

Table 1
Construction Cost Summary
Source Area Operable Unit - Rockets, Fireworks, and Flares Superfund Site

DESCRIPTION	QUANTITY		UNIT PRICE	TOTAL COST
	NUMBER	UNIT		
DIRECT CAPITAL COST				
Extraction Well				
Permits for Extraction Wells	1	EA	\$1,075	\$1,075
Install new extraction well, EW-1 (18" dia casing to total borehole depth of 760 feet)	1	EA	\$700,000	\$700,000
Extraction Well Development	1	EA	\$200,000	\$200,000
Waste Disposal and Handling	1	EA	\$93,700	\$93,700
Real estate ¹	4000	SF	\$0	\$1
Extraction Pump - 450 HP	1	EA	\$188,000	\$188,000
Variable frequency drive (VFD)	1	EA	\$85,000	\$85,000
Furnish and Install Equipment Housing at Extraction Wellhead	1	EA	\$62,600	\$62,600
Upgrades to surrounding area of wellhead - Compound	1	EA	\$111,000	\$111,000
Transformer	1	EA	\$25,200	\$25,200
Pump and VFD Installation ²	10%	of	\$273,000	\$27,300
Power Wiring - Electrical ²	30%	of	\$273,000	\$81,900
Transformation and Service - Electrical ²	10%	of	\$273,000	\$27,300
Instrumentation and Controls ²	5%	of	\$273,000	\$13,700
				\$1,616,800
SUBTOTAL				
Monitoring Wells and Piezometers				
Installation; development; and waste handling and disposal				
Nested Piezometers, PZ-1S/D and PZ-2S/D (total depths of 520 and 750 ft bgs)	2	EA	\$150,000	\$300,000
Nested Piezometers, PZ-3S/D (total depths of 580 and 880 ft bgs)	1	EA	\$160,000	\$160,000
EMW-1 (dual nested well)	1	EA	\$137,000	\$137,000
EMW-2 (Westbay multiport well - 5 zones)	1	EA	\$312,000	\$312,000
EMW-3 (triple nested well)	1	EA	\$175,000	\$175,000
EMW-4 (triple nested well)	1	EA	\$182,000	\$182,000
EMW-5 (triple nested well)	1	EA	\$186,000	\$186,000
EMW-6 (dual nested well)	1	EA	\$131,000	\$131,000
EMW-7 (dual nested well)	1	EA	\$126,000	\$126,000
Access Agreements and Encroachment Permits from City of Rialto				
EMW-4 and EMW-5	2	EA	\$5,379	\$10,758
PZ-1S/D, PZ-2S/D, PZ-3S/D, EMW-1, EMW-2, EMW-3, EMW-6, and EMW-7	8	EA	\$1,345	\$10,758
County Permits for Monitoring Wells and Piezometers	26	EA	\$371	\$9,646
				\$1,740,200
SUBTOTAL				
Conveyance Pipelines				
Conveyance piping and electrical in public right of way - EW-1 to treatment system	3,900	FT	\$213	\$831,923
Conveyance piping to City of Rialto distribution system ³	3,000	FT	\$208	\$623,725
Conveyance piping from City of Rialto to City of Colton distribution system (Randall)	2,800	FT	\$196	\$549,304
Right-of-way/Easement ¹	194,000	SF	\$0.00	\$1
Construction permits (base fee + per linear foot)	1		Varies	\$13,475
Colton/Rialto - Meter, Vault, and Sample Box	1	LS	\$20,000	\$20,000
				\$2,038,400
SUBTOTAL				

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DESCRIPTION	QUANTITY			
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Groundwater Treatment System				
Concrete Pads - Treatment System and Bag Filter	7,300	SF	\$12	\$87,600
Real estate ¹	26,800	SF	\$0	\$1
Ultraviolet pre-treatment system with enclosure ⁴	0	EA	\$115,000	\$0
Ion Exchange Vessels (12-foot diameter vessels)	4	EA	\$182,500	\$730,000
Ion Exchange resin fill	1,700	CF	\$300	\$510,000
Granular Activated Carbon Vessels (20,000 lbs/vessel)	4	EA	\$152,500	\$610,000
Carbon fill	80,000	LB	\$1.40	\$112,000
Bag Filter Housing and Bags ⁵	1	EA	\$40,000	\$40,000
Chlorination System	1	EA	\$81,000	\$81,000
Treatment Plant Feed Booster Pump - BP-2	1	EA	\$65,514	\$65,514
Variable frequency drive (VFD) - BP-2	1	EA	\$40,000	\$40,000
Pump and VFD Installation ²	10%	of	\$105,514	\$10,600
Power Wiring - Electrical ²	30%	of	\$105,514	\$31,700
Instrumentation and Controls ²	5%	of	\$105,514	\$5,300
Building and Planning Permits (City of Rialto)	1	LS	\$5,375	\$5,375
Treatment System Installation, Piping, and Controls	1	EA	\$663,990	\$663,990
System Start-up/Shakedown	10%	of	\$1,603,514	\$160,400
CDPH permitting compliance field activities	1	EA	\$67,456	\$67,456
	SUBTOTAL			\$3,220,900
INDIRECT CAPITAL COST				
PM, CM/COA & Project Support				
Project Management	5%	% of costs	\$8,616,300	\$430,815
Construction Management (CM) & Oversight	10%	% of costs	\$8,616,300	\$861,630
Contractor Overhead and Profit	12%	% of costs	\$8,616,300	\$1,033,956
	SUBTOTAL			\$2,326,400
	TOTAL DIRECT AND INDIRECT COSTS			\$10,942,700
Capital Contingency (10% of Direct and Indirect Costs)	10%	of	\$10,942,700	\$1,094,270
	TOTAL CAPITAL COSTS			\$12,037,000

Notes:

1. The real estate and right-of-way easement costs will be a negotiated nominal rate. A placeholder of \$1 has been included at this time.
2. These line items are based on percentages of purchase costs/typical of such equipment installation.
3. The connection to the City of Rialto distribution system is uncertain at this time, with two options being considered. This cost estimate assumes construction of a new pipeline along Linden Avenue, then across the airport to a connection point south of Freeway 210.
4. Ultraviolet disinfection unit may be required pending the water quality of EW-1. This unit is included in the Pre-Final Design but will only be installed if necessary, based on water quality results to be generated during the demonstration period.
5. A second set of bag filters after BP-1 may be installed based on consultation with the County.

Subtotal and total amounts are rounded to the nearest hundreds.

Key:

- CF = cubic feet
- EA = each
- ft bgs = feet below ground surface
- Hp = horsepower
- lbs = pounds
- LS = lump sum
- SF = square feet
- VFD = Variable frequency drive

Table 2
Operation and Maintenance Cost Summary
Source Area Operable Unit - Rockets, Fireworks, and Flares Superfund Site

DESCRIPTION	QUANTITY		UNIT PRICE	TOTAL COST
	NUMBER	UNIT		
OPERATIONS AND MAINTENANCE COST				
<u>Wellhead Maintenance/Monitoring</u>				
Extraction well sampling (CR-3)	12	EA	\$500	\$6,000
Extraction well sampling (EW-1)	12	EA	\$500	\$6,000
Electrical usage - CR-3 (minus lifting cost from Rialto) ¹	0	kW-hr	\$0.094	\$0
Electrical usage - EW-1 (minus lifting cost from Colton) ¹	0	kW-hr	\$0.094	\$0
SUBTOTAL				\$12,000
<u>Treatment System Maintenance</u>				
System Compliance Monitoring	52	WK	\$1,517	\$78,890
System O&M labor ²	1	Year	TBD	TBD
Ion Exchange Resin Replacement (per vessel)	5	EA	\$124,500	\$622,500
Granular Activated Carbon Replacement	80,000	lbs	\$1.40	\$112,000
Chemical Feed (Chlorine) ³	0	lbs	\$0.50	\$0
Ultraviolet Lamp Replacement ³	0	EA	\$300	\$0
Bag filter cartridge change-outs	48	EA	\$720	\$34,560
Power Usage - treatment system feed pumps BP-1 (250 HP) and BP-2 (300 HP)	1,605,922	kW-hr	\$0.094	\$150,957
SUBTOTAL				\$998,900
<u>Groundwater Monitoring</u>				
Water Level Measurement in accordance with Compliance Monitoring Plan	4	per event	\$7,850	\$31,400
Potentiometric Surface Maps in accordance with Compliance Monitoring Plan	4	per event	\$4,500	\$18,000
Sampling and Analysis in accordance with Compliance Monitoring Plan	2	per event	\$75,000	\$150,000
Chemical Distribution and Chemical Cross Sections in accordance with Compliance Monitoring Plan	2	per event	\$6,000	\$12,000
Database Management	2	per event	\$12,000	\$24,000
SUBTOTAL				\$204,000
<u>Reporting Requirements</u>				
CDPH Permit Monthly Compliance Reporting	12	LS	\$3,000	\$36,000
Five-year review requirement	0	LS	\$50,000	\$0
Annual Report (including hydraulic containment evaluation)	1	LS	\$75,000	\$75,000
SUBTOTAL				\$111,000
<u>O&M Project Support</u>				
Equipment Replacement Costs	2%	System Costs	\$4,837,700	\$96,754
O&M Oversight	5%	% of O&M Cost	\$1,325,900	\$66,295
SUBTOTAL				\$163,000
TOTAL OPERATIONS AND MAINTENANCE COSTS				\$1,488,900
O&M Contingency (10% of O&M Costs)	10%	of	\$1,488,900	\$148,890
TOTAL OPERATIONS AND MAINTENANCE COSTS ⁴				\$1,637,800

Table 2
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Notes:

1. In accordance with the Work Consent Decree and Four Party Implementation Agreement, Enhart and the County only pay incremental electrical usage above the lifting costs that would otherwise be incurred by Rialto and Colton.
2. The treatment system O&M labor cost to be determined.
3. Water disinfection costs will be the water purveyor's responsibility.
4. This total cost reflects operation and maintenance of the combined County and SAOU remedy and compliance monitoring and reporting of the SAOU Remedy.

Subtotal and total amounts are rounded to the nearest hundreds.

Key:

CDPH = California Department of Public Health

EA = each

HP = horsepower

kW-hr = Kilowatt-hour

lbs = pounds

LS = lump sum

O&M = Operation and maintenance

TBD = to be determined

WK = Week