

Lift Station Operation, Maintenance Replacement Cost Estimate

Summit Valley and Bellatona Additions						
The Engineering Report provided by the developer will include sufficient information to allow the City of Norman to calculate the approximate cost to operate, maintain and replace capital equipment for the life of the proposed lift station. This information shall include the following at a minimum:						
Proposed Lift Station Sewer Service Area including expected number and type of residential units as well as the number of acres of other zoning classifications such as commercial, institutional, industrial, etc. If applicable, a phasing plan shall be submitted. Calculate estimated population equivalent to be served by the lift station (include total population and breakout by phases, if applicable). Estimated average daily wastewater flow (ADF) in gallons per day (GPD) and peak hourly flow in GPD utilizing generally accepted standards for per capita ADF or other data acceptable to the City of Norman.						
	Summit Valley	Belatona	Summit Valley Commercial	Belatona Commercial	Commercial	
	<u>Lots</u>	<u>Lots</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Total</u>
	389	692	2.21	12.38	0	
Population Equivalent Per Category	2.55	2.55	5	5	5	
Estimated Population	992	1,765	11	62	-	2,830
Estimated average daily wastewater flow (ADF) in gallons per day	124,000	220,625	1,375	7,750	-	353,750
Estimated peak hourly flow in GPD	496,000	882,500	5,500	31,000	-	1,415,000
Peaking Factor	4.0					
Drawings showing the location of the proposed lift station, force main and access roadways. Include sufficient data to allow the pump static head to be determined).						
approximate cost to operate, maintain and replace capital equipment for the life of the proposed lift station. This information shall include the following at a minimum:						
HP = ((GPM) x (TDH)) / ((3960) x (0.50)) where pump efficiency is assumed to be 50% (unless otherwise approved). Check if pump of estimated GPM and TDH is available; adjust HP as required.						
	<u>GPM</u>	<u>TDH</u>	<u>Efficiency</u>	<u>HP</u>		
	775	70	60%	22.83		
Estimate average annual electrical cost						
1. Pump time (hours per day) = ((ADF in GPD) x 24) / (1440 x (Pump Capacity in GPM))						
	<u>ADF</u>	<u>Pumping Capacity</u>	<u>Pumping Hours/day</u>			
	353,750	775	7.61			
2. kilowatt-hours (kWh) = (HP) x 0.746 x (pump time in hours per day) x 365						
	<u>HP</u>	<u>Pumping Hours/Day</u>	<u>Kwh Per Day</u>	<u>Kwh Per Year</u>		
	22.83	7.61	129.58	47,296		
3. Annual Electrical Cost = kWh per year x \$0.08 kWh						
	<u>Kwh Per Year</u>	<u>Cost per Kwh</u>	<u>Cost per Year</u>			
	47,296	0.08	\$3,783.72			
Estimate annual lift station and force main OM&R cost. Provide approximate cost for lift station and appurtenances. Include wetwell, pumps, discharge piping and valves, electrical controls, flow metering, force main quick-connect coupling, valve vault, fittings and valves, fencing, all weather access road, force main, air release valves and vaults, etc. Assume annual replacement cost is 5% of original construction cost.						
Annual OM&R Cost = 0.05 x Capital Cost						
	<u>Lift Station Cost</u>	<u>12" Force Main Length</u>	<u>Force Main Per Foot</u>	<u>Force Main Cost</u>	<u>Total Cost</u>	<u>Annual Cost</u>
	\$238,909.00	2,363	\$25.26	\$59,683.50	\$298,592.50	\$14,929.63
Note: Actual costs from 03/28/04 bid inserted						
Calculate Total Monthly OM&R Cost: Monthly OM&R Cost = (Annual Electrical Cost + Annual OM&R Cost) / 12						
	<u>Electrical Cost</u>	<u>OM&R Cost</u>	<u>Total Annual Cost</u>	<u>Total Monthly Cost</u>		
	\$3,783.72	\$14,929.63	\$18,713.34	\$1,559.45		
Calculate Lift Station Fee: The fee will be calculated on a residential lot basis as well as a per capita basis to accommodate other zoning classifications such as commercial, institutional, industrial, etc.						
Monthly Per Capita Fee = ((Monthly OM&R Cost) x Per Capita ADF) / ((ADF) x 30.417 days per month))						
Monthly Residential Fee = where the number of persons per household is the same as was assumed in the Engineering Report.						
	<u>Total Annual Monthly Cost</u>	<u>Monthly Cost Per Person</u>	<u>Monthly Cost Per Household</u>			
	\$1,559.45	\$0.551	\$1.405	as of 9/15/2005		
		\$0.697	\$1.778	as of 6/30/2018		