

B2.6 STANDARD PUMP CALCULATIONS with Suction Head

[Return to MAIN Menu](#)

PUMP NAME: Booster Pump Plant #2

Note - Take BLUE readings during a PEAK demand period.
Take RED readings during a LOW demand period.

Date of Data Collection: 3/15/2004

COLOR KEY
PUMP RUNNING (Dynamic)
PUMP OFF (Static)
COMMON Quantities

Normal Meter Flow Rate: 800.0 gpm

Discharge Gauge
 Pump Off PSI: 120.0
 Pump Running PSI: 136.0
 Static Elevation Head: 277.2

13.4 Dynamic Suction Head Loss (ft.)

34.7 Static Suction Head (ft.)

21.3 Dynamic Suction Head (ft.)

Pump Design RPM: 3,600
Pump Specific Speed: 1,445
Developed Pump System Cost: 400,000 \$
Capital Cost per gpm: 500.00 \$
Pump Sys. is Amortized Over: 20 years
Annual Interest Rate: 6.00 %
Annual Power Inflation Rate: 1.50 %
Utility Power Rate # : 6
Energy Cost per Kilowatt Hour: 0.06 \$/KW-hr
Power Demand Charge / KW: 7.67 \$/KW/mo.
Annual (1,000) Gallons Pumped: 240,000 gals.
Pump 20 Year Life Cycle Costs: 1,513,363 \$

Suction Gauge
 Pump Off PSI: 15.0
 Pump Running PSI: 10.0
 Static Suction Head (ft): 34.7

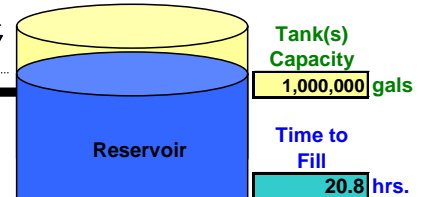
Water Horse Power: 59 HP
est. Pump Horse Power: 84 HP
Motor Rated Horsepower: 150 HP
Real Power: 155.9 KWatts
Wire to Water Efficiency: 48.71% Eff.
Estimated Motor Efficiency: 69.59% Eff.
Pump Efficiency from Curve: 70.00% Eff.
AC Circuit Type: 3 Phase

TOTAL DYNAMIC HEAD TDH (ft.)
291.1

Total Static Head (ft.)
242.6

Dynamic Discharge Head (ft.)
314.2

Dynamic Discharge Head Loss ft.
37.0



Est. Annual Duty Cycle: 57.08%
Annual 1,000 Gals: 240,000
Annual Energy in KW-hr: 450,000
Gallons per KW-hr: 533.33
Energy Cost / 1000 gallons: 0.11 \$
Annual Power Cost / GPM Capacity: 10.35 \$
Annual Energy Cost / Ac-Ft: 36.66 \$
Estimated Annual Energy Cost: 27,000 \$
Estimated Annual Power Demand Cost: 8,284 \$
Estimated Total Annual Electrical Cost: 35,284 \$
Estimated Total Electrical Cost/1000 gals.: 0.15 \$

Take the following readings when ONLY the Pump is running.
Pumping Amps: 100.0
Pumping Volts: 480.0
Apparent Power: 83.1 KVA

Take following readings from the Utility Meter with only the pump on.
Real Power Demand: 90.0 KW
Peak Horsepower: 120.7 HP
Calc. Power Factor: 1.08 pf