

Jefferson County Department of Public Works  
**Port Hadlock UGA Sewer Facility Plan**

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**APPENDIX D.**  
**PLANNING LEVEL COST ESTIMATES FOR RECOMMENDED**  
**ALTERNATIVE**

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September 2008





**Project:** Port Hadlock UGA Sewer Facility Plan  
**Subject:** Treatment System Analysis  
**By :** Tt  
**Date :** 11-Aug-08  
**July 2008**  
**ENR:** 8361.74

Item	Description	RESIDENTIAL #1				RESIDENTIAL AREA #2									
		2016		2017		2018		2019		2020		2021		2022	
		ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$
	<b>COLLECTION - GRAVITY SYSTEM</b>	102				1443			1678			2269		2639	
	<b>Capital Cost Estimate</b>														
	<i>Structural</i>														
	8" PVC Gravity Main (8' to 10' deep)	1,297	\$103,760	1,297	\$103,760	0	\$0	700	\$56,000	700	\$56,000	700	\$56,000	0	\$0
	8" PVC Gravity Main (10' to 12' deep)	716	\$64,395	716	\$64,395	0	\$0	197	\$17,700	197	\$17,700	197	\$17,700	0	\$0
	8" PVC Gravity Main (12' to 14' deep)	1,166	\$116,600	1,166	\$116,600	0	\$0	357	\$35,733	357	\$35,733	357	\$35,733	0	\$0
	8" PVC Gravity Main (14' to 16' deep)	528	\$66,000	528	\$66,000	0	\$0	103	\$12,875	103	\$12,875	103	\$12,875	0	\$0
	8" PVC Gravity Main (16'-20' deep)	1,252	\$157,689	1,252	\$157,689	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	8" PVC Gravity Main (20' to 25' deep)	443	\$79,650	443	\$79,650	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	8" PVC Gravity Main (25' to 30' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	10" PVC Gravity Main (20' to 25' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (8' to 10' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (10' to 12' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (12' to 14' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (14' to 16' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (16'-20' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (20' to 25' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	14" PVC Gravity Main (8' to 10' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	14" PVC Gravity Main (10' to 12' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	4" PVC Force Main	0	\$0	0	\$0	0	\$0	2829	\$90,528	0	\$0	0	\$0	0	\$0
	12" PVC Force Main	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	4" PVC Gravity Laterals (Side Sewers)	149	\$298,935	174	\$347,605	202	\$404,201	235	\$470,010	273	\$546,535	318	\$635,519	369	\$738,990
	4" PVC Gravity Laterals - extra for existing houses	42	\$42,000	41	\$41,000	41	\$41,000	42	\$42,000	26	\$26,000	40	\$40,000	40	\$40,000
	1.5" HDPE Pressure Laterals - Grinder	5	\$12,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Lateral Kits	5	\$1,250	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (8' to 10' deep)	4	\$12,900	3	\$9,675	0	\$0	3	\$9,675	2	\$6,450	2	\$6,450	0	\$0
	48" MH (8' to 12' deep)	2	\$7,851	2	\$7,851	0	\$0	1	\$3,925	1	\$3,925	0	\$0	0	\$0
	48" MH (12' to 14' deep)	3	\$13,877	3	\$13,877	0	\$0	2	\$9,251	1	\$4,626	1	\$4,626	0	\$0
	48" MH (14' to 16' deep)	2	\$10,652	1	\$5,326	0	\$0	1	\$5,326	0	\$0	0	\$0	0	\$0
	48" MH (16' to 20' deep)	4	\$25,505	3	\$19,129	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (20' to 25' deep)	2	\$15,903	1	\$7,952	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (25' to 30' deep)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Dewatering	1	\$50,000	1	\$50,000	0	\$0	1	\$50,000	1	\$50,000	1	\$50,000	0	\$0
	AC Surface Restoration	1,800	\$54,005	1,800	\$54,005	0	\$0	452	\$13,570	452	\$13,570	452	\$13,570	0	\$0
	Native Surface Restoration	6,000	\$6,000	7,000	\$7,000	8,100	\$8,100	9,400	\$9,400	10,900	\$10,900	12,700	\$12,700	14,800	\$14,800
	Abandon Septic Tank	42	\$31,500	41	\$30,750	41	\$30,750	42	\$31,500	26	\$19,500	40	\$30,000	40	\$30,000
	<b>Subtotal Structural</b>		<b>\$1,170,472</b>		<b>\$1,182,263</b>		<b>\$484,051</b>		<b>\$857,494</b>		<b>\$803,814</b>		<b>\$915,173</b>		<b>\$823,790</b>
	Grinder Pump (Installed)	5	\$22,500	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Electrical Connections - Grinder	5	\$2,500	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Main Pump Station (2.1 mgd)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Medium Pump Station	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Small Pump Station (0.036 mgd)	0	\$0	0	\$0	0	\$0	1	\$250,000	0	\$0	0	\$0	0	\$0
	<b>Subtotal Equipment</b>		<b>\$25,000</b>		<b>\$0</b>		<b>\$0</b>		<b>\$250,000</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Installation, Miscellaneous Mechanical	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Electrical	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Instrumentation and Control	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	<b>Subtotal Structural, Mechanical, Elect, I&amp;C</b>		<b>\$1,195,472</b>		<b>\$1,182,263</b>		<b>\$484,051</b>		<b>\$1,107,494</b>		<b>\$803,814</b>		<b>\$915,173</b>		<b>\$823,790</b>
	Contractor O&P	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Mobilization, demobilization, bond	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	<b>Total estimated current construction cost</b>		<b>\$1,195,472</b>		<b>\$1,182,263</b>		<b>\$484,051</b>		<b>\$1,107,494</b>		<b>\$803,814</b>		<b>\$915,173</b>		<b>\$823,790</b>
	Escalation to time of construction	3.50%	\$41,842	3.50%	\$41,379	3.50%	\$16,942	3.50%	\$38,762	3.50%	\$28,134	3.50%	\$32,031	3.50%	\$28,833
	<b>Total estimated construction cost</b>		<b>\$1,237,313</b>		<b>\$1,223,643</b>		<b>\$500,992</b>		<b>\$1,146,257</b>		<b>\$831,948</b>		<b>\$947,204</b>		<b>\$852,623</b>
	Contingency	30%	\$371,194	30%	\$367,093	30%	\$150,298	30%	\$343,877	30%	\$249,584	30%	\$284,161	30%	\$255,787
	Engineering Design	15%	\$157,179	15%	\$152,561	15%	\$0	15%	\$111,929	15%	\$40,543	15%	\$39,750	15%	\$0
	Construction Management	10%	\$104,786	10%	\$101,707	10%	\$0	10%	\$74,619	10%	\$27,028	10%	\$26,500	10%	\$0
	Sales Tax	8.4%	\$135,115	8.4%	\$133,622	8.4%	\$54,708	8.4%	\$125,171	8.4%	\$90,849	8.4%	\$103,435	8.4%	\$93,106
	<b>Total Estimated Capital Cost</b>		<b>\$2,006,000</b>		<b>\$1,979,000</b>		<b>\$706,000</b>		<b>\$1,802,000</b>		<b>\$1,240,000</b>		<b>\$1,401,000</b>		<b>\$1,202,000</b>
	<b>Total Estimated Onsite Capital Cost</b>		<b>\$608,000</b>		<b>\$622,000</b>		<b>\$706,000</b>		<b>\$806,000</b>		<b>\$879,000</b>		<b>\$1,048,000</b>		<b>\$1,202,000</b>

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		RESIDENTIAL AREA #3																
		2023		2024		2025		2026		2027		2028		2029		2030		
		ERUs	3069	ERUs	3568	ERUs	3666	ERUs	3768	ERUs	3872	ERUs	3978	ERUs	4088	ERUs	4201	
		Flow (mgd)	0.73	Flow (mgd)	0.85	Flow (mgd)	0.87	Flow (mgd)	0.90	Flow (mgd)	0.92	Flow (mgd)	0.95	Flow (mgd)	0.97	Flow (mgd)	1.00	
Item	Description	Quantity	Cost, \$	Quantity	Unit Cost, \$	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
<b>COLLECTION - GRAVITY SYSTEM</b>																		
<b>Capital Cost Estimate</b>																		
<i>Structural</i>																		
	8" PVC Gravity Main (8' to 10' deep)	0	\$0	1,432		\$114,526	1,432	\$114,526	1,432	\$114,526	1,432	\$114,526	1,432	\$114,526	1,432	\$114,526	1,432	\$114,526
	8" PVC Gravity Main (10' to 12' deep)	0	\$0	569		\$51,210	569	\$51,210	569	\$51,210	569	\$51,210	569	\$51,210	569	\$51,210	569	\$51,210
	8" PVC Gravity Main (12' to 14' deep)	0	\$0	642		\$64,157	642	\$64,157	642	\$64,157	642	\$64,157	642	\$64,157	642	\$64,157	642	\$64,157
	8" PVC Gravity Main (14' to 16' deep)	0	\$0	2,198		\$274,696	398	\$49,696	398	\$49,696	398	\$49,696	398	\$49,696	398	\$49,696	398	\$49,696
	8" PVC Gravity Main (16'-20' deep)	0	\$0	3,835		\$483,174	2,035	\$256,374	2,035	\$256,374	2,035	\$256,374	2,035	\$256,374	2,035	\$256,374	2,035	\$256,374
	8" PVC Gravity Main (20' to 25' deep)	0	\$0	1,007		\$181,209	1,121	\$201,780	1,121	\$201,780	1,121	\$201,780	1,121	\$201,780	1,121	\$201,780	1,121	\$201,780
	8" PVC Gravity Main (25' to 30' deep)	0	\$0	442		\$95,914	442	\$95,914	442	\$95,914	442	\$95,914	442	\$95,914	442	\$95,914	442	\$95,914
	10" PVC Gravity Main (20' to 25' deep)	0	\$0	800		\$152,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (8' to 10' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (10' to 12' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (12' to 14' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (14' to 16' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (16'-20' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Gravity Main (20' to 25' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	14" PVC Gravity Main (8' to 10' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	14" PVC Gravity Main (10' to 12' deep)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	4" PVC Force Main	0	\$0	2,857		\$91,424	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	12" PVC Force Main	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	4" PVC Gravity Laterals (Side Sewers)	430	\$859,309	500		\$999,216	98	\$196,519	101	\$202,314	104	\$207,896	107	\$213,632	110	\$219,526	113	\$225,583
	4" PVC Gravity Laterals - extra for existing houses	50	\$50,000	50		\$50,000	24	\$24,000	48	\$48,000	48	\$48,000	48	\$48,000	107	\$107,000	107	\$107,000
	1.5" HDPE Pressure Laterals - Grinder	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Lateral Kits	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	48" MH (8' to 10' deep)	0	\$0	0		\$0	5	\$15,051	5	\$15,051	5	\$15,051	5	\$15,051	5	\$15,051	5	\$15,051
	48" MH (8' to 12' deep)	0	\$0	0		\$0	2	\$7,851	2	\$7,851	2	\$7,851	2	\$7,851	2	\$7,851	2	\$7,851
	48" MH (12' to 14' deep)	0	\$0	0		\$0	2	\$10,022	2	\$10,022	2	\$10,022	2	\$10,022	2	\$10,022	2	\$10,022
	48" MH (14' to 16' deep)	0	\$0	0		\$0	2	\$12,427	2	\$12,427	2	\$12,427	2	\$12,427	2	\$12,427	2	\$12,427
	48" MH (16' to 20' deep)	0	\$0	21		\$133,900	5	\$28,693	5	\$28,693	5	\$28,693	5	\$28,693	5	\$28,693	5	\$28,693
	48" MH (20' to 25' deep)	0	\$0	0		\$0	4	\$27,831	4	\$27,831	4	\$27,831	4	\$27,831	4	\$27,831	4	\$27,831
	48" MH (25' to 30' deep)	0	\$0	0		\$0	1	\$9,702	1	\$9,702	1	\$9,702	1	\$9,702	1	\$9,702	1	\$9,702
	Dewatering	0	\$0	3		\$150,000	0	\$0	0	\$0	0	\$0	1	\$50,000	1	\$50,000	0	\$0
	AC Surface Restoration	0	\$0	3,641		\$109,231	2,212	\$66,374	2,212	\$66,374	2,212	\$66,374	2,212	\$66,374	2,212	\$66,374	2,212	\$66,374
	Native Surface Restoration	17,200	\$17,200	20,000		\$20,000	3,900	\$3,900	4,000	\$4,000	4,200	\$4,200	4,300	\$4,300	4,400	\$4,400	4,500	\$4,500
	Abandon Septic Tank	50	\$37,500	50		\$37,500	24	\$18,000	48	\$36,000	48	\$36,000	48	\$36,000	107	\$80,250	107	\$80,250
	<b>Subtotal Structural</b>		<b>\$964,009</b>			<b>\$3,008,158</b>		<b>\$1,254,027</b>		<b>\$1,301,922</b>		<b>\$1,307,704</b>		<b>\$1,363,540</b>		<b>\$1,472,784</b>		<b>\$1,428,941</b>
	Grinder Pump (Installed)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Electrical Connections - Grinder	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Main Pump Station (2.1 mgd)	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Medium Pump Station	0	\$0	1		\$375,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Small Pump Station (0.036 mgd)	0	\$0	1		\$250,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<b>Subtotal Equipment</b>		<b>\$0</b>			<b>\$625,000</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Installation, Miscellaneous Mechanical	0%	\$0	0%		\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Electrical	0%	\$0	0%		\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Instrumentation and Control	0%	\$0	0%		\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	<b>Subtotal Structural, Mechanical, Elect, I&amp;C</b>		<b>\$964,009</b>			<b>\$3,633,158</b>		<b>\$1,254,027</b>		<b>\$1,301,922</b>		<b>\$1,307,704</b>		<b>\$1,363,540</b>		<b>\$1,472,784</b>		<b>\$1,428,941</b>
	Contractor O&P	0%	\$0	0%		\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	Mobilization, demobilization, bond	0%	\$0	0%		\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0	0%	\$0
	<b>Total estimated current construction cost</b>		<b>\$964,009</b>			<b>\$3,633,158</b>		<b>\$1,254,027</b>		<b>\$1,301,922</b>		<b>\$1,307,704</b>		<b>\$1,363,540</b>		<b>\$1,472,784</b>		<b>\$1,428,941</b>
	Escalation to time of construction	3.50%	\$33,740	3.50%		\$127,161	3.50%	\$43,891	3.50%	\$45,567	3.50%	\$45,770	3.50%	\$47,724	3.50%	\$51,547	3.50%	\$50,013
	<b>Total estimated construction cost</b>		<b>\$997,749</b>			<b>\$3,760,318</b>		<b>\$1,297,918</b>		<b>\$1,347,490</b>		<b>\$1,353,474</b>		<b>\$1,411,264</b>		<b>\$1,524,332</b>		<b>\$1,478,954</b>
	Contingency	30%	\$299,325	30%		\$1,128,096	30%	\$389,375	30%	\$404,247	30%	\$406,042	30%	\$423,379	30%	\$457,299	30%	\$443,686
	Engineering Design	15%	(\$0)	15%		\$509,899	15%	\$204,168	15%	\$204,168	15%	\$204,168	15%	\$214,259	15%	\$214,259	15%	\$204,168
	Construction Management	10%	(\$0)	10%		\$339,933	10%	\$136,112	10%	\$136,112	10%	\$136,112	10%	\$142,839	10%	\$142,839	10%	\$136,112
	Sales Tax	8.4%	\$108,954	8.4%		\$410,627	8.4%	\$141,733	8.4%	\$147,146	8.4%	\$147,799	8.4%	\$154,110	8.4%	\$166,457	8.4%	\$161,502
	<b>Total Estimated Capital Cost</b>		<b>\$1,406,000</b>			<b>\$6,149,000</b>		<b>\$2,169,000</b>		<b>\$2,239,000</b>		<b>\$2,248,000</b>		<b>\$2,346,000</b>		<b>\$2,505,000</b>		<b>\$2,424,000</b>
	<b>Total Estimated Onsite Capital Cost</b>		<b>\$1,406,000</b>			<b>\$1,614,000</b>		<b>\$354,000</b>		<b>\$423,000</b>		<b>\$432,000</b>		<b>\$440,000</b>		<b>\$600,000</b>		<b>\$609,000</b>

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Updated Unit Costs

			CORE PLUS ALCOHOL						RHODY DRIVE					
			2010		2011		2012		2013		2014		2015	
Item	Description	Unit cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$
<b>COLLECTION - GRAVITY SYSTEM</b>														
<b>Operations and Maintenance Cost Estimate (per year)</b>														
Labor		\$40	188	\$7,520	188	\$7,520	188	\$7,520	240	\$9,600	240	\$9,600	240	\$9,600
Septic tank pumping		\$300		\$0		\$0		\$0		\$0		\$0		\$0
Diesel oil		\$4.50		\$0		\$0		\$0		\$0		\$0		\$0
Power		\$0.08	123390	\$9,254	125571	\$9,418	128109	\$9,608	185495	\$13,912	188926	\$14,169	192915	\$14,469
Structural Maintenance			2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0
Equipment replacement			4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0
Chemicals		\$0.00		\$0		\$0		\$0		\$0		\$0		\$0
Hypochlorite	lb	\$0.60	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
Sodium Bisulfite	gal	\$0.20	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
Polymer	lb	\$3.00		\$0		\$0		\$0		\$0		\$0		\$0
Misc expenses	allowance			\$0		\$0		\$0		\$0		\$0		\$0
<b>Total Annual Cost</b>				\$16,774		\$16,938		\$17,128		\$23,512		\$23,769		\$24,069
Structural Maintenance			2%	\$86,992	2%	\$90,385	2%	\$94,246	2%	\$126,131	2%	\$131,166	2%	\$137,880
Equipment replacement			4%	\$41,600	4%	\$41,600	4%	\$41,600	4%	\$56,600	4%	\$56,600	4%	\$56,600
<b>Total Annual Cost with Replacement Costs</b>				\$145,366		\$148,923		\$152,974		\$206,244		\$211,536		\$218,548

Project: Port Hadlock UGA Sewer Facility Plan  
 Subject: Treatment System Analysis  
 By : Tt  
 Date : 11-Aug-08  
 July 2008  
 ENR: 8361.74

		RESIDENTIAL #1						RESIDENTIAL AREA #2							
		2016		2017		2018		2019		2020		2021		2022	
		ERUs	1067	ERUs	1241	ERUs	1443	ERUs	1678	ERUs	1952	ERUs	2269	ERUs	2639
		Flow (mgd)	0.25	Flow (mgd)	0.30	Flow (mgd)	0.34	Flow (mgd)	0.40	Flow (mgd)	0.46	Flow (mgd)	0.54	Flow (mgd)	0.63
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
<b>COLLECTION - GRAVITY SYSTEM</b>															
<b>Operations and Maintenance Cost Estimate (per year)</b>															
Item	Description														
	Labor	260	\$10,400	260	\$10,400	260	\$10,400	312	\$12,480	312	\$12,480	312	\$12,480	312	\$12,480
	Septic tank pumping		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Diesel oil		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Power	251990	\$18,899	257384	\$19,304	263656	\$19,774	325385	\$24,404	333866	\$25,040	343727	\$25,780	300759	\$22,557
	Structural Maintenance	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0
	Equipment replacement	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0
	Chemicals		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Hypochlorite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sodium Bisulfite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Misc expenses		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	<b>Total Annual Cost</b>		<b>\$29,299</b>		<b>\$29,704</b>		<b>\$30,174</b>		<b>\$36,884</b>		<b>\$37,520</b>		<b>\$38,260</b>		<b>\$35,037</b>
	Structural Maintenance	2%	\$161,289	2%	\$184,934	2%	\$194,615	2%	\$211,765	2%	\$227,842	2%	\$246,145	2%	\$262,621
	Equipment replacement	4%	\$57,600	4%	\$57,600	4%	\$57,600	4%	\$67,600	4%	\$67,600	4%	\$67,600	4%	\$67,600
	<b>Total Annual Cost with Replacement Costs</b>		<b>\$248,188</b>		<b>\$272,238</b>		<b>\$282,390</b>		<b>\$316,249</b>		<b>\$332,961</b>		<b>\$352,005</b>		<b>\$365,258</b>

Project: Port Hadlock UGA Sewer Facility Plan  
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		RESIDENTIAL AREA #3																
		2023		2024			2025		2026		2027		2028		2029		2030	
Item	Description	ERUs	3069	ERUs	3568	ERUs	3666	ERUs	3768	ERUs	3872	ERUs	3978	ERUs	4088	ERUs	4201	
		Flow (mgd)	0.73	Flow (mgd)	0.85	Flow (mgd)	0.87	Flow (mgd)	0.90	Flow (mgd)	0.92	Flow (mgd)	0.95	Flow (mgd)	0.97	Flow (mgd)	1.00	
		Quantity	Cost, \$	Quantity	Unit Cost, \$	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
<b>COLLECTION - GRAVITY SYSTEM</b>																		
<b>Operations and Maintenance Cost Estimate (per year)</b>																		
Item	Description																	
	Labor	312	\$12,480	416		\$16,640	416	\$16,640	416	\$16,640	416	\$16,640	416	\$16,640	416	\$16,640	416	\$16,640
	Septic tank pumping		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Diesel oil		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Power	368529	\$27,640	492906		\$36,968	495956	\$37,197	499095	\$37,432	502321	\$37,674	505636	\$37,923	509043	\$38,178	512543	\$38,441
	Structural Maintenance	2%	\$0	2%		\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0
	Equipment replacement	4%	\$0	4%		\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0
	Chemicals		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Hypochlorite	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sodium Bisulfite	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Misc expenses		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0
	<b>Total Annual Cost</b>		<b>\$40,120</b>			<b>\$53,608</b>		<b>\$53,837</b>		<b>\$54,072</b>		<b>\$54,314</b>		<b>\$54,563</b>		<b>\$54,818</b>		<b>\$55,081</b>
	Structural Maintenance	2%	\$281,901	2%		\$342,064	2%	\$367,145	2%	\$393,183	2%	\$419,337	2%	\$446,608	2%	\$476,064	2%	\$504,643
	Equipment replacement	4%	\$67,600	4%		\$92,600	4%	\$92,600	4%	\$92,600	4%	\$92,600	4%	\$92,600	4%	\$92,600	4%	\$92,600
	<b>Total Annual Cost with Replacement Costs</b>		<b>\$389,621</b>			<b>\$488,272</b>		<b>\$513,581</b>		<b>\$539,855</b>		<b>\$566,251</b>		<b>\$593,771</b>		<b>\$623,482</b>		<b>\$652,323</b>

Project: Port Hadlock UGA Sewer Facility Plan  
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Updated Unit Costs

Item	Description	Unit cost, \$	Unit	CORE PLUS ALCOHOL				RHODY DRIVE							
				2010		2011		2012		2013		2014		2015	
				ERUs Flow (mgd)	Quantity	ERUs Flow (mgd)	Quantity	ERUs Flow (mgd)	Quantity	ERUs Flow (mgd)	Quantity	ERUs Flow (mgd)	Quantity	ERUs Flow (mgd)	Quantity
<b>Capital Cost Estimate</b>															
<i>Structural</i>															
	Administration/Lab Building	\$250	SF	400	\$100,000										
	Electrical Building (generator outside)	\$200	SF	720	\$144,000										
	Mechanical Building	\$200	SF	2,320	\$464,000										
	Excavation	\$20	CY	2,828	\$56,560										
	Backfill	\$15	CY	1,173	\$17,595										
	Headworks Concrete	\$1,500	CY	37	\$55,556										
	Slab Concrete and Rebar	\$500	CY	331	\$165,519										
	Straight Wall Concrete and Rebar	\$700	CY	383	\$268,411										
	Access Bridge Concrete	\$800	CY	34	\$27,467										
	Effluent Weir Concrete	\$700	CY	14	\$9,722										
	Misc Metals (Handrailing, Covers, etc.)	\$32,298	LS	1	\$32,298										
	Site Stormwater Piping and Valving	\$15,000	AC	2	\$30,000										
	Site Process Piping and Valving	\$23,600	LS	1	\$23,600				1	\$20,000	\$20,000				
	Indoor Process Piping and Valving	\$94,400	LS	1	\$94,400				1	\$7,500	\$7,500				
	Membrane Bioreactor Piping and Valving	\$414,153	LS	1	\$414,153										
	Manholes	\$6,000	EA	7	\$42,000										
	Stormwater Detention Tank and Control Structures	\$90,000	LS	1	\$90,000										
	Paving	\$30	SY	4,840	\$145,200										
	Sitework	\$90,000	LS	1	\$90,000										
	Landscaping	\$90,000	LS	1	\$90,000										
	Electrical Conduit, Sitework	\$55,000	LS	1	\$55,000				1	\$10,000	\$10,000				
	Site Lighting	\$36,000	LS	1	\$36,000				1	\$5,000	\$5,000				
	Laboratory Equipment	\$20,000	LS	1	\$20,000										
	Furniture	\$25,000	LS	1	\$25,000										
	Land Acquisition	\$28,000	AC	6	\$168,000										
	Land Purchase: Storage/8' Dike/20days/Buidout MM Flows	\$49,000	AC	0	\$0				0	\$0	\$0				
	Land Purchase: Buffers	\$49,000	AC	0	\$0				0	\$0	\$0				
	Storage Basins - Sitework	\$8	CY	0	\$0				6551	\$52,408	\$52,408				
	Electrical Conduit, Sitework, Lighting	\$50,000	LS	0	\$0				1	\$50,000	\$50,000				
	Liner	\$1.75	SF	0	\$0				17962.56	\$31,434	\$31,434				
	Concrete Access Ramps	\$500	CY	0	\$0				10	\$5,000	\$5,000				
	Inlet / Outlet Structures	\$15,000	EA	0	\$0				2	\$30,000	\$30,000				
	<b>Subtotal Structural</b>				<b>\$2,664,480</b>		<b>\$0</b>			<b>\$211,342</b>			<b>\$0</b>		<b>\$0</b>
	Equipment	\$1,380,511	EA	1	\$1,380,511			1	\$351,895						
	Biological air blowers (@ 40 hp)														
	Blower piping														
	Biological air diffuser systems														
	Anoxic Mixers (@ 2.5 hp)														
	Influent Screen - 1/8 in.														
	Transfer Pump from Membrane to Anoxic Basin														
	Washer Compactor														
	Permeate Pumps														
	Redundant Influent Screen	\$100,000	EA	1	\$100,000										
	WAS Pumps	\$7,500	EA	2	\$15,000										
	Magnetic Flow Meters	\$5,000	EA	3	\$15,000										
	Yard Pump Station Pumps	\$7,500	EA	0	\$0										
	Plant Water Pumps	\$5,000	EA	2	\$10,000										
	Strainer (Manual duplex)	\$2,000	EA	1	\$2,000										
	Overhead Crane	\$100,000	EA	1	\$100,000										
	Hydro Tank	\$4,000	EA	1	\$4,000										
	Odor Control - Carbon Adsorber, Fans, Piping	\$75,000	LS	1	\$75,000										
	Generator	\$200	kW	1,000	\$200,000										
	Generator Silencer, Louvers, Acoustics	\$5,000	LS	1	\$5,000										
	Underground Fuel Storage Tank, Pumps	\$15,000	LS	1	\$15,000										
	Automatic Transfer Switch	\$15,000	LS	1	\$15,000										
	Motor Control Centers/Variable Frequency Drives	\$100,000	LS	1	\$100,000				1	\$20,000	\$20,000				
	PLC	\$100,000	LS	1	\$100,000				1	\$10,000	\$10,000				
	Main Pump Station (2.1 mgd)	\$500,000	EA	0	\$0				0	\$0	\$0				
	Medium Pump Station	\$375,000	EA	0	\$0				0	\$0	\$0				
	Small Pump Station (0.036 mgd)	\$250,000	EA	0	\$0				0	\$0	\$0				
	Distribution Piping & Equipment	\$91	LF	0	\$0				500	\$45,500	\$45,500				
	Aspirating Aerator	\$1,000	hp	0	\$0				7.5	\$7,500	\$7,500				
	<b>Subtotal Equipment</b>				<b>\$2,136,511</b>		<b>\$0</b>			<b>\$351,895</b>			<b>\$83,000</b>		<b>\$0</b>

Project: Port Hadlock UGA Sewer Facility Plan  
 Subject: Treatment System Analysis  
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Item Description	RESIDENTIAL #1				RESIDENTIAL AREA #2									
	2016		2017		2018		2019		2020		2021		2022	
	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$
<b>TREATMENT - MBR</b>														
<b>Capital Cost Estimate</b>														
<i>Structural</i>														
Administration/Lab Building					2,100	\$250	\$525,000							
Electrical Building (generator outside)					0	\$200	\$0							
Mechanical Building					800	\$200	\$160,000							
Excavation					2,828	\$20	\$56,560							
Backfill					1,173	\$15	\$17,595							
Headworks Concrete					0	\$1,500	\$0							
Slab Concrete and Rebar					322	\$500	\$160,963							
Straight Wall Concrete and Rebar					306	\$700	\$214,200							
Access Bridge Concrete					34	\$800	\$27,467							
Effluent Weir Concrete					6	\$700	\$3,889							
Misc Metals (Handrailing, Covers, etc.)					1	\$28,184	\$28,184							
Site Stormwater Piping and Valving					1	\$15,000	\$15,000							
Site Process Piping and Valving					1	\$23,600	\$23,600							
Indoor Process Piping and Valving					1	\$94,400	\$94,400							
Membrane Bioreactor Piping and Valving					1	\$414,153	\$414,153							
Manholes					0	\$6,000	\$0							
Stormwater Detention Tank and Control Structures					0	\$60,000	\$0							
Paving					1,000		\$0							
Sitework					1	\$50,000	\$50,000							
Landscaping					1	\$10,000	\$10,000							
Electrical Conduit, Sitework					1	\$55,000	\$55,000							
Site Lighting					1	\$10,000	\$10,000							
Laboratory Equipment					1	\$15,000	\$15,000							
Furniture					1	\$7,000	\$7,000							
Land Acquisition					0	\$49,000	\$0							
Land Purchase: Storage/8' Dike/20days/Buidout MM Flows														
Land Purchase: Buffers														
Storage Basins - Sitework														
Electrical Conduit, Sitework, Lighting														
Liner														
Concrete Access Ramps														
Inlet / Outlet Structures														
<b>Subtotal Structural</b>		\$0		\$0		\$1,888,011		\$0		\$0		\$0		\$0
<b>Equipment</b>					1	\$1,136,892	\$1,136,892							
Biological air blowers (@ 40 hp)														
Blower piping														
Biological air diffuser systems														
Anoxic Mixers (@ 2.5 hp)														
Influent Screen - 1/8 in.														
Transfer Pump from Membrane to Anoxic Basin														
Washer Compactor														
<b>Permeate Pumps</b>														
Redundant Influent Screen														
WAS Pumps					1	\$7,500	\$7,500							
Magnetic Flow Meters					1	\$5,000	\$5,000							
Yard Pump Station Pumps					0	\$7,500	\$0							
Plant Water Pumps					0	\$5,000	\$0							
Strainer (Manual duplex)					0	\$2,000	\$0							
Overhead Crane					1	\$45,000	\$45,000							
Hydro Tank					0	\$4,000	\$0							
Odor Control - Carbon Adsorber, Fans, Piping					0	\$75,000	\$0							
Generator					0	\$175	\$0							
Generator Silencer, Louvers, Acoustics					0	\$5,000	\$0							
Underground Fuel Storage Tank, Pumps					0	\$15,000	\$0							
Automatic Transfer Switch					0	\$15,000	\$0							
Motor Control Centers/Variable Frequency Drives					1	\$45,000	\$45,000							
PLC					1	\$20,000	\$20,000							
Main Pump Station (2.1 mgd)														
Medium Pump Station														
Small Pump Station (0.036 mgd)														
Distribution Piping & Equipment														
Aspirating Aerator														
<b>Subtotal Equipment</b>		\$0		\$0		\$1,259,392		\$0		\$0		\$0		\$0

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		RESIDENTIAL AREA #3																
		2023		2024		2025		2026		2027		2028		2029		2030		
Item	Description	ERUs	Flow (mgd)	ERUs	Flow (mgd)	ERUs	Flow (mgd)	ERUs	Flow (mgd)	ERUs	Flow (mgd)	ERUs	Flow (mgd)	ERUs	Flow (mgd)	ERUs	Flow (mgd)	
Capital Cost Estimate		Quantity	Cost, \$	Quantity	Unit Cost, \$	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
	<i>Structural</i>																	
	Administration/Lab Building																	
	Electrical Building (generator outside)																	
	Mechanical Building																	
	Excavation																	
	Backfill																	
	Headworks Concrete																	
	Slab Concrete and Rebar																	
	Straight Wall Concrete and Rebar																	
	Access Bridge Concrete																	
	Effluent Weir Concrete																	
	Misc Metals (Handrailing, Covers, etc.)																	
	Site Stormwater Piping and Valving																	
	Site Process Piping and Valving																	
	Indoor Process Piping and Valving																	
	Membrane Bioreactor Piping and Valving																	
	Manholes																	
	Stormwater Detention Tank and Control Structures																	
	Paving																	
	Sitework																	
	Landscaping																	
	Electrical Conduit, Sitework																	
	Site Lighting																	
	Laboratory Equipment																	
	Furniture																	
	Land Acquisition																	
	Land Purchase: Storage/8' Dike/20days/Buidout MM Flows																	
	Land Purchase: Buffers																	
	Storage Basins - Sitework																	
	Electrical Conduit, Sitework, Lighting																	
	Liner																	
	Concrete Access Ramps																	
	Inlet / Outlet Structures																	
	<b>Subtotal Structural</b>		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Equipment			1	\$351,895	\$351,895												
	Biological air blowers (@ 40 hp)																	
	Blower piping																	
	Biological air diffuser systems																	
	Anoxic Mixers (@ 2.5 hp)																	
	Influent Screen - 1/8 in.																	
	Transfer Pump from Membrane to Anoxic Basin																	
	Washer Compactor																	
	Permeate Pumps																	
	Redundant Influent Screen																	
	WAS Pumps																	
	Magnetic Flow Meters																	
	Yard Pump Station Pumps																	
	Plant Water Pumps																	
	Strainer (Manual duplex)																	
	Overhead Crane																	
	Hydro Tank																	
	Odor Control - Carbon Adsorber, Fans, Piping																	
	Generator																	
	Generator Silencer, Louvers, Acoustics																	
	Underground Fuel Storage Tank, Pumps																	
	Automatic Transfer Switch																	
	Motor Control Centers/Variable Frequency Drives																	
	PLC																	
	Main Pump Station (2.1 mgd)																	
	Medium Pump Station																	
	Small Pump Station (0.036 mgd)																	
	Distribution Piping & Equipment																	
	Aspirating Aerator																	
	<b>Subtotal Equipment</b>		\$0		\$351,895	\$351,895		\$0		\$0		\$0		\$0		\$0		\$0

Project: Port Hadlock UGA Sewer Facility Plan  
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Updated Unit Costs

TREATMENT - MBR				CORE PLUS ALCOHOL						RHODY DRIVE					
				2010		2011		2012		2013		2014		2015	
Item	Description	Unit cost, \$	Unit	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$		
	Installation, Miscellaneous Mechanical		of Equip	40%	\$854,604		\$0		\$140,758		\$33,200		\$0		
	Electrical		of Equip	20%	\$427,302		\$0		\$70,379		\$16,600		\$0		
	Instrumentation and Control		of Equip	15%	\$320,477		\$0		\$52,784		\$12,450		\$0		
	<i>Subtotal Structural, Mechanical, Elect, I&amp;C</i>				<i>\$6,403,375</i>		<i>\$0</i>		<i>\$615,816</i>		<i>\$356,592</i>		<i>\$0</i>		
	Contractor O&P		of Sub Cost	15%	\$960,506		\$0		\$92,372		\$53,489		\$0		
	Mobilization, demobilization, bond		of Sub cost	6%	\$384,202		\$0		\$36,949		\$21,396		\$0		
	<i>Total estimated current construction cost</i>				<i>\$7,748,083</i>		<i>\$0</i>		<i>\$745,138</i>		<i>\$431,477</i>		<i>\$0</i>		
	Escalation to time of construction			3.50%	\$271,183		\$0		\$26,080		\$15,102		\$0		
	<i>Total estimated construction cost</i>				<i>\$8,019,266</i>		<i>\$0</i>		<i>\$771,217</i>		<i>\$446,579</i>		<i>\$0</i>		
	Contingency			30%	\$2,405,780		\$0		\$231,365		\$133,974		\$0		
	Engineering Design			15%	\$1,563,757		\$0		\$87,083		\$87,083		\$0		
	Construction Management			10%	\$1,042,505		\$0		\$100,258		\$58,055		\$0		
	Sales Tax			8.4%	\$875,704		\$0		\$84,217		\$48,766		\$0		
	<i>Total Estimated Capital Cost</i>				<i>\$13,907,000</i>		<i>\$0</i>		<i>\$1,337,000</i>		<i>\$774,000</i>		<i>\$0</i>		
<b>Operations and Maintenance Cost Estimate (per year)</b>															
Item	Description	Unit Cost	Unit	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost		
	Labor	\$40	HR	2,080	\$83,200	2,080	\$83,200	2,080	\$83,200	2,080	\$83,200	2,080	\$83,200		
	Membrane Replacement	\$75	panel	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0		
	Diesel oil	\$4.50	GAL	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0		
	Power	\$0.075	kWh	173,736	\$13,030	186,686	\$14,001	201,745	\$15,131	219,256	\$16,444	239,617	\$17,971		
	Other utilities (water, garbage, etc.)	\$1,000	month	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000		
	Chemicals - membrane cleaning	\$3,380	LS	2	\$6,760	2	\$6,760	2	\$6,760	2	\$6,760	2	\$6,760		
	Hypochlorite	\$1.50	LB	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0		
	Laboratory Testing at Port Townsend	\$25.00	Test	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400		
	Polymer	\$3.00	LB	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0		
	Misc expenses		allowance	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0		
	<i>Total Annual Cost</i>				<i>\$125,390</i>		<i>\$126,361</i>		<i>\$127,491</i>		<i>\$128,804</i>		<i>\$130,331</i>		
	Structural Replacement			2%	\$53,290	2%	\$53,290	2%	\$53,290	2%	\$53,290	2%	\$53,290		
	Capital Replacement			4%	\$85,460	4%	\$85,460	4%	\$85,460	4%	\$85,460	4%	\$85,460		
	<i>Total Annual Cost with Replacement Costs</i>				<i>\$264,140</i>		<i>\$265,112</i>		<i>\$266,241</i>		<i>\$267,554</i>		<i>\$270,857</i>		
	"overhead" horsepower =		9												
	"overhead" power with expansion =		16												

Project: Port Hadlock UGA Sewer Facility Plan  
 Subject: Treatment System Analysis  
 By: Tt  
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TREATMENT - MBR		RESIDENTIAL #1						RESIDENTIAL AREA #2							
		2016		2017		2018		2019		2020		2021		2022	
Item	Description	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$
	Installation, Miscellaneous Mechanical		\$0		\$0		\$503,757		\$0		\$0		\$0		\$0
	Electrical		\$0		\$0		\$251,878		\$0		\$0		\$0		\$0
	Instrumentation and Control		\$0		\$0		\$188,909		\$0		\$0		\$0		\$0
	<i>Subtotal Structural, Mechanical, Elect, I&amp;C</i>		<i>\$0</i>		<i>\$0</i>		<i>\$4,091,946</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Contractor O&P		\$0		\$0		\$613,792		\$0		\$0		\$0		\$0
	Mobilization, demobilization, bond		\$0		\$0		\$245,517		\$0		\$0		\$0		\$0
	<i>Total estimated current construction cost</i>		<i>\$0</i>		<i>\$0</i>		<i>\$4,951,255</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Escalation to time of construction		\$0		\$0		\$173,294		\$0		\$0		\$0		\$0
	Total estimated construction cost		\$0		\$0		\$5,124,549		\$0		\$0		\$0		\$0
	Contingency		\$0		\$0		\$1,537,365		\$0		\$0		\$0		\$0
	Engineering Design		\$0		\$0		\$999,287		\$0		\$0		\$0		\$0
	Construction Management		\$0		\$0		\$666,191		\$0		\$0		\$0		\$0
	Sales Tax		\$0		\$0		\$559,601		\$0		\$0		\$0		\$0
	Total Estimated Capital Cost		\$0		\$0		\$8,887,000		\$0		\$0		\$0		\$0
<b>Operations and Maintenance Cost Estimate (per year)</b>															
Item	Description														
	Labor	2,080	\$83,200	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840
	Membrane Replacement	400	\$30,000	400	\$30,000	800	\$60,000	800	\$60,000	800	\$60,000	400	\$30,000	400	\$30,000
	Diesel oil	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Power	290,825	\$21,812	323,555	\$24,267	406,508	\$30,488	404,069	\$30,305	454,404	\$34,080	512,935	\$38,470	580,995	\$43,575
	Other utilities (water, garbage, etc.)	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000
	Chemicals - membrane cleaning	2	\$6,760	3	\$10,140	3	\$10,140	3	\$10,140	3	\$10,140	3	\$10,140	3	\$10,140
	Hypochlorite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Laboratory Testing at Port Townsend	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400
	Polymer	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Misc expenses	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Total Annual Cost		\$164,172		\$238,647		\$274,868		\$274,685		\$278,460		\$252,850		\$257,955
	Structural Replacement	2%	\$53,290	2%	\$53,290	2%	\$91,050	2%	\$91,050	2%	\$91,050	2%	\$91,050	2%	\$91,050
	Capital Replacement	4%	\$85,460	4%	\$85,460	4%	\$135,836	4%	\$135,836	4%	\$135,836	4%	\$135,836	4%	\$135,836
	Total Annual Cost with Replacement Costs		\$302,922		\$377,397		\$501,754		\$501,571		\$505,346		\$479,736		\$484,841

"overhead" horsepower =  
 "overhead" power with expansion =

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 By: Tt  
 Date: 11-Aug-08  
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TREATMENT - MBR		RESIDENTIAL AREA #3															
		2023		2024		2025		2026		2027		2028		2029		2030	
Item	Description	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Unit Cost, \$ Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$	ERUs Flow (mgd) Quantity	Cost, \$		
	Installation, Miscellaneous Mechanical		\$0		\$140,758		\$0		\$0		\$0		\$0		\$0		
	Electrical		\$0		\$70,379		\$0		\$0		\$0		\$0		\$0		
	Instrumentation and Control		\$0		\$52,784		\$0		\$0		\$0		\$0		\$0		
	<i>Subtotal Structural, Mechanical, Elect, I&amp;C</i>		\$0		\$615,816		\$0		\$0		\$0		\$0		\$0		
	Contractor O&P		\$0		\$92,372		\$0		\$0		\$0		\$0		\$0		
	Mobilization, demobilization, bond		\$0		\$36,949		\$0		\$0		\$0		\$0		\$0		
	<i>Total estimated current construction cost</i>		\$0		\$745,138		\$0		\$0		\$0		\$0		\$0		
	Escalation to time of construction		\$0		\$26,080		\$0		\$0		\$0		\$0		\$0		
	<i>Total estimated construction cost</i>		\$0		\$771,217		\$0		\$0		\$0		\$0		\$0		
	Contingency		\$0		\$231,365		\$0		\$0		\$0		\$0		\$0		
	Engineering Design		\$0		\$150,387		\$0		\$0		\$0		\$0		\$0		
	Construction Management		\$0		\$100,258		\$0		\$0		\$0		\$0		\$0		
	Sales Tax		\$0		\$84,217		\$0		\$0		\$0		\$0		\$0		
	<i>Total Estimated Capital Cost</i>		\$0		\$1,337,000		\$0		\$0		\$0		\$0		\$0		
<b>Operations and Maintenance Cost Estimate (per year)</b>																	
Item	Description																
	Labor	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	3,796	\$151,840	4,004	\$160,160
	Membrane Replacement	0	\$0	400	\$30,000	400	\$30,000	800	\$60,000	800	\$60,000	800	\$60,000	400	\$30,000	800	\$60,000
	Diesel oil	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Power	660,137	\$49,510	797,890	\$59,842	815,989	\$61,199	834,622	\$62,597	853,769	\$64,033	873,444	\$65,508	893,662	\$67,025	914,438	\$68,583
	Other utilities (water, garbage, etc.)	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000	12	\$12,000
	Chemicals - membrane cleaning	3	\$10,140	4	\$13,520	4	\$13,520	4	\$13,520	4	\$13,520	4	\$13,520	4	\$13,520	4	\$13,520
	Hypochlorite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Laboratory Testing at Port Townsend	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400	416	\$10,400
	Polymer	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Misc expenses	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<i>Total Annual Cost</i>		\$233,890		\$277,602		\$278,959		\$310,357		\$311,793		\$313,268		\$284,785		\$324,663
	Structural Replacement	2%	\$91,050	2%	\$91,050	2%	\$91,050	2%	\$91,050	2%	\$91,050	2%	\$91,050	2%	\$91,050	2%	\$91,050
	Capital Replacement	4%	\$135,836	4%	\$149,912	4%	\$149,912	4%	\$149,912	4%	\$149,912	4%	\$149,912	4%	\$149,912	4%	\$149,912
	<i>Total Annual Cost with Replacement Costs</i>		\$460,776		\$518,563		\$519,921		\$551,318		\$552,754		\$554,230		\$525,746		\$565,625

"overhead" horsepower =  
 "overhead" power with expansion =

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Updated Unit Costs

			CORE PLUS ALCOHOL						RHODY DRIVE						
			2010		2011		2012		2013		2014		2015		
			ERUs Flow (mgd)	432	ERUs Flow (mgd)	502	ERUs Flow (mgd)	584	ERUs Flow (mgd)	679	ERUs Flow (mgd)	789	ERUs Flow (mgd)	918	
Item	Description	Unit cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	
<b>Liquid Sodium Hypochlorite Disinfection</b>															
<b>Capital Cost Estimate</b>															
Item	Description	Unit cost, \$	Unit	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
	Building enclosure for equipment	\$150	SF	280	\$42,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Excavation	\$20	CY	397	\$7,940	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Backfill	\$15	CY	218	\$3,270	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Slab Concrete and Rebar	\$500	CY	73	\$36,333	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Straight Wall Concrete and Rebar	\$700	CY	67	\$47,144	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Misc Metals (Handrailing, Covers, etc.)	\$500	LS	1	\$500	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Misc Concrete (NaOCl secondary containment)	\$600	CY	5	\$3,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Process Piping and Valving	\$25,000	LS	1	\$25,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sitework	\$15,000	LS	1	\$15,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Electrical Conduit, Sitework	\$5,000	LS	1	\$5,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Lighting	\$20,000	LS	1	\$20,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Contact Tank Baffles	\$10,000	LS	1	\$10,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<b>Subtotal Structural</b>				<b>\$215,187</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Storage Tank (3-55 gal drums)	\$200	ea	6	\$1,200	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Pumps w/ installation (hypo)	\$2,500	ea	2	\$5,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Tank Mixers	\$1,000	ea	1	\$1,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Feed Pacing Controller	\$2,500	ea	1	\$2,500	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Chemical Flow Meter	\$2,000	ea	1	\$2,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<b>Subtotal Equipment</b>				<b>\$11,700</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Installation, Miscellaneous Mechanical		of Equip	40%	\$4,680	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0
	Electrical		of Equip	20%	\$2,340	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0
	Instrumentation and Control		of Equip	15%	\$1,755	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	<b>Subtotal Structural, Mechanical, Elect, I&amp;C</b>				<b>\$235,662</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Contractor O&P		of Sub Cost	15%	\$35,349	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Mobilization, demobilization, bond		of Sub cost	6%	\$14,140	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0
	<b>Total estimated current construction cost</b>				<b>\$285,151</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Escalation to time of construction			3.50%	\$9,980	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0
	<b>Total estimated construction cost</b>				<b>\$295,131</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Contingency			30%	\$88,539	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0
	Engineering Design			15%	\$57,551	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Construction Management			10%	\$38,367	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0
	Sales Tax			8.4%	\$32,228	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0
	<b>Total Estimated Capital Cost</b>				<b>\$512,000</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
<b>Operations and Maintenance Cost Estimate (per year)</b>															
Item	Description	Unit Cost	Unit	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost
	Labor	\$40	hr	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080
	Septic tank pumping	\$300	ea		\$0		\$0		\$0		\$0		\$0		\$0
	Diesel oil	\$4.50	gal		\$0		\$0		\$0		\$0		\$0		\$0
	Power	\$0.08	kWh	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245
	Structural Maintenance			2%	\$4,454	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0
	Equipment replacement			4%	\$484	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0
	Chemicals	\$0.00			\$0		\$0		\$0		\$0		\$0		\$0
	Hypochlorite	\$1.50	lb	156	\$235	182	\$273	212	\$317	246	\$369	286	\$429	333	\$499
	Sodium Bisulfite	\$0.20	gal	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer	\$3.00	lb		\$0		\$0		\$0		\$0		\$0		\$0
	Misc expenses		allowance		\$0		\$0		\$0		\$0		\$0		\$0
	<b>Total Annual Cost</b>				<b>\$7,498</b>		<b>\$2,598</b>		<b>\$2,642</b>		<b>\$2,694</b>		<b>\$2,754</b>		<b>\$2,824</b>
	Structural Maintenance			2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304
	Equipment replacement			4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468
	<b>Total Annual Cost with Replacement Costs</b>				<b>\$12,270</b>		<b>\$7,370</b>		<b>\$7,414</b>		<b>\$7,466</b>		<b>\$7,526</b>		<b>\$7,596</b>

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		RESIDENTIAL #1				RESIDENTIAL AREA #2									
		2016		2017		2018		2019		2020		2021		2022	
		ERUs	1067	ERUs	1241	ERUs	1443	ERUs	1678	ERUs	1952	ERUs	2269	ERUs	2639
		Flow (mgd)	0.25	Flow (mgd)	0.30	Flow (mgd)	0.34	Flow (mgd)	0.40	Flow (mgd)	0.46	Flow (mgd)	0.54	Flow (mgd)	0.63
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
<b>Liquid Sodium Hypochlorite Disinfection</b>															
<b>Capital Cost Estimate</b>															
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
	Building enclosure for equipment	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Excavation	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Backfill	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Slab Concrete and Rebar	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Straight Wall Concrete and Rebar	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Misc Metals (Handrailing, Covers, etc.)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Misc Concrete (NaOCl secondary containment)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Process Piping and Valving	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Electrical Conduit, Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Lighting	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Contact Tank Baffles	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<b>Subtotal Structural</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Storage Tank (3-55 gal drums)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Pumps w/ installation (hypo)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Tank Mixers	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Feed Pacing Controller	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Chemical Flow Meter	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<b>Subtotal Equipment</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Installation, Miscellaneous Mechanical	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0
	Electrical	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0
	Instrumentation and Control	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	<b>Subtotal Structural, Mechanical, Elect, I&amp;C</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Contractor O&P	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Mobilization, demobilization, bond	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0
	<b>Total estimated current construction cost</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Escalation to time of construction	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0
	<b>Total estimated construction cost</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Contingency	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0
	Engineering Design	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Construction Management	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0
	Sales Tax	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0
	<b>Total Estimated Capital Cost</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
<b>Operations and Maintenance Cost Estimate (per year)</b>															
Item	Description	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost
	Labor	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080
	Septic tank pumping		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Diesel oil		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Power	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245
	Structural Maintenance	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0
	Equipment replacement	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0
	Chemicals		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Hypochlorite	387	\$580	450	\$675	523	\$784	608	\$912	707	\$1,061	822	\$1,233	956	\$1,434
	Sodium Bisulfite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Misc expenses		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	<b>Total Annual Cost</b>		<b>\$2,905</b>		<b>\$3,000</b>		<b>\$3,109</b>		<b>\$3,237</b>		<b>\$3,386</b>		<b>\$3,558</b>		<b>\$3,759</b>
	Structural Maintenance	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304
	Equipment replacement	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468
	<b>Total Annual Cost with Replacement Costs</b>		<b>\$7,677</b>		<b>\$7,771</b>		<b>\$7,881</b>		<b>\$8,009</b>		<b>\$8,157</b>		<b>\$8,330</b>		<b>\$8,531</b>

Project: Port Hadlock UGA Sewer Facility Plan  
 Subject: Treatment System Analysis  
 By: Tt  
 Date: 11-Aug-08  
 July 2008  
 ENR: 8361.74

		RESIDENTIAL AREA #3																
		2023		2024		2025		2026		2027		2028		2029		2030		
		ERUs	3069	ERUs	3568	ERUs	3666	ERUs	3768	ERUs	3872	ERUs	3978	ERUs	4088	ERUs	4201	
		Flow (mgd)	0.73	Flow (mgd)	0.85	Flow (mgd)	0.87	Flow (mgd)	0.90	Flow (mgd)	0.92	Flow (mgd)	0.95	Flow (mgd)	0.97	Flow (mgd)	1.00	
Item	Description	Quantity	Cost, \$	Quantity	Unit Cost, \$	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
<b>Liquid Sodium Hypochlorite Disinfection</b>																		
<b>Capital Cost Estimate</b>																		
<b>Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Cost, \$</b>	<b>Quantity</b>	<b>Cost, \$</b>	<b>Quantity</b>	<b>Cost, \$</b>	<b>Quantity</b>	<b>Cost, \$</b>	<b>Quantity</b>	<b>Cost, \$</b>	<b>Quantity</b>	<b>Cost, \$</b>	<b>Quantity</b>	<b>Cost, \$</b>	<b>Quantity</b>	<b>Cost, \$</b>	
	Building enclosure for equipment	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Excavation	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Backfill	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Slab Concrete and Rebar	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Straight Wall Concrete and Rebar	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Misc Metals (Handrailing, Covers, etc.)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Misc Concrete (NaOCl secondary containment)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Site Process Piping and Valving	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Electrical Conduit, Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Site Lighting	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Contact Tank Baffles	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	<b>Subtotal Structural</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>	
	Storage Tank (3-55 gal drums)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Pumps w/ installation (hypo)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Tank Mixers	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Feed Pacing Controller	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Chemical Flow Meter	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	<b>Subtotal Equipment</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>	
	Installation, Miscellaneous Mechanical	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	
	Electrical	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0	20%	\$0	
	Instrumentation and Control	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	<b>Subtotal Structural, Mechanical, Elect, I&amp;C</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>	
	Contractor O&P	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	Mobilization, demobilization, bond	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	
	<b>Total estimated current construction cost</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>	
	Escalation to time of construction	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	
	<b>Total estimated construction cost</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>	
	Contingency	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	
	Engineering Design	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	Construction Management	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	
	Sales Tax	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	
	<b>Total Estimated Capital Cost</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>	
<b>Operations and Maintenance Cost Estimate (per year)</b>																		
<b>Item</b>	<b>Description</b>	<b>Quantity</b>	<b>Annual Cost</b>	<b>Quantity</b>	<b>Annual Cost</b>	<b>Quantity</b>	<b>Annual Cost</b>	<b>Quantity</b>	<b>Annual Cost</b>	<b>Quantity</b>	<b>Annual Cost</b>	<b>Quantity</b>	<b>Annual Cost</b>	<b>Quantity</b>	<b>Annual Cost</b>	<b>Quantity</b>	<b>Annual Cost</b>	
	Labor	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	52	\$2,080	
	Septic tank pumping		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Diesel oil		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Power	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245	3266	\$245	
	Structural Maintenance	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	
	Equipment replacement	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	
	Chemicals		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Hypochlorite	1112	\$1,668	1293	\$1,939	1328	\$1,993	1365	\$2,048	1403	\$2,104	1441	\$2,162	1481	\$2,222	1522	\$2,283	
	Sodium Bisulfite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Polymer		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Misc expenses		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	<b>Total Annual Cost</b>		<b>\$3,993</b>		<b>\$4,264</b>		<b>\$4,318</b>		<b>\$4,373</b>		<b>\$4,429</b>		<b>\$4,487</b>		<b>\$4,547</b>		<b>\$4,608</b>	
	Structural Maintenance	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	2%	\$4,304	
	Equipment replacement	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468	4%	\$468	
	<b>Total Annual Cost with Replacement Costs</b>		<b>\$8,764</b>		<b>\$9,036</b>		<b>\$9,089</b>		<b>\$9,144</b>		<b>\$9,201</b>		<b>\$9,259</b>		<b>\$9,318</b>		<b>\$9,380</b>	

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Updated Unit Costs

			CORE PLUS ALCOHOL						RHODY DRIVE						
			2010		2011		2012		2013		2014		2015		
Item	Description	Unit cost, \$	Unit	ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$	ERUs Flow (mgd)	Cost, \$
<b>SLUDGE HANDLING</b>															
<b>Capital Cost Estimate</b>															
Item	Description	Unit cost, \$	Unit	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
	Mechanical Building	\$200	SF	0	\$0	0	\$0	0	\$0	150	\$30,000	0	\$0	0	\$0
	Filter & Chemical Building	\$200	SF	0	\$0	0	\$0	0	\$0	650	\$130,000	0	\$0	0	\$0
	Slab Concrete and Rebar	\$500	CY	0	\$0	0	\$0	0	\$0	24	\$11,963	0	\$0	0	\$0
	Straight Wall Concrete and Rebar	\$700	CY	0	\$0	0	\$0	0	\$0	48	\$33,496	0	\$0	0	\$0
	excavation	\$20	CY	0	\$0	0	\$0	0	\$0	676	\$13,520	0	\$0	0	\$0
	disposal	\$0	CY	0	\$0	0	\$0	0	\$0	340	\$0	0	\$0	0	\$0
	backfill	\$15	CY	0	\$0	0	\$0	0	\$0	601	\$9,020	0	\$0	0	\$0
	Site Process Piping and Valving	\$13,926	LS	0	\$0	0	\$0	0	\$0	1	\$13,926	0	\$0	0	\$0
	Site Process Piping and Valving	\$3,000	LS	1	\$3,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Indoor Process Piping and Valving	\$23,210	LS	0	\$0	0	\$0	0	\$0	1	\$23,210	0	\$0	0	\$0
	Sitework	\$60,000	LS	0	\$0	0	\$0	0	\$0	1	\$60,000	0	\$0	0	\$0
	<b>Subtotal Structural</b>				<b>\$3,000</b>		<b>\$0</b>		<b>\$0</b>		<b>\$325,135</b>		<b>\$0</b>		<b>\$0</b>
	Blower	\$20,000	EA	0	\$0	0	\$0	0	\$0	1	\$10,000	0	\$0	0	\$0
	Diffuser with piping	\$20,000	EA	0	\$0	0	\$0	0	\$0	1	\$10,000	0	\$0	0	\$0
	Decant pump	\$10,000	EA	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Screw Press Thickener	\$54,630	EA	0	\$0	0	\$0	0	\$0	1	\$54,630	0	\$0	0	\$0
	Odor Control Scrubber	\$60,700	EA	0	\$0	0	\$0	0	\$0	1	\$60,700	0	\$0	0	\$0
	Sludge Pump	\$9,105	EA	0	\$0	0	\$0	0	\$0	2	\$18,210	0	\$0	0	\$0
	Polymer Feed System	\$12,140	EA	0	\$0	0	\$0	0	\$0	1	\$12,140	0	\$0	0	\$0
	Steel 10k gallon sludge holding tank	\$20,000	EA	1	\$20,000	0	\$0	0	\$0	1	\$20,000	0	\$0	0	\$0
	<b>Subtotal Equipment</b>				<b>\$20,000</b>		<b>\$0</b>		<b>\$0</b>		<b>\$185,680</b>		<b>\$0</b>		<b>\$0</b>
	Installation, Miscellaneous Mechanical		of Equip	40%	\$8,000	40%	\$0	40%	\$0	40%	\$74,272	40%	\$0	40%	\$0
	Electrical		of Equip	25%	\$5,000	25%	\$0	25%	\$0	25%	\$46,420	25%	\$0	25%	\$0
	Instrumentation and Control		of Equip	15%	\$3,000	15%	\$0	15%	\$0	15%	\$27,852	15%	\$0	15%	\$0
	<b>Subtotal Structural, Mechanical, Elect, I&amp;C</b>				<b>\$39,000</b>		<b>\$0</b>		<b>\$0</b>		<b>\$659,359</b>		<b>\$0</b>		<b>\$0</b>
	Contractor O&P		of Sub Cost	15%	\$5,850	15%	\$0	15%	\$0	15%	\$98,904	15%	\$0	15%	\$0
	Mobilization, demobilization, bond		of Sub cost	6%	\$2,340	6%	\$0	6%	\$0	6%	\$39,562	6%	\$0	6%	\$0
	<b>Total estimated current construction cost</b>				<b>\$47,190</b>		<b>\$0</b>		<b>\$0</b>		<b>\$797,825</b>		<b>\$0</b>		<b>\$0</b>
	Escalation to time of construction			3.50%	\$1,652		\$0		\$0		\$27,924		\$0		\$0
	<b>Total estimated construction cost</b>				<b>\$48,842</b>		<b>\$0</b>		<b>\$0</b>		<b>\$825,749</b>		<b>\$0</b>		<b>\$0</b>
	Contingency			30%	\$14,652		\$0		\$0		\$247,725		\$0		\$0
	Engineering Design			15%	\$9,524		\$0		\$0		\$161,021		\$0		\$0
	Construction Management			10%	\$6,349		\$0		\$0		\$107,347		\$0		\$0
	Sales Tax			8.4%	\$5,334		\$0		\$0		\$90,172		\$0		\$0
	<b>Total Estimated Capital Cost</b>				<b>\$84,701</b>		<b>\$0</b>		<b>\$0</b>		<b>\$1,432,013</b>		<b>\$0</b>		<b>\$0</b>
<b>Operations and Maintenance Cost Estimate (per year)</b>															
Item	Description	Unit Cost	Unit	Gallons per day Quantity	Annual Cost	Gallons per day Quantity	Annual Cost	Gallons per day Quantity	Annual Cost	Gallons per day Quantity	Annual Cost	Gallons per day Quantity	Annual Cost	Gallons per day Quantity	Annual Cost
	Labor	\$40	HR	52	\$2,080	52	\$2,080	52	\$2,080	82	\$3,270	95	\$3,806	111	\$4,424
	Diesel oil	\$4.50	GAL	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Power	\$0.075	kWh	0	\$0	0	\$0	0	\$0	2,453	\$184	2,854	\$214	3,318	\$249
	Structural Maintenance			0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Equipment replacement			0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Hypochlorite	\$0.60	LB	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sodium Bisulfite	\$0.20	GAL	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer	\$3.00	LB	0	\$0	0	\$0	0	\$0	409	\$1,227	476	\$1,428	553	\$1,660
	Misc expenses		allowance	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sludge hauling and disposal	\$0.30	GAL	416,100	\$124,830	483,990	\$145,197	562,465	\$168,740	245,280	\$73,584	285,430	\$85,629	331,785	\$99,536
	<b>Total Annual Cost</b>				<b>\$126,910</b>		<b>\$147,277</b>		<b>\$170,820</b>		<b>\$78,266</b>		<b>\$91,077</b>		<b>\$105,868</b>
	Structural Maintenance			2%	\$60	2%	\$60	2%	\$60	2%	\$6,563	2%	\$6,563	2%	\$6,563
	Equipment replacement			4%	\$800	4%	\$800	4%	\$800	4%	\$8,227	4%	\$8,227	4%	\$8,227
	<b>Total Annual Cost with Replacement Costs</b>				<b>\$127,770</b>		<b>\$148,137</b>		<b>\$171,680</b>		<b>\$93,056</b>		<b>\$105,867</b>		<b>\$120,658</b>

Project: Port Hadlock UGA Sewer Facility Plan  
 Subject: Treatment System Analysis  
 By : Tt  
 Date : 11-Aug-08  
 July 2008  
 ENR: 8361.74

		RESIDENTIAL #1				RESIDENTIAL AREA #2									
		2016		2017		2018		2019		2020		2021		2022	
		ERUs	1067	ERUs	1241	ERUs	1443	ERUs	1678	ERUs	1952	ERUs	2269	ERUs	2639
		Flow (mgd)	0.25	Flow (mgd)	0.30	Flow (mgd)	0.34	Flow (mgd)	0.40	Flow (mgd)	0.46	Flow (mgd)	0.54	Flow (mgd)	0.63
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
<b>SLUDGE HANDLING</b>															
<b>Capital Cost Estimate</b>															
Item	Description	Quantity		Quantity		Quantity		Quantity		Quantity		Quantity		Quantity	
			Cost, \$		Cost, \$		Cost, \$		Cost, \$		Cost, \$		Cost, \$		Cost, \$
	Mechanical Building	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Filter & Chemical Building	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Slab Concrete and Rebar	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Straight Wall Concrete and Rebar	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	excavation	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	disposal	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	backfill	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Process Piping and Valving	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Process Piping and Valving	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Indoor Process Piping and Valving	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<b>Subtotal Structural</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Blower	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Diffuser with piping	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Decant pump	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Screw Press Thickener	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Odor Control Scrubber	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sludge Pump	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer Feed System	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Steel 10k gallon sludge holding tank	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<b>Subtotal Equipment</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Installation, Miscellaneous Mechanical	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0
	Electrical	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0
	Instrumentation and Control	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	<b>Subtotal Structural, Mechanical, Elect, I&amp;C</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Contractor O&P	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Mobilization, demobilization, bond	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0
	<b>Total estimated current construction cost</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Escalation to time of construction		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	<b>Total estimated construction cost</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
	Contingency		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Engineering Design		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Construction Management		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Sales Tax		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	<b>Total Estimated Capital Cost</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>
<b>Operations and Maintenance Cost Estimate (per year)</b>															
Item	Description	Gallons per day	1,057	Gallons per day	1,229	Gallons per day	1,429	Gallons per day	1,661	Gallons per day	1,932	Gallons per day	2,246	Gallons per day	2,612
		Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost
	Labor	129	\$5,144	150	\$5,981	174	\$6,954	202	\$8,084	235	\$9,402	273	\$10,931	318	\$12,712
	Diesel oil	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Power	3,858	\$289	4,486	\$336	5,216	\$391	6,063	\$455	7,052	\$529	8,198	\$615	9,534	\$715
	Structural Maintenance	0	\$0	0	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0
	Equipment replacement	0	\$0	0	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0
	Hypochlorite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sodium Bisulfite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Polymer	644	\$1,931	748	\$2,245	870	\$2,610	1,011	\$3,034	1,176	\$3,529	1,367	\$4,102	1,590	\$4,771
	Misc expenses	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Sludge hauling and disposal	385,805	\$115,742	448,585	\$134,576	521,585	\$156,476	606,265	\$181,880	705,180	\$211,554	819,790	\$245,937	953,380	\$286,014
	<b>Total Annual Cost</b>		<b>\$123,105</b>		<b>\$143,138</b>		<b>\$166,431</b>		<b>\$193,451</b>		<b>\$225,014</b>		<b>\$261,585</b>		<b>\$304,211</b>
	Structural Maintenance	2%	\$6,563	2%	\$6,563	2%	\$6,563	2%	\$6,563	2%	\$6,563	2%	\$6,563	2%	\$6,563
	Equipment replacement	4%	\$8,227	4%	\$8,227	4%	\$8,227	4%	\$8,227	4%	\$8,227	4%	\$8,227	4%	\$8,227
	<b>Total Annual Cost with Replacement Costs</b>		<b>\$137,895</b>		<b>\$157,928</b>		<b>\$181,221</b>		<b>\$208,241</b>		<b>\$239,804</b>		<b>\$276,375</b>		<b>\$319,001</b>

Project: Port Hadlock UGA Sewer Facility Plan  
 Subject: Treatment System Analysis  
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 Date: 11-Aug-08  
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 ENR: 8361.74

		RESIDENTIAL AREA #3																	
		2023		2024			2025		2026		2027		2028		2029		2030		
		ERUs	3069	ERUs	3568	ERUs	3666	ERUs	3768	ERUs	3872	ERUs	3978	ERUs	4088	ERUs	4201		
		Flow (mgd)	0.73	Flow (mgd)	0.85	Flow (mgd)	0.87	Flow (mgd)	0.90	Flow (mgd)	0.92	Flow (mgd)	0.95	Flow (mgd)	0.97	Flow (mgd)	1.00		
Item	Description	Quantity	Cost, \$	Quantity	Unit Cost, \$	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	
<b>SLUDGE HANDLING</b>																			
<b>Capital Cost Estimate</b>																			
Item	Description																		
	Mechanical Building	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Filter & Chemical Building	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Slab Concrete and Rebar	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Straight Wall Concrete and Rebar	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	excavation	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	disposal	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	backfill	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Site Process Piping and Valving	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Site Process Piping and Valving	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Indoor Process Piping and Valving	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Sitework	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	<b>Subtotal Structural</b>		<b>\$0</b>			<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>	
	Blower	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Diffuser with piping	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Decant pump	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Screw Press Thickener	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Odor Control Scrubber	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Sludge Pump	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Polymer Feed System	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Steel 10k gallon sludge holding tank	0	\$0	0		\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	<b>Subtotal Equipment</b>		<b>\$0</b>			<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>	
	Installation, Miscellaneous Mechanical	40%	\$0	40%		\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	
	Electrical	25%	\$0	25%		\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	
	Instrumentation and Control	15%	\$0	15%		\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	<b>Subtotal Structural, Mechanical, Elect, I&amp;C</b>		<b>\$0</b>			<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>	
	Contractor O&P	15%	\$0	15%		\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	Mobilization, demobilization, bond	6%	\$0	6%		\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	
	<b>Total estimated current construction cost</b>		<b>\$0</b>			<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>	
	Escalation to time of construction		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	<b>Total estimated construction cost</b>		<b>\$0</b>			<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>	
	Contingency		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Engineering Design		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Construction Management		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Sales Tax		\$0			\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	<b>Total Estimated Capital Cost</b>		<b>\$0</b>			<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>		<b>\$0</b>	
<b>Operations and Maintenance Cost Estimate (per year)</b>																			
Item	Description	Gallons per day	3,037	Gallons per day	3,532	Annual Cost		Gallons per year	3,629	Gallons per year	3,730	Gallons per year	3,833	Gallons per year	3,939	Gallons per year	4,047	Gallons per day	4,159
		Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost
	Labor	370	\$14,780	430	\$17,189	442	\$17,663	454	\$18,151	466	\$18,653	479	\$19,168	492	\$19,697	506	\$20,241		
	Diesel oil		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	Power	11,085	\$831	12,892	\$967	13,248	\$994	13,613	\$1,021	13,989	\$1,049	14,376	\$1,078	14,773	\$1,108	15,181	\$1,139		
	Structural Maintenance	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0	2%	\$0		
	Equipment replacement	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0	4%	\$0		
	Hypochlorite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0		
	Sodium Bisulfite	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0		
	Polymer	1,849	\$5,547	2,150	\$6,451	2,210	\$6,629	2,271	\$6,812	2,333	\$7,000	2,398	\$7,194	2,464	\$7,392	2,532	\$7,597		
	Misc expenses	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0		
	Sludge hauling and disposal	1,108,505	\$332,552	1,289,152	\$386,746	1,324,759	\$397,428	1,361,349	\$408,405	1,398,950	\$419,685	1,437,589	\$431,277	1,477,295	\$443,188	1,518,098	\$455,429		
	<b>Total Annual Cost</b>		<b>\$353,710</b>		<b>\$411,352</b>		<b>\$422,714</b>		<b>\$434,389</b>		<b>\$446,387</b>		<b>\$458,716</b>		<b>\$471,386</b>		<b>\$484,406</b>		
	Structural Maintenance	2%	\$6,563	2%	\$6,563	2%	\$6,563	2%	\$6,563	2%	\$6,563	2%	\$6,563	2%	\$6,563	2%	\$6,563		
	Equipment replacement	4%	\$8,227	4%	\$8,227	4%	\$8,227	4%	\$8,227	4%	\$8,227	4%	\$8,227	4%	\$8,227	4%	\$8,227		
	<b>Total Annual Cost with Replacement Costs</b>		<b>\$368,500</b>		<b>\$426,142</b>		<b>\$437,504</b>		<b>\$449,179</b>		<b>\$461,177</b>		<b>\$473,506</b>		<b>\$486,176</b>		<b>\$499,196</b>		

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Updated Unit Costs

			CORE PLUS ALCOHOL						RHODY DRIVE						
			2010		2011		2012		2013		2014		2015		
Item	Description	Unit cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	
<b>EFFLUENT REUSE</b>															
<b>Capital Cost Estimate</b>															
Item	Description	Unit cost, \$	Unit	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
	Site Process Piping and Valving to Disposal Field	\$65	LF	500	\$32,500	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Land Purchase: Disposal/Buidout MM Flows	\$28,000	AC	9.0	\$252,000	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0
	Rapid Infiltration Basins - Sitework	\$8	CY	18,392	\$147,136	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Storage Basins - Sitework	\$8	CY	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Process Piping and Valving	\$25,000	LS	1	\$25,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Electrical Conduit, Sitework, Lighting	\$10,000	LS	1	\$10,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Monitoring Wells	\$10,000	EA	3	\$30,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<i>Subtotal Structural</i>				<i>\$496,636</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Main Pump Station (2.1 mgd)	\$500,000	EA	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Medium Pump Station	\$375,000	EA	1	\$375,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Small Pump Station (0.036 mgd)	\$250,000	EA	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Distribution Piping & Equipment	\$10,000	EA	1	\$10,000	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<i>Subtotal Equipment</i>				<i>\$385,000</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Installation, Miscellaneous Mechanical		of Equip	40%	\$154,000	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0
	Electrical		of Equip	25%	\$96,250	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0
	Instrumentation and Control		of Equip	15%	\$57,750	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	<i>Subtotal Structural, Mechanical, Elect, I&amp;C</i>				<i>\$1,189,636</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Contractor O&P		of Sub Cost	15%	\$178,445	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Mobilization, demobilization, bond		of Sub cost	6%	\$71,378	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0
	<i>Total estimated current construction cost</i>				<i>\$1,439,460</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Escalation to time of construction			3.50%	\$50,381	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0
	<i>Total estimated construction cost</i>				<i>\$1,489,841</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Contingency			30%	\$446,952	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0
	Engineering Design			15%	\$290,519	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Construction Management			10%	\$193,679	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0
	Sales Tax			8.4%	\$162,691	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0
	<i>Total Estimated Capital Cost</i>				<i>\$2,583,682</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
<b>Operations and Maintenance Cost Estimate (per year)</b>															
Item	Description	Unit Cost	Unit	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost
	Labor	\$40	hr	104	\$4,160	104	\$4,160	104	\$4,160	104	\$4,160	104	\$4,160	104	\$4,160
	Power	\$0.08	kWh	10162	\$762	12344	\$926	14882	\$1,116	17832	\$1,337	21262	\$1,595	25252	\$1,894
	Misc expenses	\$0	allowance		\$0		\$0		\$0		\$0		\$0		\$0
	<i>Total Annual Cost</i>				<i>\$4,922</i>		<i>\$5,086</i>		<i>\$5,276</i>		<i>\$5,497</i>		<i>\$5,755</i>		<i>\$6,054</i>
	Structural Maintenance			2%	\$4,893	2%	\$4,893	2%	\$4,893	2%	\$4,893	2%	\$4,893	2%	\$4,893
	Equipment replacement			4%	\$15,400	4%	\$15,400	4%	\$15,400	4%	\$15,400	4%	\$15,400	4%	\$15,400
	<i>Total Annual Cost with Replacement Costs</i>				<i>\$25,215</i>		<i>\$25,379</i>		<i>\$25,569</i>		<i>\$25,790</i>		<i>\$26,047</i>		<i>\$26,347</i>

Project: Port Hadlock UGA Sewer Facility Plan  
 Subject: Treatment System Analysis  
 By : Tt  
 Date : 11-Aug-08  
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 ENR: 8361.74

		RESIDENTIAL #1				RESIDENTIAL AREA #2									
		2016		2017		2018		2019		2020		2021		2022	
		ERUs	1067	ERUs	1241	ERUs	1443	ERUs	1678	ERUs	1952	ERUs	2269	ERUs	2639
		Flow (mgd)	0.25	Flow (mgd)	0.30	Flow (mgd)	0.34	Flow (mgd)	0.40	Flow (mgd)	0.46	Flow (mgd)	0.54	Flow (mgd)	0.63
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
<b>EFFLUENT REUSE</b>															
<b>Capital Cost Estimate</b>															
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
	Site Process Piping and Valving to Disposal Field	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Land Purchase: Disposal/Buidout MM Flows	0.0	\$0	0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0
	Rapid Infiltration Basins - Sitework	0	\$0	0	\$0	18,392	\$147,136	0	\$0	0	\$0	0	\$0	0	\$0
	Storage Basins - Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Site Process Piping and Valving	0	\$0	0	\$0	1	\$25,000	0	\$0	0	\$0	0	\$0	0	\$0
	Electrical Conduit, Sitework, Lighting	0	\$0	0	\$0	1	\$10,000	0	\$0	0	\$0	0	\$0	0	\$0
	Monitoring Wells	0	\$0	0	\$0	3	\$30,000	0	\$0	0	\$0	0	\$0	0	\$0
	<i>Subtotal Structural</i>		<i>\$0</i>		<i>\$0</i>		<i>\$212,136</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Main Pump Station (2.1 mgd)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Medium Pump Station	0	\$0	0	\$0	1	\$25,000	0	\$0	0	\$0	0	\$0	0	\$0
	Small Pump Station (0.036 mgd)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	Distribution Piping & Equipment	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0
	<i>Subtotal Equipment</i>		<i>\$0</i>		<i>\$0</i>		<i>\$25,000</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Installation, Miscellaneous Mechanical	40%	\$0	40%	\$0	40%	\$10,000	40%	\$0	40%	\$0	40%	\$0	40%	\$0
	Electrical	25%	\$0	25%	\$0	25%	\$6,250	25%	\$0	25%	\$0	25%	\$0	25%	\$0
	Instrumentation and Control	15%	\$0	15%	\$0	15%	\$3,750	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	<i>Subtotal Structural, Mechanical, Elect, I&amp;C</i>		<i>\$0</i>		<i>\$0</i>		<i>\$257,136</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Contractor O&P	15%	\$0	15%	\$0	15%	\$38,570	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Mobilization, demobilization, bond	6%	\$0	6%	\$0	6%	\$15,428	6%	\$0	6%	\$0	6%	\$0	6%	\$0
	<i>Total estimated current construction cost</i>		<i>\$0</i>		<i>\$0</i>		<i>\$311,135</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Escalation to time of construction	3.50%	\$0	3.50%	\$0	3.50%	\$10,890	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0
	<i>Total estimated construction cost</i>		<i>\$0</i>		<i>\$0</i>		<i>\$322,024</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
	Contingency	30%	\$0	30%	\$0	30%	\$96,607	30%	\$0	30%	\$0	30%	\$0	30%	\$0
	Engineering Design	15%	\$0	15%	\$0	15%	\$62,795	15%	\$0	15%	\$0	15%	\$0	15%	\$0
	Construction Management	10%	\$0	10%	\$0	10%	\$41,863	10%	\$0	10%	\$0	10%	\$0	10%	\$0
	Sales Tax	8.4%	\$0	8.4%	\$0	8.4%	\$35,165	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0
	<i>Total Estimated Capital Cost</i>		<i>\$0</i>		<i>\$0</i>		<i>\$558,454</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>		<i>\$0</i>
<b>Operations and Maintenance Cost Estimate (per year)</b>															
Item	Description	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost
	Labor	104	\$4,160	104	\$4,160	208	\$8,320	208	\$8,320	208	\$8,320	208	\$8,320	208	\$8,320
	Power	29890	\$2,242	35284	\$2,646	41556	\$3,117	48850	\$3,664	57331	\$4,300	67192	\$5,039	78659	\$5,899
	Misc expenses		\$0		\$0		\$0		\$0		\$0		\$0		\$0
	<i>Total Annual Cost</i>		<i>\$6,402</i>		<i>\$6,806</i>		<i>\$11,437</i>		<i>\$11,984</i>		<i>\$12,620</i>		<i>\$13,359</i>		<i>\$14,219</i>
	Structural Maintenance	2%	\$4,893	2%	\$4,893	2%	\$9,135	2%	\$9,135	2%	\$9,135	2%	\$9,135	2%	\$9,135
	Equipment replacement	4%	\$15,400	4%	\$15,400	4%	\$16,400	4%	\$16,400	4%	\$16,400	4%	\$16,400	4%	\$16,400
	<i>Total Annual Cost with Replacement Costs</i>		<i>\$26,694</i>		<i>\$27,099</i>		<i>\$36,972</i>		<i>\$37,519</i>		<i>\$38,155</i>		<i>\$38,895</i>		<i>\$39,755</i>

Project: Port Hadlock UGA Sewer Facility Plan  
 Subject: Treatment System Analysis  
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 Date : 11-Aug-08  
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		RESIDENTIAL AREA #3																
		2023		2024		2025		2026		2027		2028		2029		2030		
		ERUs	3069	ERUs	3568	ERUs	3666	ERUs	3768	ERUs	3872	ERUs	3978	ERUs	4088	ERUs	4201	
		Flow (mgd)	0.73	Flow (mgd)	0.85	Flow (mgd)	0.87	Flow (mgd)	0.90	Flow (mgd)	0.92	Flow (mgd)	0.95	Flow (mgd)	0.97	Flow (mgd)	1.00	
Item	Description	Quantity	Cost, \$	Quantity	Unit Cost, \$	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$
<b>EFFLUENT REUSE</b>																		
<b>Capital Cost Estimate</b>																		
Item	Description	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	Quantity	Cost, \$	
	Site Process Piping and Valving to Disposal Field	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Land Purchase: Disposal/Buidout MM Flows	0.0	\$0	0	\$0	0.0	\$0	0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	0.0	\$0	
	Rapid Infiltration Basins - Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Storage Basins - Sitework	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Site Process Piping and Valving	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Electrical Conduit, Sitework, Lighting	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Monitoring Wells	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	<i>Subtotal Structural</i>		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Main Pump Station (2.1 mgd)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Medium Pump Station	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Small Pump Station (0.036 mgd)	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	Distribution Piping & Equipment	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	0	\$0	
	<i>Subtotal Equipment</i>		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Installation, Miscellaneous Mechanical	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	40%	\$0	
	Electrical	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	25%	\$0	
	Instrumentation and Control	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	<i>Subtotal Structural, Mechanical, Elect, I&amp;C</i>		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Contractor O&P	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	Mobilization, demobilization, bond	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	6%	\$0	
	<i>Total estimated current construction cost</i>		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Escalation to time of construction	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	3.50%	\$0	
	<i>Total estimated construction cost</i>		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	Contingency	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	30%	\$0	
	Engineering Design	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	15%	\$0	
	Construction Management	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	10%	\$0	
	Sales Tax	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	8.4%	\$0	
	<i>Total Estimated Capital Cost</i>		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
<b>Operations and Maintenance Cost Estimate (per year)</b>																		
Item	Description	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	Quantity	Annual Cost	
	Labor	208	\$8,320	208	\$8,320	208	\$8,320	208	\$8,320	208	\$8,320	208	\$8,320	208	\$8,320	208	\$8,320	
	Power	91994	\$6,900	107499	\$8,062	110548	\$8,291	113688	\$8,527	116914	\$8,769	120229	\$9,017	123635	\$9,273	127136	\$9,535	
	Misc expenses		\$0		\$0		\$0		\$0		\$0		\$0		\$0		\$0	
	<i>Total Annual Cost</i>		\$15,220		\$16,382		\$16,611		\$16,847		\$17,089		\$17,337		\$17,593		\$17,855	
	Structural Maintenance	2%	\$9,135	2%	\$9,135	2%	\$9,135	2%	\$9,135	2%	\$9,135	2%	\$9,135	2%	\$9,135	2%	\$9,135	
	Equipment replacement	4%	\$16,400	4%	\$16,400	4%	\$16,400	4%	\$16,400	4%	\$16,400	4%	\$16,400	4%	\$16,400	4%	\$16,400	
	<i>Total Annual Cost with Replacement Costs</i>		\$40,755		\$41,918		\$42,147		\$42,382		\$42,624		\$42,873		\$43,128		\$43,391	

