

# CITY OF POULSBO

## Contribution to Puget Sound Recovery



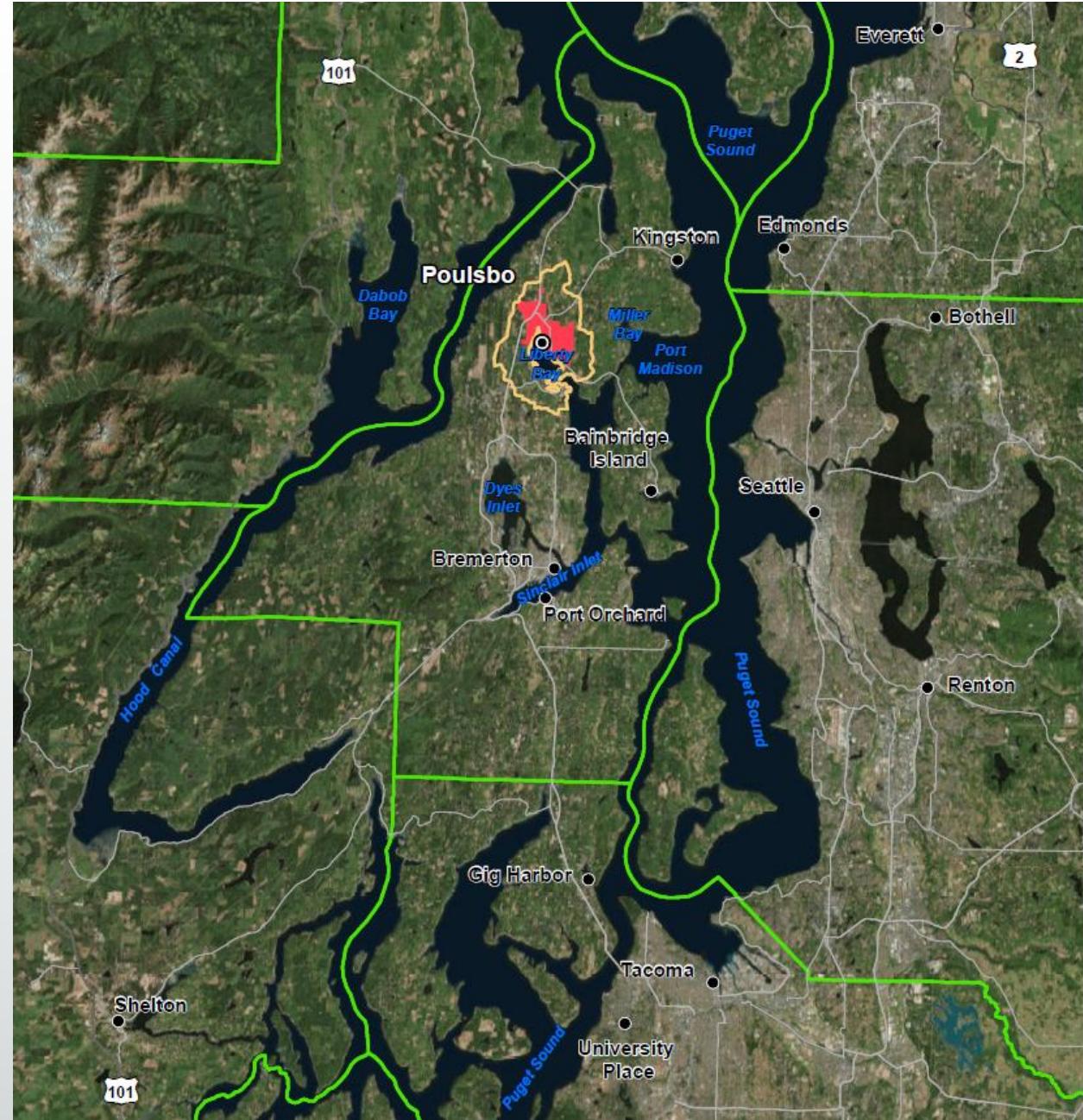
# HIGHLIGHTS

- Liberty Bay – Re-Opened to Shellfish Harvest
  - Partnerships were essential
  - Measurement Matters – Total Maximum Daily Load (TMDL) Implementation Plan
- Sample Retrofit and Fish Passage Projects:
  - Retrofits can be small or large
  - Fish Passage
- What makes these projects important to our community?



# LOCATION

- 12,400 population
- 4.5 square mile area
- Tributary to Liberty Bay
- Current growth rate ~5%





# Commercial Shellfish Harvest History

1967  
Conditional  
Downgrade

1990  
Closed to  
Harvest

2006 TMDL  
Study

2013 TMDL  
Plan

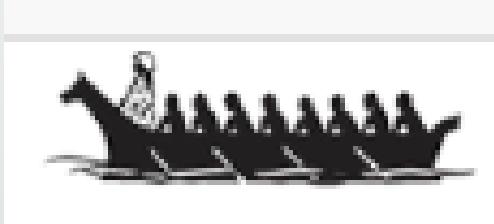
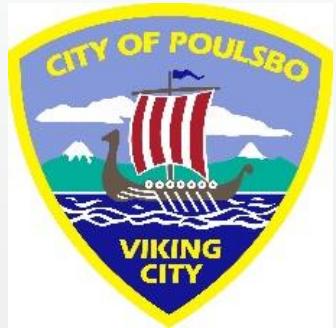
2017 PTIP

2018 Re-  
opens



**50 years since downgrade!**

# PROJECT TEAM



Suquamish Tribe



NORTH KITSAP SCHOOL DISTRICT



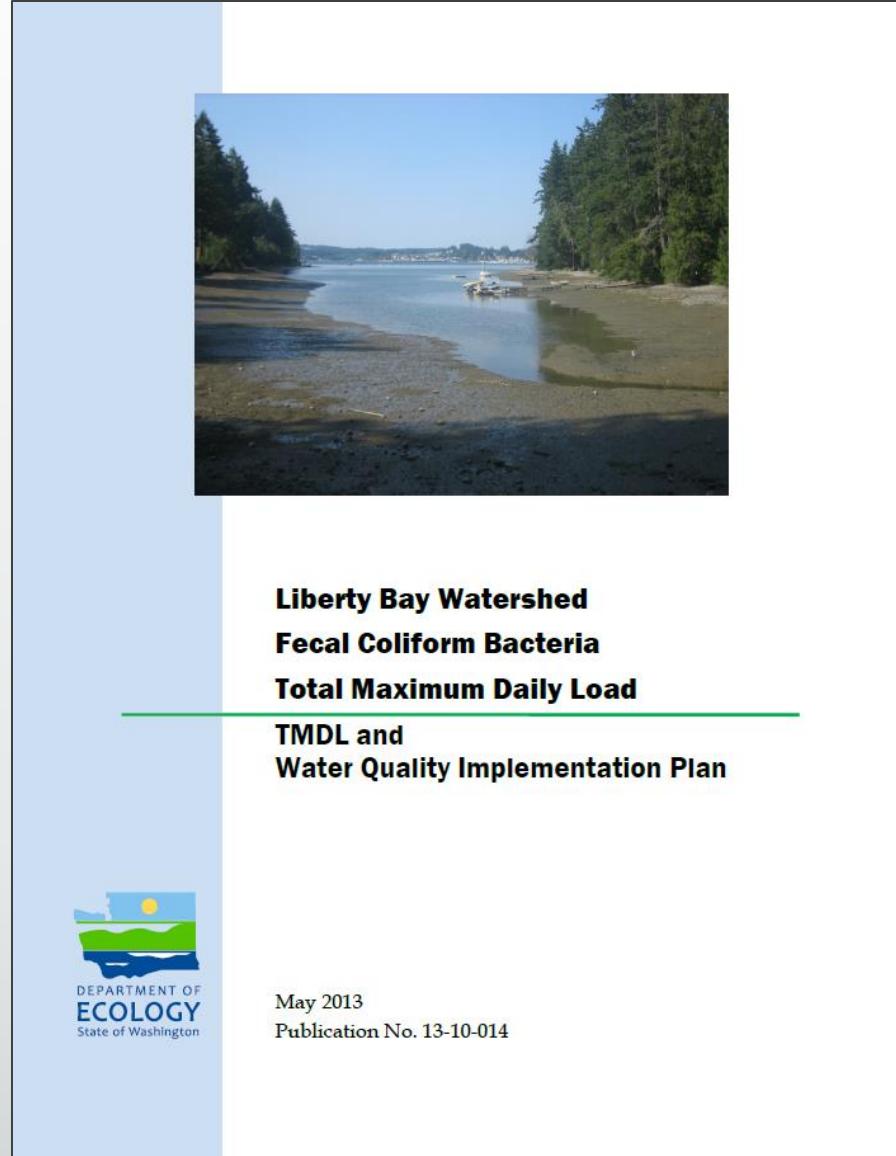
Land Developers



Community

# TMDL PLAN BACKGROUND

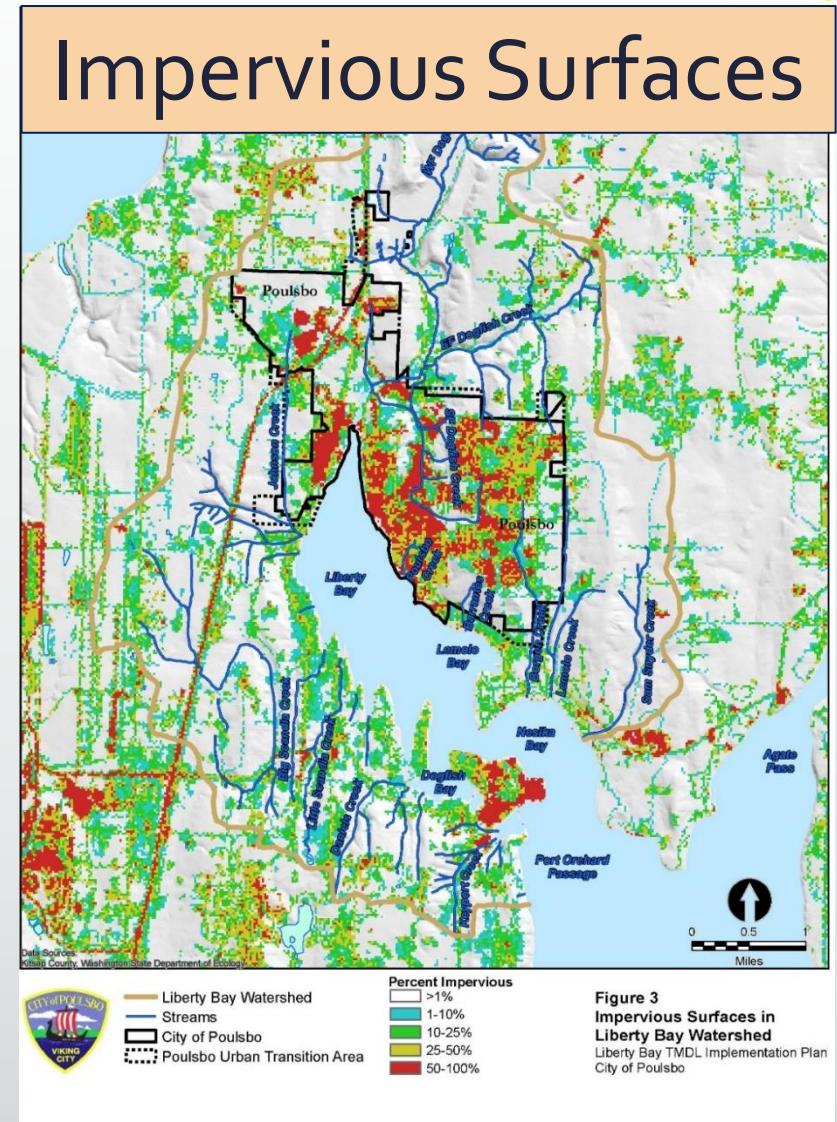
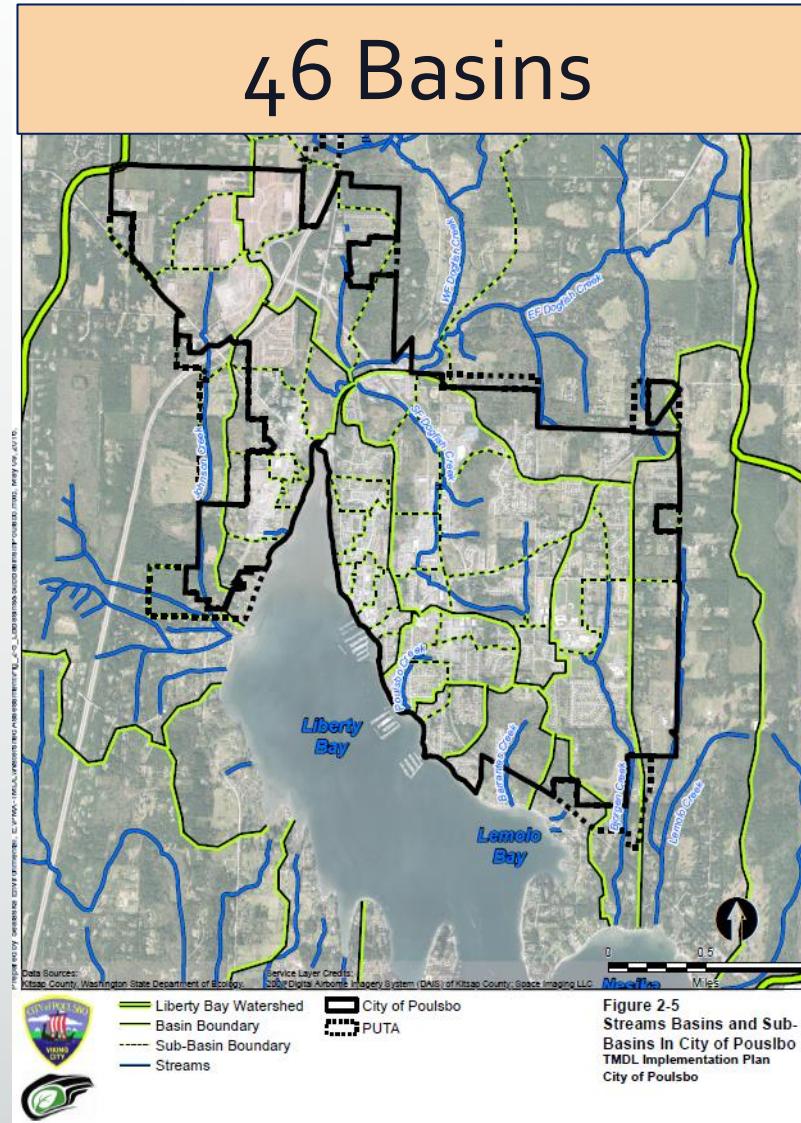
- Initiated by Ecology in 2008, completed in 2013
- Water quality standards were not being met
- Actions to attain water quality standards in Liberty Bay
- TMDL is extension of NPDES Permit



# WATERSHED ASSESSMENT

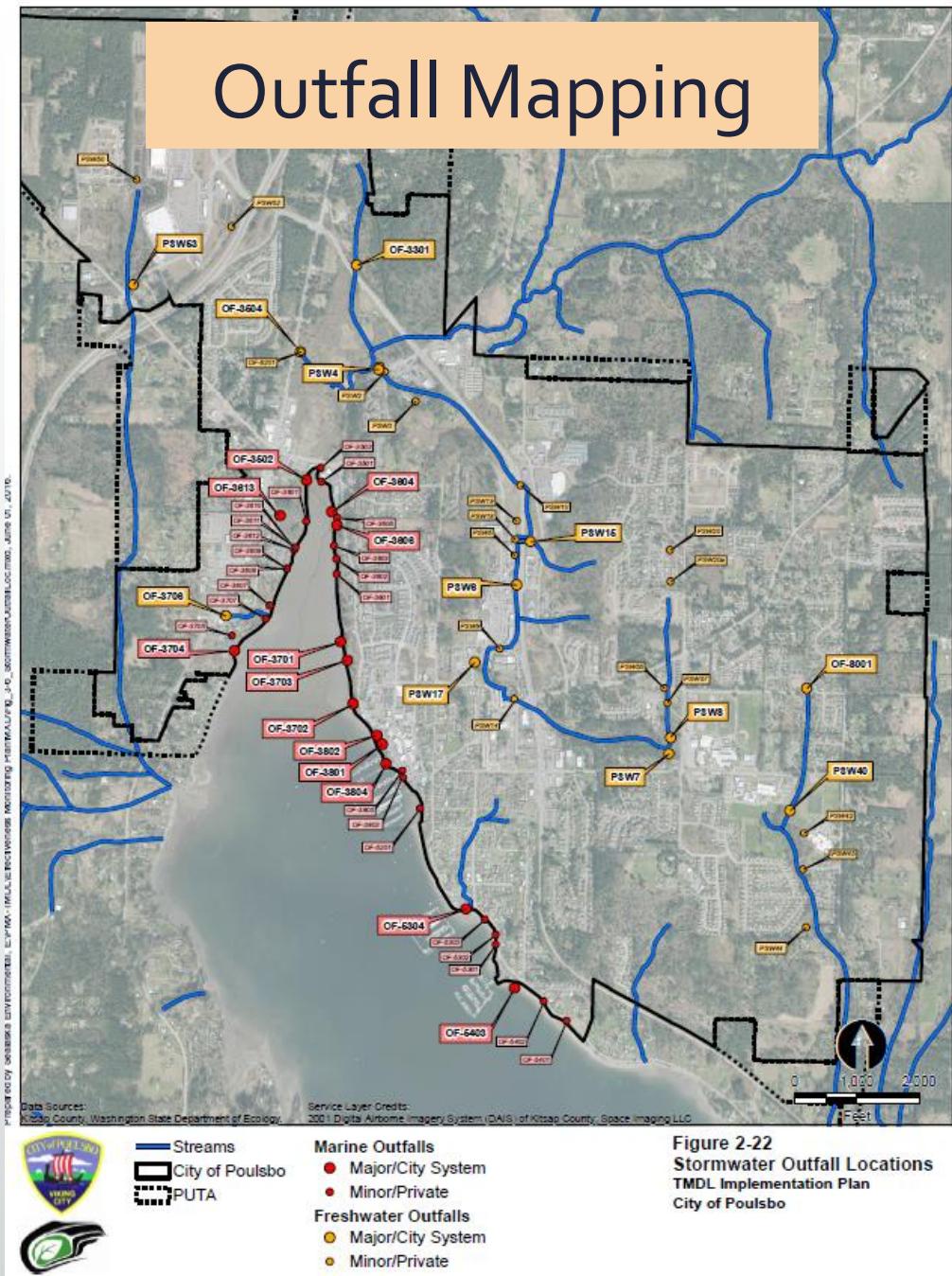


- Characterization
- Evaluate progress
- Identify priorities

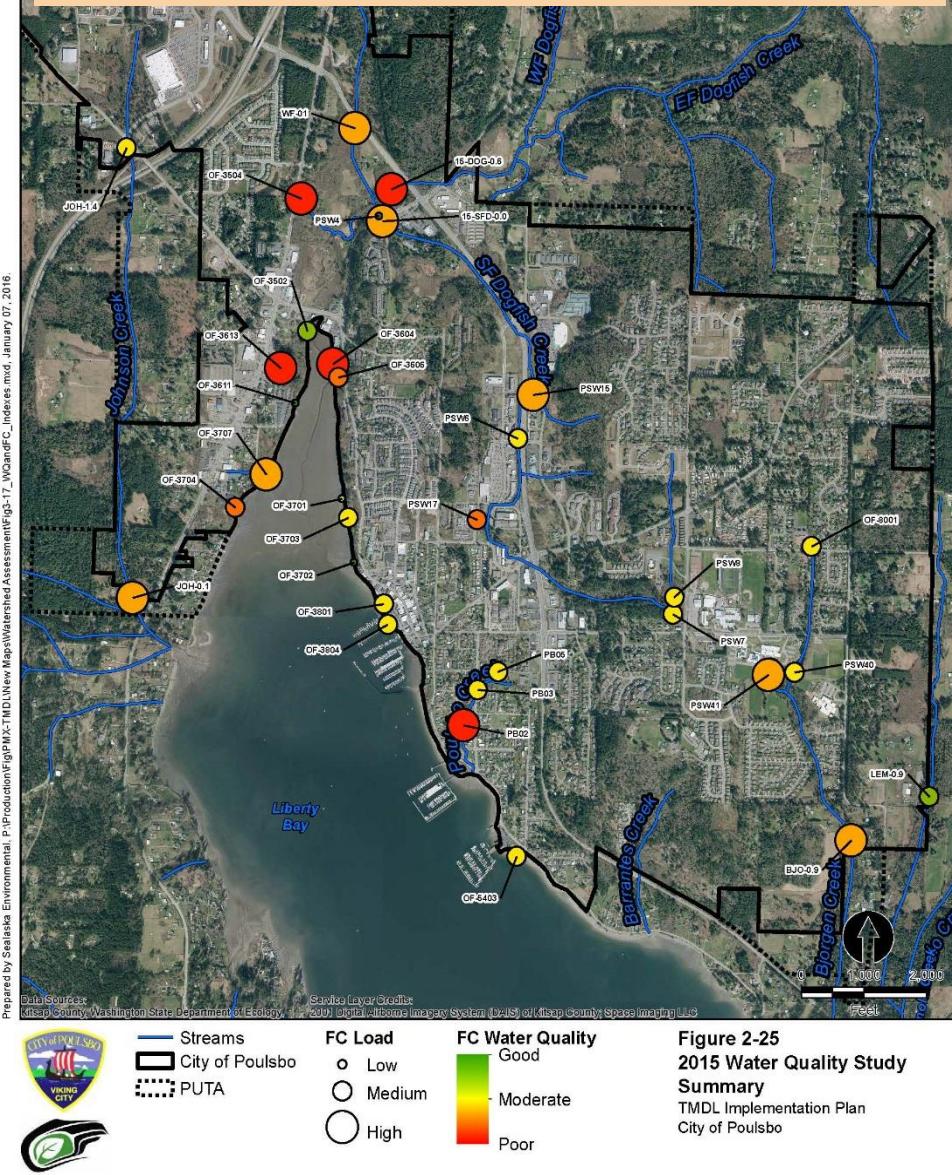




# Outfall Mapping



# Synoptic Stormwater Sampling



**Figure 2-25  
2015 Water Quality Study  
Summary  
TMDL Implementation Plan  
City of Poulsbo**

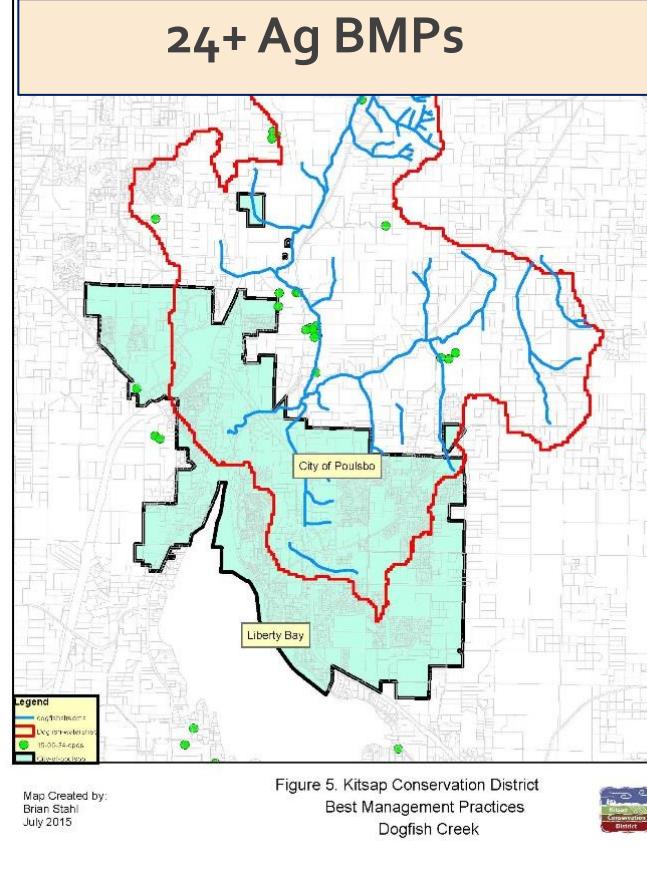


# CORRECTIVE ACTIONS

40+ OSS corrections

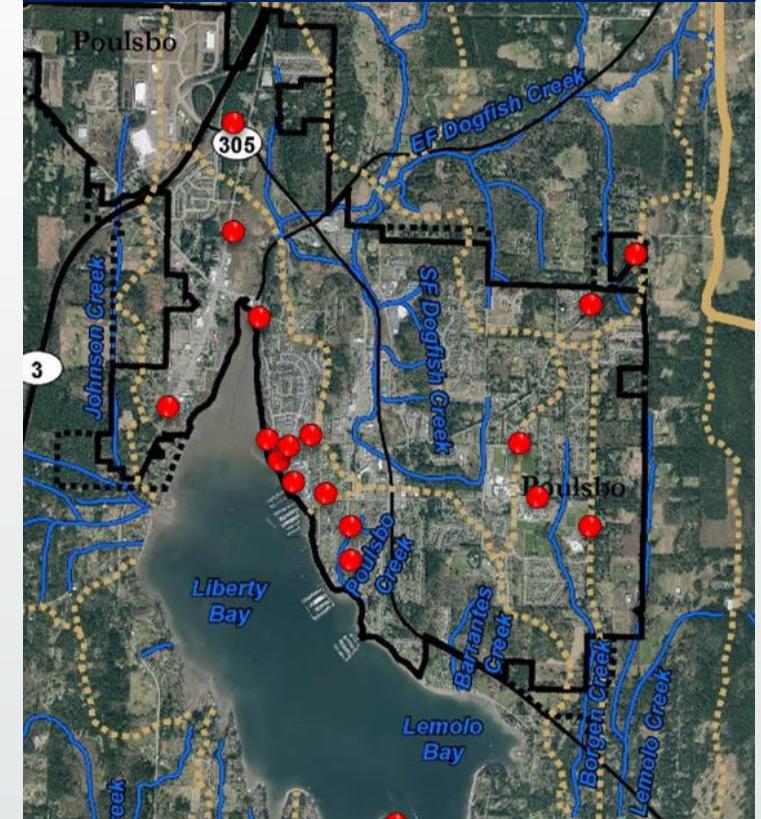


24+ Ag BMPs



18 to 25+

Stormwater Retrofits



Corrective Actions:

\$10M+ investment over 8 year period

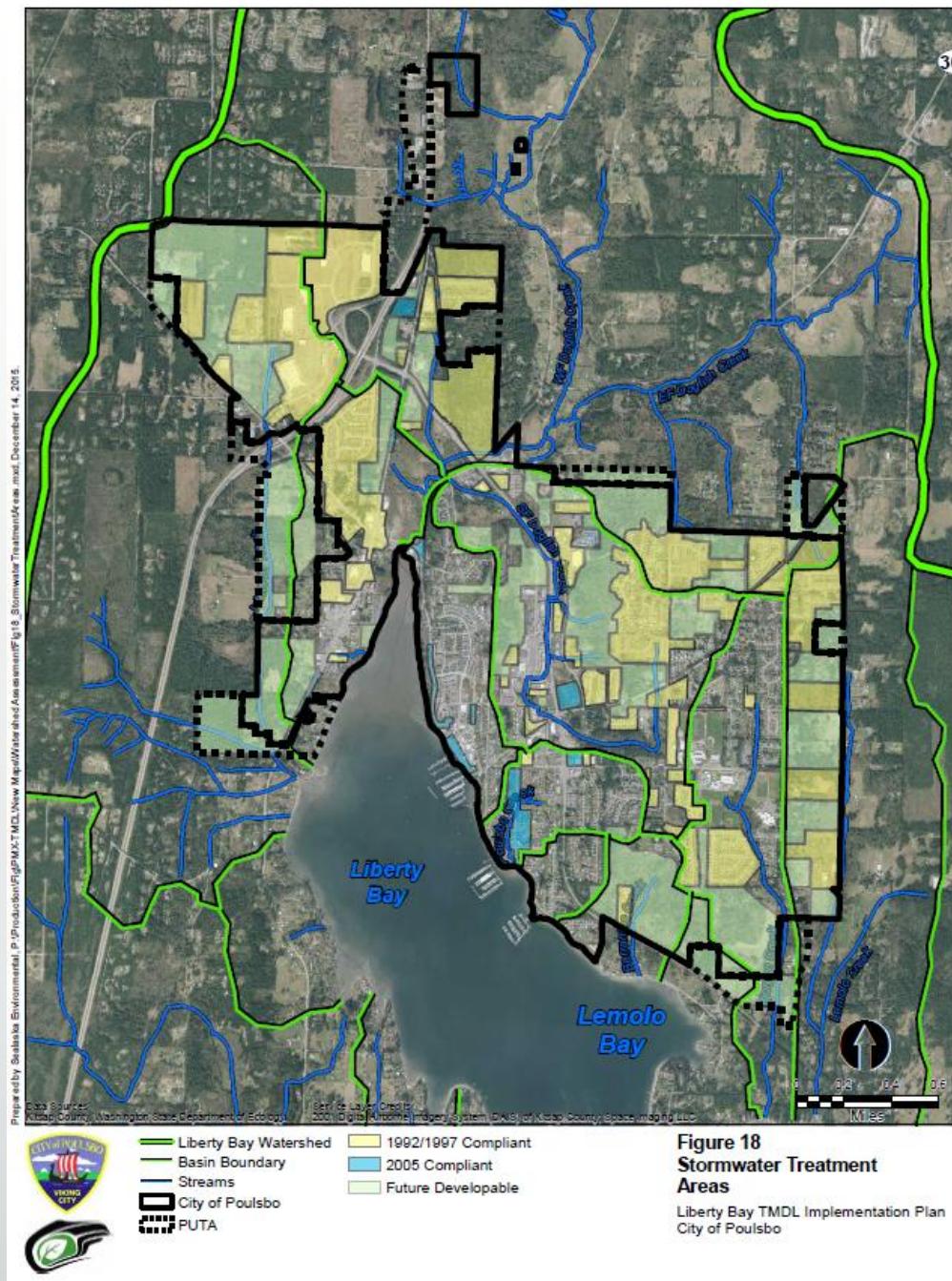


# TMDL COMPLIANCE APPROACH

- Proactive approach to document action and measures progress
- Aggressive, prioritized capital program
  - 25+ retrofit projects in last 20 years
- Enhance O&M
  - Improve procedures for public O&M
  - Instituted a Private (Drainage) Facilities Maintenance (PFM) program going beyond permit requirements by including facilities permitted prior to 2010.
  - 241 properties in the PFM program, most of which were not maintained prior to the initiation of the program.
- Continue on-going public education campaigns, expanding when possible
  - Robust Mutt Mitt program and backyard pet waste campaigns
- Develop stewardship opportunities
  - ILA with Kitsap Conservation District for rain gardens & grid paving
    - To date, 10 practices installed & 14 pending
- Expand annual dry weather screening to include 2 wet-weather rounds for effectiveness monitoring
- Keep community and elected officials engaged

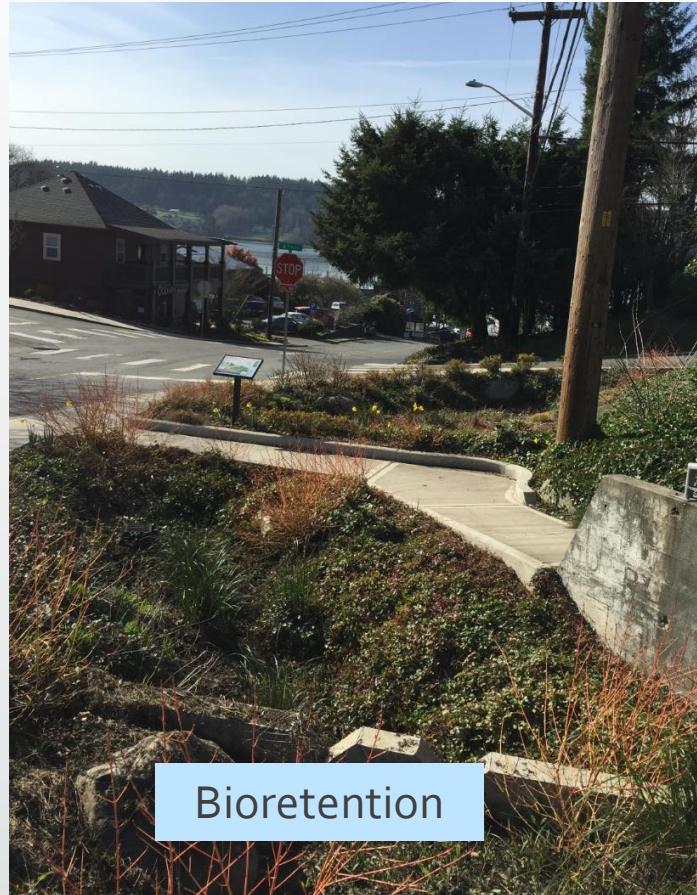
# Stormwater Treatment and Impervious Areas

- > 50% of the Total Impervious Area is Treated





# STORMWATER RETROFITS



# Fjord Drive Bioretention Swale - Before



- Existing condition is a roadside grass lined ditch
- No water quality treatment
- Mud / sedimentation build up

# Fjord Drive Bioretention Swale – Construction



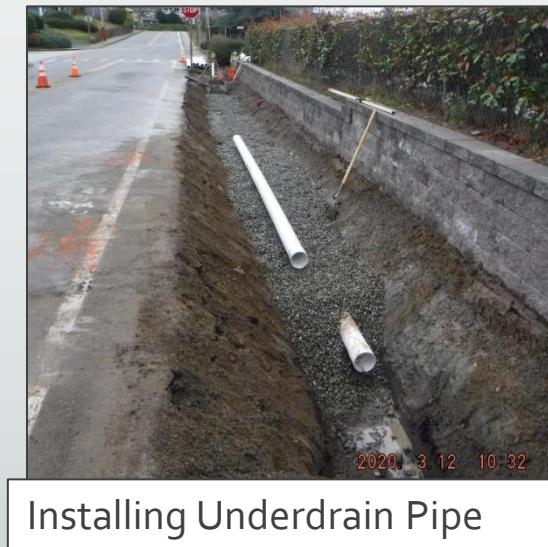
Excavating



Prepping Wall Foundation

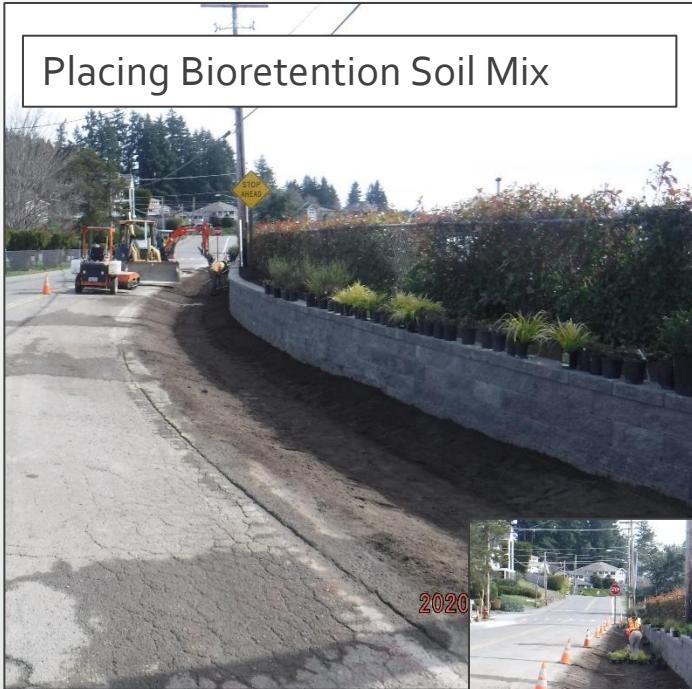


Constructing Wall



Installing Underdrain Pipe

# Fjord Drive Bioretention Swale – Construction



# Fjord Drive Bioretention Swale – Complete



- Enhanced Water Quality Treatment ~ 1.4 Acres
  - 0.6 Acres of road surface
- Attractive retrofit
- Consistent with LID features in downtown, on 6<sup>th</sup> Ave, and on Hostmark

# Poulsbo Middle School Water Quality Vault - Before



- Outfall for ~115 Acre basin
- No treatment
- Large concrete outfall structure in degraded condition
  - Attractive nuisance
- Erosion/degradation of outfall near Creek

# Poulsbo Middle School Water Quality Vault - Construction



# Poulsbo Middle School Water Quality Vault – Construction



# Poulsbo Middle School Water Quality Vault—Complete



- Enhanced Water Quality Treatment ~ 2.56 Acres of PGIS
- Allows for School/City to install treatment vaults in line for increased capacity
- Stabilized outfall and placed farther back from Bjorgen Creek



# CIP PROJECT NO. 1

## SOUTH FORK DOGFISH CREEK RESTORATION





## BJORGEN CREEK

- Channel grade was too steep for fish
- Reconfigured to meet Dept. of Fish and Wildlife requirements.



## MONITORING RESULTS





# KEY FINDINGS

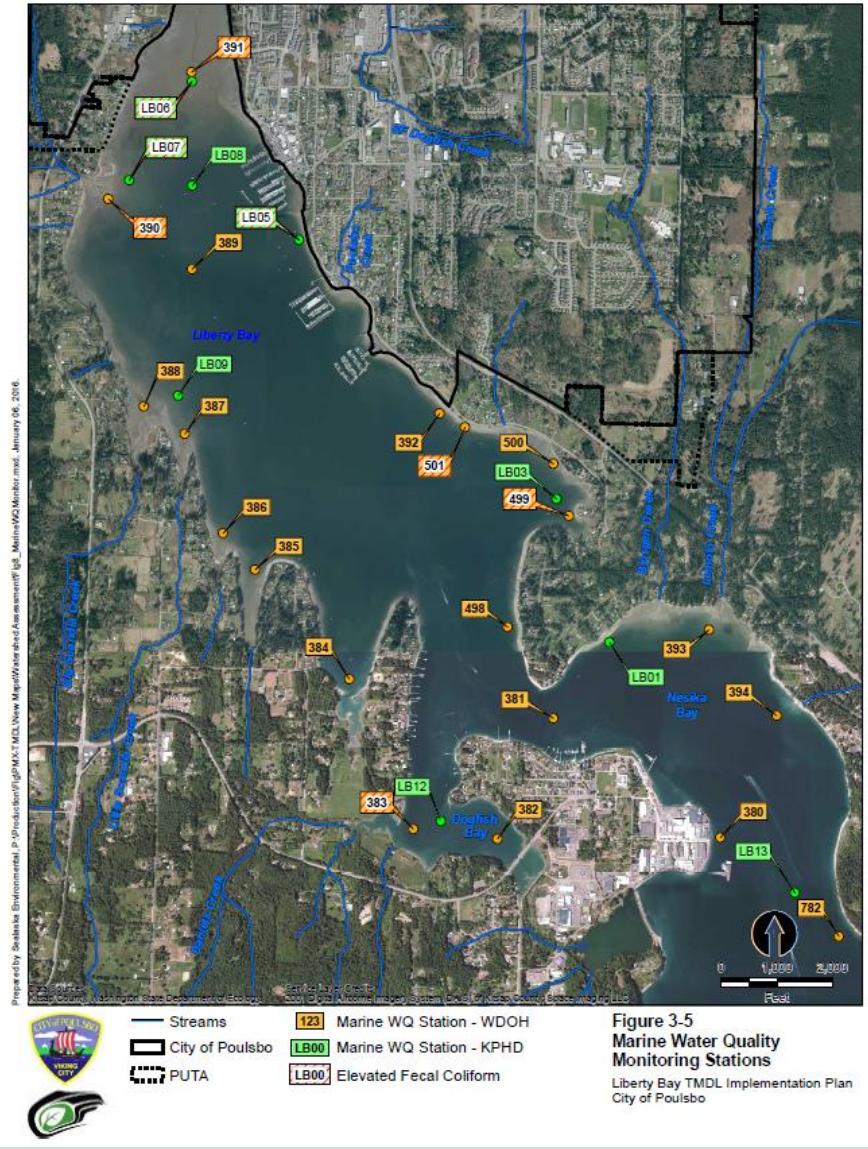


Figure 3-5  
Marine Water Quality  
Monitoring Stations

Liberty Bay TMDL Implementation Plan  
City of Poulsbo

Water quality is improving.  
Marine water meets standards  
at all 29 locations.

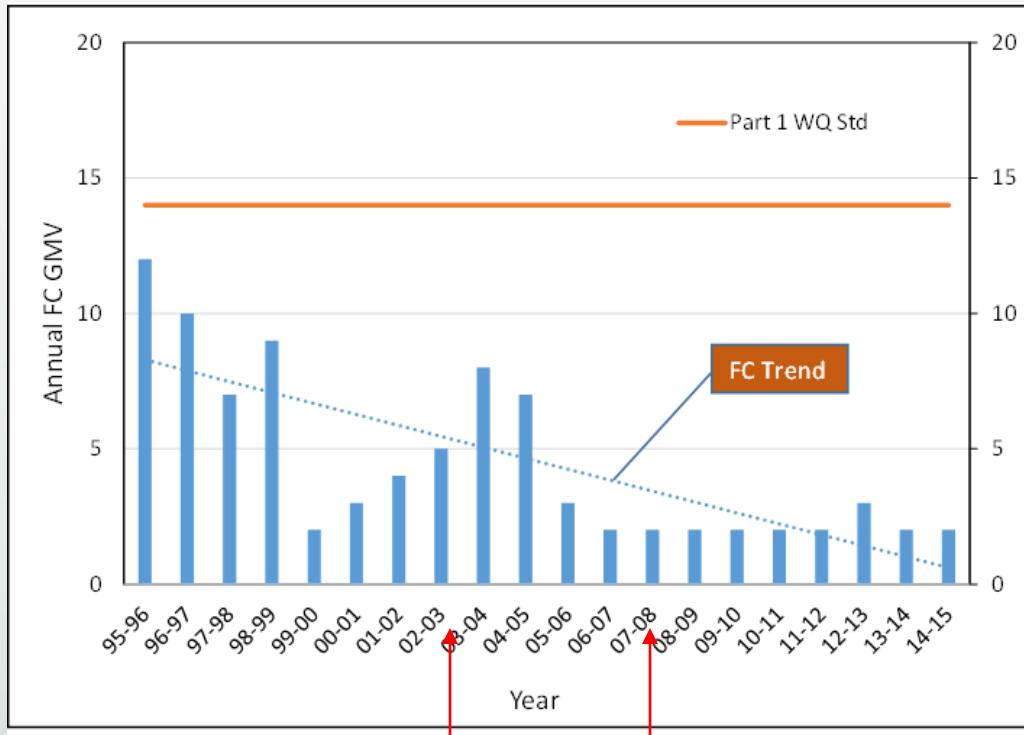


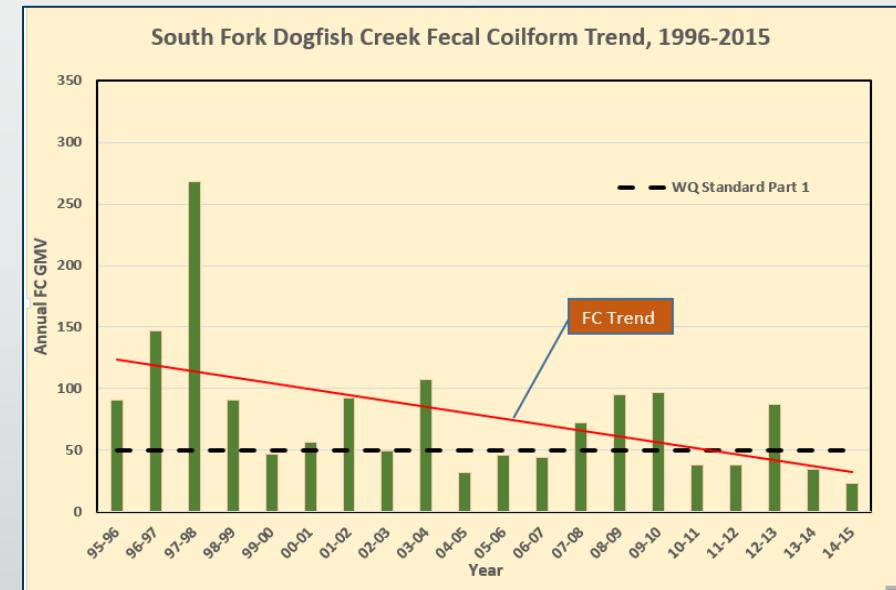
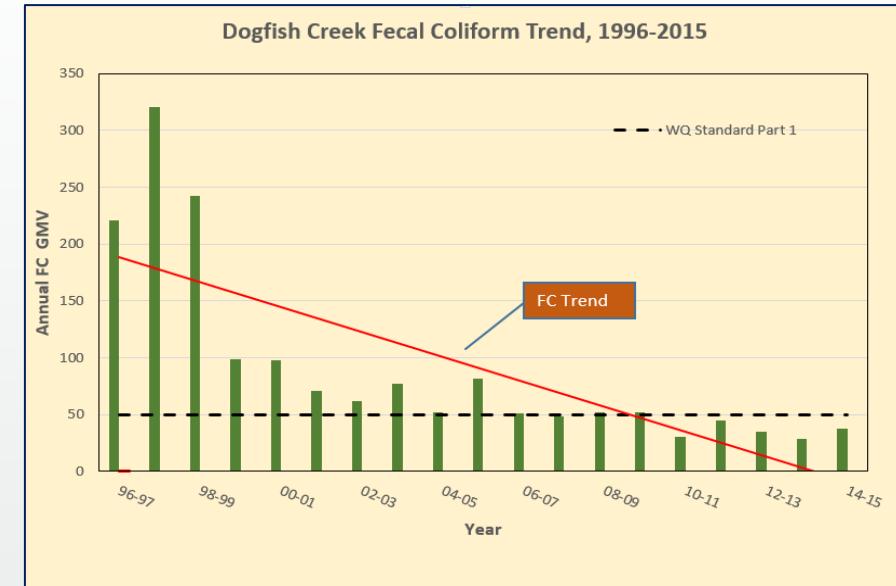
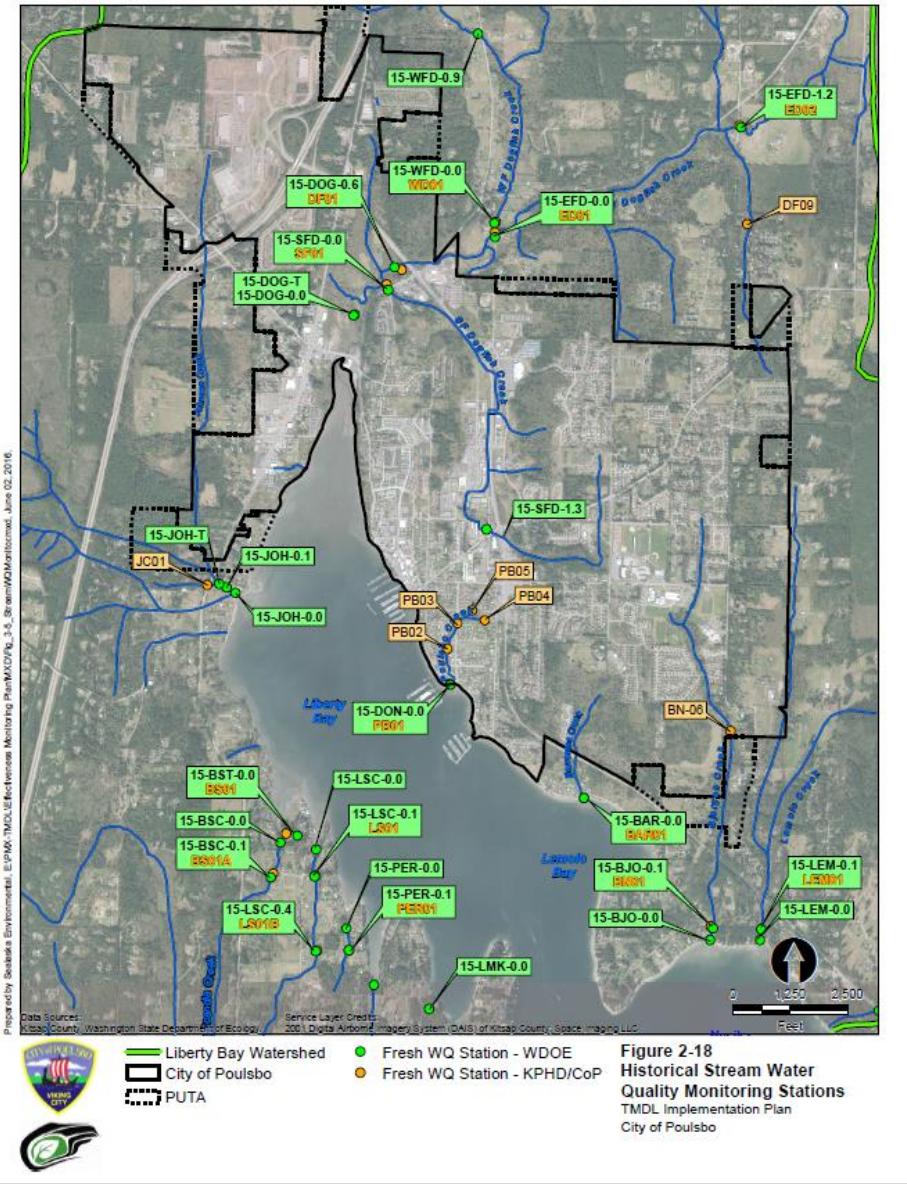
Figure 2-12. Trend for Liberty Bay Marine Station LB05

1<sup>st</sup> City retrofit

Regional PIC  
project



# STREAM LOAD DECREASING – 10 YEAR TREND

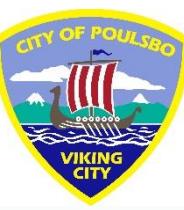




# WHY IS THIS IMPORTANT?

- Marine water quality critical to social, economic and cultural identity
- We are a waterfront community with tourism based economy





# QUESTIONS?