begin once all 4022 DD&D and vault excavation is complete.

**Technical Approach** Internal post-excavation survey will be conducted by a subcontractor.

453 - EPA Characterization & DTSC Verification Surveys

**Schedule Relationships** EPA & DTSC surveys will begin after 4022 Vault demolition and the internal post-excavation characterization survey are complete.

**Technical Approach** Surveys of the 4022 excavation will be performed by the EPA for radiological characterization and by the DTSC for chemical verification purposes to allow for backfill of the excavation pit. These surveys include:

- An EPA characterization survey of the exposed sub-surface soils to verify that all soils meet background levels of radiation;
- A DTSC chemical verification survey of the exposed sub-surface soils to determine that the site meets background conditions.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.4

**Building 4621 Demolition**

A1970 - 4621 Start  
A1980 - 4621 Finish

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.4.1

**Project Support**

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.4.2

**Utilities**

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.4.3

**Surveys**

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.4.6

**Demolish Building**

457 - Demolish 4621 Above Grade Structure and Slab

**Schedule Relationships** 4621 DD&D will begin as soon as 4022 DD&D is finished.

**Technical Approach** Structure will be demolished by conventional means.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.5

**4075 & 4563 Demolition**

A1990 - 4075 & 4563 Start  
A2000 - 4075 & 4563 Finish

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.5.1

Project Support

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.5.2

Utilities

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.5.3

Hazardous Material Removal

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.5.6

Demolish Buildings

472 - Demolish 4075 Above Grade Structure and Slab

Schedule 4075 DD&D will begin as soon as 4621 DD&D is finished.

Relationships

Technical Approach Structure will be demolished by conventional means. Slab will be saw cut and removed in blocks.

482 - Demolish 4563 Above Grade Structure and Slab

Schedule 4563 DD&D will begin as soon as 4075 DD&D is finished.

Relationships

Technical Approach Structure will be demolished by conventional means. Slab will be saw cut and removed in blocks.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.6

Other RMHF Buildings Demolition

477 - Other RMHF Buildings Start

487 - Other RMHF Buildings Finish

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.6.1

Project Support

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.6.2

Utilities

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.6.3

Hazardous Material Removal

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.6.4

Piping and Equipment Removal

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.6.6

Demolish Buildings

- 488 - Demolish Building 4665
  - Schedule 4665 DD&D will occur after 4563 DD&D is completed.
  - Relationships
  - Technical Approach Building will be demolished by conventional means.
- 489 - Demolish Building 4688
  - Schedule 4688 DD&D will occur after 4665 DD&D is completed.
  - Relationships
  - Technical Approach Building will be demolished by conventional means.
- 491 - Demolish Building 4034
  - Schedule 4034 DD&D will occur after 4688 DD&D is completed.
  - Relationships
  - Technical Approach Building will be demolished by conventional means.
- 494 - Demolish Building 4044
  - Schedule 4044 DD&D will occur after 4034 DD&D is completed.
  - Relationships
  - Technical Approach Building will be demolished by conventional means.
- 495 - Demolish Building 4658 and Slab
  - Schedule 4658 DD&D will occur after 4044 DD&D is completed.
  - Relationships
  - Technical Approach Structure will be demolished by conventional means. Slab will be saw cut and removed in blocks.
- 508 - Miscellaneous Structures
  - Schedule DD&D of miscellaneous structures will begin after 4658 DD&D is completed.
  - Relationships
  - Technical Approach Structures will be demolished by conventional means.
- 509 - Removal of Storm Water Collection System
  - Schedule Removal of storm water collection systems will occur concurrently with DD&D of miscellaneous structures.
  - Relationships

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.7

RMHF Yard

- 520 - RMHF Asphalt Start
- 521 - RMHF Asphalt Finish

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.7.1

Project Support

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.7.5

Surveys

- 522 - EPA & DTSC Verification Survey
  - Schedule Relationships EPA & DTSC surveys will begin once the Internal post-excavation characterization survey is complete.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.7.6

Asphalt Removal

- 530 - Remove Asphalt Paving
  - Schedule Relationships Asphalt paving removal will begin as soon as 4021 and 4658 DD&D is complete.
- 531 - RMHF Buildings Demolition Complete

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.7.7

Site Stabilization

- 537 - Backfill and Regrade Site
  - Schedule Relationships Backfill of 4022 will begin once the EPA & DTSC surveys are complete and the site has been verified as meeting radiological release criteria for unrestricted use.
- 538 - Seed

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.8

RMHF LLW

- 36 - Ship Building 4021 Debris
  - Schedule Relationships LLW packaging, shipping, and disposal will occur concurrently with demolition work and be completed at approximately the same time.
  - Technical Approach 4021 DD&D is expected to generate 587 tons of debris, which are expected to require 40 shipments at approximately 15 tons/shipment. Concrete blocks will be wrapped and other debris will be loaded into roll-offs for transportation. All LLW will be disposed at NNSS.
- 39 - Ship Building 4022 Vault Covers
  - Schedule Relationships LLW packaging, shipping, and disposal will occur concurrently with demolition work and be completed at approximately the same time.
  - Technical Approach DD&D of 4022 vault covers is expected to generate 343 tons of debris, which are expected to require 23 shipments at approximately 15 tons/shipment. Blocks will be wrapped for transportation and all LLW will be disposed at NNSS.

- 42 - Ship Asphalt  
**Schedule Relationships** LLW packaging, shipping, and disposal will occur concurrently with demolition work and be completed at approximately the same time.  
**Technical Approach** RMHF Yard excavation and DD&D are expected to generate 1,974 tons of debris, which are expected to require 128 shipments at approximately 17 tons/shipment. Soil and asphalt will be loaded into roll-offs for transportation. All LLW will be disposed at NNSS.
- 45 - Ship Building 4022 Vault Concrete  
**Schedule Relationships** LLW packaging, shipping, and disposal will occur concurrently with demolition work and be completed at approximately the same time.  
**Technical Approach** DD&D of 4022 vault concrete is expected to generate 3,027 tons of debris, which are expected to require 202 shipments at approximately 15 tons/shipment. Blocks will be wrapped for transportation and all LLW will be disposed at NNSS.
- 48 - Ship 4034 & 4044 Slabs  
**Schedule Relationships** LLW packaging, shipping, and disposal will occur concurrently with demolition work and be completed at approximately the same time.  
**Technical Approach** DD&D of 4034 and 4044 slabs is expected to generate 212 tons of debris, which are expected to require 15 shipments at approximately 15 tons/shipment. Concrete blocks will be wrapped and other debris will be loaded into roll-offs for transportation. All LLW will be disposed at NNSS.
- 51 - Ship Building 4022 Debris  
**Schedule Relationships** LLW packaging, shipping, and disposal will occur concurrently with demolition work and be completed at approximately the same time.  
**Technical Approach** DD&D of 4022 debris is expected to generate 870 tons of debris, which are expected to require 58 shipments at approximately 15 tons/shipment. All debris will be loaded into roll-offs for transportation. All LLW will be disposed at NNSS.
- 54 - Ship Building 4075, 4563, and 4621 Debris

**Schedule Relationships** LLW packaging, shipping, and disposal will occur concurrently with demolition work and be completed at approximately the same time.

**Technical Approach** 4076, 4563, and 4621 DD&D is expected to generate 97.6 tons of debris, which are expected to require 7 shipments at approximately 15 tons/shipment. All debris will be loaded into roll-offs for transportation. All LLW will be disposed at NNSS.

57 - Ship 4665, 4688, & 4658 Debris

**Schedule Relationships** LLW packaging, shipping, and disposal will occur concurrently with demolition work and be completed at approximately the same time.

**Technical Approach** 4665, 4688, and 4658 DD&D is expected to generate 680.4 tons of debris, which are expected to require 46 shipments at approximately 15 tons/shipment. All debris will be loaded into roll-offs for transportation. All LLW will be disposed at NNSS.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.1.3.9

RMHF Mixed Waste Disposal

77 - Characterize and Prepare Shipment

**Schedule Relationships** MLLW packaging, shipping, and disposal will occur concurrently with demolition work and be completed at approximately the same time.

**Technical Approach** Two shipments of MLLW are expected to support RMHF DD&D activities.

78 - Ship RMHF MLLW to Energy Solutions

**Schedule Relationships** MLLW packaging, shipping, and disposal will occur concurrently with demolition work and be completed at approximately the same time.

**Technical Approach** DD&D of RMHF is expected to generate enough MLLW to ship a total of 180 cubic feet of lead, HEPA filters, and paint chips (including the existing inventory) in two shipments to Energy Solutions.

Total Cost: Hours Labor: Subcontractor: Material:

**Table 2: Resource Assignments**

1.2.2.1.3		Radioactive Materials Handling Facility (RMHF)			
1.2.2.1.3.1		Project Management, Planning and Controls			
1.2.2.1.3.1.1		Project Support			
ID	Activity Name	Total Cost	Start	Finish	Duration
384	Update RMHF Closure Plan 2007 Baseline modified by professional judgment to allow for subcontractor execution (lump sum estimate) <u>Subcontractor - TBD</u>				
385	RMHF Engineering Support to Procurement 2007 Baseline modified by professional judgment <u>Boeing Labor</u>				
386	Permits 2007 Baseline modified by professional judgment to allow for partial subcontractor execution (lump sum estimate) <u>Boeing Labor</u> <u>Subcontractor - TBD</u>				
387	SWPP Permit Estimate by Fischer. Includes preparation of plan and submission to the agency <u>Subcontractor - TBD</u>				
388	Boeing Provide Contractor Oversight <u>Boeing Labor</u>				
389	RMHF Contractor Project Management Costs <u>Subcontractor - TBD</u>				
393	RMHF Final Demolition Report 2007 Baseline modified by professional judgment to allow for partial subcontractor execution (lump sum estimate) <u>Boeing Labor</u> <u>Subcontractor - TBD</u>				
1.2.2.1.3.1.2		Utilities			
ID	Activity Name	Total Cost	Start	Finish	Duration
399	Disconnect All Utilities 2007 Baseline modified by professional judgment to allow for subcontractor execution (lump sum estimate) <u>Subcontractor - TBD</u>				
1.2.2.1.3.1.3		Hazardous Materials Planning and Removal			
ID	Activity Name	Total Cost	Start	Finish	Duration
391	Characterization 2007 Baseline modified by professional judgment to allow for subcontractor execution (lump sum estimate). Hazardous materials include lead, lead-based paint, asbestos, oils, hydraulic fluids, PCB ballasts, and electronic waste. <u>Subcontractor - TBD</u>				
392	Removal and Packaging 2007 Baseline modified by professional judgment to allow for subcontractor execution (lump sum estimate) <u>Subcontractor - TBD</u>				
393	Disposal 2007 Baseline modified by professional judgment to allow for subcontractor execution (lump sum estimate) <u>Subcontractor - TBD</u>				

		Building 4021 Demolition			
		Project Support			
		Surveys			
		Hazardous Materials Removal			
		Demolish Building			
ID	Activity Name	Total Cost	Start	Finish	Duration
412	Remove Internal Non-Structural Walls and Ceilings 2007 Baseline modified by professional judgment to allow for subcontractor execution Subcontractor - TBD				
413	Saw-Cut Slab and Around Sumps 2007 Baseline modified by professional judgment to allow for subcontractor execution Subcontractor - TBD				
414	Remove Internal 4021 HEPA Ducting 2007 Baseline modified by professional judgment to allow for subcontractor execution Subcontractor - TBD				
415	Remove Drain Lines, Two Internal Sumps, Incidental Soils and Related Concrete Blocks 2007 Baseline modified by professional judgment to allow for subcontractor execution Subcontractor - TBD				
416	Fix Loose Contamination 2007 Baseline modified by professional judgment to allow for subcontractor execution Subcontractor - TBD				
417	Remove External HEPA Components 2007 Baseline modified by professional judgment to allow for subcontractor execution Subcontractor - TBD				
418	Dismantle and Size Reduce Structural Components 2007 Baseline modified by professional judgment to allow for subcontractor execution Additional costs (2002 dollars) from the baseline. Work does not include the removal of the steel plate, which was already completed. Materials cost is also based on 2007 Boeing Baseline estimate. Subcontractor - TBD				
	Materials				
	Subcontractor - TBD				
419	Fix Contamination on Slab 2007 Baseline modified by professional judgment to allow for subcontractor execution Subcontractor - TBD				
420	Remove Concrete Slabs and Footings 2007 Baseline modified by professional judgment to allow for subcontractor execution Subcontractor - TBD				
		Building 4022 Demolition			
		Project Support			
		Utilities			
		Hazardous Material Removal			
		Piping and Equipment Removal			
		Demolish Building			
ID	Activity Name	Total Cost	Start	Finish	Duration
438	Demolish and Size Reduce Stack				

Cost estimate by Fischer excluding transportation and disposal costs, estimate includes removal of Stack and HEPA filter concrete pads.  
Subcontractor - TBD

439 **Demolish Above-Ground Building and Contents**  
 2007 Baseline modified by professional judgment to allow for subcontractor execution of equipment/fixture removal and size reduction, where necessary.  
Subcontractor - TBD Includes

443 **Demolish Vaults**  
 2007 Baseline modified by professional judgment to allow for subcontractor execution of additional costs (2002 dollars) from the baseline. Work includes excavation of soil around the vaults.  
Subcontractor - TBD  
Subcontractor - TBD

444 **Remove 4022 Sump, Incidental Soils, and Drain Lines**  
 2007 Baseline modified by professional judgment to allow for subcontractor execution of  
Subcontractor - TBD

445 **Contractor Performs Post-Excavation Characterization Survey**  
 2007 Baseline modified by professional judgment to allow for subcontractor execution (lump sum estimate)  
Subcontractor - TBD

1.2.2.1.3.4	Building 4621 Demolition
1.2.2.1.3.4.1	Project Support
1.2.2.1.3.4.2	Utilities
1.2.2.1.3.4.3	Surveys
1.2.2.1.3.4.6	Demolish Building

ID	Activity Name	Total Cost	Start	Finish	Duration
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457 **Demolish 4621 Above Grade Structure and Slab**  
 Cost estimate by Fischer  
Subcontractor - TBD

1.2.2.1.3.5	4075 & 4563 Demolition
1.2.2.1.3.5.1	Project Support
1.2.2.1.3.5.2	Utilities
1.2.2.1.3.5.3	Hazardous Material Removal
1.2.2.1.3.5.6	Demolish Buildings

ID	Activity Name	Total Cost	Start	Finish	Duration
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472 **Demolish 4075 Above Grade Structure and Slab**  
 Cost estimate by Fischer  
Subcontractor - TBD

482 **Demolish 4563 Above Grade Structure and Slab**  
 Cost estimate by Fischer  
Subcontractor - TBD

1.2.2.1.3.6	Other RMHF Buildings Demolition
1.2.2.1.3.6.1	Project Support
1.2.2.1.3.6.2	Utilities
1.2.2.1.3.6.3	Hazardous Material Removal
1.2.2.1.3.6.4	Piping and Equipment Removal

1.2.2.1.3.6.6					Demolish Buildings	
ID	Activity Name	Total Cost	Start	Finish	Duration	
488	Demolish Building 4665 Cost estimate by Fischer Subcontractor - TBD					
489	Demolish Building 4688 Cost estimate by Fischer Subcontractor - TBD					
491	Demolish Building 4034 Cost estimate by Fischer Subcontractor - TBD					
494	Demolish Building 4044 Cost estimate by Fischer Subcontractor - TBD					
495	Demolish Building 4668 and Slab 2007 Baseline modified by professional judgment to allow for subcontractor execution Subcontractor - TBD					
603	Miscellaneous Structures 2007 Baseline modified by professional judgment to allow for subcontractor execution concrete pit outside of 4024 and other incidental below-grade structures Subcontractor - TBD				Includes septic tank	
609	Removal of Storm Water Collection System 2007 Baseline modified by professional judgment to allow for subcontractor execution drainage lines Subcontractor - TBD				Includes tank and	
1.2.2.1.3.7					RMHIF Yard	
1.2.2.1.3.7.1					Project Support	
1.2.2.1.3.7.5					Surveys	
1.2.2.1.3.7.6					Asphalt Removal	
ID	Activity Name	Total Cost	Start	Finish	Duration	
630	Remove Asphalt Paving  requirements that were not previously factored in Subcontractor - TBD				a factor of 3 due to radiological handling, packaging, and control	
1.2.2.1.3.7.7					Site Stabilization	
ID	Activity Name	Total Cost	Start	Finish	Duration	
637	Backfill and Regrade Site Site restoration includes backfilling the 4022 pit and implementing erosion control measures (e.g. swales, hydroseeding). RMHIF backfill volume is assumed to be 75% of the 4024 backfill volume, and therefore costs are 75% of 4024 (used 75% of the 4024 base estimate and 4024 Subcontractor resources) 4024 Subcontractor - TBD					
638	Seed 2007 Baseline modified by professional judgment to allow for subcontractor execution Subcontractor - TBD					
1.2.2.1.3.8					RMHIF LAY	
ID	Activity Name	Total Cost	Start	Finish	Duration	

- 36 **Ship Building 4021 Debris**  
 LLW costs assume the use of a NISS Certified Generator sub-contractor or Broker to conduct all LLW characterization, packaging, shipping, and NISS coordination. Additional Boeing Oversight effort is captured in the LLW Account. 7,622 cubic feet of LLW are estimated as 4021 debris, which is equivalent to 637 tons or 40 shipments of approximately 15 tons/shipment. Freight costs are estimated at \_\_\_\_\_ per shipment, and broker costs are estimated at \_\_\_\_\_.
- LLW Freight by Shipment  
Broker Cost by Shipment
- 39 **Ship Building 4022 Vault Covers**  
 4,574 cubic feet of LLW are estimated as 4022 vault covers, which is equivalent to 343 tons or 23 shipments of approximately 15 tons/shipment. Freight costs are estimated at \_\_\_\_\_ per shipment, and broker costs are estimated at \_\_\_\_\_.
- LLW Freight by Shipment  
Broker Cost by Shipment
- 42 **Ship Asphalt**  
 31,059 cubic feet of LLW are estimated as soil and asphalt, which is equivalent to 1,974 tons or 128 shipments of approximately 17 tons/shipment. Freight costs are estimated at \_\_\_\_\_ per shipment, and broker costs are estimated at \_\_\_\_\_.
- LLW Freight by Shipment  
Broker Cost by Shipment
- 45 **Ship Building 4022 Vault Concrete**  
 40,360 cubic feet of LLW are estimated as vault concrete, which is equivalent to 3,027 tons or 202 shipments of approximately 15 tons/shipment. Freight costs are estimated at \_\_\_\_\_ per shipment, and broker costs are estimated at \_\_\_\_\_.
- LLW Freight by Shipment  
Broker Cost by Shipment
- 48 **Ship 4034 & 4044 Slabs**  
 2,828 cubic feet of LLW are estimated as 4034 & 4044 slab debris, which is equivalent to 212 tons or 15 shipments of approximately 15 tons/shipment. Freight costs are estimated at \_\_\_\_\_ per shipment, and broker costs are estimated at \_\_\_\_\_.
- LLW Freight by Shipment  
Broker Cost by Shipment
- 61 **Ship Building 4022 Debris**  
 11,600 cubic feet of LLW are estimated as 4022 debris, which is equivalent to 870 tons or 58 shipments of approximately 15 tons/shipment. Freight costs are estimated at \_\_\_\_\_ per shipment, and broker costs are estimated at \_\_\_\_\_.
- LLW Freight by Shipment  
Broker Cost by Shipment
- 64 **Ship Building 4075, 4563, and 4621 Debris**  
 1,300 cubic feet of LLW are estimated for these buildings, which is equivalent to 97.6 tons or 7 shipments of approximately 15 tons/shipment. Freight costs are estimated at \_\_\_\_\_ per shipment, and broker costs are estimated at \_\_\_\_\_.
- LLW Freight by Shipment  
Broker Cost by Shipment
- 67 **Ship 4665, 4688, & 4658 Debris**  
 9,072 cubic feet of LLW are estimated for these buildings, which is equivalent to 680.4 tons or 46 shipments of approximately 15 tons/shipment. Freight costs are estimated at \_\_\_\_\_ per shipment, and broker costs are estimated at \_\_\_\_\_.
- LLW Freight by Shipment  
Broker Cost by Shipment

1.2.2.1.3.9		RMHF Mixed Waste Disposal			
ID	Activity Name	Total Cost	Start	Finish	Duration

- 77 **Characterize and Prepare Shipment**  
Preparation costs for two shipments, are estimated to MLLW  
costs assume the use of a qualified subcontractor or broker to conduct all MLLW characterization, waste approval, packaging  
shipping and disposal site coordination  
Subcontractor - TBD
- 78 **Ship RMHF MLLW to Energy Solutions**
- MLW Disposal by Shipment  
MLW Freight by Shipment

## DD&D Planning Package for Building 4024

Energy Technology and Engineering Center  
(ETEC) Closure Project

### Performance Baseline

WBS Number	1.2.2.1.4
BOE Start Date	January 2012
BOE Completion Date	February 2013
GFY 2012 Cost	
GFY 2013 Cost	
GFY 2014 Cost	
Out-year Cost	
Life Cycle Cost	



Building 4024, pictured above, consists of a corrugated above-grade metal building measuring 13,972 square feet. Below grade are nuclear reactor test vaults constructed of aluminum-clad, borated concrete and an operating gallery. Testing of reactors as part of the Systems for Nuclear Auxiliary Power (SNAP) program resulted in radiological activity above Department of Energy (DOE) release limits.

### 1.0 Current Status

The test reactors and other components, such as the radioactive liquid and gas holdup tanks, were removed during previous Decontamination, Decommissioning and Demolition (DD&D) work. Building 4024 is partially demolished and is in an inactive, safe-shutdown status. Access to the power test vaults that contained the test reactors are restricted and have remained in surveillance and maintenance mode since September 1, 1978.

Refer to the Boeing Historical Site Assessment (HSA) summary for a detailed site description, operational history, and account of previously completed cleanup and DD&D. Historical information has not indicated any known or potential releases to the surrounding soils.

Just prior to the 2007 stop work order, AREVA completed a full radiological characterization survey but was not authorized to demolish the facilities. Boeing will use the results of this survey to provide a basis for the work plan it submits to DTSC prior to any demolition work.

Conditions requiring action under this Planning Package are:

- a) Radiological activity in the vault concrete consists primarily of two radionuclides, Co-60 and Eu-152. Sampling efforts in 2003 indicate internal structure activation with a maximum of 9.3 pCi/g of Co-60 and a maximum of 105 pCi/g of Eu-152.

Measurable activation above release limits exists only within the inner 15 inches of concrete of the two power test cells. Refer to the Boeing HSA for details regarding all the historical sampling of Building 4024.

## 2.0 End State

The end state for Building 4024 is to remove all above and below grade structures (i.e. the 4024 building, foundation, vaults, and utilities), confirm the vault excavation to be below background levels through EPA characterization and DTSC verification, and backfill the site, after which the 4024 site will be stabilized and handed over to the site wide soils investigation and cleanup process.

## 3.0 Technical Approach

This Planning Package involves the demolition and disposal of Building 4024, as well as the subsequent verification by the DOE that the site is at or below background levels for radiological and chemical constituents. This verification will allow the site to be characterized by EPA and verified by DTSC.

No actions under this Planning Package will commence until DOE issues a Notice to Proceed allowing demolition, and off-site disposal of debris, of Area IV facilities. Boeing will then prepare a 4024 Work Plan for DTSC review and approval.

Boeing will select an NNSNNS-certified generator subcontractor via a competitive procurement process. All subcontractor operations planning documentation and outside work will be reviewed and approved by Boeing. Building 4024 above grade structures will be demolished by conventional means. Excavation will be performed to provide access to the concrete vaults, which will be saw-cut and removed in blocks. All DD&D debris and soils resulting from excavations will be managed and disposed at the Nevada National Security Site (NNS) as Low Level Waste (LLW).

Following vault removal, the subcontractor will perform one post-excavation characterization survey at 4024 to document radiological and chemical conditions. The EPA and DTSC will then perform a radiological characterization survey and chemical verification survey, respectively.

Following finalized surveys and reports, soil that meets background levels will be brought from an off-site source for use as backfill. The site will be stabilized to comply with storm water best management practices and turned over to the site-wide soils investigation program.

This Planning Package is organized into the following Work Breakdown Structure (WBS) Elements:

- 1.2.2.1.4.1.1 Project Management, Planning, and Support
- 1.2.2.1.4.1.2 Utilities - completed

- 1.2.2.1.4.1.3 Hazardous Materials Removal - completed
- 1.2.2.1.4.1.4 Equipment Removal - completed
- 1.2.2.1.4.1.5 Surveys
- 1.2.2.1.4.1.6 Building Demolition
- 1.2.2.1.4.1.7 Site Stabilization
- 1.2.2.1.4.1.8 4024 LLW

Further details of the technical approach, schedule, and cost for each WBS Element by activity are described in Table 1.

Life cycle costs were determined based on standard unit costs from R.S. Means and estimated quantiles of material, professional judgment, previous experience executing work at ETEC, and prior vendor proposals. Detailed resource assignments and rationales for each activity are described in Table 2.

### 3.1 Waste Management:

LLW will be generated during the execution of this Planning Package in the following expected streams and volumes:

**Stream #1 (5 shipments):**

- o 71.6 tons of steel and equipment

**Stream #2 (400 shipments):**

- o 35 tons of miscellaneous building debris
- o 550 tons of asphalt
- o 5,318 tons of concrete

All LLW will be disposed at NNSS. Boeing intends to procure contractors that are NNSS-certified generators.

**Table 1: Technical Approach, Schedule, and Cost by WBS Element**

**1.2.2.1.4**

**Facility 4024**

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.4.1**

**Building 4024**

575 - 4024 Planning Start

576 - 4024 D&D Start

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.4.1.1**

**Project Management and Planning**

577 - Pre-Mobilization Planning and Permits

Schedule 4024 activity is expected to begin in January 2012 when DOE issues a Notice to Proceed allowing demolition, and off-site disposal of debris, of Area IV facilities.  
Relationships

Technical Approach

579 - Engineering Support for Procurement

Schedule Support for procurement will start once the work plan is final and will occur prior to any demolition or disposal activity.  
Relationships

Technical Approach

580 - 4024 D&D Project Management

Schedule 4024 Project Management will last for the duration of all demolition, stabilization, and EPA surveys & analysis, and will end once the EPA report is finished.  
Relationships

Technical Approach

584 - PIC Contractor Oversight

Schedule Oversight will last for the duration of all DD&D and stabilization activities.  
Relationships

Technical Approach

585 - Health & Safety and Rad Contractor Oversight

Schedule Oversight will last for the duration of all DD&D and stabilization activities.  
Relationships

Technical Approach

594 - Subcontractor Project Oversight

Technical Approach

595 - 4024 Final Demolition Report

Technical Approach

- 651 - 4024 End State Achieved  
 End State      The 4024 building, foundation, vaults, and utilities are removed; the 4024 vault excavation is confirmed to be below background levels through EPA characterization and DTSC verification and backfilled; the 4024 site is handed over to the site wide soils investigation and cleanup process.

Total Cost:    Hours Labor:    Subcontractor:    Material:

1.2.2.1.4.1.3

**Hazardous Materials Removal**

Total Cost:    Hours Labor:    Subcontractor:    Material:

1.2.2.1.4.1.5

**Surveys**

- 591 - EPA Rad Characterization & DTSC Chemical Verification Surveys  
 Schedule      The EPA characterization survey and DTSC verification survey will occur  
 Relationships      concurrently as soon as 4024 demolition work is complete.  
 Technical Approach

- 592 - Support EPA & DTSC Surveys  
 Schedule      Boeing support for EPA and DTSC surveys will occur concurrently with the surveys  
 Relationships      being performed.  
 Technical Approach

- 600 - Post-Excavation Characterization Survey  
 Schedule      The survey will be performed following DD&D and prior to releasing the site to EPA  
 Relationships      for further characterization and verification.  
 Technical Approach

- 602 - EPA Develop Report and Analysis  
 Schedule      The completion of the EPA's final report will trigger End State Achievement for  
 Relationships      Building 4024.  
 Technical Approach

Total Cost:    Hours Labor:    Subcontractor:    Material:

1.2.2.1.4.1.6

**Building Demolition**

- 596 - Mobilization  
 Schedule      Mobilization will be the first DD&D task.  
 Relationships

**Technical Approach**

- 597 - Demolish High Bay, Vaults, and Remaining Site  
**Schedule Relationships** The High Bay, Vaults, and Remaining Site (including asphalt, fences, and any utilities) will be demolished.  
**Technical Approach** The High Bay, Vaults, and Remaining Site (including asphalt, fences, and any utilities) will be demolished and handled as LLW.

- 601 - 4024 Demolition Complete

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.4.1.7**

**Site Stabilization**

- 603 - Site Stabilization and Demobilization  
**Schedule Relationships** Backfill will occur once the EPA and DTSC confirm that all exposed sub-surface soils in the vault excavation meet background levels. Site stabilization will immediately follow backfill.  
**Technical Approach** Vault excavation area will be backfilled and re-graded using material from off-site that meets background levels, and compacted to 90%, as required by grading permit. Site will then be stabilized to implement best management practices for stormwater pollution prevention.

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.1.4.1.8**

**4024 LLW**

- 20 - Ship Steel & Equipment (Five Shipments) - Freight + Loading  
**Schedule Relationships** LLW packaging, shipping, and disposal will occur concurrently with demolition work and be completed at approximately the same time.  
**Technical Approach** D&D activities at 4024 are expected to generate 71.6 tons of debris, which are expected to require 5 shipments at approximately 15 tons/shipment. Steel and equipment will be loaded in roll-offs for transportation. All LLW will be disposed and
- 23 - Ship Concrete Blocks and Associated Rubble (400 Shipments) - Freight  
**Schedule Relationships** LLW packaging, shipping, and disposal will occur concurrently with demolition work and be completed at approximately the same time.  
**Technical Approach** DD&D activities at 4024 are expected to generate 5,903 tons of debris, which are expected to require 400 shipments at approximately 15 tons/shipment. Blocks will be wrapped and associated rubble will be loaded into roll-offs for transportation. All LLW will be disposed

Total Cost: Hours Labor: Subcontractor: Material:

**Table 2: Resource Assignments**

1.2.2.1.4		Facility 4024			
1.2.2.1.4.1		Building 4024			
1.2.2.1.4.1.1		Project Management and Planning			
ID	Activity Name	Total Cost	Start	Finish	Duration
677	Pre-Mobilization Planning and Permits				
	<u>4024 Subcontractor - TBD</u>				
679	Engineering Support for Procurement, Job walks, technical approach, review, access, logistics, etc. <u>Boeing Labor</u>				
680	4024 D&D Project Management Non-worksite project management support. Estimated at <u>Boeing Labor</u>				
684	PIC Contractor Oversight Worksite project management support and oversight. Estimated at <u>Boeing Labor</u>				
685	Health & Safety and Rad Contractor Oversight Estimated at _____ for the Health Physicist and _____ for Safety <u>Boeing Labor</u>				
695	4024 Final Demolition Report From AREVA Quote - November 2006 <u>4024 Subcontractor - TBD</u> <u>Boeing Labor</u>				
1.2.2.1.4.1.3		Hazardous Materials Removal			
1.2.2.1.4.1.5		Surveys			
ID	Activity Name	Total Cost	Start	Finish	Duration
600	Post-Excavation Characterization Survey From AREVA Quote - November 2006 <u>4024 Subcontractor - TBD</u>				
1.2.2.1.4.1.6		Building Demolition			
ID	Activity Name	Total Cost	Start	Finish	Duration
606	Mobilization From AREVA Quote - November 2006 <u>4024 Subcontractor - TBD</u>				
697	Demolish High Bay, Vaults, and Remaining Site From AREVA Quote - November 2006 <u>4024 Subcontractor - TBD</u>				
1.2.2.1.4.1.7		Site Stabilization			
ID	Activity Name	Total Cost	Start	Finish	Duration
603	Site Stabilization and Demobilization From AREVA Quote - November 2006				

4024 Subcontractor - TBD

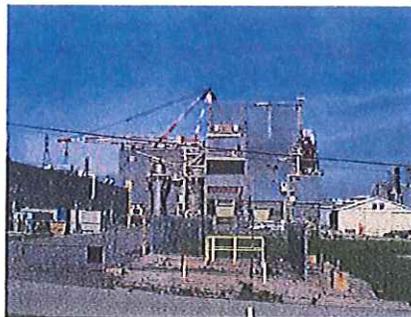
1.2.2.1.4.1.8				4024 LLW	
ID	Activity Name	Total Cost	Start	Finish	Duration
20	<p>Ship Steel &amp; Equipment (Five Shipments) - Freight + Loading</p> <p>288 cubic feet of LLW and 50 tons of former DM debris are estimated as 4024 Equipment which comes to a total of 71.6 tons or 6 shipments at approximately 15 tons/shipment. Freight costs are estimated at \$1,000 per shipment, and broker costs are estimated at \$500 per shipment plus 10 hours of labor for liners and containers for a total of \$1,500 per shipment. Equipment is estimated at 5 shipments.</p> <p><u>LLW Freight by Shipment</u></p> <p><u>Broker Cost by Shipment</u></p>				
23	<p>Ship Concrete Blocks and Associated Rubble (400 Shipments) - Freight</p> <p>6,003 tons of LLW are estimated as 4024 concrete blocks &amp; rubble, which is expected to require approximately 400 shipments at approximately 15 tons/shipment. Freight costs are estimated at \$1,000 per shipment, and broker costs are estimated at \$500 per shipment plus 10 hours of labor for liners and containers for a total of \$1,500 per shipment. Concrete blocks and rubble are estimated at 400 shipments.</p> <p><u>LLW Freight by Shipment</u></p> <p><u>Broker Cost by Shipment</u></p>				

## DD&D Planning Package for Sodium Pump Test Facility

Energy Technology and Engineering Center  
(ETEC) Closure Project

### Performance Baseline

WBS Number	1.2.2.2.5
BOE Start Date	January 2012
BOE Completion Date	December 2012
GFY 2012 Cost	
GFY 2013 Cost	
GFY 2014 Cost	
Out-Year Cost	
Life Cycle Cost	



The Sodium Pump Test Facility (SPTF) started operations in 1974 and continued through October 2001. Constructed in the early 1970s, the SPTF was one of seven liquid metal test facilities at the ETEC used for research and development. The SPTF's primary purpose was to provide test beds for development, performance, and verification testing of large sodium pumps.

### 1.0 Current Status

SPTF is currently partially demolished. Two of the original three buildings remain and the facility is no longer used for sodium pump testing. Sodium removal began in 2002 and was completed in 2007. SPTF was not a radiological facility.

The current status and conditions requiring action for each building are described in Table 1 with the associated summary scope, cost, and schedule information. Refer to the Boeing Historical Site Assessment (HSA) summary for a detailed site description and operational history of each building.

Conditions requiring action under this Planning Package are:

- a) Buildings (4462 and 4463) are unused, aging, and require final disposition.

SPTF includes two steel framed, sided, and roofed buildings standing on concrete slab foundations.

- Building 4462 is a 6,635-square foot building that housed various sodium test pumps and associated piping.
- Building 4463 is a 6,530-square foot building that was used to assemble, disassemble, and clean pumps and other components associated with the SPTF. The building stands 70 feet tall and has cranes with 15, 50, and 60-ton capacities.

## 2.0 End State

The end state is to demolish Buildings 4462 and 4453 and hand over all below grade structures to Boeing for continued demolition prior to the site-wide soils investigation and cleanup process.

## 3.0 Technical Approach

The performance of this Planning Package involves the removal of any remaining hazardous materials, including Asbestos-Containing Material (ACM) from the interior of the two remaining buildings. Next the sheet metal exterior walls will be removed and disposed of as ACM due to the weather stripping between panels. The remaining structures and equipments will be demolished by conventional means. All debris will be disposed of at a Class III landfill facility.

The SPTF end state does not include excavation or below grade D&D, and therefore no backfill or site stabilization is expected. Boeing will assume the remaining scope of demolishing the foundation and below grade structures.

No actions under this Planning Package will commence until DOE issues a Notice to Proceed allowing demolition, and off-site disposal of debris, of Area IV facilities.

This Planning Package contains only one Work Breakdown Structure (WBS) Element:

### 1.2.2.2.5.1 Buildings 4462 and 4463

The technical approach, schedule, and cost for this WBS Element is described in Table 1.

Life cycle costs were determined based on standard unit costs from R.S. Means and estimated quantities of material, professional judgment, previous experience executing work at ETEC, and vendor estimates.

Refer to the "DOE Standard Operating Procedure for Demolition of Facilities in Area IV at the Santa Susana Field Laboratory" for details regarding the decommissioning approach, project management approach, worker protection, environmental protection, and waste management.

#### 4.0 Government Furnished Services and Items (GFSI)

Activities executed by Boeing will be integrated with activities executed by the DOE. The relationship between the Boeing and DOE activities are summarized here and captured in the project schedule. GFSI that impact when Boeing can finish activities include:

- a) The DOE will issue a Notice to Proceed with DD&D work.
- b) The DTSC will approve the SPTF Work Plan submitted by Boeing.

#### 5.0 Uncertainties

The ETEC risk analysis identified the following significant (i.e. uncertainties with combined direct and delayed costs of greater than \$1M) uncertainties associated with SPTF D&D:

- Scrap Metal Recycling Opportunity

All SPTF uncertainties are defined in Table 3 by the expected conditions for the project, potential deviations from these expected conditions, and technical impacts.

**Table 1: Technical Approach, Schedule, and Cost by WBS Element**

**1.2.2.2.5 Sodium Pump Test Facility (SPTF)**

611 - SPTF Planning Start

612 - SPTF D&D Start

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.2.5.1**

**Building 4462 and 4463**

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.2.5.1.1**

**Planning**

619 - Contractor Oversight

**Schedule** Oversight will last for the duration of D&D and debris disposal.

**Relationships**

**Technical Approach** Project management support, includes Boeing oversight of subcontractor planning and operations.

621 - SPTF Engineering Support to Procurement

**Schedule** Support for procurement will start once the work plan is approved and will occur prior to any demolition or disposal activity.

**Relationships**

**Technical Approach** Support procurement for demolition and stabilization work, including requests for bid package preparation and subcontractor selection. Boeing will review and approve all planning documentation for subcontractor operations.

622 - SPTF Final Demolition Report

**Schedule** The report will begin as soon as all SPTF D&D is completed. Site stabilization will occur concurrently, and end in time for all relevant information to be included in the report.

**Relationships**

**Technical Approach** Boeing will prepare a Final Demolition Report following D&D and debris disposal.

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.2.5.1.3**

**Surveys**

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.2.5.1.6**

**Building Demolition**

625 - Demolish Building 4462 and 4463

**Schedule** Both SPTF buildings will be demolished in parallel once the detailed work plan has been approved by the DTSC and all procurement work is completed.

**Relationships**

**Technical Approach**

- 627 - Debris Disposal
  - Schedule Debris disposal will run concurrently with building demolition, with a 20 day lag
  - Relationships
  - Technical Approach D&D activities at SPTF are expected to generate 4,000 tons of debris, which are expected to require 287 shipments at approximately 15 tons/shipment. Debris will be loaded in roll-offs for transportation and sent to a Class III landfill facility.
  
- 628 - SPTF End State Achieved
  - End State Buildings 4462 and 4463 are demolished, and below grade structures are handed over to Boeing for continued demolition prior to incorporation into site-wide soils investigation and cleanup process.

Total Cost    Hours Labor:    Subcontractor:    Material:

**Table 2: Resource Assignments**

1.2.2.2.5		Sodium Pump Test Facility (SPTF)			
1.2.2.2.5.1		Building 4462 and 4463			
1.2.2.2.5.1.1		Planning			
ID	Activity Name	Total Cost	Start	Finish	Duration
619	<b>Contractor Oversight</b> Oversight is based on the following FTE ratios: PIC, Health & Safety, PM/Problem Solving <u>Boeing Labor</u>				
621	<b>SPTF Engineering Support to Procurement</b> SPTF Engineering Support to Procurement was estimated to be half the cost of the 4024 Engineering Support activity. <u>Boeing Labor</u>				
622	<b>SPTF Final Demolition Report</b> Professional Judgment <u>Boeing Labor</u>				
1.2.2.2.5.1.3		Surveys			
1.2.2.2.5.1.6		Building Demolition			
ID	Activity Name	Total Cost	Start	Finish	Duration
625	<b>Demolish Building 4462 and 4463</b> Based on Fischer's estimate, D&D costs do not include any potential savings from material's recycling or salvage. <u>Subcontractor - TBD</u>				
627	<b>Debris Disposal</b> Approx. 8 million lbs of Class III SPTF waste are assumed, or 4,000 tons. Approximately 267 shipments (at approximately 15 tons/shipment) are expected to require disposal and a Class III landfill. Average freight costs per shipment for Class III waste. <u>Class III Freight by Shipment</u> <u>Class III Disposal by Shipment</u>				

## DD&D Planning Package for Hazardous Waste Management Facility

Energy Technology and Engineering Center  
(ETEC) Closure Project

### Performance Baseline

WBS Number	1.2.2.2.7
BOE Start Date	January 2012
BOE Completion Date	October 2012
GFY 2012 Cost	
GFY 2013 Cost	
GFY 2014 Cost	
Out-year Cost	
Life Cycle Cost	



The Hazardous Waste Management Facility (HWMF), mapped above, was constructed to treat and store reactive metallic wastes regulated by the California Department of Toxic Substances Control (DTSC) under the Resource Conservation and Recovery Act (RCRA). Operations began under the RCRA permit in 1978 and entered regulatory closure in 1998. The Department of Energy (DOE) is owner and co-operator of the facility.

### 1.0 Current Status

The HWMF consists of two facilities, Building 4133 and 4029, with surrounding soils that may be contaminated with hazardous waste constituents. These DOE-owned facilities operated under a RCRA permit for treatment and storage of reactive wastes. Building 4029 (a former radiation instrument calibration facility) has been released for radiologically unrestricted use by the DOE. Building 4133 has undergone a final status survey, and verification surveys by the California Department of Public Health (CDPH) and the Oak Ridge Institute of Science & Education (ORISE).

Boeing submitted the revised HWMF RCRA Closure Plan in December 2003 and obtained DTSC authority to proceed with closure plan implementation in January 2007. The facility is currently inactive and monitoring is consistent with that state.

Refer to the Boeing Historical Site Assessment (HSA) summary of each building for a detailed site description, operational history, and account of previously completed cleanup and Decommissioning and Demolition (D&D).

Conditions requiring action under this Planning Package include:

- a) Buildings 4133 and 4029 are RCRA permitted units and facilities requiring final disposition.

The HWMF RCRA Closure Report and all related scope is covered under Work Element 1.2.1.2.1 (RCRA).

## 2.0 End State

The end state for HWMF is to remove all buildings, foundations, vaults and utilities, and hand the site over to the site wide soils investigation and cleanup process.

## 3.0 Technical Approach

The performance of this Planning Package involves demolishing Buildings 4133 and 4029.

Boeing submitted the revised HWMF RCRA Closure Plan to the DTSC in December 2003 for final approval and DTSC authorized Boeing to proceed in January 2007. Execution of this Planning Package assumes DTSC re-authorization of the approved HWMF Closure Plan prior to HWM facility demolition.

No actions under this Planning Package will commence until DOE issues a Notice to Proceed allowing demolition, and off-site disposal of debris, of Area IV facilities.

Demolition of buildings 4133 and 4029 will include support activities such as project management and completion of a detailed work plan; installation of temporary site utilities; demolition of the buildings and concrete slabs; and stabilization activities. All buildings and slabs will be demolished by conventional means. All debris will be disposed of at a Class I landfill facility. The site will be stabilized to comply with stormwater best management practices and turned over to the site-wide soils investigation program. Specific scope for each site is discussed in Table 1.

This Planning Package is organized into the following Work Breakdown Structure (WBS) Elements:

- 1.2.2.2.7 Hazardous Waste Management Facility
  - 1.2.2.2.7.1 Building 4133
  - 1.2.2.2.7.2 Building 4029

The technical approach, schedule, and cost for each WBS Element are described in Table 1.

Life cycle costs were determined based on standard unit costs from R.S. Means and estimated quantities of material, professional judgment, previous experience executing work at ETEC, and vendor estimates. Detailed resource assignments and rationales for each activity are described in Table 2.

Refer to the HWMF Closure Plan and "DOE Standard Operating Procedure for Demolition of Facilities in Area IV at the Santa Susana Field Laboratory" for additional

details regarding the permitted facilities, hazardous waste constituents, closure process, and sampling requirements.

#### 4.0 Government Furnished Services and Items (GFSI)

Activities executed by Boeing will be integrated with activities executed by the DOE. The relationship between the Boeing and DOE activities are summarized here and captured in the project schedule. GFSI that impact when Boeing can finish activities include:

- a) DOE issues a Notice to Proceed allowing demolition, and off-site disposal of debris.
- b) The DTSC will approve the HWMF Work Plan submitted by Boeing.
- c) The DTSC will re-approve the HWMF RCRA Closure Plan at the same time as it approves the Work Plan, allowing D&D to go forward.
- d) The DOE will fund the EPA to conduct verification surveys to confirm that the site meets release criteria for unrestricted use.

#### 5.0 Uncertainties

The ETEC risk analysis identified the following significant (i.e. uncertainties with combined direct and delayed costs of greater than \$1M) uncertainties associated with HWMF D&D:

- Closure Plan Approval
- Post-Closure Permit Requirement

All HWMF uncertainties are defined in Table 3 by the expected conditions for the project, potential deviations from these expected conditions, and technical impacts.

**Table 1: Technical Approach, Schedule, and Cost by WBS Element**

**1.2.2.2.7 Hazardous Waste Management Facility**

**633 - HWMF Closure Plan Re-approval**

**Schedule** HWMF activity is expected to begin in January 2012 when the DOE issues a  
**Relationships** Notice to Proceed allowing demolition, and off-site disposal of debris. Once DTSC approves the Work Plan, other D&D activities can begin.

**Technical Approach**

**634 - HWMF Planning Start**

**635 - HWMF D&D Start**

**653 - HWMF Engineering Support to Procurement**

**Schedule** Support for procurement will start once the work plan is approved and will occur  
**Relationships** prior to any demolition or disposal activity.

**Technical Approach**

**657 - HWMF Final Demolition Report**

**Schedule** The report will begin as soon as all HWMF DD&D is completed. Site stabilization  
**Relationships** will occur concurrently, and end in time for all relevant information to be included in the report.

**Technical Approach**

**659 - Contractor Oversight**

**Schedule** Oversight will last for the duration of all DD&D and stabilization activities.

**Relationships**

**Technical Approach**

**660 - HWMF End State Achieved**

**End State** HWMF buildings, foundations, vaults, and utilities are removed, and the HWMF site is handed over to the site wide soils investigation and cleanup process.

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.2.7.1**

**Building 4133**

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.2.7.1.1**

**Project Planning**

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.2.7.1.6

**Building Demolition**

638 - Building 4133 Demolition

**Schedule Relationships** Building 4133 DD&D will begin once the detailed work plan has been approved by the DTSC and all procurement work is completed.

**Technical Approach** Building 4133 will be demolished by conventional means and debris will be disposed of at a Class I landfill facility. Execution of DD&D assumes DTSC re-authorization of the approved HWMF Closure Plan.

639 - Debris Disposal

**Schedule Relationships** Debris disposal will begin once 4133 demolition is completed.

**Technical Approach** D&D activities at 4133 are expected to generate 85 tons of unsalvageable debris, which will require 6 shipments at approximately 15 tons/shipment. Debris will be loaded in roll-offs for transportation and sent to a Class I landfill facility.

642 - HWMF Demolition Complete

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.2.7.1.7

**Stabilization**

643 - HWMF Regrade and Vegetate

**Schedule Relationships** Site stabilization will follow 4133 demolition and debris disposal.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.2.7.2

**Building 4029**

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.2.7.2.1

**Project Planning**

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.2.7.2.2

**Utilities**

649 - Disconnect Utilities & Install Temporary Utilities

**Schedule Relationships** 4029 utilities removal will begin as soon as 4133 demolition is complete.

**Technical Approach** Existing building utilities will be deactivated and temporary utilities installed before 4029 DD&D begins.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.2.7.2.6

**Building Demolition**

655 - Demolish Building 4029

**Schedule Relationships** 4029 DD&D will only begin after the building utilities have been removed and temporary utilities installed.

**Technical Approach** Building 4029 will be demolished by conventional means and debris will be disposed of at a Class I landfill facility. Execution of DD&D assumes DTSC re-authorization of the approved HWMF Closure Plan.

656 - Debris Disposal

**Schedule** Debris disposal will occur once 4029 demolition is completed.

**Relationships**

**Technical Approach** DD&D activities at 4029 are expected to generate 37 tons of unsalvageable debris, which will require 3 shipments at approximately 15 tons/shipment. Debris will be loaded in roll-offs for transportation and sent to a Class I landfill facility.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.2.7.2.7

**Stabilization**

658 - Regrade and Vegetate

**Schedule** Site stabilization will follow 4029 demolition and debris disposal.

**Relationships**

Total Cost: Hours Labor: Subcontractor: Material:

**Table 2: Resource Assignments**

1.2.2.2.7		Hazardous Waste Management Facility			
ID	Activity Name	Total Cost	Start	Finish	Duration
633	<b>HWMF Closure Plan Re-approval</b> Professional Judgment. To develop work plan for DTSC will also be the basis of work scope for Contractor Ltd requests <u>Boeing Labor</u>				
635	<b>HWMF Engineering Support to Procurement</b> Professional Judgment. Procurement support including job walks, technical approach, review, access logistics, etc. <u>Boeing Labor</u>				
657	<b>HWMF Final Demolition Report</b> Professional Judgment (Lump Sum) <u>Boeing Labor</u> <u>Subcontractor - TBD</u>				
659	<b>Contractor Oversight</b> Oversight is estimate at FTE for the length of the DD&D and restoration. PIC. Health & Safety. PM/Problem Solving <u>Boeing Labor</u>				
1.2.2.2.7.1		Building 4133			
1.2.2.2.7.1.1		Project Planning			
1.2.2.2.7.1.6		Building Demolition			
ID	Activity Name	Total Cost	Start	Finish	Duration
638	<b>Building 4133 Demolition</b> Based on cost estimate by Fischer. <u>Subcontractor - TBD</u>				
639	<b>Debris Disposal</b> 4133 is estimated at 85 tons of debris and 6 shipments of approximately 15 tons/shipment. All HWMF debris will go to the Beatty Class I Landfill. <u>Class I Disposal by Shipment</u> <u>Class I Freight by Shipment</u>				
1.2.2.2.7.1.7		Stabilization			
ID	Activity Name	Total Cost	Start	Finish	Duration
643	<b>HWMF Regrade and Vegetate</b> Based on 2007 Boeing Baseline. <u>Subcontractor - TBD</u>				
1.2.2.2.7.2		Building 4029			
1.2.2.2.7.2.1		Project Planning			
1.2.2.2.7.2.2		Utilities			
ID	Activity Name	Total Cost	Start	Finish	Duration
649	<b>Disconnect Utilities &amp; Install Temporary Utilities</b> (engineering) labor. Materials costs based on the 2007 Boeing Baseline estimate and converted from in-house. <u>Boeing Labor</u>				

Subcontractor - TBD

Materials

**1.2.2.2.7.2.6**

ID	Activity Name	Total Cost	Start	Building Demolition	
				Finish	Duration
655	Demolish Building 4029 Based on cost estimate by Fischer <u>Subcontractor - TBD</u>				
656	Debris Disposal 4029 is estimated at 37 tons of debris and 3 shipments of approximately 15 tons/shipment. All HWMF debris will go to the Beatty Class I Landfill. <u>Class I Disposal by Shipment</u> <u>Class I Freight by Shipment</u>				

**1.2.2.2.7.2.7**

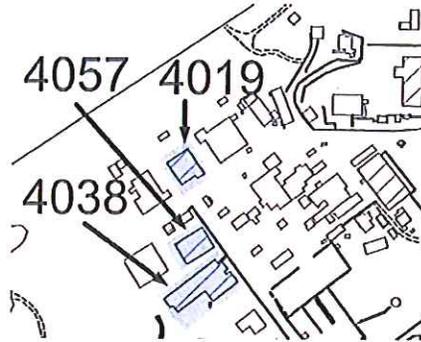
ID	Activity Name	Total Cost	Start	Finish	Stabilization
					Duration
658	Regrade and Vegetate Based on 2007 Boeing Baseline <u>Subcontractor - TBD</u>				

## DD&D Planning Package for Other Facilities

Energy Technology and Engineering Center  
(ETEC) Closure Project

### Performance Baseline

WBS Number	1.2.2.3
BOE Start Date	September 2012
BOE Completion Date	January 2014
GFY 2012 Cost	
GFY 2013 Cost	
GFY 2014 Cost	
Out-year Cost	
Life Cycle Cost	



### 1.0 Current Status

Building 4019 was constructed in 1962 to perform criticality acceptance tests of SNAP reactors before they were delivered for launch. Three reactors (FS-1, FS-4 and FS-5) were assembled and tested from 1964 to 1965. In 1965, all nuclear materials were removed and the building was reassigned for non-nuclear use in the 1970s and 1980s. Building 4019 has undergone a final status survey and verification surveys by the California Department of Public Health (CDPH), the Oak Ridge Institute of Science & Education (ORISE) and the U.S. Environmental Protection Agency (EPA).

Building 4038 is a 15,297 square foot building composed of a steel frame, roof, and siding, anchored to a concrete floor. It was used as office space until 2006 and is currently vacant.

Building 4057 was constructed in 1961 and housed two sodium test rigs. Each rig achieved a maximum temperature of 1,300 degrees F with a capacity of 42 gallons. Building 4057 was used as a sodium pump test laboratory until 1998, at which point it became a storage room for DOE records.

Conditions requiring action under this Planning Package include:

- a) Building 4019 requires demolition in order to verify that footprint soils meet the site wide release criteria for unrestricted use.
- b) Buildings 4038 and 4057 are unused, aging, and require final disposition.
- c) Removal of miscellaneous ancillary infrastructure improvements.

## 2.0 End State

All buildings, foundations, vaults, and utilities will be removed; the 4019 vaults excavation will be confirmed as being below background levels through EPA characterization and DTSC verification and backfilled; and the sites will be handed over to the site-wide soils investigation and cleanup process.

## 3.0 Technical Approach

No actions under this Planning Package will commence until DOE issues a Notice to Proceed allowing demolition, and off-site disposal of debris, of Area IV facilities. Boeing will then prepare two work plans, one generalized Other Facilities plan and one specific to 4019, and submit them to DTSC for approval.

This Planning Package is organized into the following Work Breakdown Structure (WBS) Elements:

- 1.2.2.3 Other Facilities
- 1.2.2.3.2 Building 4057
- 1.2.2.3.6 Building 4019
- 1.2.2.3.8 Building 4038

The technical approach, schedule, and cost for these WBS Elements are described in Table 1.

Life cycle costs were determined based on standard unit costs from R.S. Means and estimated quantities of material, professional judgment, previous experience executing work at ETEC, and vendor estimates. Detailed resource assignments and rationales for each activity are described in Table 2.

Pre-demolition activities will include removal of utilities and deactivation of fire suppression systems. Temporary utilities will not be installed. Lead and asbestos abatement will be performed at Building 4019, and all buildings will be inspected for hazardous materials by qualified personnel. The primary hazardous materials expected to be found are asbestos, PCB light ballasts, and mercury switches.

Once hazardous materials are removed, all buildings will be demolished by conventional means. All buildings and below grade structures are either not impacted or radiologically released, so no radiological contamination is expected to be encountered during demolition. Following demolition of 4019, Boeing will conduct an internal post-excavation survey to document radiological and chemical conditions. EPA and DTSC will conduct characterization and verification surveys of 4019 to confirm that no areas of the site exceed background levels of radiation. The excavation areas will then be backfilled and stabilized to comply with stormwater best management practices.

Debris from 4019 will be disposed at a Class I landfill due to being a formerly radiological facility. Debris from 4038 and 4057 will be sent to a municipal (Class III) landfill. All shipping and disposal tasks will be managed through a subcontract.

#### 4.0 Government Furnished Services and Items (GFSI)

Activities executed by Boeing will be integrated with activities executed by the DOE. The relationship between the Boeing and DOE activities are summarized here and captured in the project schedule. GFSI that impact when Boeing can finish activities include:

- a) DOE issues a Notice to Proceed.
- b) The DTSC will approve the Other Facilities Work Plan submitted by Boeing.
- c) The DTSC will approve the Building 4019 Work Plan submitted by Boeing.
- d) Ventura County will approve the Boeing grading plan and award a grading permit for the 4056 Pit.
- e) The DOE will fund the EPA and DTSC to conduct characterization and verification surveys for 4019 to confirm that the site meets release criteria for unrestricted use.

#### 5.0 Uncertainties

The ETEC risk analysis identified no significant (i.e. uncertainties with combined direct and delayed costs of greater than \$1M) uncertainties associated with Other Facilities D&D:

All Other Facilities uncertainties are defined in Table 3 by the expected conditions for the project, potential deviations from these expected conditions, and technical impacts.

**Table 1: Technical Approach, Schedule, and Cost by WBS Element**

**1.2.2.3 Other Facilities**

- 670 - Other Facilities Planning Start
- 671 - Other Facilities D&D Start
- 673 - Other Facilities Engineering Support to Procurement
  - Schedule Support for procurement will start once the work plan is approved and will occur prior to any demolition or disposal activity.
  - Relationships
  - Technical Approach

- 674 - Other Facilities Demolition Complete
- 675 - Other Facilities Final Demolition Report
  - Schedule This report is expected to be completed 20 days after the final site stabilization activity is finished.
  - Relationships
  - Technical Approach Boeing will prepare a Final Demolition Report following debris disposal and site stabilization of all Other Facilities sites. The report will include the results of the EPA & DTSC characterization and verification surveys for 4019 and all post-excavation conditions surveys performed by the subcontractor.

- 722 - Other Facilities End State Achieved
  - End State All above and below grade structures are removed; DTSC verifies the chemical constituents are below background levels prior to backfill; and the site is handed over to the site-wide soils investigation and cleanup process.

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.3.6 Building 4019**

- 694 - 4019 Start
- 703 - 4019 Finish
  - End State All buildings, foundations, vaults, and utilities are removed; the 4019 vaults excavation is confirmed to be below background levels through EPA characterization and DTSC verification and backfilled; and the sites are handed over to the site-wide soils investigation and cleanup process.

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.3.6.4 Survey**

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.3.6.1 Project Management and Planning**

- 693 - 4019 Engineering Support to Procurement
  - Schedule Support for procurement will start once the work plan is approved and will occur prior to any demolition or disposal activity.
  - Relationships
  - Technical Approach Support procurement for demolition and stabilization work, including requests for bid package preparation and subcontractor selection. Boeing will review and

approve all planning documentation for subcontractor operations.

- 702 - **Obtain Grading and Other Permits**
  - Schedule Permit applications will begin once procurement work is completed.
  - Relationships
  - Technical Approach Includes preparation and submission of applications to the agency.
  
- 704 - **4019 Contractor Oversight**
  - Schedule Oversight will last for the duration of all D&D and stabilization activities.
  - Relationships
  - Technical Approach Project management support, includes Boeing oversight of subcontractor planning and operations.
  
- 707 - **4019 Final Demolition Report**
  - Schedule The report will begin as soon as all 4019 D&D is completed. Site stabilization will occur concurrently, and end in time for all relevant information to be included in the report.
  - Relationships
  - Technical Approach Boeing will prepare a Final Demolition Report following debris disposal and site stabilization. The report will include the results of the subcontractor's post-excavation conditions survey and EPA's verification survey.

Total Cost: Hours Labor: Subcontractor: Material:

#### 1.2.2.3.6.1.2

#### Other Buildings EECA

Total Cost: Hours Labor: Subcontractor: Material:

#### 1.2.2.3.6.2

#### Utilities

- 706 - **Remove Electrical and Fire Suppression Systems**
  - Schedule Electrical and fire suppression systems will be removed once all procurement work is completed, and occurs concurrently with hazardous materials removal.
  - Relationships

Total Cost: Hours Labor: Subcontractor: Material:

#### 1.2.2.3.6.3

#### Hazardous Materials Removal

- 708 - **Lead and Asbestos Abatement**
  - Schedule Lead and asbestos abatement will start concurrently with utilities removal.
  - Relationships
  - Technical Approach The primary hazardous materials expected to be found are asbestos, PCB light ballasts, and mercury switches.

Total Cost: Hours Labor: Subcontractor: Material:

#### 1.2.2.3.6.5

#### Surveys

- 712 - **EPA Characterization & DTSC Verification Surveys**
  - Schedule The EPA characterization survey and DTSC verification survey will occur concurrently as soon as the post-excavation conditions survey is complete.
  - Relationships

**Technical Approach** Surveys include: An EPA characterization survey of the exposed sub-surface soils to verify that soils meet background radiation levels, and a DTSC chemical verification survey of the exposed sub-surface soils to determine that soils meet background chemical levels.

732 - 4019 Post Excavation Conditions Survey

**Schedule Relationships** The post-excavation conditions survey will begin as soon as 4019 demolition is complete.

**Technical Approach** Following D&D, an internal post-excavation characterization survey of the vault excavation will be performed prior to releasing the site to EPA for further characterization and DTSC for chemical verification.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.3.6.6

**Building Demolition**

60 - Building 4019 Debris

**Schedule Relationships** Debris disposal will begin once all the 4019 High Bay and below-grade structures are demolished.

**Technical Approach** D&D activities at 4019 are expected to generate 405 tons of debris, or 27 shipments of approximately 15 tons/shipment. Debris will be loaded in roll-offs for transportation and sent to a Class I landfill facility.

717 - High Bay Removal

**Schedule Relationships** High Bay removal will begin as soon as permits are obtained.

**Technical Approach** All buildings will be demolished by conventional means.

718 - Remove Concrete Vault and Foundation

**Schedule Relationships** Concrete vault and foundation demolition will overlap with the High Bay removal and will be complete three weeks after the High Bay is fully removed.

**Technical Approach** All buildings will be demolished by conventional means. All buildings and below grade structures are either not impacted or radiologically released, so no contamination is expected to be encountered during demolition.

719 - Remove Asphalt

**Schedule Relationships** Asphalt removal is scheduled to start concurrently with concrete vault and foundation demolition.

720 - 4019 Demolition Complete

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.3.6.7

**Site Restoration**

721 - 4019 Site Stabilization

**Schedule Relationships** Backfill will occur once the EPA and DTSC confirm that all exposed sub-surface soils in the vault excavation meet background levels. Site stabilization will immediately follow backfill.

**Technical Approach** Vault excavation area will be backfilled and re-graded using material from off-site that meets background levels, and compacted to 90%, as required by grading.

permit. Site will then be stabilized to implement best management practices for stormwater pollution prevention.

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.3.2**

**Building 4057**

- 677 - 4057 Start
- 687 - 4057 Finish  
End State

All above and below grade structures are removed and the site is handed over to the site-wide soils investigation and cleanup process.

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.3.2.1**

**Project Support**

- 676 - Provide Contractor Oversight

Schedule Oversight will last for the duration of all D&D and stabilization activities.

Relationships

Technical Approach Project management support, includes Boeing oversight of subcontractor planning and operations.

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.3.2.4**

**Surveys**

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.3.2.2**

**Utilities**

- 678 - Remove Electrical and Fire Suppression Systems

Schedule Utilities removal will begin as soon as the 4019 Final Demolition Report is finished.

Relationships

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.3.2.3**

**Hazardous Material Removal**

- 680 - Remove Hazardous Materials

Schedule Hazardous materials removal will begin as soon as electrical and fire suppression systems are removed

Relationships

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.3.2.6**

**Demolish Buildings**

- 684 - Demolish and Size Reduce Above Grade Structures by Conventional Means

Schedule D&D will begin as soon as all hazardous materials and utilities are removed.

Relationships

Technical Approach All buildings will be demolished by conventional means.

- 685 • Demolish Slab  
 Schedule Relationships Slab demolition will begin as soon as above-grade structures are removed.  
 Technical Approach Slab will be demolished by conventional means.
- 686 • Remove Asphalt  
 Schedule Relationships Asphalt will be removed concurrently with the concrete slab, once above-grade structures are removed.
- 696 • Debris Disposal  
 Schedule Relationships Debris disposal will occur concurrently with demolition work and be completed at approximately the same time.  
 Technical Approach D&D activities at 4057 are expected to generate 341 tons of debris, or 22 shipments of approximately 15 tons/shipment. Debris will be loaded in roll-offs for transportation and sent to a Class III landfill facility.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.3.2.5

Site Restoration

- 688 • 4057 Regrade Site  
 Schedule Relationships Site regrading will begin as soon as slab and asphalt D&D is completed.
- 689 • 4057 Seed  
 Schedule Relationships Seeding will begin as soon as site regrading is completed.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.3.8

Building 4038

- 725 • 4038 Start
- 755 • 4038 Finish  
 End State All above and below grade structures are removed and the site is handed over to the site-wide soils investigation and cleanup process.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.3.8.1

Project Support

- 726 • Provide Contractor Oversight  
 Schedule Relationships Oversight will last for the duration of all D&D and stabilization activities.  
 Technical Approach Project management support; includes Boeing oversight of subcontractor planning and operations.

Total Cost: Hours Labor: Subcontractor: Material:

1.2.2.3.8.2

Utilities

- 728 • Remove Electrical and Fire Suppression Systems



**Schedule Relationships** Utilities removal will begin as soon as all activities are complete for Building 4057.

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.3.8.3**

**Hazardous Material Removal**

**730 - Remove Hazardous Materials**

**Schedule Relationships** Hazardous materials removal will begin as soon as utilities removal is completed

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.3.8.6**

**Demolish Buildings**

**734 - Demolish and Size Reduce Above Grade Structures by Conventional Means**

**Schedule Relationships** Demolition of above grade structures will begin once all utilities and hazardous materials are removed

**Technical Approach** Building will be demolished by conventional means.

**735 - Demolish Slab**

**Schedule Relationships** Slab demolition will begin as soon as above-grade structure demolition is completed.

**Technical Approach** Slab will be demolished by conventional means.

**736 - Remove Asphalt**

**Schedule Relationships** Asphalt removal will start concurrently with slab demolition, after all above-grade structures have been removed.

**766 - 4038 Debris Disposal**

**Schedule Relationships** Debris disposal will occur concurrently with demolition work and be completed at approximately the same time.

**Technical Approach** D&D activities at 4038 are expected to generate 1,269 tons of debris, or 85 shipments of approximately 15 tons/shipment. Debris will be loaded in roll-offs for transportation and sent to a Class III landfill facility.

Total Cost: Hours Labor: Subcontractor: Material:

**1.2.2.3.8.4**

**Site Restoration**

**738 - 4038 Backfill and Regrade Site**

**Schedule Relationships** Backfill and regrading will begin as soon as all D&D is completed.

**739 - 4038 Seed**

**Schedule Relationships** Seeding will begin as soon as all backfill and regrading is completed.

Total Cost: Hours Labor: Subcontractor: Material:

**Table 2: Resource Assignments**

1.2.2.3					Other Facilities
ID	Activity Name	Total Cost	Start	Finish	Duration
673	<b>Other Facilities Engineering Support to Procurement</b> Procurement support including job walks, technical approach review, access logistics, etc. Other Facilities Engineering Support costs are estimated to be half of 4024's cost. <u>Boeing Labor</u>				
675	<b>Other Facilities Final Demolition Report</b> Final Demolition Report costs are estimated to be the same as the HMMF Final Demolition Report. Boeing labor costs are estimated as a lump sum rather than by labor rates. <u>Subcontractor - TBD</u> <u>Boeing Labor</u>				
1.2.2.3.6					Building 4019
1.2.2.3.6.1					Survey
1.2.2.3.6.1					Project Management and Planning
ID	Activity Name	Total Cost	Start	Finish	Duration
693	<b>4019 Engineering Support to Procurement</b> Procurement support including job walks, technical approach review, access logistics, etc. 4019 Engineering Support costs are estimated to be the same as HMMF Engineering Support. <u>Boeing Labor</u>				
702	<b>Obtain Grading and Other Permits</b> Includes preparation and submission of applications to the agency. Subcontractor costs are converted from in-house Boeing labor (120 hours) @ \$160/hr. <u>Subcontractor - TBD</u>				
704	<b>4019 Contractor Oversight</b> Oversight is estimated at 1 FTE for the length of the D&D and restoration. <u>Boeing Labor</u>				
707	<b>4019 Final Demolition Report</b> 4019 Final Demolition Report costs are estimated to be the same as HMMF Final Demolition Report. Boeing labor costs are based on a lump sum estimate rather than by labor rates. <u>Subcontractor - TBD</u> <u>Boeing Labor</u>				
1.2.2.3.6.1.2					Other Buildings EECA
1.2.2.3.6.2					Utilities
ID	Activity Name	Total Cost	Start	Finish	Duration
706	<b>Remove Electrical and Fire Suppression Systems</b> Cost estimates drawn from 2007 Baseline estimates and converted from in-house (Engineering) labor to subcontractor labor (\$3 hours @ \$160/hr). Activity has been delayed to occur just before the start of 4019 D&D. <u>Subcontractor - TBD</u>				
1.2.2.3.6.3					Hazardous Materials Removal
ID	Activity Name	Total Cost	Start	Finish	Duration
708	<b>Lead and Asbestos Abatement</b> Costs are based on 2007 Baseline estimates. <u>Subcontractor - TBD</u>				
1.2.2.3.6.5					Surveys

ID	Activity Name	Total Cost	Start	Finish	Duration
732	4019 Post Excavation Conditions Survey Professional Judgment (Leap Scan) Subcontractor - TBD				
1.2.2.3.6.6					
Building Demolition					
ID	Activity Name	Total Cost	Start	Finish	Duration
60	Building 4019 Debris 4019 is estimated to have 405 tons of debris or 27 shipments of approximately 15 tons/shipment. All 4019 debris will go to the Beatty Class I Landfill at an average freight cost of _____ and average disposal cost of _____ per shipment. Class I Freight by Shipment Class I Disposal by Shipment				
717	High Bay Removal Costs are based on 2007 Baseline estimates Subcontractor - TBD				
718	Remove Concrete Vault and Foundation Costs are based on 2007 Baseline estimates Subcontractor - TBD				
719	Remove Asphalt Costs are based on 2007 Baseline estimates Subcontractor - TBD				
1.2.2.3.6.7					
Site Restoration					
ID	Activity Name	Total Cost	Start	Finish	Duration
721	4019 Site Stabilization Costs are based on 2007 Baseline estimates Subcontractor - TBD				
1.2.2.3.2					
Building 4057 Project Support					
ID	Activity Name	Total Cost	Start	Finish	Duration
676	Provide Contractor Oversight Oversight is estimated at _____ FTE for the length of the DSD and stabilization Boeing Labor				
1.2.2.3.2.4					
Surveys Utilities					
ID	Activity Name	Total Cost	Start	Finish	Duration
678	Remove Electrical and Fire Suppression Systems Cost estimates drawn from 2007 Baseline estimates and converted from in-house (Engineering) labor to subcontractor labor Subcontractor - TBD				
1.2.2.3.2.3					
Hazardous Material Removal					
ID	Activity Name	Total Cost	Start	Finish	Duration
680	Remove Hazardous Materials Costs are based on 2007 Baseline estimates Subcontractor - TBD				

1.2.2.3.2.6		Demolish Buildings			
ID	Activity Name	Total Cost	Start	Finish	Duration
684	Demolish and Size Reduce Above Grade Structures by Conventional Means Cost estimate is drawn from 2007 Baseline estimates Materials Subcontractor - TBD				
685	Demolish Slab Cost estimate is drawn from 2007 Baseline estimates Subcontractor - TBD				
686	Remove Asphalt Cost estimate is drawn from 2007 Baseline estimates Subcontractor - TBD				
690	Debris Disposal 4057 is estimated to have 341 tons of Class III (municipal landfill) debris, or 23 shipments of approximately 15 tons/shipment. Average disposal costs per shipment for Class III waste are estimated at \$1,000 each. Average freight costs per shipment for Class III waste are estimated at \$1,000 each. Class III Freight by Shipment Class III Disposal by Shipment				

1.2.2.3.2.5		Site Restoration			
ID	Activity Name	Total Cost	Start	Finish	Duration
688	4057 Regrade Site Costs are based on 2007 Baseline estimates Subcontractor - TBD				
689	4057 Seed Costs are based on 2007 Baseline estimates Subcontractor - TBD				

1.2.2.3.8		Building 4038			
1.2.2.3.8.1		Project Support			
ID	Activity Name	Total Cost	Start	Finish	Duration
726	Provide Contractor Oversight Oversight is estimated at 1 FTE for the length of the D&D and stabilization Boeing Labor				

1.2.2.3.8.2		Utilities			
ID	Activity Name	Total Cost	Start	Finish	Duration
728	Remove Electrical and Fire Suppression Systems Cost estimate is drawn from 2007 Baseline estimates and converted from in house (Engineering) labor hours @ \$100 to subcontractor labor Subcontractor - TBD				

1.2.2.3.8.3		Hazardous Material Removal			
ID	Activity Name	Total Cost	Start	Finish	Duration
730	Remove Hazardous Materials Costs are based on 2007 Baseline estimates Subcontractor - TBD				

1.2.2.3.8.6		Demolish Buildings			
ID	Activity Name	Total Cost	Start	Finish	Duration
734	<b>Demolish and Size Reduce Above Grade Structures by Conventional Means</b> Cost estimate is drawn from 2007 Baseline estimates <b>Materials</b> Subcontractor - TBD				
735	<b>Demolish Slab</b> Cost estimate is drawn from 2007 Baseline estimates Subcontractor - TBD				
736	<b>Remove Asphalt</b> Cost estimate is drawn from 2007 Baseline estimates Subcontractor - TBD				
766	<b>4038 Debris Disposal</b> 4038 is estimated to have 1,269 tons of Class III (municipal landfill) debris, or 85 shipments of approximately 15 tons/shipment. Average disposal costs per shipment for Class III waste are estimated at _____ each. Average freight costs per shipment for Class III waste are estimated at _____ each. <b>Class III Disposal by Shipment</b> <b>Class III Freight by Shipment</b>				

1.2.2.3.8.4		Site Restoration			
ID	Activity Name	Total Cost	Start	Finish	Duration
738	<b>4038 Backfill and Regrade Site</b> Costs are based on 2007 Baseline estimates Subcontractor - TBD				
739	<b>4038 Seed</b> Costs are based on 2007 Baseline estimates Subcontractor - TBD				