

APPENDIX A
Capital Costs

C H2M HILL P arametric Cost E stimating S ystem (CPES)

FACILITIES DESIGN & CONSTRUCTION COST MODULE

File Version: 11/11/2009

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 [To Cost Summary Matrix](#)
 [To Unit Cost Database](#)

Project Name: Lebanon, Oregon
Project Number: 382293
Project Manager: Paul Berg
Estimator: Paul Berg, Sheryl Stuart, Ed Meyer, John Sams, Mark Carlson, Paul Swaim, Russell Ford
Project Description: First Phase 6 mgd Conventional Media Filtration Plant
Project Location (City): Eugene
Project Location (State): OREGON
Project Location (Country): USA
Construction Start (Month): Jan
Construction Start (Year): 2009
Construction Duration (months): 18
Mid-Point of Construction: Oct/2009

Roundup to the nearest:
\$10,000

This Report is for INTERNAL Distribution
 This Report is for EXTERNAL Distribution



Item	Is This Facility Included in Project? (Yes or No)	SCOPE OF PROJECT	Cost
22	Yes	Inline Rapid Mix: InlineRM	\$360,000
23	Yes	Vertical Turbine PS: RWpump	\$310,000
24	No	Ozone Serpentine: O3serp	\$0
25	Yes	Flocculation: Flocc	\$850,000
26	Yes	Lamella Clarifier: Plates	\$1,080,000
27	Yes	Filters: Filters	\$2,090,000
28	No	Pressure Membrane: Pressmemb	\$0
29	No	Ozone O-U: O3overund	\$0
30	Yes	Concrete Clearwell: Clearconc	\$2,280,000
31	No	Steel Clearwell: ClearSteel	\$0
32	No	Horizontal PS: FWpumph	\$0
33	Yes	Vertical Turbine PS: FWpumpv	\$340,000
34	No	On-Site Sodium Hypo: Hypogen	\$0
35	Yes	Liquid Chemical: Alum	\$280,000
36	No	Liquid Chemical: Coagpoly	\$0
37	Yes	Liquid Chemical: Filteraid	\$180,000
38	Yes	Dry Chemical: SodaAsh	\$470,000
39	Yes	Liquid Chemical: Fluoride	\$220,000
40	No	Gravity Thickener: GravThick	\$0
41	Yes	Sludge Drying Beds: DryBeds	\$660,000
42	Yes	O&M Building: OMBldg	\$580,000
43	No	Yard Piping: YardPipe	\$0
44	Yes	Liquid Chemical: BulkHypo	\$280,000
47	SUBTOTAL - PROJECT COST		\$9,980,000
49	ADDITIONAL PROJECT COSTS:		
50	Demolition	0%	\$0
51	Overall Sitework	0%	\$0
52	Plant Computer System	2%	\$200,000
53	Yard Electrical	3%	\$300,000
54	Yard Piping	5%	\$500,000

	A	B	C	D	E
55	Intake		0%		\$120,000
56	UD #2 Default Description		0%		\$0
57	UD #3 Default Description		0%		\$0
58	SUBTOTAL with Additional Project Costs				\$11,100,000
59					
60	CONTRACTOR MARKUPS:				
61	Overhead		10%	\$11,100,000	\$1,110,000
62	Subtotal				\$12,210,000
63	Profit		5%	\$12,210,000	\$620,000
64	Subtotal				\$12,830,000
65	Mob/Bonds/Insurance		5%	\$12,830,000	\$650,000
66	Subtotal				\$13,480,000
67	Contingency		30%	\$13,480,000	\$4,050,000
68	SUBTOTAL with Markups				\$17,530,000
69					
70	ESCALATION (to Mid-Point of Construction)		12.6%	\$17,530,000	\$2,210,000
71	SUBTOTAL with Escalation				\$19,740,000
72					
73	LOCATION ADJUSTMENT FACTOR		101.4	\$19,740,000	\$20,020,000
74	SUBTOTAL - with Local Adjustment Factor				\$20,020,000
75					
76	RED FLAGS:				
77	1	Rock Excavation			
78	2	Pile Foundations			
79	3	Seismic Foundations			
80	4	Dewatering Conditions			
81	5	Wetlands Mitigation			
82	6	Weather Impacts			
83	7	Depth of Structures			
84	8	Local Building Code Restrictions			
85	9	Coatings or Finishes			
86	10	Building or Architectural Considerations			
87	11	Client Material Preferences			
88	12	Client Equipment Preferences			
89	13	Piping Galleries, Piping Trenches, Piping Racks			
90	14	Yard Piping Complexity			
91	15	Existing Site Utilities (New, Retrofit, and Complexity)			
92	16	I & C Automation (New or Retrofit)			
93	17	Electrical Feed (New or Retrofit)			
94	18	Electrical Distribution			
95	19	Shoring			
96	20	Contamination			
97	21				
98	22				
99	23				
100	24				
101	25				
102	26				
103	27				
104	TOTAL - RED FLAGS				\$0
105					
106	SUBTOTAL - CONSTRUCTION COST with Red Flags				\$20,020,000
107					
108	MARKET ADJUSTMENT FACTOR		0%	\$20,020,000	\$0
109	SUBTOTAL - CONSTRUCTION COST with Market Adjustment Factor				\$20,020,000

CH2M HILL Parametric Cost Estimating System (CPES)

FACILITIES DESIGN & CONSTRUCTION COST MODULE

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Project Name: Lebanon, Oregon
Project Number: 382293
Project Manager: Paul Berg
Estimator: Paul Berg, Sheryl Stuart, Paul Mueller, Ed Meyer, John Sams, Paul Swaim, Russell Ford
Project Description: First Phase 6 mgd Pressure Membrane WTP
Project Location (City): Eugene
Project Location (State): OREGON
Project Location (Country): USA
Construction Start (Month): Jan
Construction Start (Year): 2009
Construction Duration (months): 18
Mid-Point of Construction: Oct/2009

Roundup to the nearest:
\$10,000

This Report is for INTERNAL Distribution

This Report is for EXTERNAL Distribution



Item	Is This Facility Included in Project? (Yes or No)	SCOPE OF PROJECT	Cost
22	No	Inline Rapid Mix: InlineRM	\$0
23	Yes	Vertical Turbine PS: RWpump	\$390,000
24	No	Ozone Serpentine: O3serp	\$0
25	No	Flocculation: Flocc	\$0
26	No	Lamella Clarifier: Plates	\$0
27	No	Filters: Filters	\$0
28	Yes	Pressure Membrane: Pressmemb	\$5,720,000
29	No	Ozone O-U: O3overund	\$0
30	No	Concrete Clearwell: Clearconc	\$0
31	Yes	Steel Clearwell: ClearSteel	\$940,000
32	Yes	Horizontal PS: FWpumph	\$440,000
33	No	Vertical Turbine PS: FWpumpv	\$0
34	No	On-Site Sodium Hypo: Hypogen	\$0
35	Yes	Liquid Chemical: Alum	\$240,000
36	No	Liquid Chemical: Coagpoly	\$0
37	No	Liquid Chemical: Filteraid	\$0
38	Yes	Dry Chemical: SodaAsh	\$410,000
39	Yes	Liquid Chemical: Fluoride	\$210,000
40	No	Gravity Thickener: GravThick	\$0
41	Yes	Sludge Drying Beds: DryBeds	\$490,000
42	Yes	O&M Building: OMBldg	\$580,000
43	No	Yard Piping: YardPipe	\$0
44	Yes	Liquid Chemical: BulkHypo	\$280,000
47	SUBTOTAL - PROJECT COST		\$9,700,000
49	ADDITIONAL PROJECT COSTS:		
50	Demolition	0%	\$0
51	Overall Sitework	0%	\$0
52	Plant Computer System	2%	\$200,000
53	Yard Electrical	3%	\$300,000
54	Yard Piping	5%	\$490,000
55	Intake	0%	\$120,000

	A	B	C	D	E
56		UD #2 Default Description	0%		\$0
57		UD #3 Default Description	0%		\$0
58		SUBTOTAL with Additional Project Costs			\$10,810,000
59					
60		CONTRACTOR MARKUPS:			
61		Overhead	10%	\$10,810,000	\$1,090,000
62		Subtotal			\$11,900,000
63		Profit	5%	\$11,900,000	\$600,000
64		Subtotal			\$12,500,000
65		Mob/Bonds/Insurance	5%	\$12,500,000	\$630,000
66		Subtotal			\$13,130,000
67		Contingency	30%	\$13,130,000	\$3,940,000
68		SUBTOTAL with Markups			\$17,070,000
69					
70		ESCALATION (to Mid-Point of Construction)	12.6%	\$17,070,000	\$2,160,000
71		SUBTOTAL with Escalation			\$19,230,000
72					
73		LOCATION ADJUSTMENT FACTOR	101.4	\$19,230,000	\$19,500,000
74		SUBTOTAL - with Local Adjustment Factor			\$19,500,000
75					
76		RED FLAGS:			
77	1	Rock Excavation			
78	2	Pile Foundations			
79	3	Seismic Foundations			
80	4	Dewatering Conditions			
81	5	Wetlands Mitigation			
82	6	Weather Impacts			
83	7	Depth of Structures			
84	8	Local Building Code Restrictions			
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95	19	Shoring			
96	20	Contamination			
97	21				
98	22				
99	23				
100	24				
101	25				
102	26				
103	27				
104		TOTAL - RED FLAGS			\$0
105					
106		SUBTOTAL - CONSTRUCTION COST with Red Flags			\$19,500,000
107					
108		MARKET ADJUSTMENT FACTOR	0%	\$19,500,000	\$0
109		SUBTOTAL - CONSTRUCTION COST with Market Adjustment Factor			\$19,500,000