

# **NOTICE**

**All drawings located at the end of the document.**



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Table 1 shows a comparison of the sites in the ICF Kaiser report with the SPRP. The finished product cost has been converted to gallons for ease in comparison between the various projects. It is noted that the cost per gallon for evaporating Interceptor Trench Water is \$0.78/ gallon based on just annual operating costs and \$1.36/gallon if the sunk costs are amortized over a nine year period. This is substantially less than the figure of \$60/gallon cost cited in a DOE letter dated December 1, 1992. The total unit cost for pondsludge processing and remix of \$42.48/gallon at RFP is comparable to the Hanford cost of \$80.50/gallon. We have yet to receive the cost analysis for commercial desposal which Halliburton volunteered to produce.

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Orig. and 1 cc - F. R. Lockhart

Attachments:  
As Stated

**Building 910 Evaporator Cost Analysis**

Volumes

ITS Water 4 million gallons per year average  
Solar Pond excess water 2 million gallons<sup>(1)</sup>

System Capacities

- 3 flash evaporators 18,000 GPD each Total 54,000 GPD
- 3 modular storage tanks for Surge Storage at 500,000 gallons each,  
one to remain empty for storage in case of tank leak  
Net volume 1,000,000 gallons
- APENS limit is 39.88 tons/year NOX (equivalent to 112 days of operations per  
year or annual capacity of 6,048,000 gallons per year).

Costs

	Evaporators	Modular Storage Tank	Total
Engineering	\$4,918K	\$460K	\$5,378K
Construction/ Equipment	\$8,393K	\$3,214K	\$11,607
Startup/ Process qualification	-	\$4,000K	\$4,000K
Grand Total to produce operable process Operations and maintenance per year			\$20,985K \$3,100K

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Amortization

Assume 9 year cycle since the OU-4 Final Remediation may not use the installed system for ITS Water past FY 2001 (Estimated completion of Phase II Correction/ Remedial Action for OU - 4).

<u>Costs/yr</u>	<u>Total 9 year</u>
Initial sunk costs \$20,985K	\$20,985K
O&M \$3,100K	\$27,900K
	\$48,885K

<u>Volumes/yr</u>	<u>Total 9 years</u>
4,000,000 gallons	36,000,000 gallons

Cost/yr  
\$0.78 per gallon<sup>(2)</sup> or \$1.36 per gallon <sup>(3)</sup>

- (1) FY-93 B Ponds only and is planned to be evaporated in B374 evaporator prior to start-up of B910 evaporators.
- (2) Annual O&M cost/gallon. Does not include sunk costs.
- (3) Includes all costs amortized over 9 years.

**Cost analysis for Stabilization of Pond Sludge  
 and Remix of existing Pondcrete/Saltcrete**

Process Description

Subcontractor cementation of pondsludge and reprocessing of failed pondcrete/saltcrete blocks which do not meet LDR Waste disposal criteria of NTS. Subcontractor effort includes: characterization of waste, treatability study of waste forms, Engineering design of process, procurement and erection of equipment, followed by processing. The M&O contractor is responsible for delivery of the waste to the process and the post-processing handling.

Volumes of Waste

	<u>Raw Waste</u>	<u>Stabilized Product</u>
Pondsludge	752,300 gallons	327,600ft <sup>3</sup> (2.45 M gallons)
Failed Pondcrete/Saltcrete	10,600 billets	<u>370,384ft<sup>3</sup> (2.77 M gallons)</u>
Total		697,984ft <sup>3</sup> (5.22 M gallons)

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Costs

- Stabilization of Pondsludge
  - Subcontract \$55.1M (1)
  - M&O Support \$20.6M
  - Total \$75.7M
  
- Stabilization of Failed Pondcrete/Saltcrete (Remix)
  - Subcontract \$49.2M
  - M&O Support \$13.7M
  - Total \$62.9M
  
- Compliant Storage Costs (assume shipping to NTS FY-98)
  - M&O \$9.9M/yr \$59.4M
  
- Disposal Costs (NTS recipient at \$30/ft<sup>3</sup>)
  - 697,984ft<sup>3</sup> @ \$30/ft<sup>3</sup> \$20.9M
  - Shipping 1385 Trucks @ \$2.1 K each \$2.9M

Summary of Costs

		<u>Cost per FT<sup>3</sup></u>
Stabilization (cementation)	\$138.6M	\$198.57/ft <sup>3</sup>
Compliant Storage	\$59.4M	\$85.10/ft <sup>3</sup>
Shipping/Disposal at NTS	\$23.8M	\$34.10/ft <sup>3</sup>
Total Cost	\$221.8M	\$42.48/gallon

(1) From 11/92 rough estimate of FY93 HNUS costs.

**Table 1  
Comparative Analysis of Analogous Sites/Projects to SPRP**

Evaluation Factors  Project/Site	Waste Volume/ Form	Hazardous Constituents	Regulatory Driver	Disposal Option (Plan)	Work Force	Site Constraints	Ambient Operating Conditions	Technology	Costs	
									•Total to date •Engineering •Construction •O & M	• On site storage • Disposal • \$/unit measure -Stab • \$/unit measure - Storage • \$/unit measure -Disposal • \$/unit total
SPRP Water Evaporation	4 M gallons/yr	PU metals	RCRA Clean Water	Reuse of distillate in raw water system	M&O	Q or L required	APENS limit of 110 days/yr	Flash Evaporators	• \$ 2.4M • \$ 5.3M • \$ 11.6M • \$ 3.1M	• None • None • \$ 0.78/Gal Treat O & M • \$ 1.36/Gal Treat total
SPRP Pondsludge Solidification Remix failed P.C./S.C.	752K gals 10,600 failed billets 697,984 FT <sup>3</sup> Stabilized Waste (5.22M gals)	PU Metals Cadmium Cyanide	RCRA AIP	NTS after onsite storage	Subcontractor M & O	L required	Warm Weather Impacted by High Winds >25 mph 10%	Cementation	• \$ 221.8M • \$ 138.6M Stab • \$ 59.4M Storage • \$ 23.8M Disposal	• \$ 42.48/gal • \$ 26.55/gal • \$ 11.38/gal • \$ 4.56/gal
Hanford 183-H Ponds	250,000 Gal-liquids 220,000 Gal-Sludge (15,519 drums of waste)	Heavy Metals Uranium Nitrites Chromium	RCRA	On site Landfill or NTS	M & O Staff	Q or L Required Existing Utilities Used	Warm Weather Impacted by Summer Heat (early work shift)	Solidification of Liquid with Sorbond LPC-II Diatomaceous earth added to sludge	• \$ 31.3M • \$ 924k • \$ 1.6M • \$ 25.6M	• \$ 2.1M/yr • \$ 34.9M • \$ 37/Gal - Stab. • \$ 2.50/Gal-Storage • \$ 41/Gal-Disposal • \$ 80.50 total
Cimarron Superfund Site	570 cu yds. sediment and sludges (700 cu. yds. of stab. waste)	heavy metals	CERCLA	Co-site landfill or RCRA	Contract (non-Union)	None	Warm Weather	Fixation using Portland cement Bulk disposal	Off-site Disposal Option • \$ 220k • \$ 65k • \$ 41k • \$ 10k	• No cost • \$ 114k • \$ 0.36/gal-Stab. • \$ 0.99/gal-Disposal • \$ 1.36 total
Imperial Superfund Site	3800 cu.yds. contaminated soils, waste filter, cake & oily sludge (5700 cu. yds. of stab. waste)	Organics, heavy metals	CERCLA	On-site	Union 7	None	Above freezing ambient temperature	Pozzolan fixation cast in 1 cu. yd. monoliths	• • \$ 35k • \$ 132k • \$ 453k	• No cost • \$ 11.4M • \$ 0.75/gal- Stab. • \$ 9.90/gal- disposal • \$ 10. 65/gal total

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