Flipping a Distribution System

Converting the City of Port Orchard's Water System from Bottoms Up to Top Down

Thomas A. Hunter
Utility Manager
City of Port Orchard

Overview

* Introduction
* The Team
* The History & Physical Landscape
* The Existing Distribution System
* The Hydraulically Broader View
* USGS Model
* New Well Sites
* DWSRF Loan – Comp Plan – The Politics
* Stakeholders
* Foster Pilot Program

Introduction

* My Background
* Professional Experience
* Education
* Passion

The Team

* BHC Consultants
  * Charlie W. Dougherty
* Robinson and Noble
  * F. Michael Krautkramer
* Law Office of Thomas M. Pors
  * Thomas M. Pors

The History and Physical Landscape

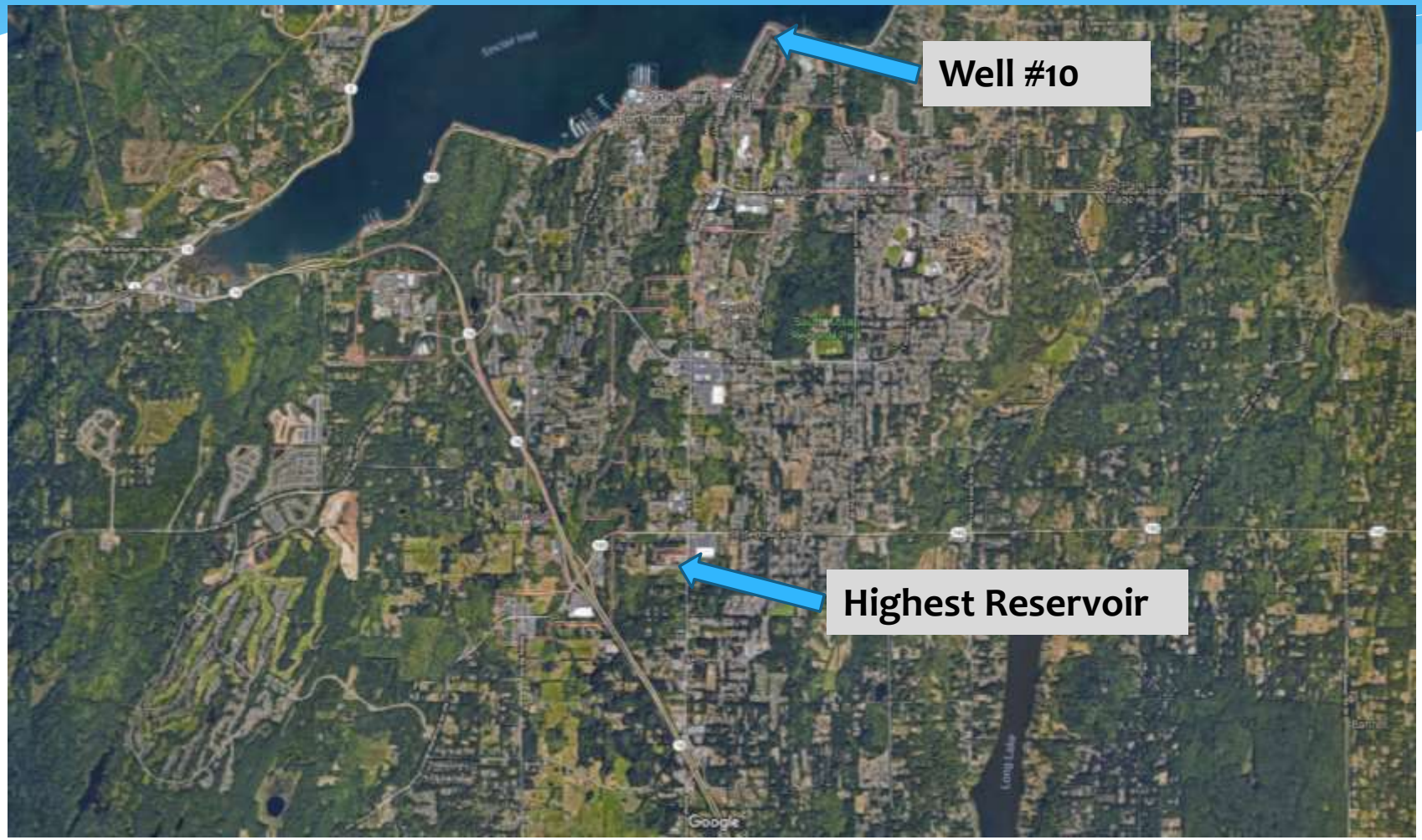
The History and Physical Landscape

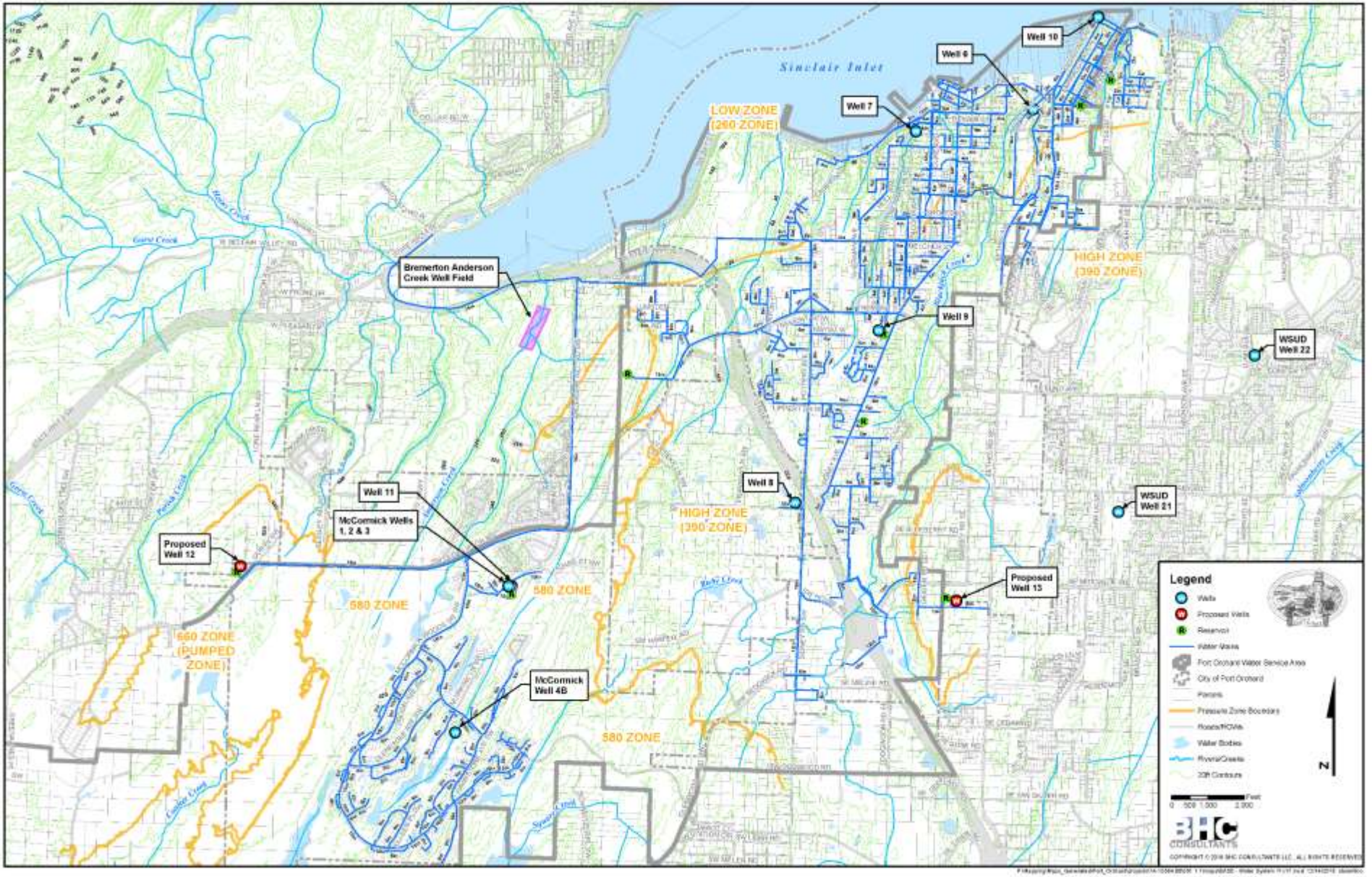
The History and Physical Landscape

The Existing Distribution System

* Water System Expanded Up-Gradient
* 4 Pressure Zones
* Shallow to Mid-Depth Wells
* Minimal Water Turnover in Reservoirs
* Reliance on Pumps and Motors

The Existing Distribution System




Sinclair Inlet
Well 10
Well 6
Well 7
LOW ZONE
(260 ZONE)
HIGH ZONE
(390 ZONE)
Bremerton Anderson
Creek Well Field
Well 9
WSUD
Well 22
Well 11
McCormick Wells
1, 2 & 3
Well 8
WSUD
Well 21
HIGH ZONE
(350 ZONE)
Proposed
Well 12
580 ZONE
580 ZONE
Proposed
Well 13
660 ZONE
(PUMPED
ZONE)
McCormick
Well 4B
580 ZONE
Legend
Wells
Proposed Wells
Reservoir
Water Mains
Port Orchard Water Service Area
City of Port Orchard
Parcels
Pressure Zone Boundary
Roads/ROWs
Water Bodies
Rivers/Creeks
20ft Contours
N
Feet
0 500 1,000 2,000
BHC
CONSULTANTS

The Existing Distribution System

The Existing Distribution System

One More Problem – 500 gpm Artesian Flow From Well 10

The Hydraulically Broader View

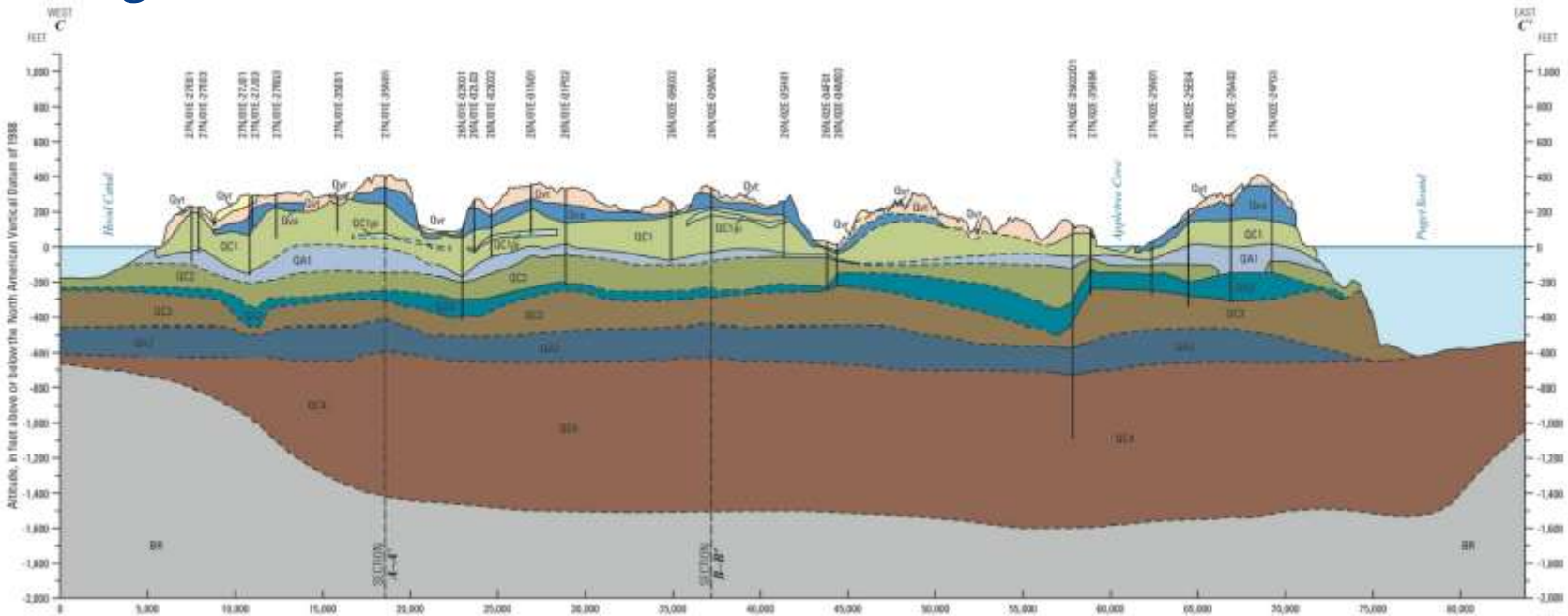
* Water System needed new sources that…
  * Improved Water Quality
  * Located to Utilize Gravity
  * Drilled into Deeper Aquifers
  * Preferably on City Owned Land

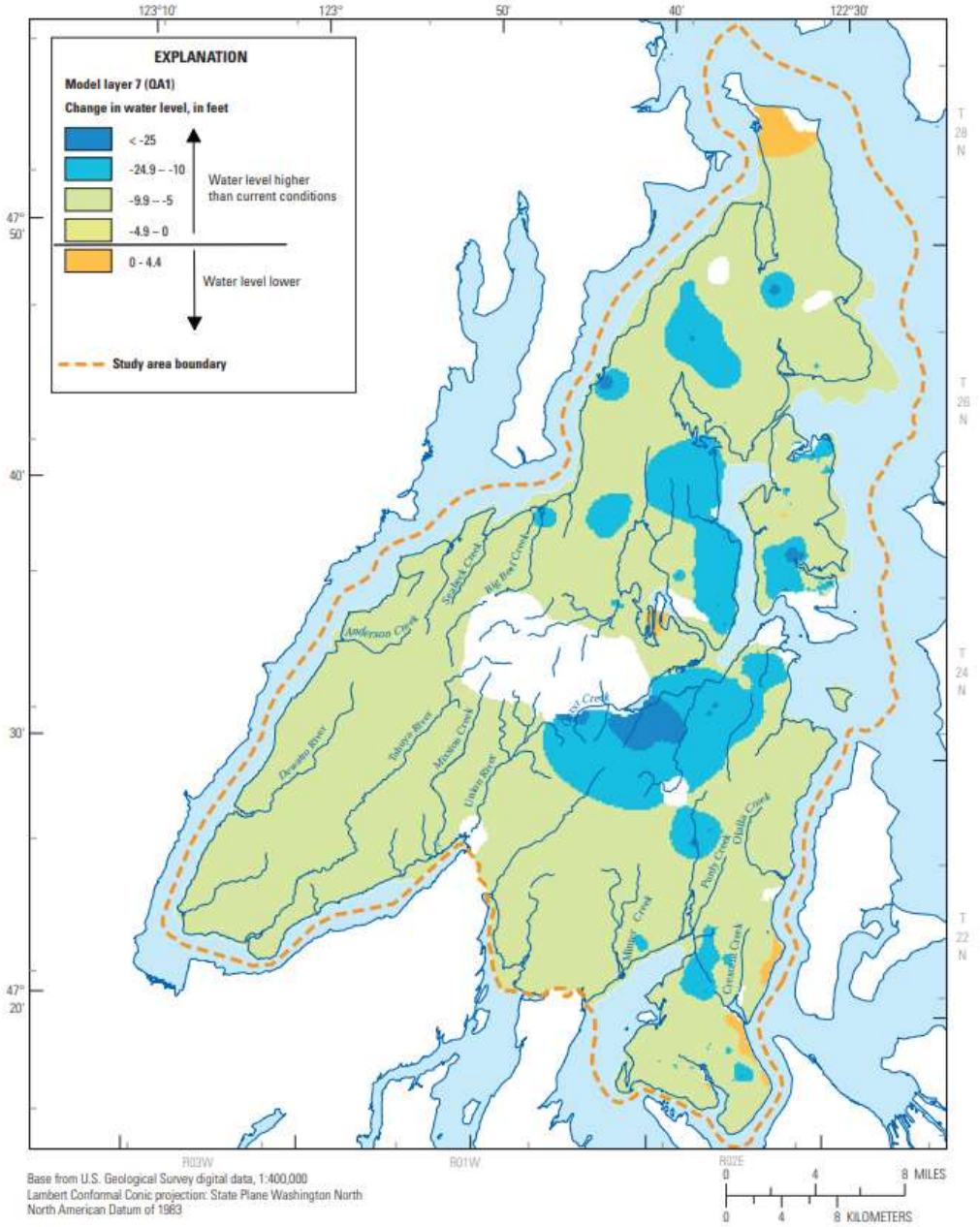
The Hydraulically Broader View

* Flipping the System
  * Water Quality
  * Physical Pipe Factors
  * System Modeling
  * PRV Installation

Understanding the Hydrogeological Options

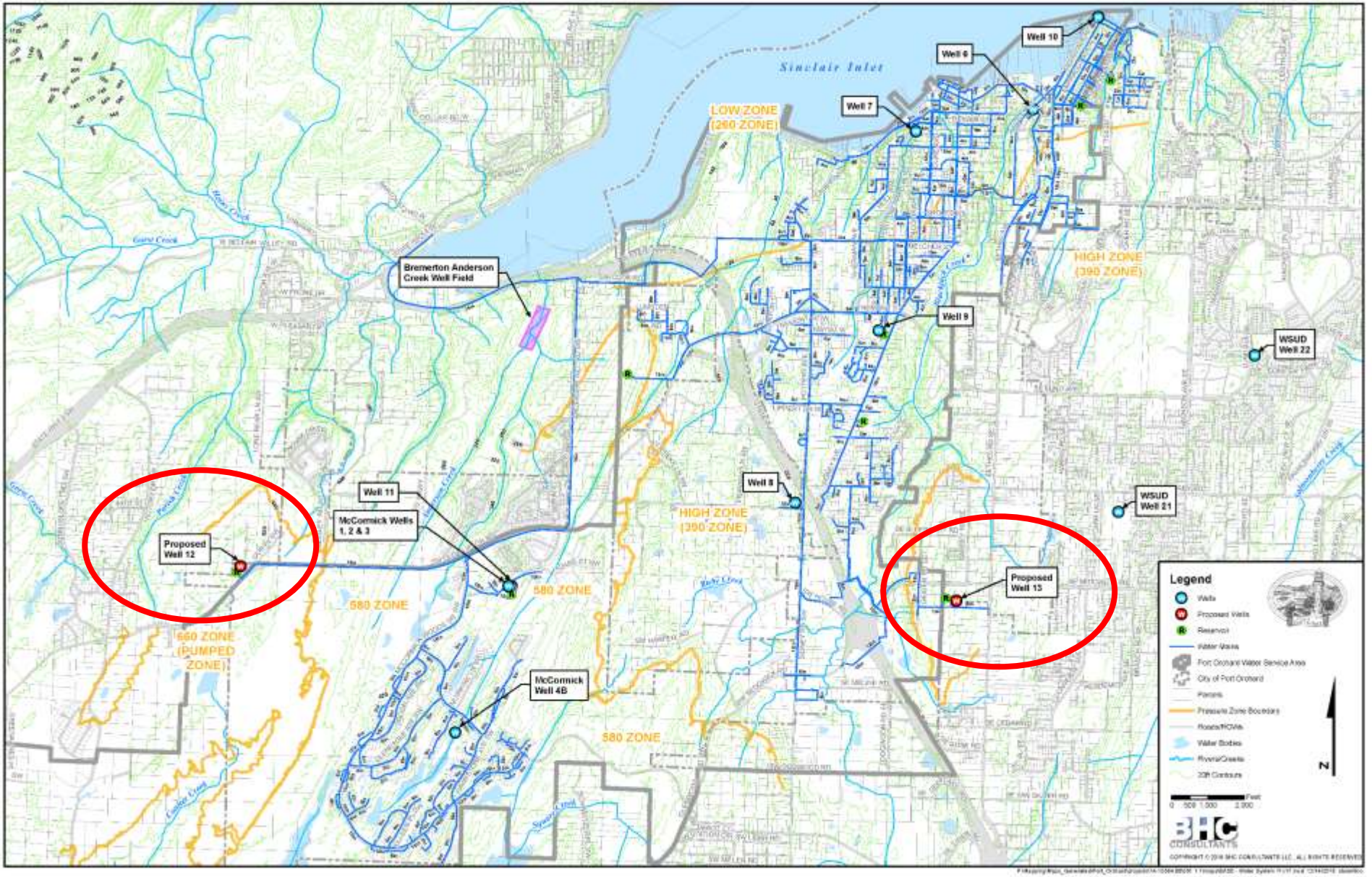
* USGS Kitsap Numerical Simulation Model
  * General Aquifer Location Based on Observed Wells
  * Potential Impacts
  * Regional Definition

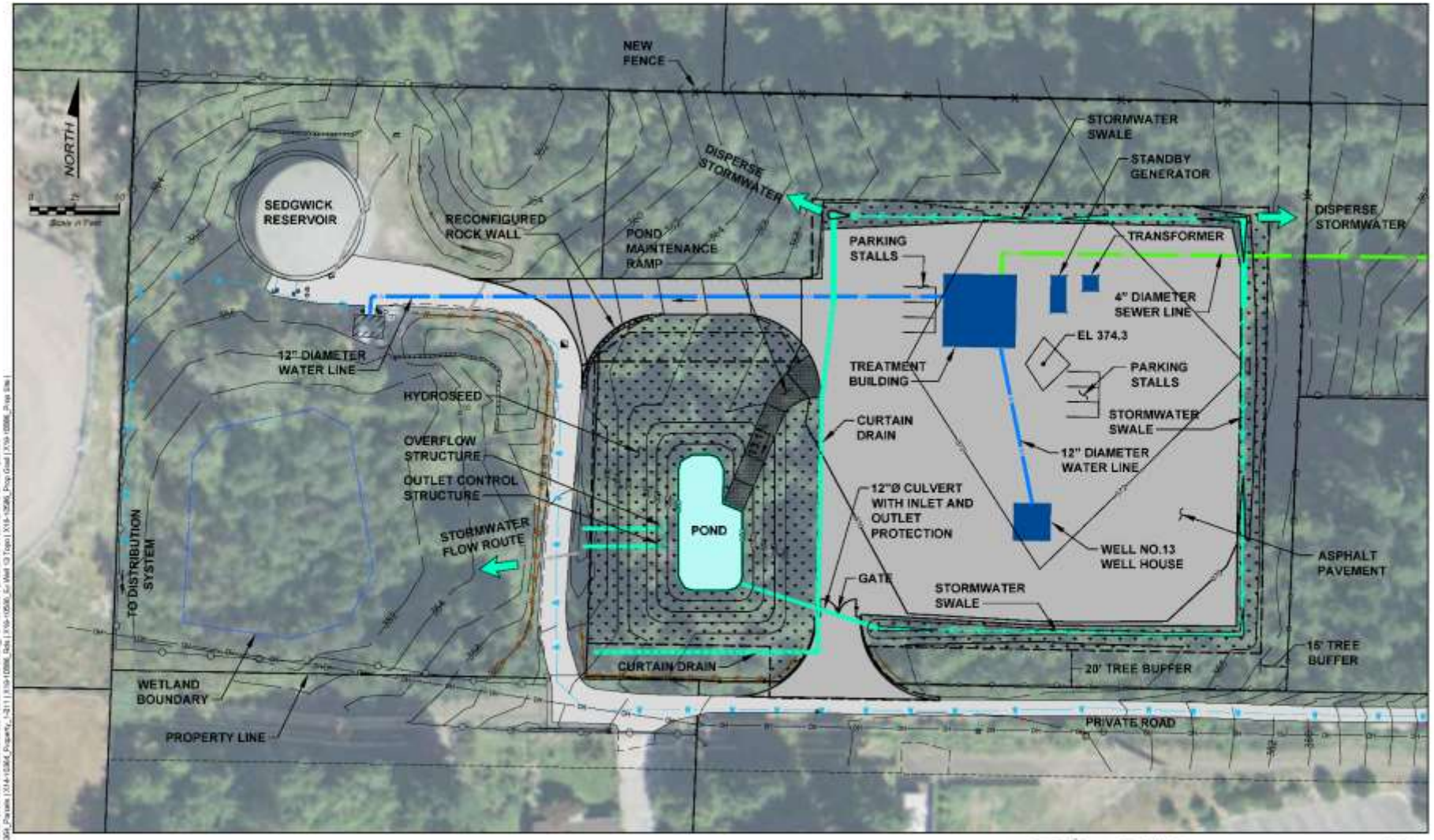




B. Model layer 7—sea-level aquifer (QA1).

New Well Sites





Preliminary Site Plan

Well 13 Water Supply Project

April 2018

Figure 2

The Real Challenge

* Identifying & Engaging Regional and Regulatory Stakeholders
* Establishing a Path Forward in an Era of Changing Regulations

DWSRF Loan – Comp Plan

* Working with Commerce and the Office of Drinking Water
* DWSRF Loan Change
* Updating the Comprehensive Plan

Table 7-2
Planned Water System Improvements, Near-Term Future (2016-2021)

CIP No.	Project	Opinion of Probable Project Cost ($Million)	Note
1	Telemetry Upgrades	$0.1 M	3
2	Water Mains Replacement Program	$0.25 M (annual)	1
3	Pressure Reducing Valve Stations	$0.9 M	3
4	Well 7 Treatment/City Hall PS Removal	$1.1 M	3
5	Well 9 Treatment Facility	$1.4 M	1
	Well 10 Supply	$6.0 M	5
6	- Site Development & Construction	--	--
7	- Treatment Facility	--	--
8	- Transmission Main	--	--
9	Well 11 Project & Treatment Upgrade	$1.2 M	4
10	Well 11 Reservoir Upgrade	TBD	
11	Well 12 Construction	TBD	2
12	Well 13 Development and Construction	TBD	--
13	Melcher Street Pump Station Upgrade	TBD	1
14	Sedgwick Service Area – WSUD connection or Sedgwick Booster Pump Station	TBD	3
15	390 to 580 Zone Booster Pump Station	$0.6 M	4
16	390 to 580 Zone Transmission Main – Sedgwick Road	$3.0 M	4
17	390 to 580 Zone Transmission Main – Old Clifton Road	$4.0 M	4
18	McCormick Pump Station to 580 Zone Reservoir Water Main	$0.6 M	TBD

Notes:
1. Funding by water rates
2. Funding by developer
3. Funding by connection charges, water rates
4. Funding by developer, connection charges
5. Funding by Drinking Water State Revolving Fund Loan Program

Water Rights

* System Wide Water Rights Evaluation
* Existing New Water Rights Applications
* Water Rights Change Applications (Methodology)
  * Going From Shallow To Deep Aquifers
  * Associated Cost Increases
  * Potential Mitigation Results

The Stakeholders

* Meeting with Ecology
* Identifying the other Stakeholders
  * Local Tribes, Towns, Small Water Systems, Purveyors
* Kitsap Is Essentially an Island

Opportunity Through Foster SB 6091

* The primary focus of ESSB 6091 was to **resolve GMA-water availability conflicts** for rural areas resulting from the Hirst v. Whatcom County decision. Part 3 of the bill concerns the adoption of more **flexible mitigation standards** to correct permitting problems resulting from the **Foster v. Yelm decision**. Part 3 includes the establishment of a joint legislative task force to review water rights permitting in relation to **instream flows and fish habitat**, to develop a mitigation sequencing process and scoring system for such appropriations, and to review the Foster decision.

Opportunity Through Foster SB 6091

* These New Wells will Act as **Pilots** and through **Meaningful Engagement** of all the **Stakeholders** involved, we might be able to help push the Water Rights Conversation forward in Washington State. Not just for the here and now but for Decades to come.

A Brighter Water Future

* Impacts to the City's Water System
* Impacts to WRIA 15
  * Instream Flows
  * Net Ecological Benefit
* Setting the Precedent for Prudent, Regional Water Resource Management

A Brighter Water Future
Moving Forward

Questions

Thomas A. Hunter
Utility Manager
City of Port Orchard
thunter@cityofportorchard.us