

Lift Station Operation, Maintenance Replacement Cost Estimate

East Ridge Lift Station also serving Stone Lake Addition							
<p>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:</p> <p>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 full buildout 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.</p>							
	Eastridge	Eastridge	Sienna Springs	Stone Lake	Eastridge Residential	Eastridge Commercial	
	<u>Lots</u>	<u>Duplex</u>	<u>Lots</u>	<u>Lots</u>	<u>Acres</u>	<u>Acres</u>	<u>Total</u>
	441	90	0	48	27.6	2.21	
Population Equivalent Per Category	2.58	2.58	2.58	2.58	9.29	5	
Estimated Population	1,138	232	-	124	256	11	1,761
Estimated average daily wastewater flow (ADF) in gallons per day	142,223	29,025	-	15,480	32,051	1,381	220,159
Estimated peak hourly flow in GPD	568,890	116,100	-	61,920	128,202	5,525	880,637
Peaking Factor	4.0						
<p>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).</p>							
<p>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:</p> <p>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.</p>							
	<u>GPM</u>	<u>TDH</u>	<u>Efficiency</u>	<u>HP</u>			
	400	45	60%	7.58			
<p>Estimate average annual electrical cost</p> <p>1. Pump time (hours per day) = ((ADF in GPD) x 24) / (1440 x (Pump Capacity in GPM))</p>							
	<u>ADF</u>	<u>Pumping Capacity</u>	<u>Pumping Hours/day</u>				
	220,159	400	9.17				
<p>2. kilowatt-hours (kWh) = (HP) x 0.746 x (pump time in hours per day) x 365</p>							
	<u>HP</u>	<u>Pumping Hours/Day</u>	<u>Kwh Per Day</u>	<u>Kwh Per Year</u>			
	7.58	9.17	51.84	18,923			
<p>3. Annual Electrical Cost = kWh per year x \$0.08 kWh</p>							
	<u>Kwh Per Year</u>	<u>Cost per Kwh</u>	<u>Cost per Year</u>				
	18,923	0.1	\$1,892				
<p>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.</p> <p>Annual OM&R Cost = 0.05 x Capital Cost</p>							
	<u>Lift Station Cost</u>	<u>8" Force Main Length</u>	<u>Force Main Per Foot</u>	<u>Force Main Cost</u>		<u>Total Cost</u>	<u>Annual Cost</u>
	\$330,000	850	\$40	\$34,000		\$364,000	\$18,200
<p>Note: Actual costs from 03/28/04 bid inserted</p>							
<p>Calculate Total Monthly OM&R Cost: Monthly OM&R Cost = (Annual Electrical Cost + Annual OM&R Cost) / 12</p>							
	<u>Electrical Cost</u>	<u>OM&R Cost</u>	<u>Total Annual Cost</u>	<u>Total Monthly Cost</u>			
	\$1,892	\$18,200	\$20,092	\$1,674			
<p>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.</p> <p>Monthly Per Capita Fee = ((Monthly OM&R Cost) x Per Capita ADF) / ((ADF) x 30.417 days per month))</p> <p>Monthly Residential Fee = where the number of persons per household is the same as was assumed in the Engineering Report.</p>							
	<u>Total Annual Monthly Cost</u>	<u>Monthly Cost Per Person</u>	<u>Monthly Cost Per Household</u>				
	\$1,674	\$0.951	\$2.453				