

**Town of Orleans, MA
FY 2016 Water Quality and Wastewater Planning
Collection System Comparison for Downtown Area**

Description	Unit	Unit Cost	Single System						Hybrid System							
			GS	STEG	LPS	VS	STEP	Hybrid (GS and LPS)	Hybrid (GS and STEP) 100% Tank Replacement							
Gravity Sewer	L.F.	\$ 125	29,500	\$ 3,687,500						29,500	\$ 3,687,500	29,500	\$ 3,687,500			
Force Main	L.F.	\$ 120	10,000	\$ 1,200,000	17,500	\$ 2,100,000	2,300	\$ 276,000	15,000	\$ 1,800,000	2,300	\$ 276,000	7,500	\$ 900,000		
Low Pressure Sewer	L.F.	\$ 100					29,500	\$ 2,950,000					2,200	\$ 220,000		
Vacuum Sewer	L.F.	\$ 110							29,500	\$ 3,245,000						
STEP Force Main	L.F.	\$ 100									29,500	\$ 2,950,000		2,200	\$ 220,000	
STEG Sewer	L.F.	\$ 125			29,500	\$ 3,687,500										
Submersible Pump Station	Each	\$ 275,000	2	\$ 550,000	2	\$ 550,000										
Wet Pit /Dry Pit Pump Station	Each	\$ 468,000														
Custom Pump Station	Each	\$ 585,000	3	\$ 1,755,000	3	\$ 1,755,000	1	\$ 585,000			1	\$ 585,000	3	\$ 1,755,000	3	\$ 1,755,000
Vacuum Pump Station	Each	\$ 860,000							5	\$ 4,300,000						
Gravity Sewer - Private Property	Each	\$ 7,800	331	\$ 2,581,800									263	\$ 2,051,400	263	\$ 2,051,400
Low Pressure Sewer - Private Property	Each	\$ 12,000					331	\$ 3,972,000					52	\$ 624,000		
Vacuum Sewer - Private Property	Each	\$ 10,250							331	\$ 3,392,750						
STEP - Private Property	Each	\$ 16,400									331	\$ 6,173,150			52	\$ 969,800
STEG - Private Property	Each	\$ 7,800			331	\$ 3,326,550										
Subtotal				\$ 9,774,300		\$ 11,419,050		\$ 7,783,000		\$ 12,737,750		\$ 9,984,150		\$ 9,237,900		\$ 9,583,700
Mobilization and Demobilization	5.0%			\$ 488,715		\$ 570,953		\$ 389,150		\$ 636,888		\$ 499,208		\$ 461,895		\$ 479,185
Subtotal				\$ 10,263,015		\$ 11,990,003		\$ 8,172,150		\$ 13,374,638		\$ 10,483,358		\$ 9,699,795		\$ 10,062,885
Overhead and Profit	22.0%			\$ 2,257,900		\$ 2,637,800		\$ 1,797,900		\$ 2,942,400		\$ 2,306,300		\$ 2,134,000		\$ 2,213,800
Subtotal				\$ 12,520,915		\$ 14,627,803		\$ 9,970,050		\$ 16,317,038		\$ 12,789,658		\$ 11,833,795		\$ 12,276,685
Contingency - "High"	25.0%			\$ 3,130,200		\$ 3,657,000		\$ 2,492,500		\$ 4,079,300		\$ 3,197,400		\$ 2,958,400		\$ 3,069,200
Construction Total				\$ 15,651,115		\$ 18,284,803		\$ 12,462,550		\$ 20,396,338		\$ 15,987,058		\$ 14,792,195		\$ 15,345,885
Town Administration and Engineering																
Town Administration	5.0%			\$ 2,032,600		\$ 2,164,200		\$ 873,100		\$ 2,269,800		\$ 1,049,400		\$ 1,489,600		\$ 1,517,300
Engineering - Planning/Consultation	5.0%			\$ 782,600		\$ 914,200		\$ 623,100		\$ 1,019,800		\$ 799,400		\$ 739,600		\$ 767,300
Engineering - Design	10.0%			\$ 1,565,100		\$ 1,828,500		\$ 1,246,300		\$ 2,039,600		\$ 1,598,700		\$ 1,479,200		\$ 1,534,600
Engineering - Construction	15.0%			\$ 2,347,700		\$ 2,742,700		\$ 1,869,400		\$ 3,059,500		\$ 2,398,100		\$ 2,218,800		\$ 2,301,900
Total Estimated Project Cost				\$ 22,379,115		\$ 25,934,403		\$ 17,074,450		\$ 28,785,038		\$ 21,832,658		\$ 20,719,395		\$ 21,466,985
Annual Operation and Maintenance Cost																
Operations	Hrs.	\$ 65	3,380	\$ 219,700	3,380	\$ 219,700	2,340	\$ 152,100	3,380	\$ 219,700	2,340	\$ 152,100	2,860	\$ 185,900	2,860	\$ 185,900
Utilities, Chemicals, etc.	Ea.	\$ 40,000	5	\$ 200,000	5	\$ 200,000	1	\$ 40,000	5	\$ 200,000	1	\$ 40,000	3	\$ 120,000	3	\$ 120,000
Clean and TV - GS	L.F.	\$ 5	7,375	\$ 36,875	7,375	\$ 36,875	-	\$ -	-	\$ -	-	\$ -	7,375	\$ 36,875	7,375	\$ 36,875
Clean and TV - Pressure Pipes	L.F.	\$ 2	10,000	\$ 20,000	17,500	\$ 35,000	31,800	\$ 63,600	44,500	\$ 89,000	31,800	\$ 63,600	9,700	\$ 19,400	9,700	\$ 19,400
Private Property - Pumps/Valves	Ea.	\$ 125	-	\$ -	-	\$ -	331	\$ 41,375	331	\$ 41,375	331	\$ 41,375	52	\$ 6,500	52	\$ 6,500
On-Site System Pump Out	Ea.	\$ 133	-	\$ -	331	\$ 44,133	-	\$ -	-	\$ -	331	\$ 44,133	-	\$ -	52	\$ 6,933
Annual Replacement Costs																
Allowance - Pump Stations	Ea.	\$ 33,367	5	\$ 166,835	5	\$ 166,835	1	\$ 33,367	5	\$ 166,835	1	\$ 33,367	3	\$ 100,101	3	\$ 100,101
Private Property - Pumps/Valves	Ea.	\$ 2,500	-	\$ -	-	\$ -	17	\$ 41,375	17	\$ 41,375	17	\$ 41,375	3	\$ 6,500	3	\$ 6,500
Annual Monitoring Costs																
Allowance - Pump Stations	Ea.	\$ 2,500	5	\$ 12,500	5	\$ 12,500	1	\$ 2,500	5	\$ 12,500	1	\$ 2,500	3	\$ 7,500	3	\$ 7,500
Private Property - Pumps/Valves	Ea.	\$ 130	-	\$ -	-	\$ -	331	\$ 43,030	331	\$ 43,030	331	\$ 43,030	52	\$ 6,760	52	\$ 6,760
Total Estimated Annual Cost				\$ 655,910		\$ 715,043		\$ 417,347		\$ 813,815		\$ 461,480		\$ 489,536		\$ 496,469
Estimated Present Value				\$ 32,137,000		\$ 36,572,000		\$ 23,283,000		\$ 40,893,000		\$ 28,699,000		\$ 28,002,000		\$ 28,853,000
Rate:		3.0%														
No. of Periods:		20												Difference		\$ (851,000)

Land Purchase per Acre	\$ 250,000
On-Site System Pump Out Number of Years	3
Cost Per Pump Out	\$ 400
Cost per Year	\$ 133
Annual Monitoring Costs Number per Hours	2
Cost per Hour	\$ 65
Cost per Year	\$ 130