

Referendum 2025
Royal River Pump Station
August 7, 2025
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Town Engineer



Referendum Proposal

CRITICAL FINANCIAL NEED FOR
REPLACEMENT OF THE ROYAL
RIVER SEWER PUMP STATION

Request is to move forward a referendum warrant to the November ballot for citizen consideration in the amount of \$7,500,000.

- ▶ Tonight's presentation will touch on the project need, work scope and estimated project budget only;
- ▶ Financial information, such as debt service, budget impacts and financial schedules will be presented and discussed at future meetings;
- ▶ The Town Manager and Finance Director are working with our financial partners to develop this key fiduciary information, and it will be available soon.



Royal River Sewer Pump Station

Existing pump station located easterly of Rowe School near the Royal River Park walking path.

System Background

- ▶ Royal River is the second largest of over 30 pump stations the Town owns and is one of the oldest; constructed in 1967 with new pumps installed in 1992;
- ▶ The Royal River pump station conveys 2/3rds of the Town's sewer flow and serves most properties westerly of US Route 1;
- ▶ This station is a dry well/wet well configuration and has two (2) 60 horsepower pumps;
- ▶ The design pumping capacity of the station is 1,400 GPM;
- ▶ Discharge flow from the station is conveyed to the wastewater plant through a single 10" asbestos-cement (A/C) force main pipe that is original equipment;
- ▶ The station has been well maintained over its life, but is no longer code compliant and is at the end of its service life;
- ▶ Most importantly, the existing station is currently at capacity and cannot convey additional sewage flow, which impacts potential development within the sewer shed served by this pump station.

Key project considerations

- ▶ Address capacity issue and provide for future increased flow to support development within the sewer shed as required by the Comprehensive Plan and recent State law;
- ▶ Provide for less operational maintenance and cleaning frequency;
- ▶ Improve safety of the site;
- ▶ Meet required building and safety code;
- ▶ Embrace industry best practices for pump station design and operation;
- ▶ Ensure long term viability of this critical pumping station for environmental protection and permit requirements.



Royal River Pump Station

Concept Plan Process

- ▶ Town retained Wright-Pierce Engineers (W-P) of Topsham to perform an analysis of the station and develop conceptual design alternatives and associated costs;
- ▶ W-P performed site visits, evaluated Yarmouth's flow and system data, reviewed operational needs from employees, evaluated current best design and operational practices, evaluated current building code requirements and reviewed Yarmouth's current permitted status;
- ▶ Additionally, W-P performed a capacity analysis including flow monitoring, drawdown testing and model development to ascertain the current conveyance capacity of the pump station and existing influent flow;
- ▶ Yarmouth staff performed site visits to other municipalities to review different pump station configurations and types including submersible type pump stations;
- ▶ Key considerations of plan:
 - ▶ Provide for long term solution to the capacity issue, i.e. providing appropriate pump sizing, redundancy and force main capacity for the design horizon;
 - ▶ Provide for long term solution to the pump station condition and inefficiencies, with an eye on improved safety and maintenance criteria;
 - ▶ Investigate current industry design standards for pumping stations;
 - ▶ Address downstream hydraulic capacity of a cross-country segment of gravity sewer main.

Report Alternatives

- ▶ Three pump station alternatives:
 - ▶ Do nothing, although not a serious option in this case;
 - ▶ 1: Demolish existing pump station and replace with new submersible station, force main and hydraulic upsize of downstream segment of gravity sewer;
 - ▶ 2: Retrofit and reuse existing below grade infrastructure with new submersible station, force main and hydraulic upsize downstream segment of gravity sewer.
- ▶ Three force main alternatives:
 - ▶ 1: Install a new 12" diameter HDPE force main parallel to the existing force main;
 - ▶ 2: Install two (2) new 12" diameter HDPE force mains parallel to the existing force main to provide additional capacity and redundancy;
 - ▶ 3: Install a new 12" diameter HDPE force main parallel to the existing force main and reline the existing 10" force main via Cured in Place Pipe technology to provide additional capacity and redundancy.

Alternative: Do nothing

- ▶ While doing nothing is always an alternative, in this case, it would have significant negative impacts such as
 - ▶ Open the Town up to liability for pollution impacts to the receiving waters;
 - ▶ Potentially cause continued and increasing shellfish closures;
 - ▶ Have increased risk to the public for health and safety impacts due to exposure to raw sewage;
 - ▶ Open the Town to scrutiny and potential suit from regulators and other stakeholders;
 - ▶ Limit growth potential for commercial and residential development in town;
 - ▶ Negatively impact Yarmouth's reputation as a clean, vibrant and livable community, and;
 - ▶ When improvements **are** undertaken, they would likely cost more in the future.

Alternative 1: Demolish the existing pump station and replace it with a new submersible station.

- ▶ Includes demolishing the above grade infrastructure and install a new 12-foot diameter precast concrete wet well with three (3) new submersible pumps, including:
 - ▶ New valve vault, piping, level controls, monitoring, cover and hatches;
 - ▶ New electrical building for service, VFD's, controls, SCADA equipment, HVAC system and transfer switch;
 - ▶ New skintight, sound attenuated standby generator;
 - ▶ New bypass piping, manhole structures, and isolation valving.
 - ▶ Site work including paving as required;
 - ▶ Existing station wet well and dry well would be abandoned and backfilled.

Alternative 2: Retrofit and upgrade the existing pump station to a submersible pump configuration.

- ▶ Includes conversion of the existing primary wet well into a valve vault and retrofit the existing pump room into a new wet well to house three (3) new submersible pumps, including:
 - ▶ Demolish the above grade infrastructure including both buildings;
 - ▶ Retrofit the existing pump room into a wet well and install three (3) pumps, piping, level and monitoring controls, a divider wall/slide gate assembly and new wet well cover and hatches;
 - ▶ Retrofit the primary wet well into a valve vault including valves and piping;
 - ▶ Install a new electrical building including the service, VFD's, controls, SCADA, generator transfer switch and a HVAC system;
 - ▶ Install a new skintight standby generator;
 - ▶ Site work including paving and new bypass assembly

Three Force Main Alternatives:

► Force Main Alternative 1

- Construct a new 12" diameter, 2,150-foot HDPE force main parallel to the existing A/C force main from the pump station to the terminus manhole in Main Street;
- Open cut construction including tie into existing terminus manhole in Main Street and restoration of site. A/C main would likely be retired.

► Force Main Alternative 2

- Construct two (2) 12" diameter HDPE force mains parallel to the existing A/C force main to provide additional flow capacity and redundancy;
- Similar construction approach and A/C main would be retired.

► Force Main Alternative 3

- Construct a new 12" diameter HDPE force main parallel to the existing A/C force Main and reline the existing 10" diameter A/C force main with Cured in Place Pipe (CIPP) to rehabilitate the main and provide addition flow capacity and redundancy.
- Under all of the alternatives above, the existing force main would be used for by-pass pumping as required for construction.

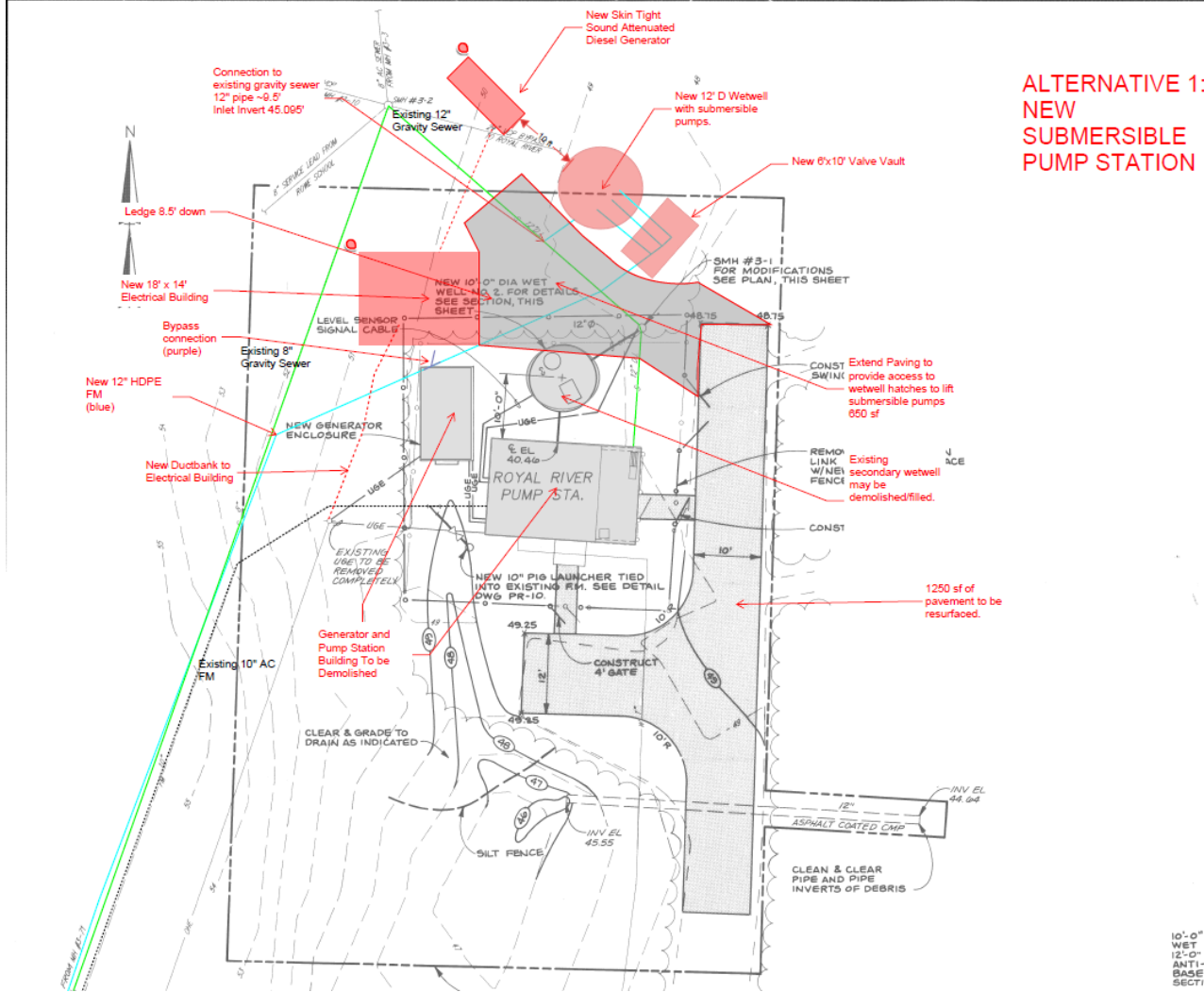
Recommended Alternatives: The Department is recommending Pump Station Alternative 1 (new submersible station) and Force Main Alternative 2 (redundant new force mains) in addition to hydraulically upsizing a segment of downstream gravity sewer main.

- ▶ Selected pump station alternative provides all new wet well components and requires less impact for bypass pumping. Also provides for use of the existing pump station during construction for less risk of bypass pumping. Provides for design flexibility of infrastructure and lessens the chance of shortened lifespan by reusing existing below grade infrastructure;
- ▶ Selected force main alternative provides redundancy, capacity for future growth and new components for the infrastructure with an estimated design life of up to 100 years. This alternative will allow careful design of hydraulic profile to ensure proper air release.
- ▶ Each alternative includes the hydraulic upsize of a segment of downstream gravity sewer.

	Station	Station	Force Main	Force Main	Force Main
	Alternative 1	Alternative 2	Alternative 1	Alternative 2	Alternative 3
Pump Station	3,000,000	2,800,000			
Force Main			1,700,000	2,900,000	2,400,000
Gravity Sewer	1,300,000	1,300,000			
Escalator	300,000	300,000			
Total Recommended Project	7,500,000				

Alternative Costs

Recommended Alternative 1



Questions?

- ▶ Steven S. Johnson, P.E.
- ▶ Town Engineer



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MAINE