City of Port St. Lucie Utility Systems Department
PUMP STATION DESIGN GUIDELINES

1. 1 ERC (Equivalent Residential Connection) = 250 gallons per day of water use. Can assume 85% returns to sewer or 212.5 gal/day.
2. Assume flows based on historical data or City Code Section 61.11 ERC Factors.
3. Average Daily Flow (ADF) = Total flow divided by 24 hours divided by 60 minutes = ADF in gallons per minute. *PSLUSD may require less than 24 hours for special operations with much less than 24-hour operations*.
4. Peak Hourly Flow (PHF) – ADF times the peaking factor per the Recommended Standards for Wastewater Works (10 States Standards).
5. Full pump (and motor) submergence is always required.
6. Minimum operating range (between Pumps Off and Lead Pump On) volume to be 2.5 x Q, where Q is the highest anticipated pumping rate.
7. Buoyancy calculations shall be required to show that downward forces are greater than upward forces assuming water level at the rim and shall use no soil weight or soil friction.
8. "C" factor of 120 shall be used for head loss calculations.
9. Calculations for current force main tie-in pressure and future force main tie-in pressures according to the PSLUSD Master Plan.
10. Pump duty point flow rates should be in the manufacturer's preferred operating range, for example, between 75% and 115% of the flow rate at the best Efficiency Point.
11. Pump starts should be between 2 and 10 starts per hour for ADF and PHF. Show run time calculations.
12. Impeller selection should allow for at least one larger and one smaller impeller available.
13. Include the manufacturers pump curve with duty points shown. System curve to be plotted on this curve.
14. Minimum float spacing 6 inches on solids handling stations, 4 inches on grinder stations.
15. Telemetry communication by fiber optic cable unless written approval for radio or cell phone.
16. 3-Phase power required. FPL must confirm availability.
17. Force main velocities should be between 2 feet per second and 5 feet per second.
18. Maintenance access for 10' X45' vacuum truck within 10' of center of the wet well.

This document has been approved by the Utility Systems Director to be considered a supplement to the 2019 City of Port St Lucie Utility Standards Manual.

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