

IPET Volume VI

Pumping Station Performance

May 15, 2006





IPET Volume VI Pumping Station Performance

How did the floodwalls, levees, pumping stations and drainage canals, individually and acting as an integrated system perform in response to Hurricane Katrina and why?



Findings

- Pump stations were not designed for the conditions imposed by Katrina
- Few operated during Katrina due to abandonment or flooding
- 1/3rd of the stations sustained significant damage
- 33% of the pumps were rendered inoperative resulting in a 37% loss of capacity
- Expected % of pumps available as of 1 June '06:

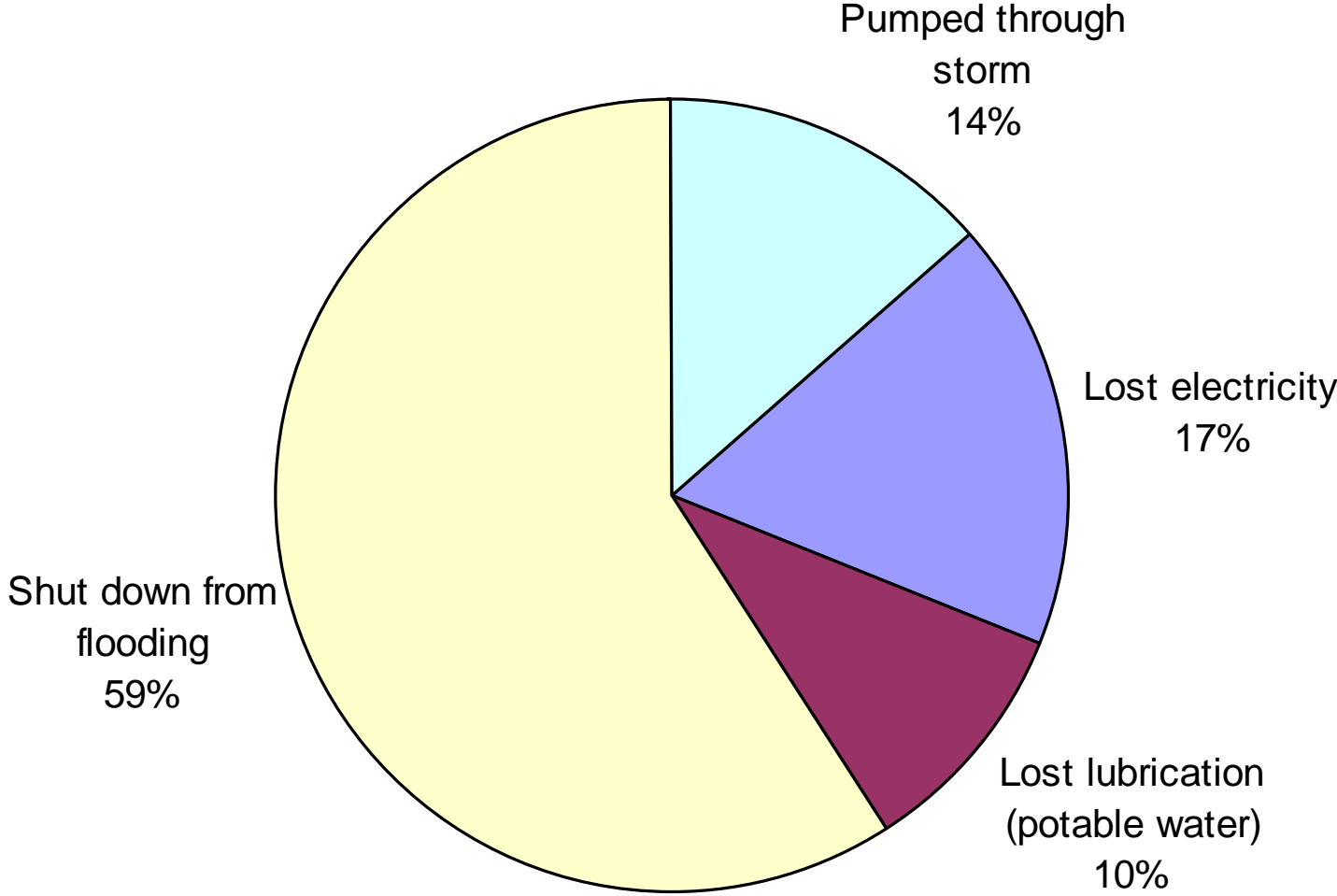
– Jefferson Parish	100%
– Orleans Parish	98%
– Plaquemines Parish	80%
– St. Bernard Parish	86%
- Improvements to stations are needed to keep them operational during future severe storms



Operation During Katrina

- All Jefferson Parish Stations were evacuated prior to Katrina
- Orleans Parish stations were manned and operated until flooded (see next slide)
- All but four Plaquemines Parish stations were evacuated during Katrina
- All St. Bernard stations were evacuated prior to Katrina

Orleans Parish Pump Circumstances During Hurricane Katrina (in cfs)



Pump Station Status

Parish	Number of pumps		Pump capacity (cfs)		
	Total	Out of Service	Before storm	After storm	Percent available after storm
Orleans	115	65	49,782	14,070	28%
St. Bernard	28	15	6,976	3,794	54%
Plaquemines	54	20	13,984	10,517	75%
Jefferson	101	0	44,661	44,661	100%

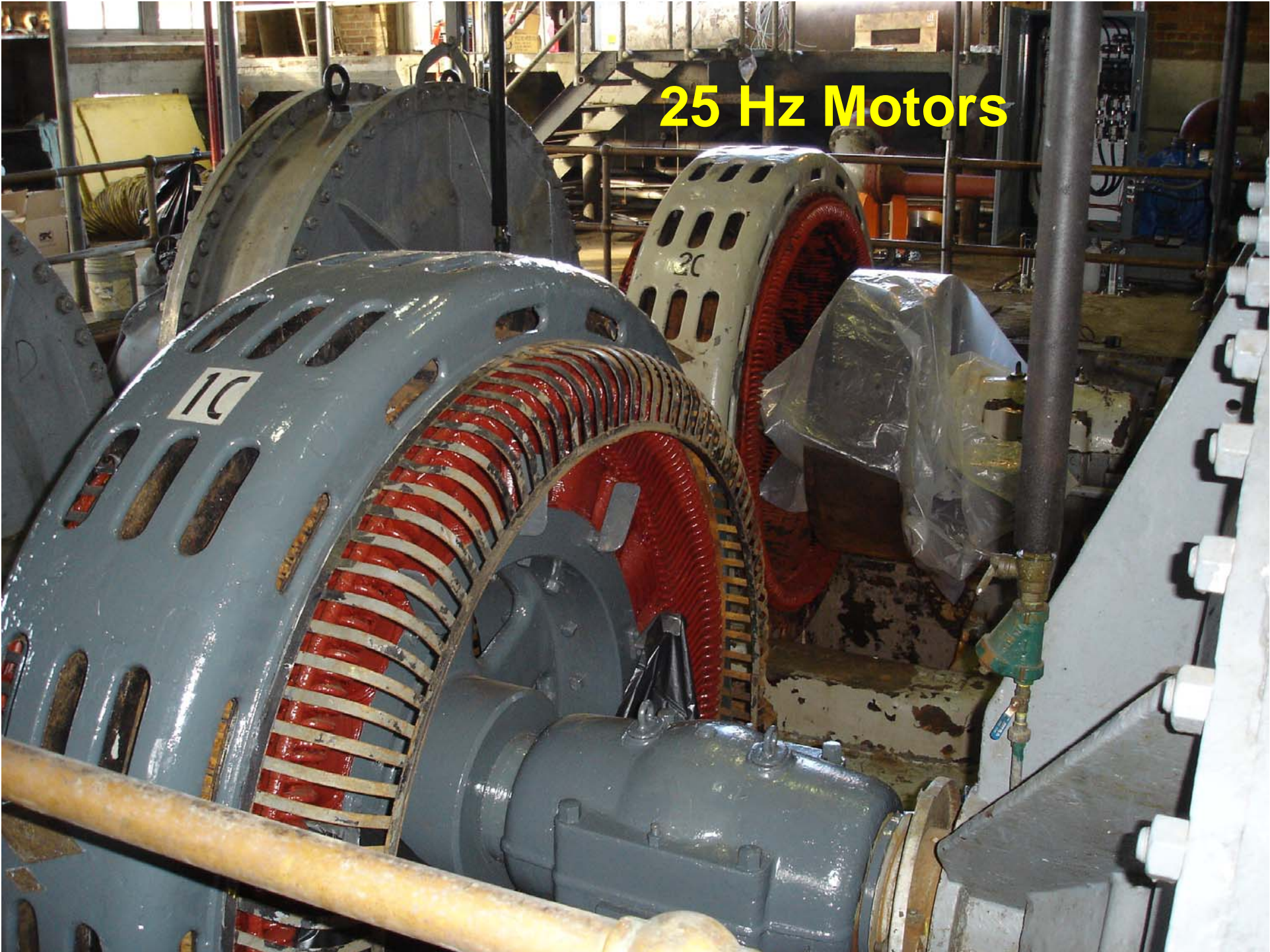
Percent of pumps out of service due to Katrina – 33%

Percent loss of pump capacity due to Katrina – 37%

Summary of Estimated Damages to Pumping Stations

Parish	Estimated cost of repairs
Orleans	\$39,000,000 (from damage survey report)
St. Bernard	\$10,688,000 (from project information report)
Plaquemines	\$8,177,000 (from project information report)
Jefferson	\$758,000 (from project information report)

25 Hz Motors



Horizontal Axis Pump



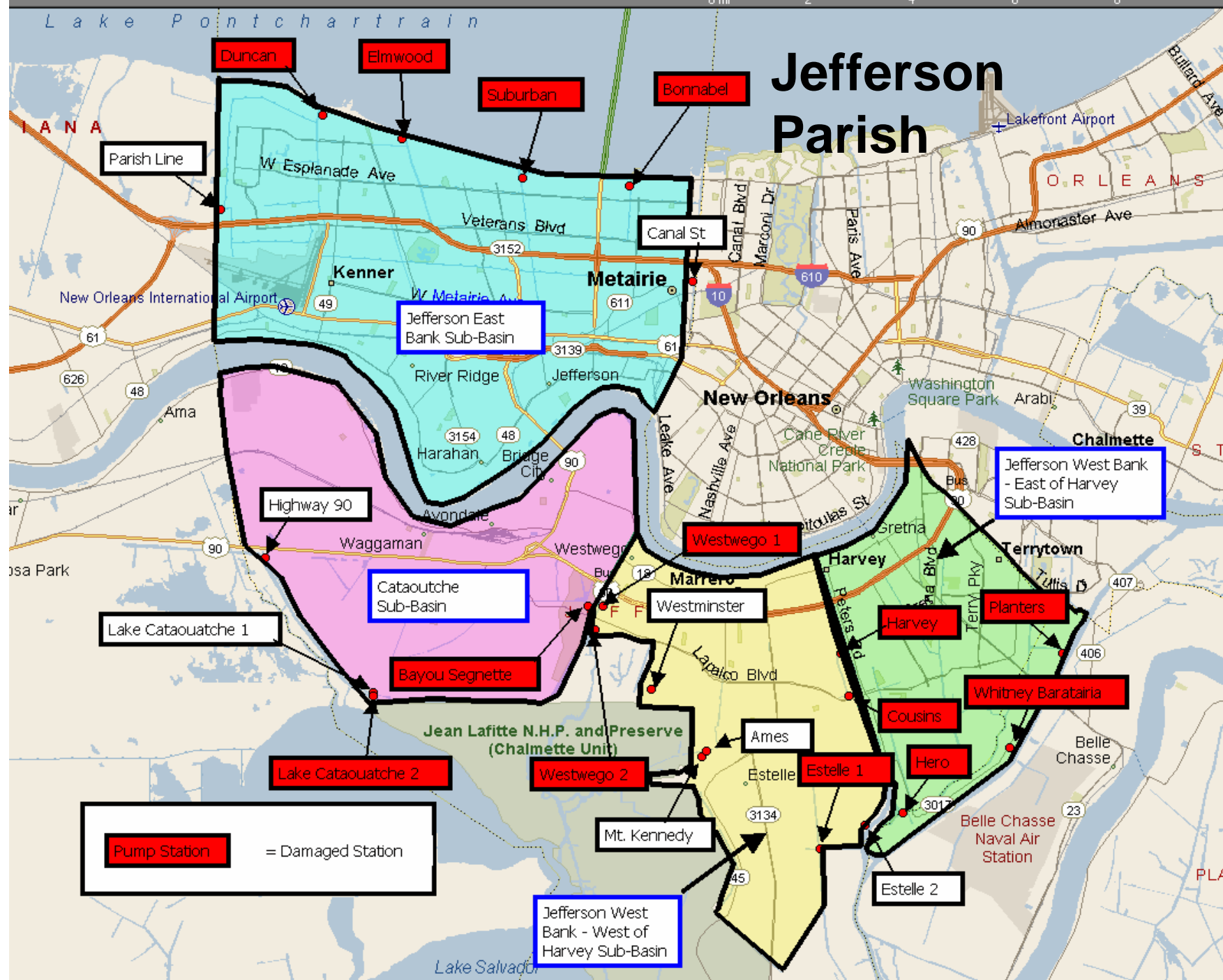


**Vertical Diesel Driven Pump with
Right-Angle Drive Speed Reducer**



Hydraulically Driven Submersible Pump

Jefferson Parish



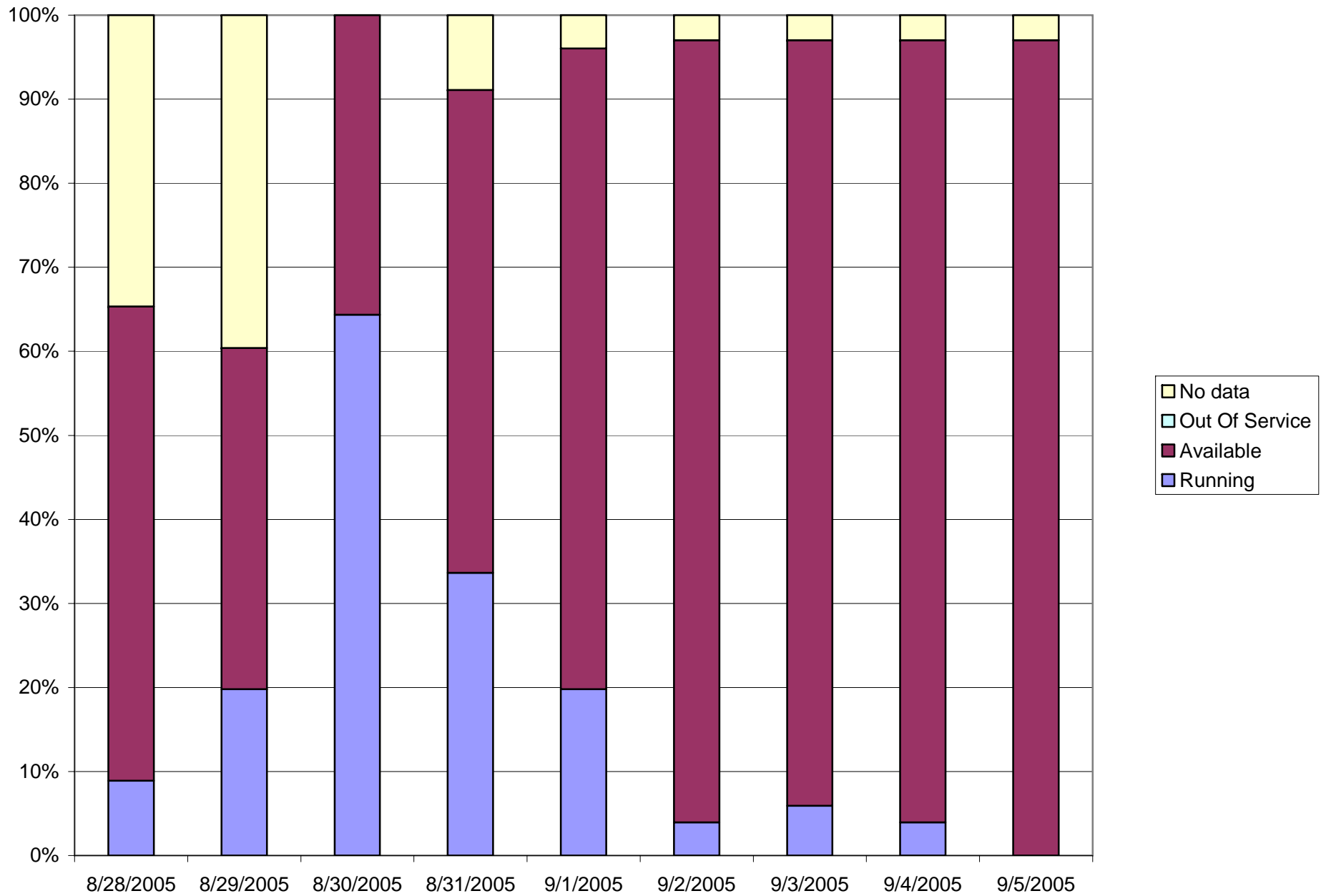
Pump Station = Damaged Station

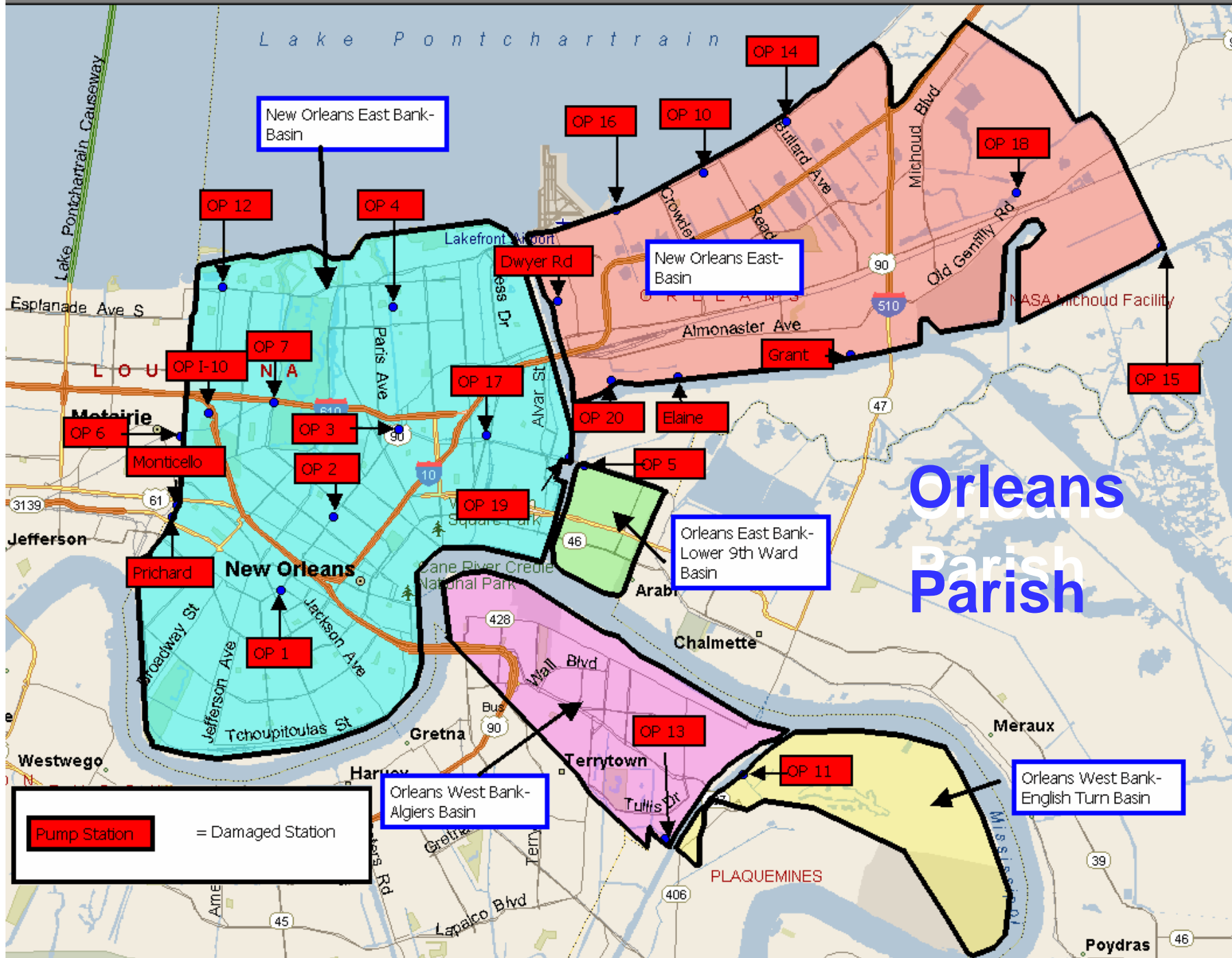
Jefferson West Bank - West of Harvey Sub-Basin

Jefferson West Bank - East of Harvey Sub-Basin

Jean Lafitte N.H.P. and Preserve (Chalmette Unit)

Jefferson Parish's 101 Pumps by Date

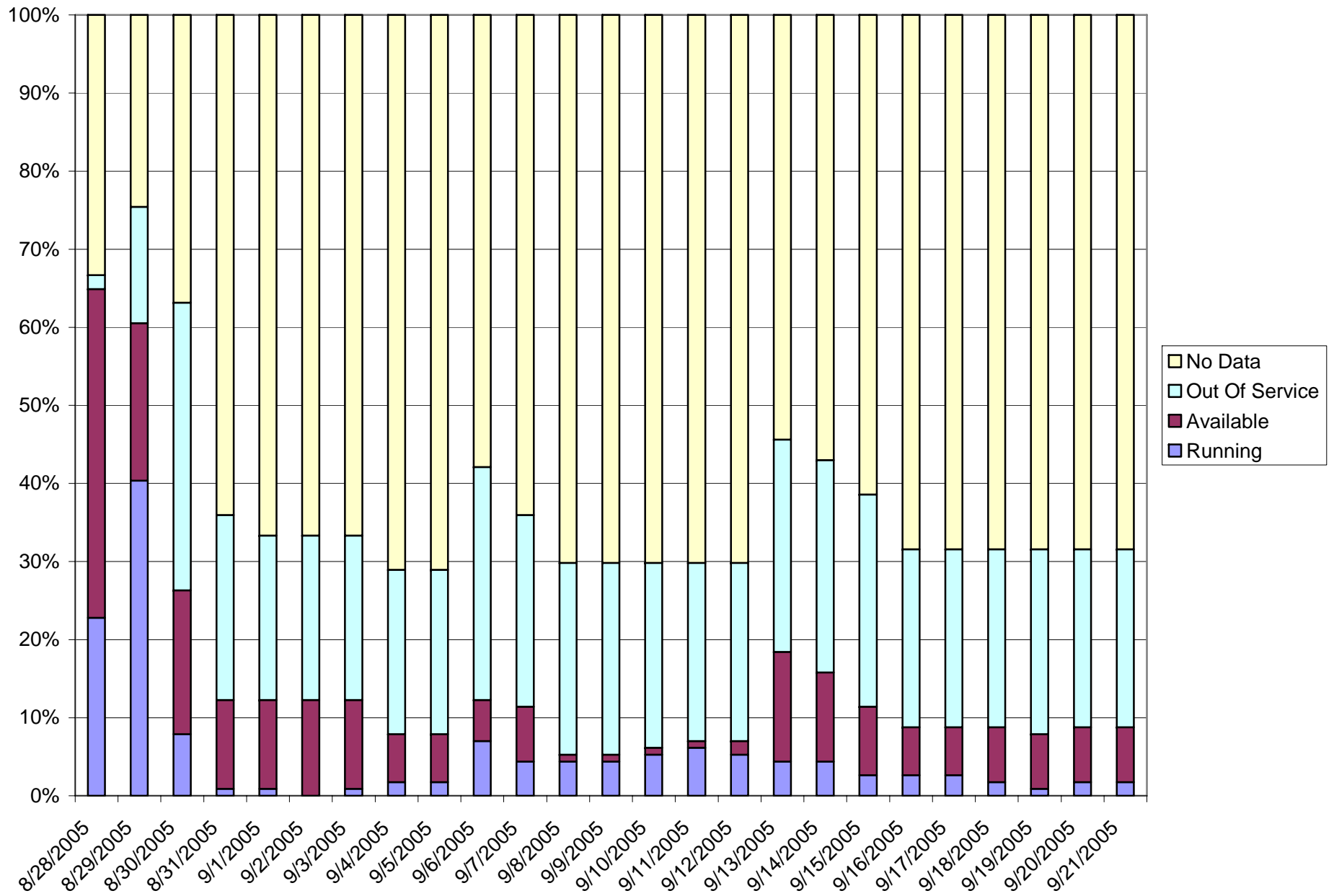


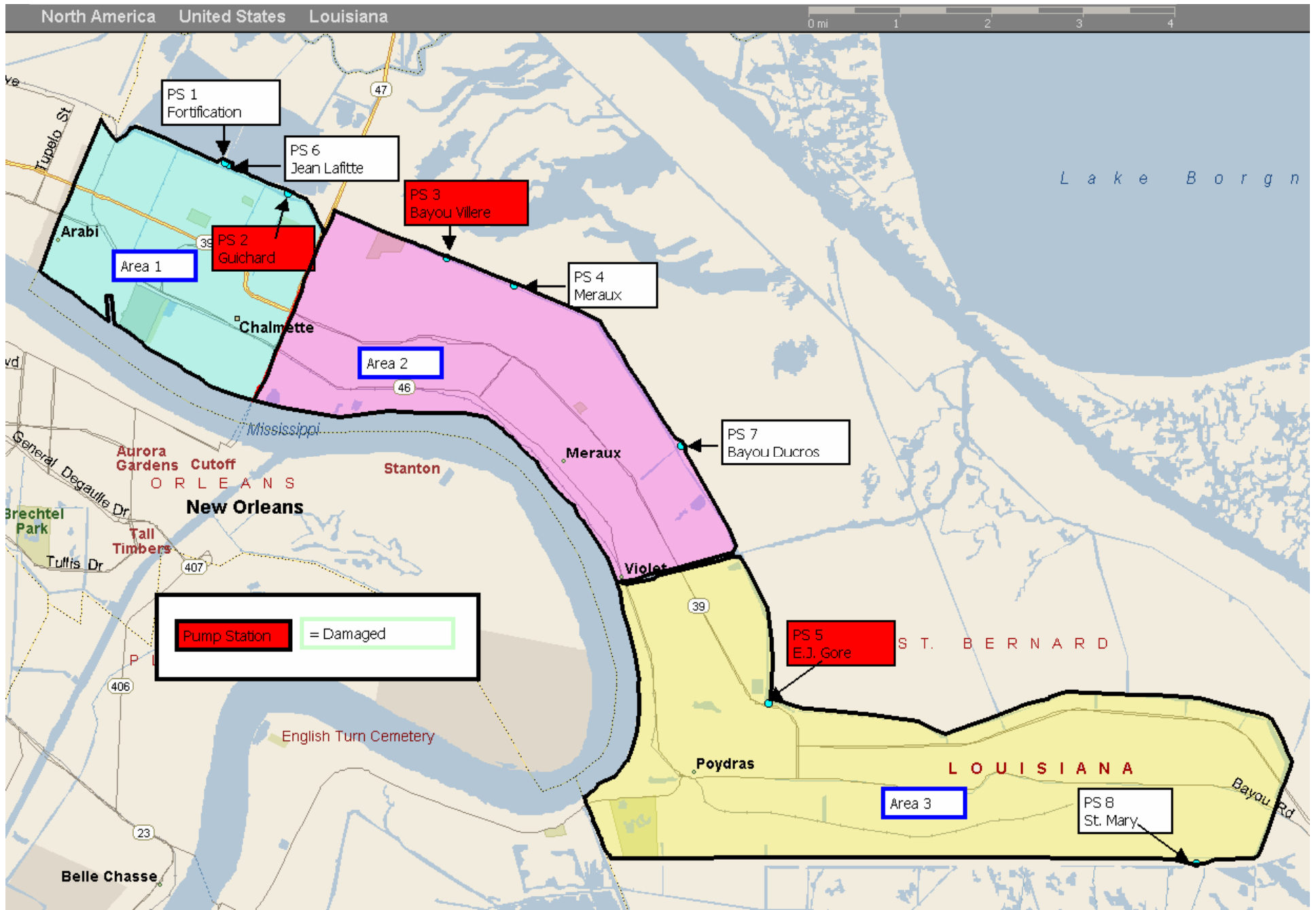


Pump Station = Damaged Station

Orleans Parish

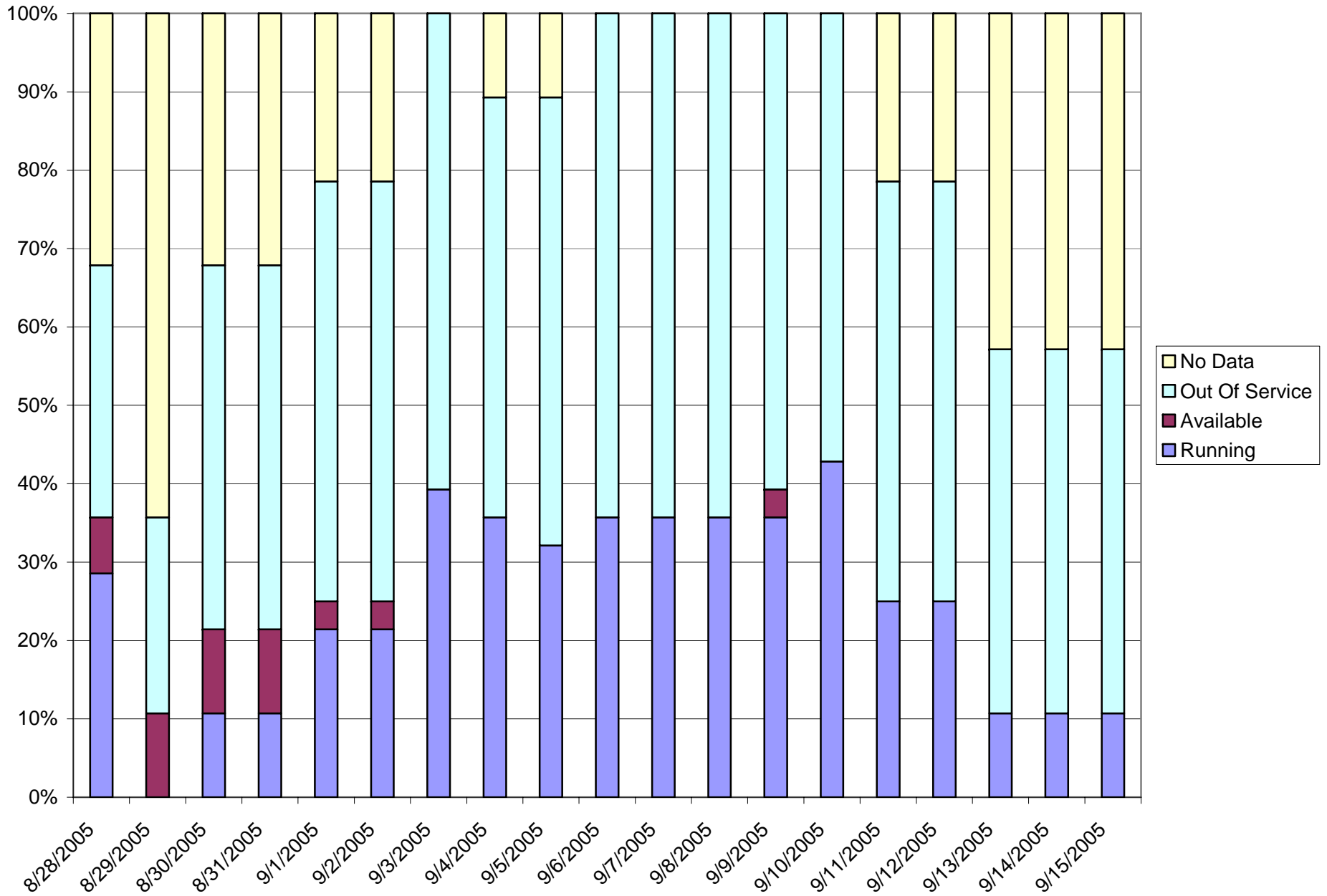
Orleans Parish's 114 Pumps by Date



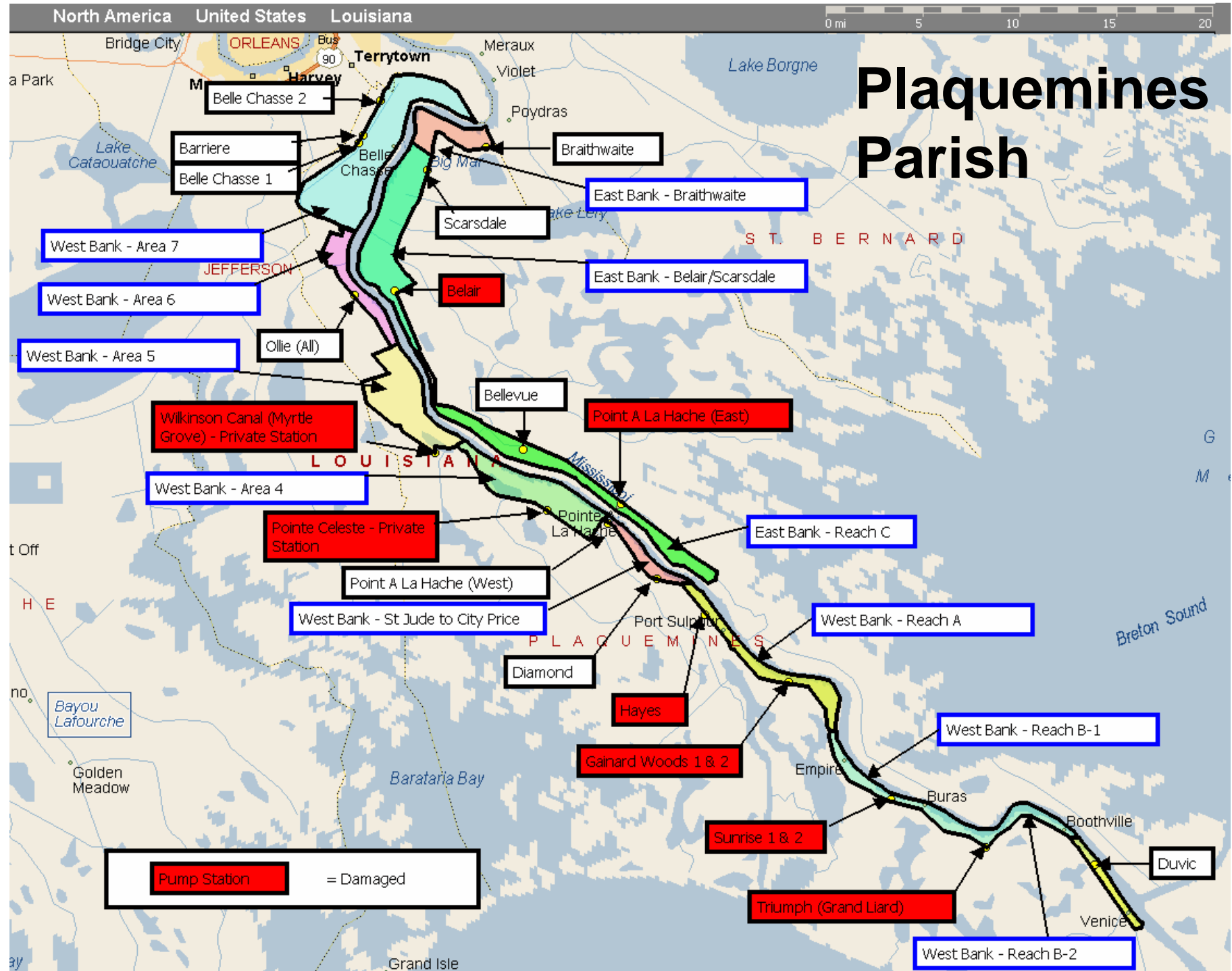


St. Bernard Pump Stations

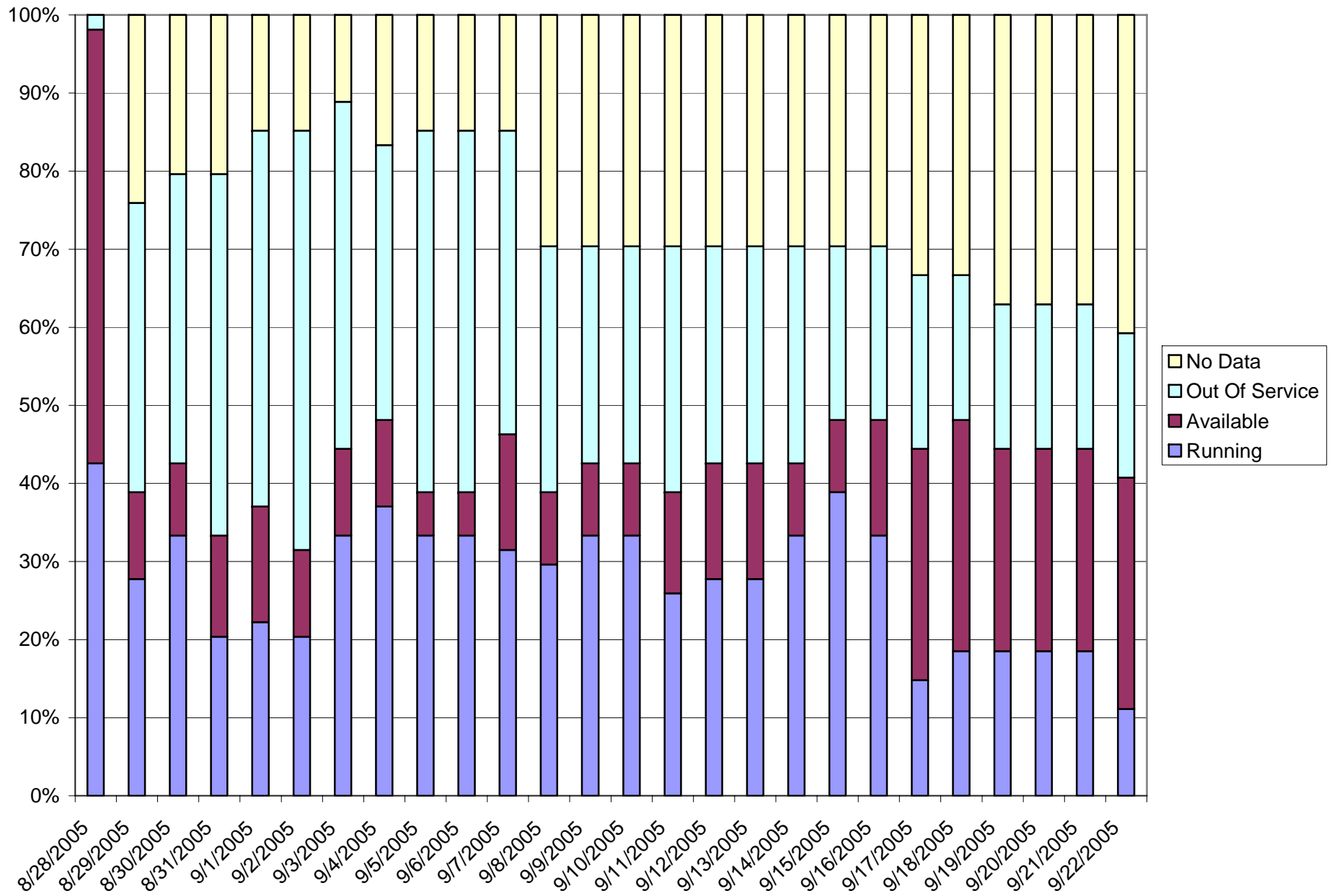
St Bernard's 28 Pumps by Date

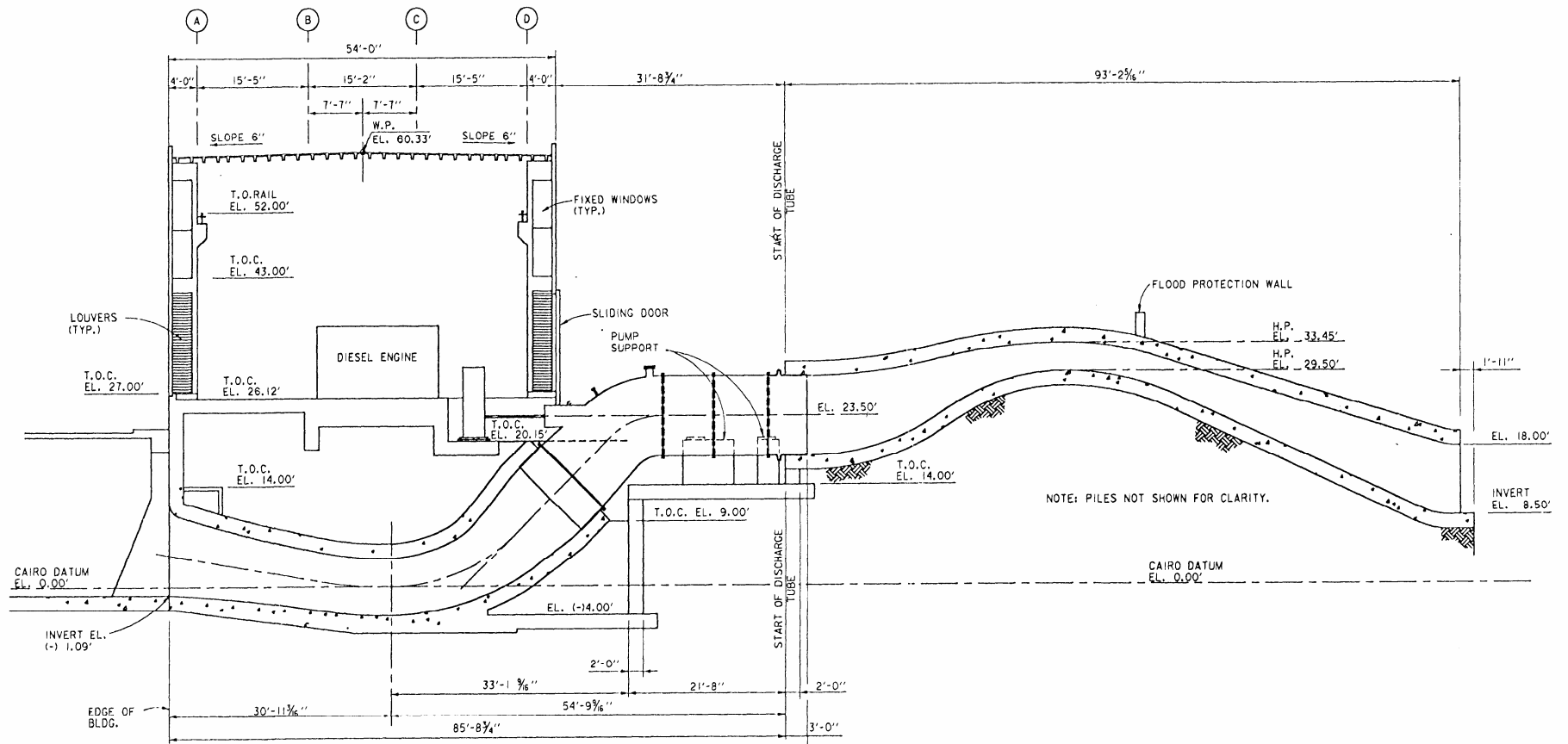


Plaquemines Parish

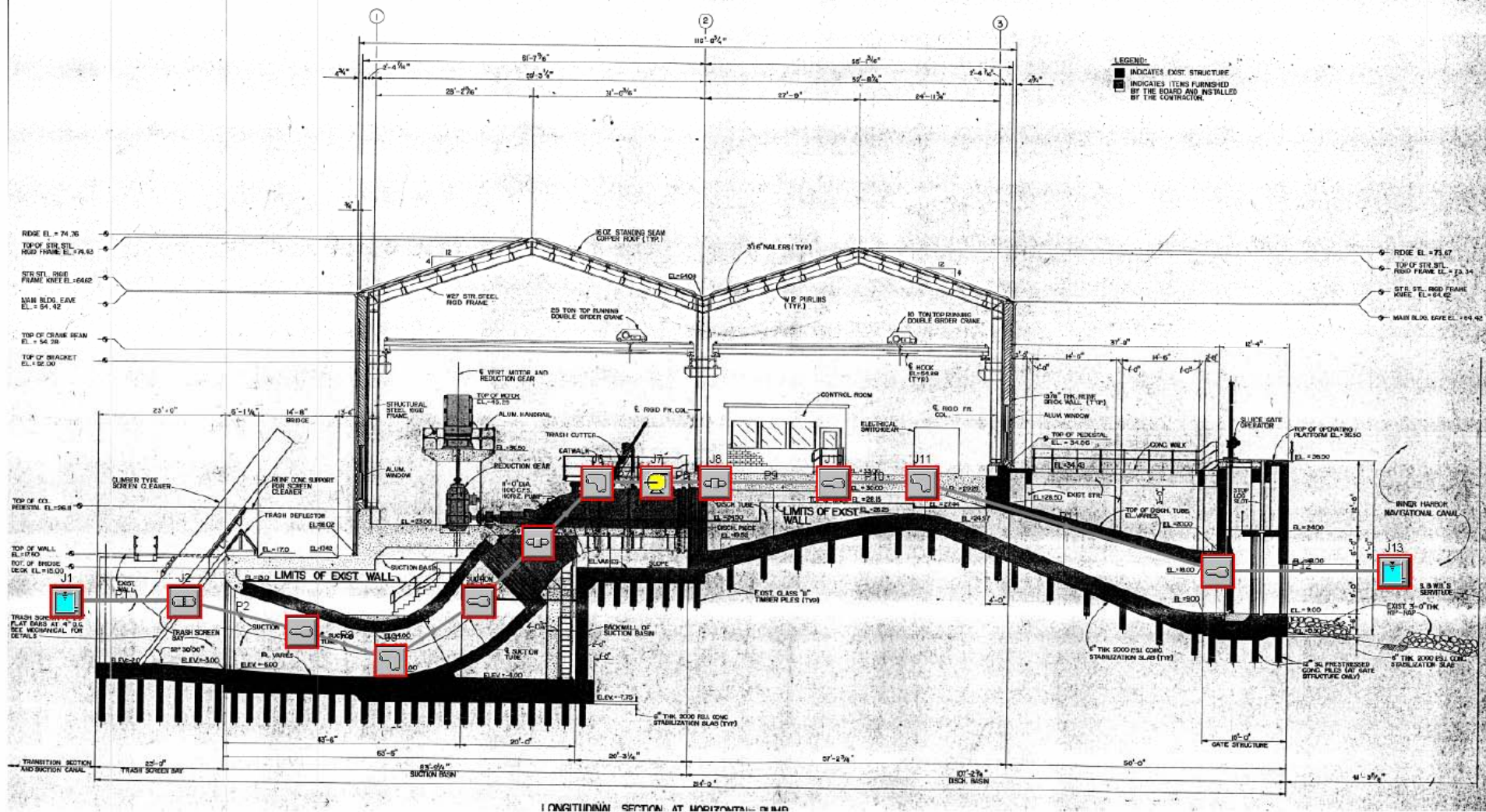


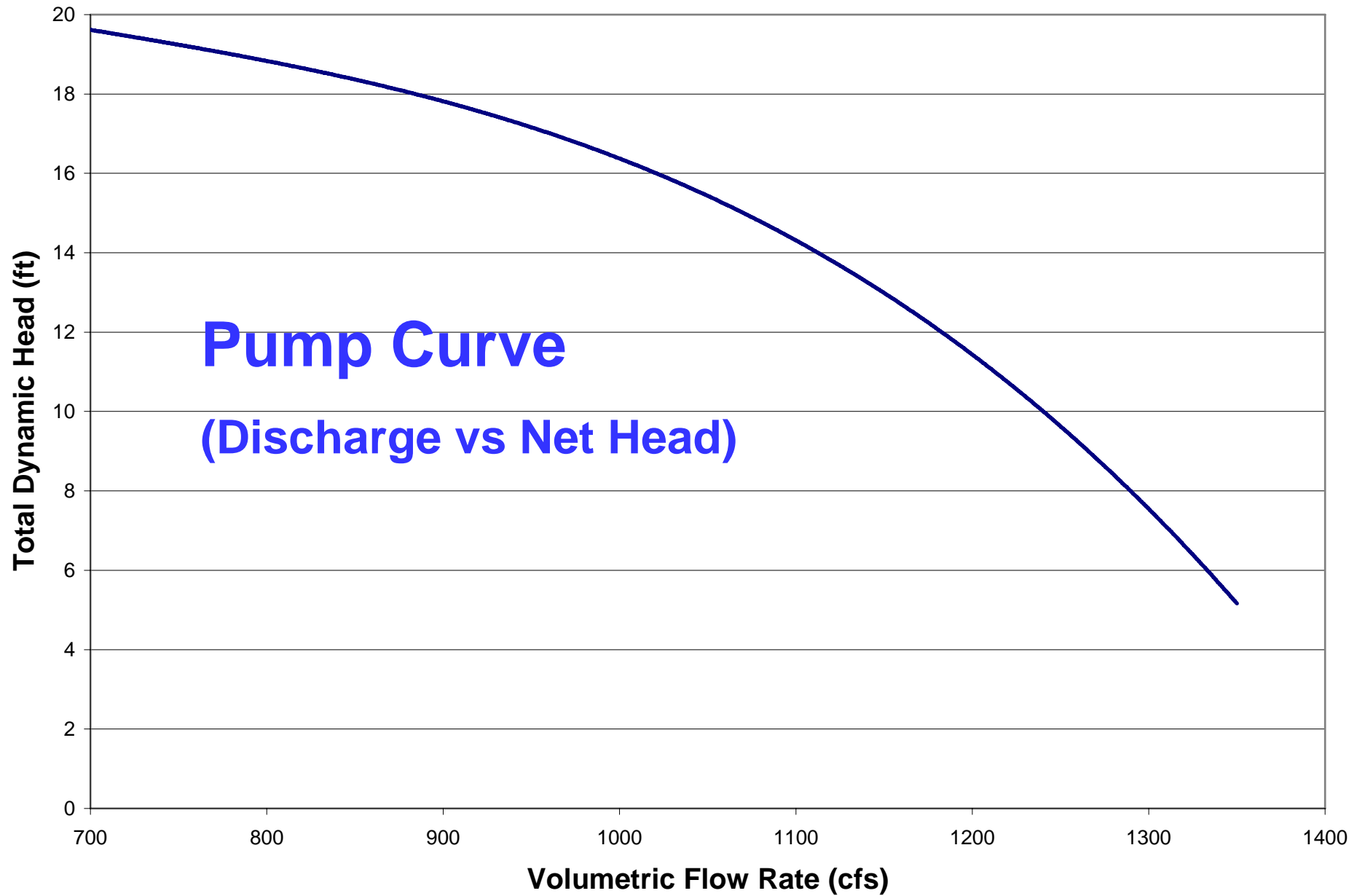
Plaquemines Parish's 54 Pumps by Date

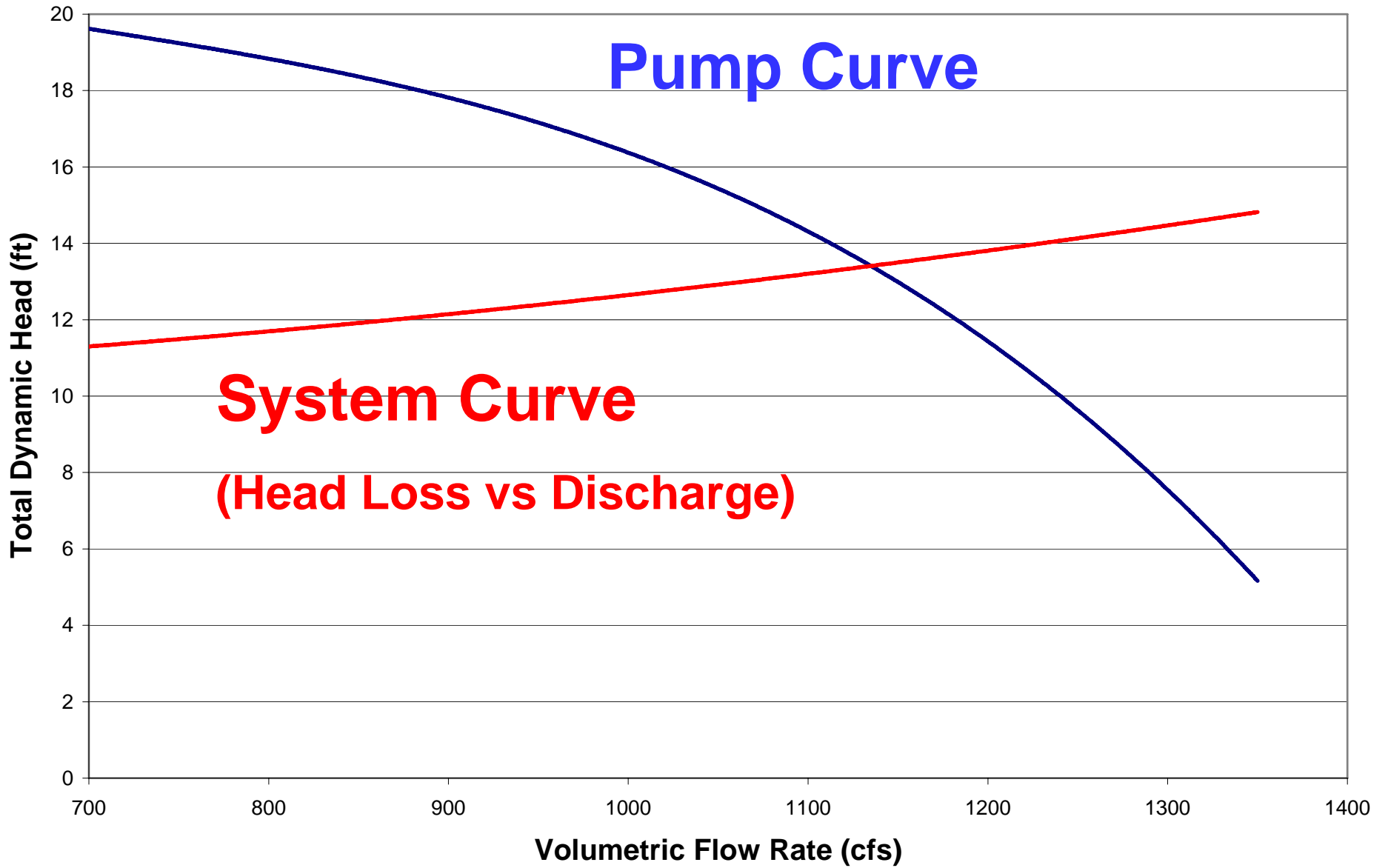


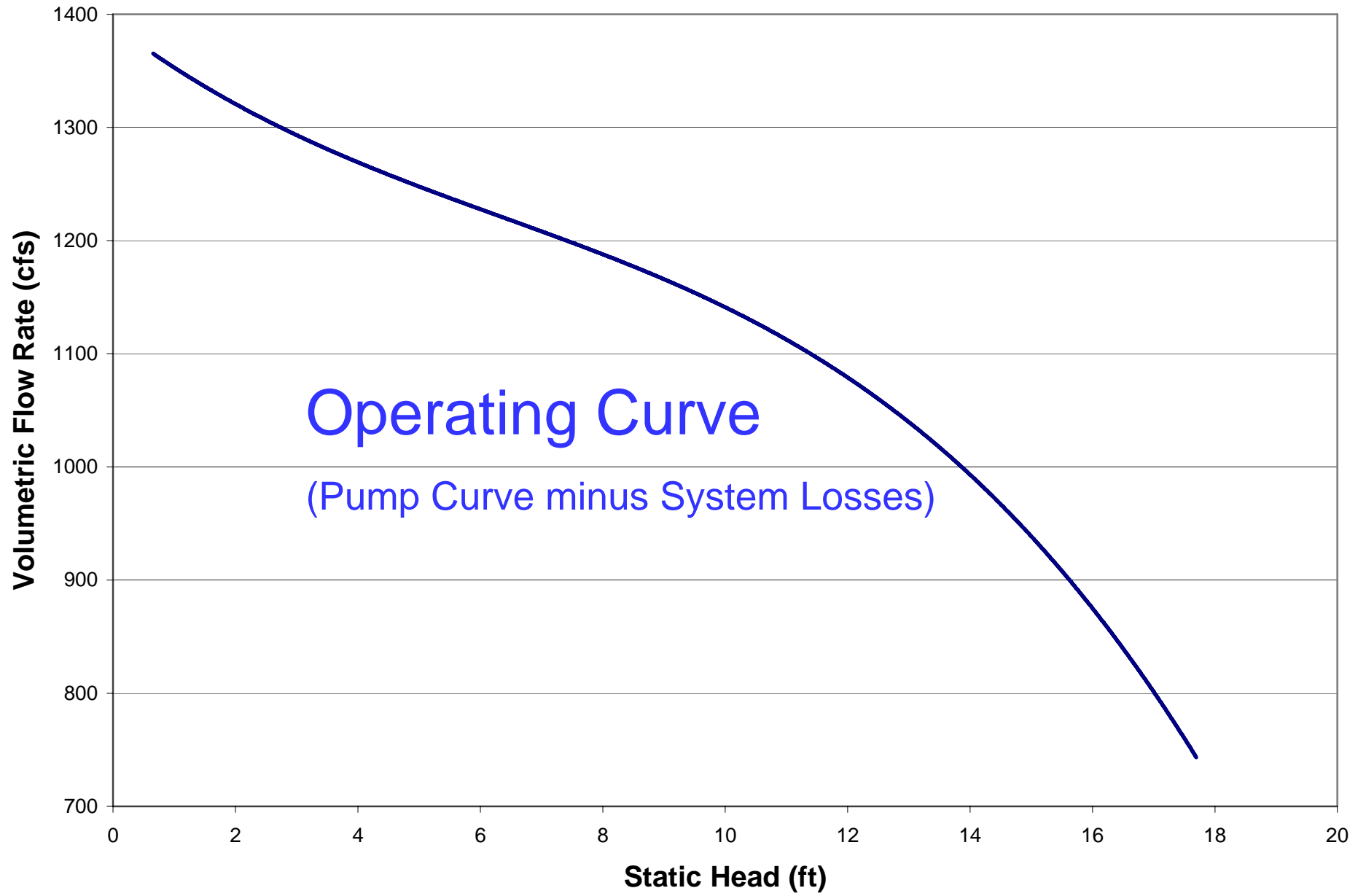


Typical AFT Fathom Model Setup



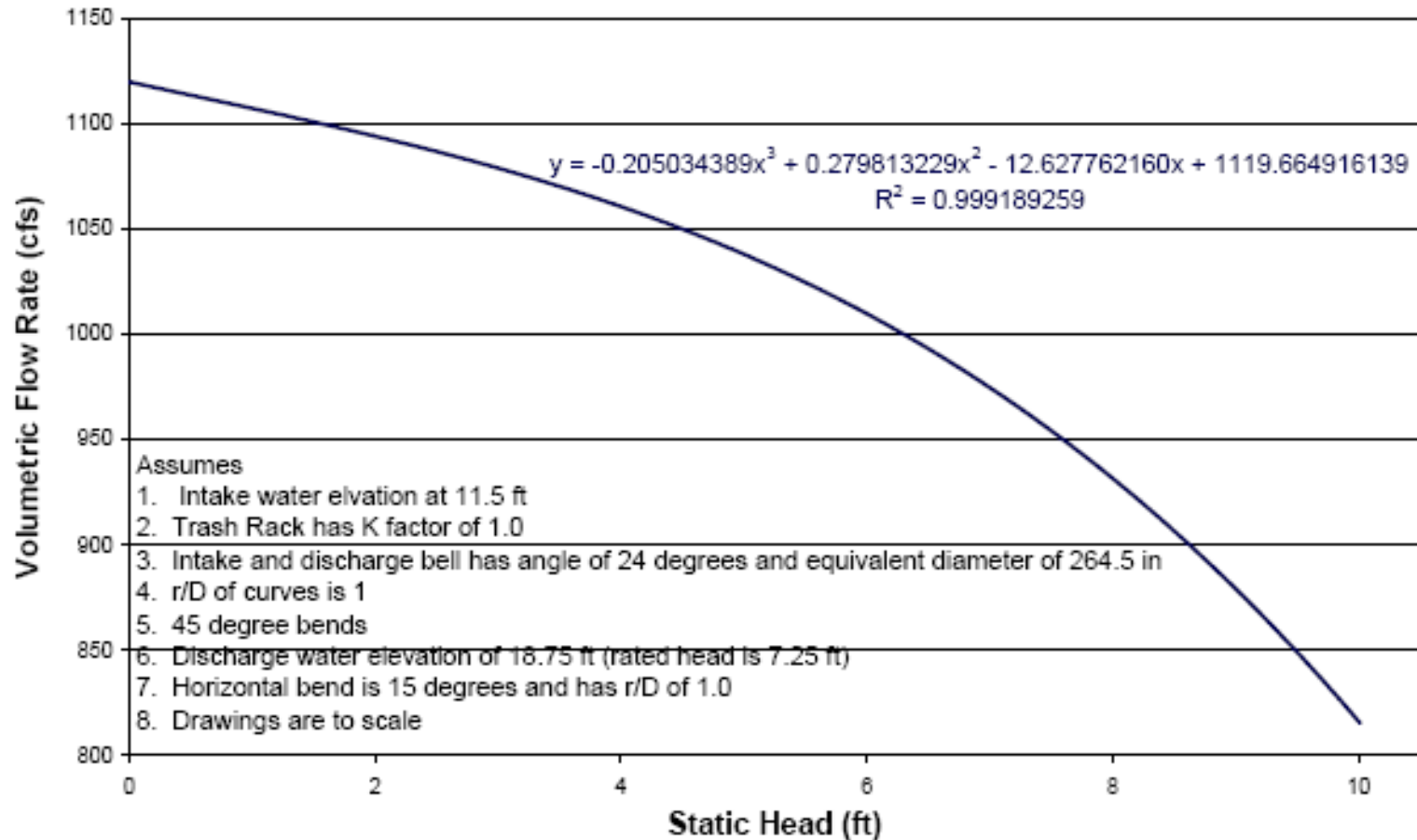


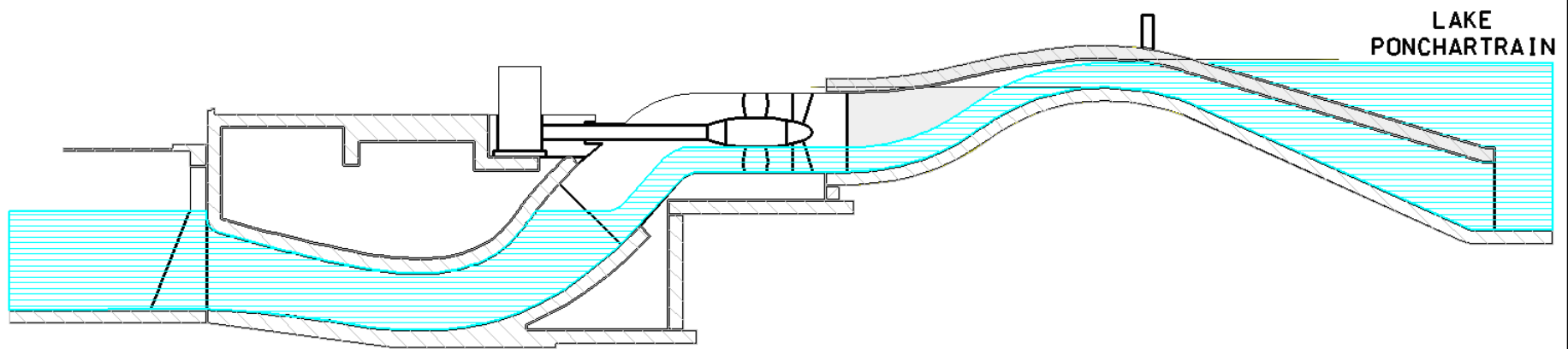






168" Wood Screw at OPS1, Orleans Parish Operational Curve

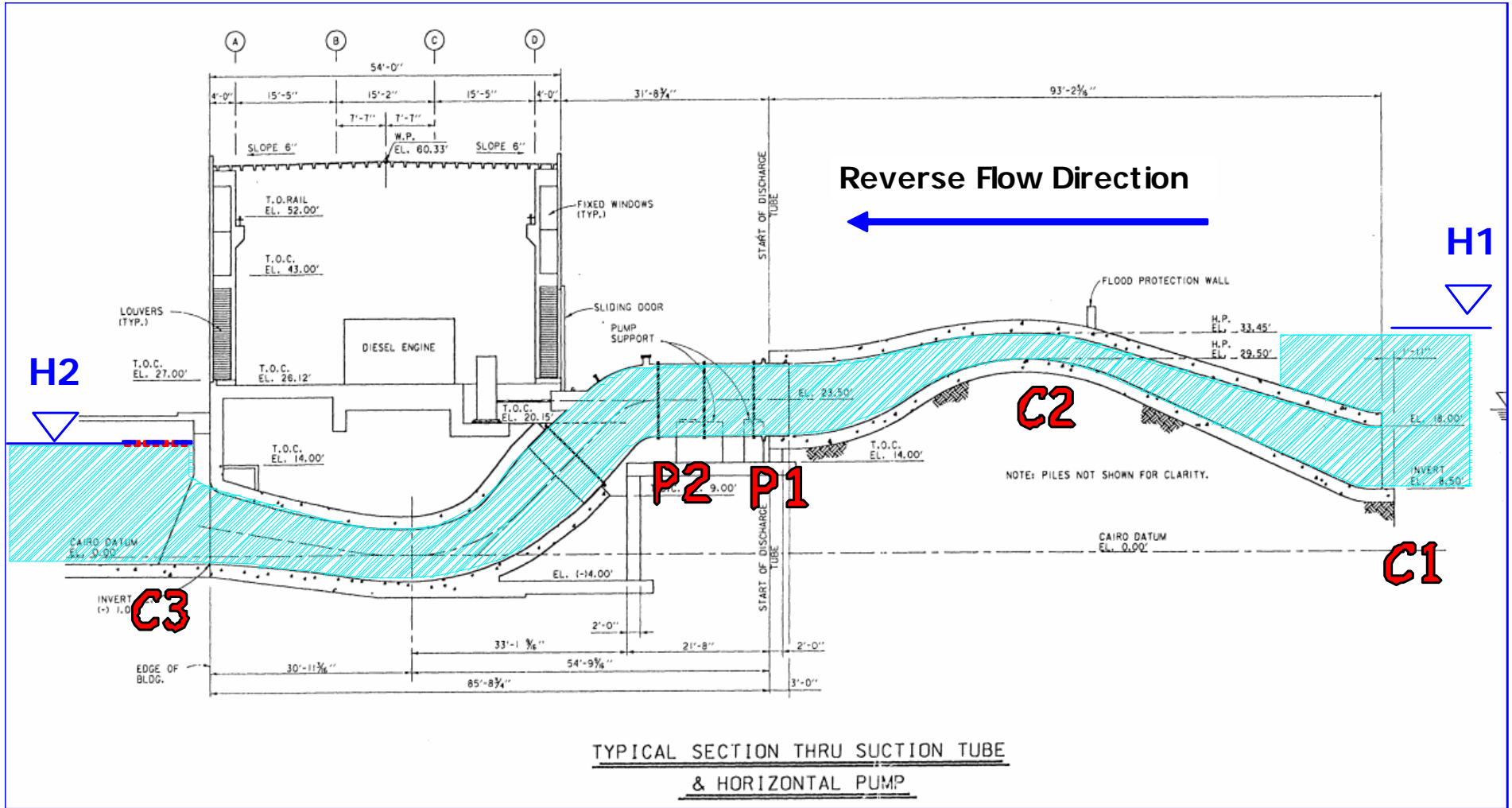


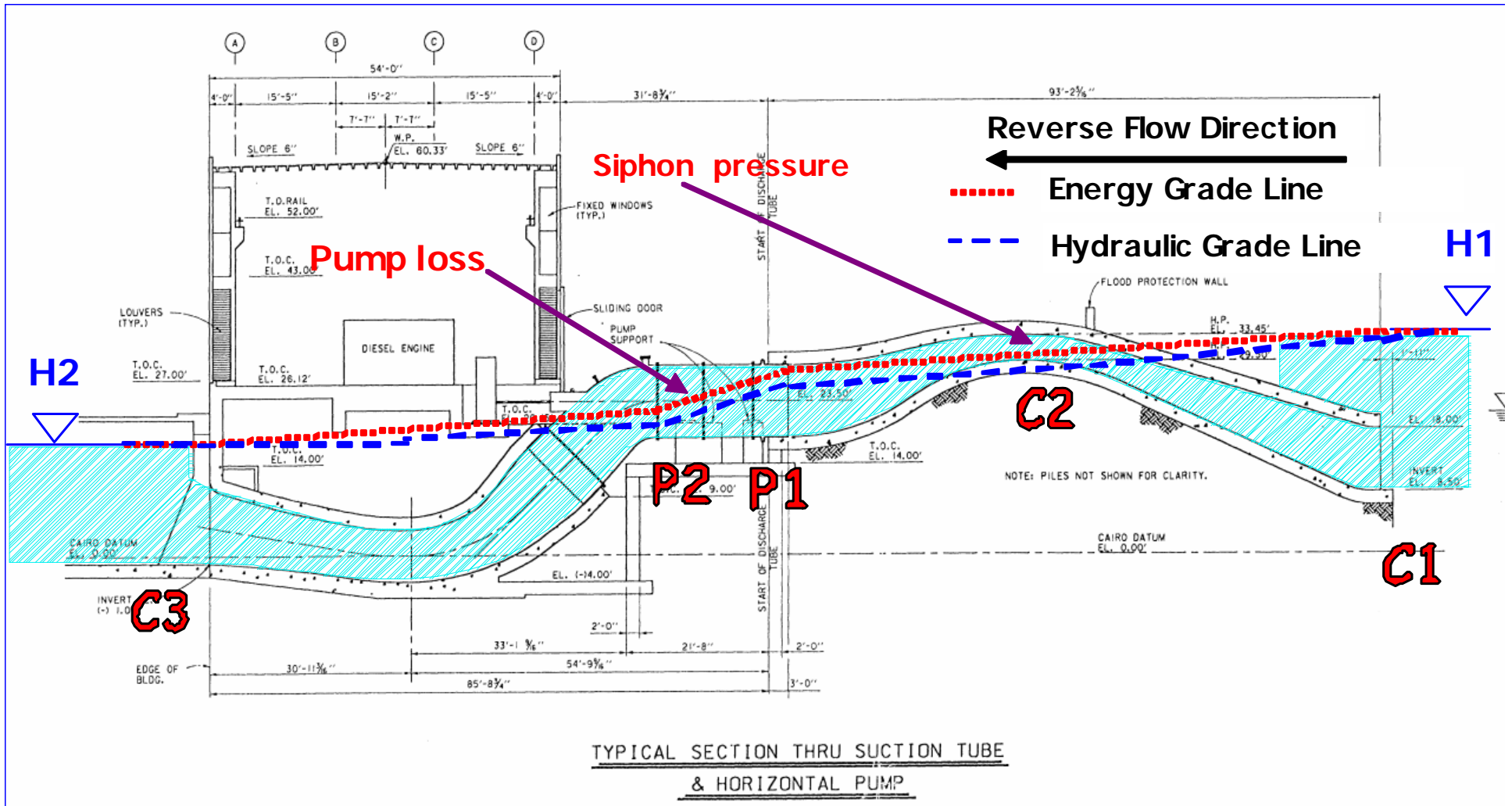


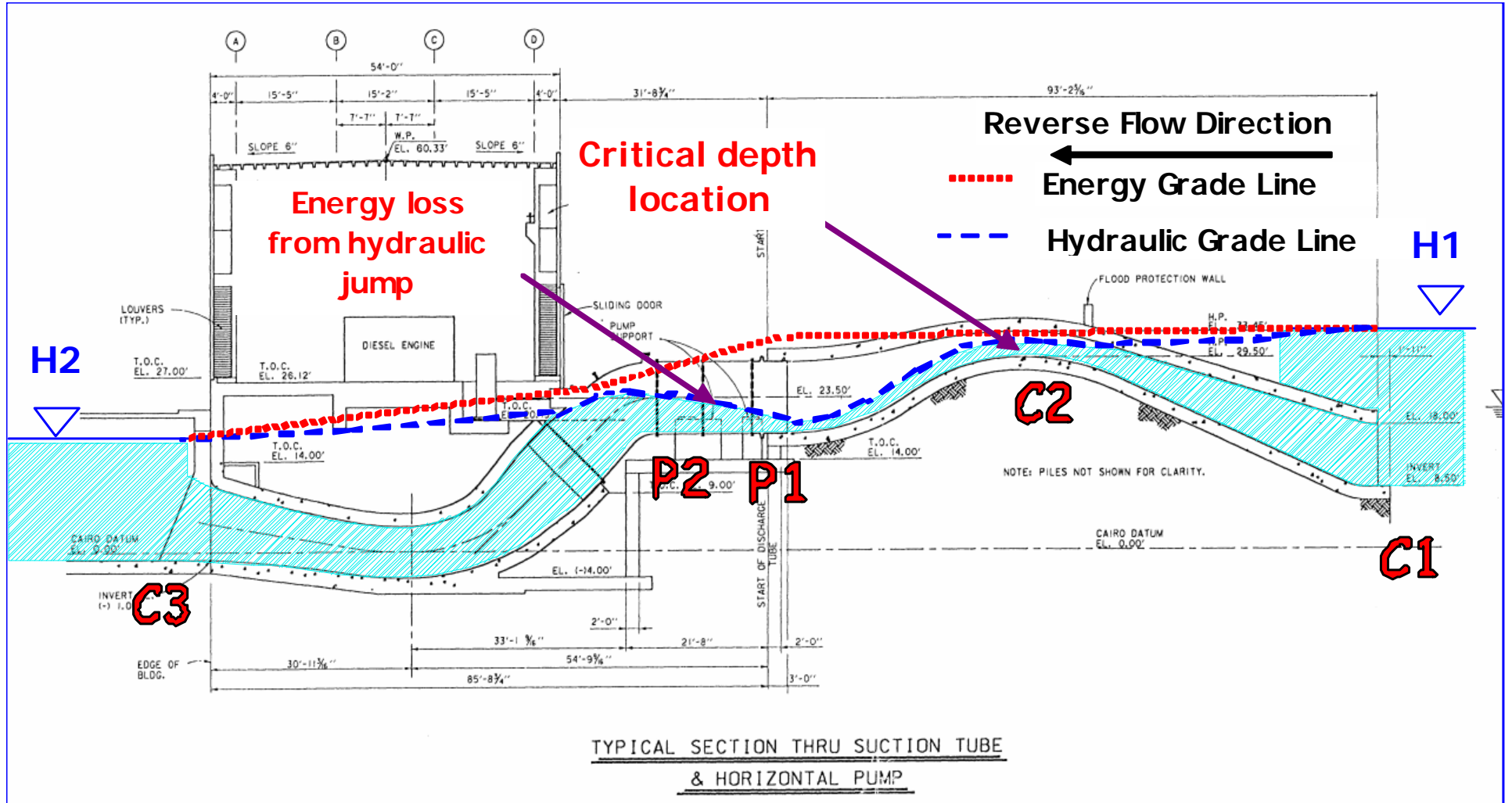
SUBURBAN PUMP STATION (JEFFERSON PARISH)

PUMPS 7 & 8

132" DIA. 1,050 CU.FT./SEC RATED DISCHARGE









Status as of 25 April, 2006

- Jefferson Parish 100%
- Orleans Parish 82%
- Plaquemines Parish 80%
- St. Bernard Parish 86%

Projected status 1 June 2006

- Jefferson Parish 100%
- Orleans Parish 98%
- Plaquemines Parish 80%
- St. Bernard Parish 86%

