

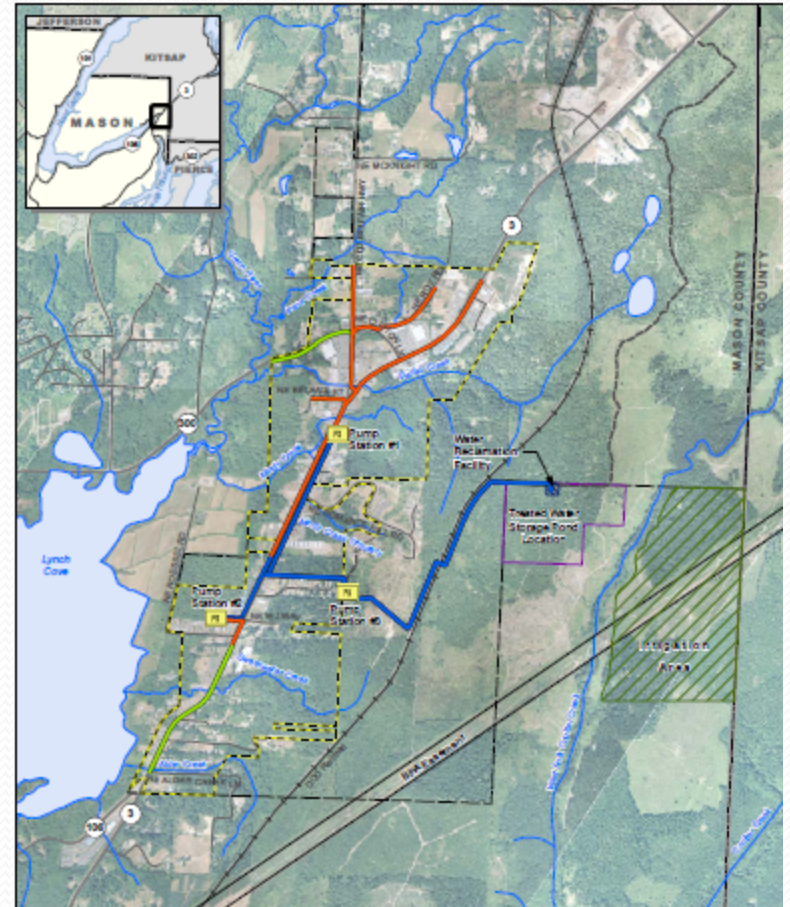
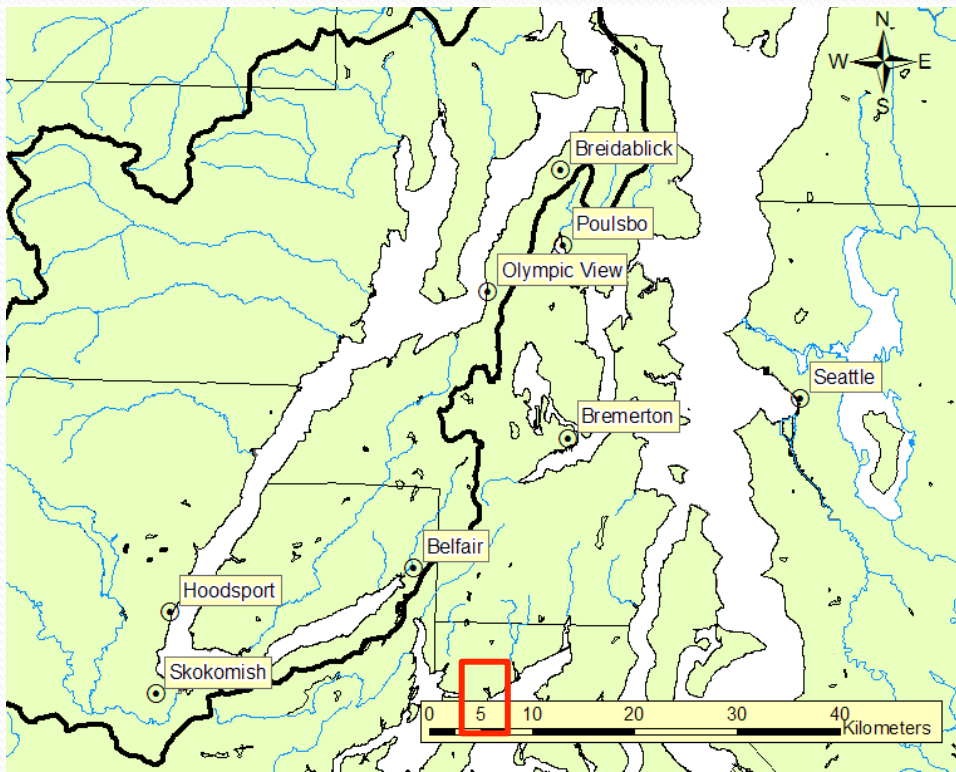


Belfair Wastewater and Water Reclamation Facilities Mason County

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Protecting Hood Canal





Below the Surface

- Deteriorated water quality in lower Hood Canal
- EPA 303(d) list of impaired water bodies for DO, fecal coliform and pH.
- Portion of the shellfish harvesting areas have been closed.
- Washington State Department of Health declared part of Hood Canal the severe public health hazard in 2002.

Project Background

-Existing Conditions and Future Plans

- On-site septic systems in Belfair Urban Growth Area (UGA).
 - Most of on-site septic systems are over 20 years old.
 - High groundwater
 - Poor soil





Key Environmental Studies

- Geotechnical
- Hydrogeological
- Hydrological
- Biological
- Archeological



Planning the Project with the Public



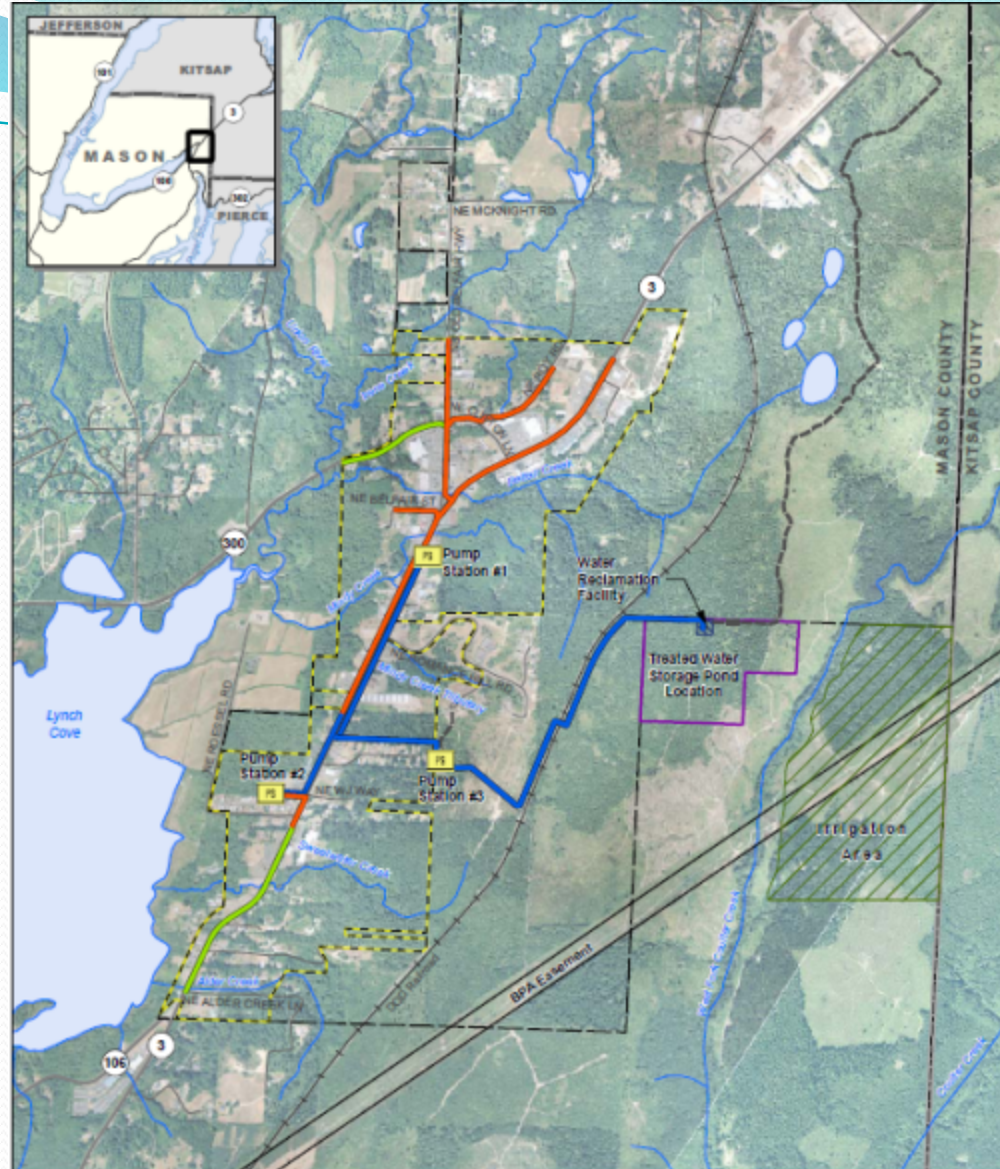
Protection of Surface Water



- Coulter Creek
- Theler Wetlands
- Union River
- Hood Canal
- Case Inlet

Project Features

- Conveyance System
 - 3 Pump Stations
 - 14,000 LF gravity sewers
 - 19,000 LF force mains
 - 5,000 LF of low pressure lines
- Water Reclamation Facility
- Storage Pond and Irrigation
 - 40 acre forest irrigation
 - 25,000 LF purple pipe
 - 700 sprinklers



Source: Data from Mason County (2007) and WSDOT (2008). Aerial photos from WSDOT (2008) and WADNR (2005).

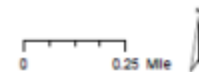


Figure 1-1
Project Location
and Vicinity

Getting the Wastewater To the Treatment Plant – Conveyance

Sustainable Design Elements

- Architectural Screening Wall and Roof Façade.
- Odor Control
- Noise Control
- Permeable Pavement
- Large Underground Storage Pipe to protect Theler Wetland



Tunneling to Avoid Sensitive Areas



Vision coming into reality

Construction of Treatment Facility



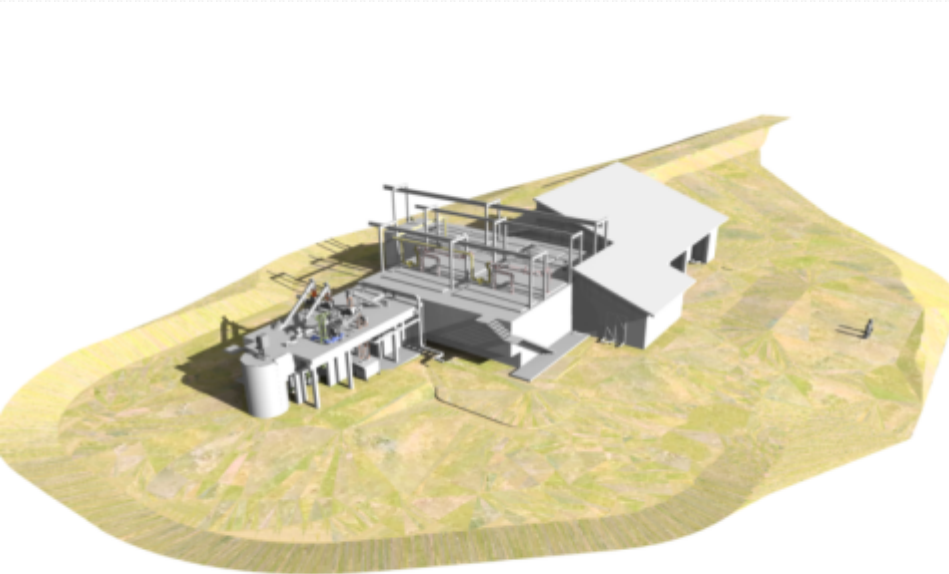
Reclaiming the Wastewater

- Treat to Class A reclaimed water quality
 - Membrane Bioreactor (MBR) & Ultraviolet (UV) disinfection.
 - BOD <20 mg/L
 - Turbidity < 0.2 NTU
 - TN < 10 mg/L
 - Total coliform < 2.2 MPN/100mL



Design in 3-D

- Helps with Owner Input
- Helps with Detailed Space



Sustainable Design Elements

- LEED silver building
- Reuse of Treated Water
- LID rain garden, permeable pavement and pavers
- Washington State University partnership



More Sustainable Design Elements

UV Disinfection
Energy Efficient Blowers
Emergency Pond



Covered Tanks at Wastewater Plant for Odor Control



Treated Water – Class A Reuse Standards





Earthen Dam at Treated Water Storage Pond - Geotechnical Design



Erosion
Control on
the Berms of
the
Treated
Water
Storage Pond



Opportunities

- Zero discharge
- Timber resource
- Private Public Partnership



Necessary Political Support





Department of Commerce
Innovation is in our nature.

Needed Financial Support

Team Work and Commitment



Operators Involvement





MASON COUNTY BELFAIR
WATER RECLAMATION FAC
2012

COUNTY COMMISSIONER
LYNDA RING ERICKSON
TIM SHELDON
STEVE BLOOMFIELD

NTY PROJECT
M MOK

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Sustainable Growth



