

Main Lift Pump Station

WPCD - BRISTOL



TOWN COUNCIL

SEP 13 2023

AGENDA

Main Lift Pump Station

(2) Screw Pumps

- 6-foot diameter
- 30 feet in length

Operation

- All Day, Every Day

Purpose

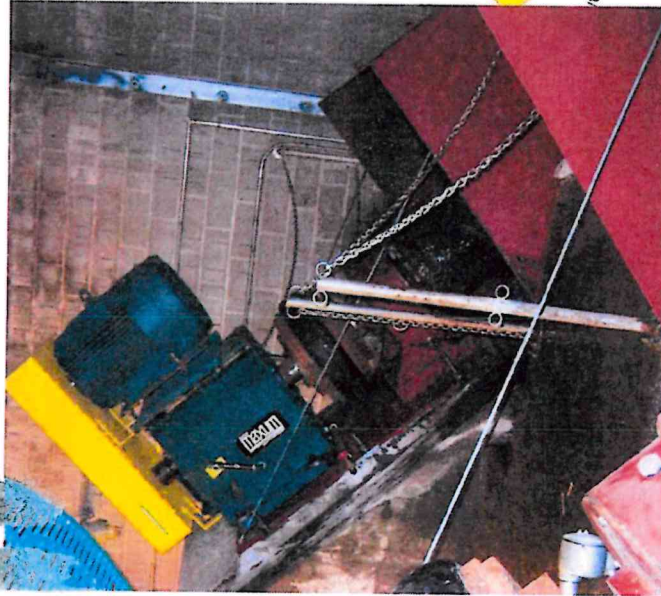
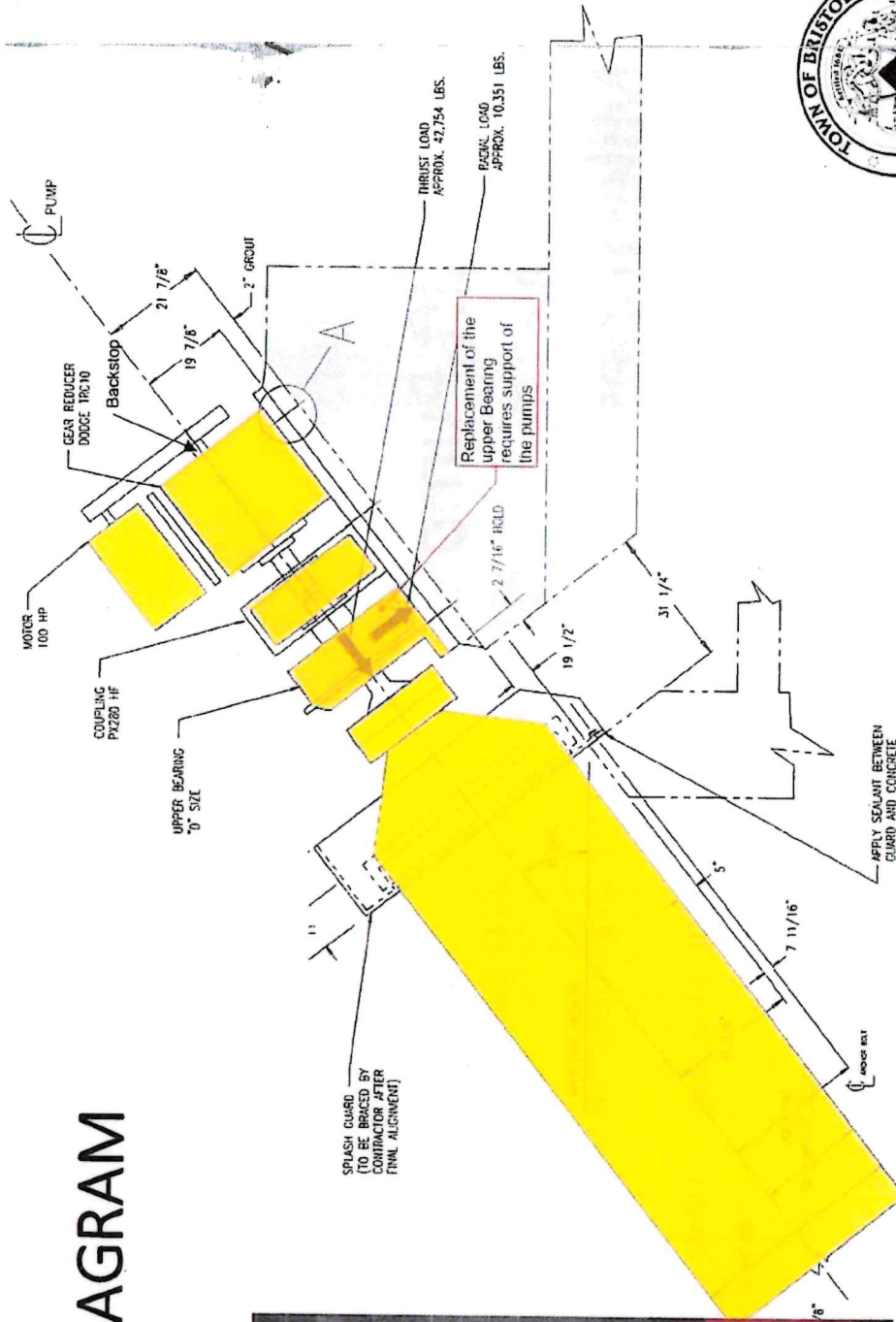
- Convey ALL Wastewater to Headworks (Start the Treatment Process)
- Critical Asset

Benefit

- Manages wide range of flow conditions (2 MGD to 13 MGD)



SCREW PUMP: DIAGRAM



Main Lift Pump Station - Milestones

- Mid 1980's Original Installation
- 2005 Failure
 - ❖ Initiated EPA Enforcement Action
- 2007 Replacement
- 2017 Evaluation
- 2018 Gear Box and Paraflex Coupling Replacement
- 2020 Cleaning and Painting of Screw Pump Body
- 2023 Evaluation



2007 Replacement

- \$1.8 M
- Hart Engineering
- Construction:
 - Roof Removal
 - Bypass Pumping Provisions
 - Full Time Bypass Pumping



2017 Screw Pump Evaluation

"The upper bearings, motors, and gearboxes all have serious corrosion issues but these have such a massive material thickness, it is more of an aesthetic issue than a mechanical issue. Once again, any of these corrosion areas that are addressed now will most likely last longer now with the better air handling system."



"Overall, I have seen many screws that are in much worse condition than these two that are still operating as well. Maintenance here is one of the best I have seen for any facility and all operators and mechanics are conscientious about the operation of ALL their equipment here at the facility."



Screw Pump Maintenance 2018

- Pump 1 – North Pump (2018)
 - Replaced Gear Box – Utilized Spare
 - Replace Paraflex Coupling



Screw Pump Maintenance 2020

- Pump 1 & 2 – North Pump and South Pump
- Resurfaced (Painted) Body of Screw



2023 Screw Pump Issues

Pump 1 – South Pump Gear Box

- Seal Leak
- Clicking Noises
- Backstop Fail (during seal replacement)
 - ❖ Resultant Paraflex Coupling Damage
- Contacted Pump Manufacturer for Direction and Evaluation



2023 Screw Pump Evaluation

Pump 1 – South Pump

- Replace Upper Bearing (Rusting)
- Rebuild / Replace Gear Box
- Replace Paraflex Coupling
- Replace Motor Sheaves

Pump 2 – North Pump

- Replace Upper Bearing (Rusting)
- Replace Paraflex Coupling
- Replace Motor Sheaves



Project Challenges

- ACCESS and ACCESS
- Ability to Support Pump and allow removal / replacement of Upper Bearing
- New Equipment Upgrades require concrete modifications
- Bypass Pumping



Project Cost

Description	Parts Cost	Labor Est (~ Parts)	Total
North Screw Pump			
- Upper Bearing (Marginal)	\$80 K		
- Paraflex Coupling (Damaged – Marginal)	\$25 K		
- Sheaves	\$1 K		
South Screw Pump			
- Upper Bearing (Marginal)	\$80 K		
- Paraflex Coupling (Damaged – Marginal)	\$25 K		
- Sheaves	\$1 K		
- Rehab Existing Gear Box	?????		
TOTAL	\$212 K	\$250 K	\$465 K





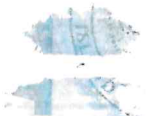
General Pump Station Improvements

2015 – New Odor Control System with Exhaust Fan, Carbon Media
Odor Scrubber, Associated Ductwork

2019 – Grating/Railings Replacement – Upper Access Landing

2021 – XP Light Fixture Replacement (All)

2021 – Grating Replacement and Interior Stairway/Landing Repairs



QUESTIONS AND DISCUSSION

