

**BOUYANCY CALCULATION
FOR PUMPING STATION DESIGN**

**PORT ST. GEORGES
SOUTH PUMPING STATION**

PROJECT NO. 11373.BB.CB

BY: RKM, 04-26-2024

Inside diameter	10.00 feet
Wall thickness	8.00 inches
Outside diameter	11.33 feet
Top of barrel elevation	26.17 feet
Bottom of barrel elevation	7.90 feet
Barrel Height	18.27 feet
Top slab length	0.00 feet
Top slab width	0.00 feet
Top slab thickness	0.00 inches
	0.00 feet
Top slab top elevation	0.00 feet
Hatch length	0.00 feet
Hatch width	0.00 feet
Base slab thickness	12.00 inches
	1.00 feet
Base slab diameter	13.33 feet
Ground Elevation	26.67 feet
Density of soil	53 lb/cf
Volume of Soil normal to shelf	708 cu. Ft
Soil friction angle 26-36	26
R1 (large base, top of wet well)	16 feet
R2 (small base, bottom of wet well)	7 feet
Volume of Soil at angle to shelf	4,930 cu. ft
Total volume acting on shelf	5,638 cu. ft
Concrete weight	150 lbs/cu ft
Top slab volume	- cubic feet
Top slab weight	- lbs
Barrel weight	244,893 lbs
Base slab weight	20,944 lbs
Soil weight	298,799 lbs
Total weight	564,636 lbs
Water table elevation ¹	17.67 feet
Water displaced by barrel	246,005 lbs
Water displaced by base	8,713 lbs
Total bouyanacy	254,718 lbs
Safety factor	2.22

Notes: 1 Geotech report prepared by Duffield, water level is 9 feet below grade.