

JUNE 9, 2016

HELP SHAPE OUR WATER FUTURE: Nanoose Bay (AREA)

MONITOR RIVER FLOW & RECHARGE
 HIGHER AQUIFERS?
 Bathing in Englishman River!
 We need to MONITOR!
PRIVATE AREAS: LOGGING DESTROYS HABITAT

KNOWLEDGE FROM THE PAST INFORMS THE FUTURE
CULTURAL USE OF WATER (1 VOTE)
 WHAT ARE EFFICIENT FARMING PRACTICES?
 EVERYONE WORKING TOGETHER
 NANAIMO TO COMOX!
 WITH BROADER AREA!
 What about Cameron Lake?
RAIN: MONITOR THE RATES, MICRO CLIMATES, CHANGE OVER TIME
WEATHER MONITORING IS INEXPENSIVE & EFFECTIVE

THINK REGIONALLY (3 VOTES)
RECREATIONAL USE OF LAKES
FARM IRRIGATION (17 VOTES)
HOUSEHOLD VEGGIE GARDENS & GREENHOUSES (13 VOTES)
HOUSEHOLD ESSENTIAL INDOOR DEMAND IMPACTS SUPPLY (23 VOTES)
POPULATION INCREASE GET AHEAD OF THE CURVE!
FAIRWINDS! MONITORING IS IMPORTANT
GOLF COURSES & COMMUNITY PARKS (2 VOTES)
WATER PUBLIC AWARENESS IS VITAL!
HOUSEHOLD LAWN & ORNAMENTAL (5 VOTES)
PRIVATE WELLS NEED TO BE MONITORED!
 WHICH WELLS ARE ACTIVE?
 BOTH VOLUME & LEVEL & # OF NEW WELLS!
HOUSEHOLD FIRE PROTECTION (14 VOTES)
DEVELOPMENTS NEED TO BE PLANNED WITH WATER USE!
PRIVATE WELLS NEED TO BE MONITORED!
 MONITOR DEEP AQUIFERS & RECHARGE RATE
 Where's the BEDROCK AREAS?
PIPED USERS SHOULD BE MONITORED
 Daily consumption RATES!
WATER
 Pollinators are CRUCIAL
 We care about water!
WATER PUBLIC AWARENESS IS VITAL!
WATER
 WHAT DOES THE FUTURE LOOK LIKE?
 Broughts? Supply??
WATER
 UNDERSTAND IMPACT ON FISH
AQUATIC HABITAT & STREAM FLOW (16 VOTES)
BUFFER BETWEEN WET LANDS & DEVELOPMENT
GRAPHIC RECORDING: Tanya Gadsby
 Drawing Out Ideas drawingoutideas.ca

AGENDA – March 15th 2018

- Welcome from the Director (B. Rogers)
- Area E water monitoring update (J.Pisani)
- RDN Nanoose Bay Peninsula water service area update (G. St Pierre)
- Englishman River Water Service update (V. Figueria)
- Water Conservation (J. Pisani)
- Closing (B. Rogers)

Update on Area E Water Monitoring

*Julie Pisani, Drinking Water & Watershed Protection
Program Coordinator*

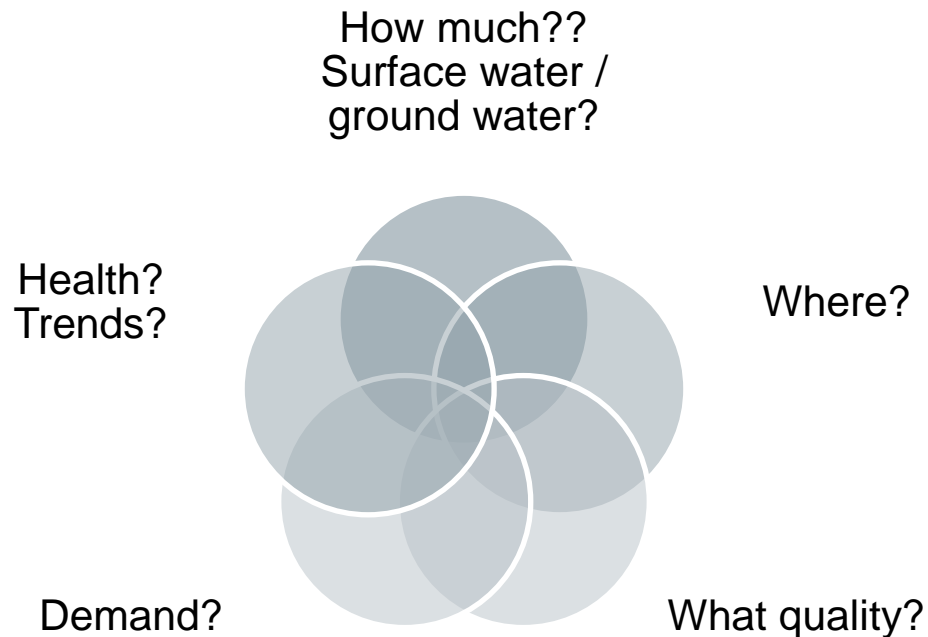


WHAT I WILL COVER:

- Objective of water monitoring
- Summary of Area E Water Monitoring Plan recommendations
- What has been implemented to date?
- Preliminary results
- Next steps

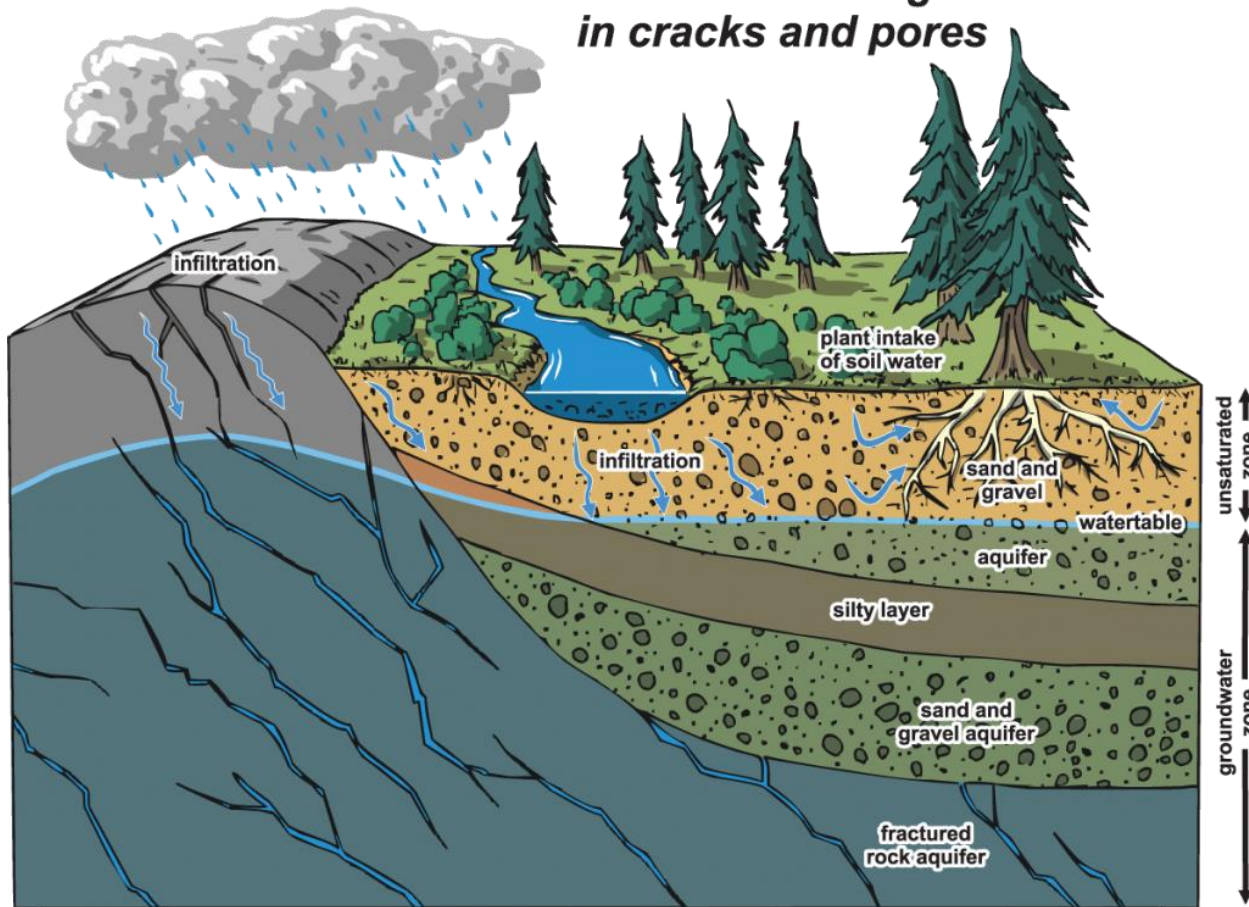
OBJECTIVE OF WATER MONITORING

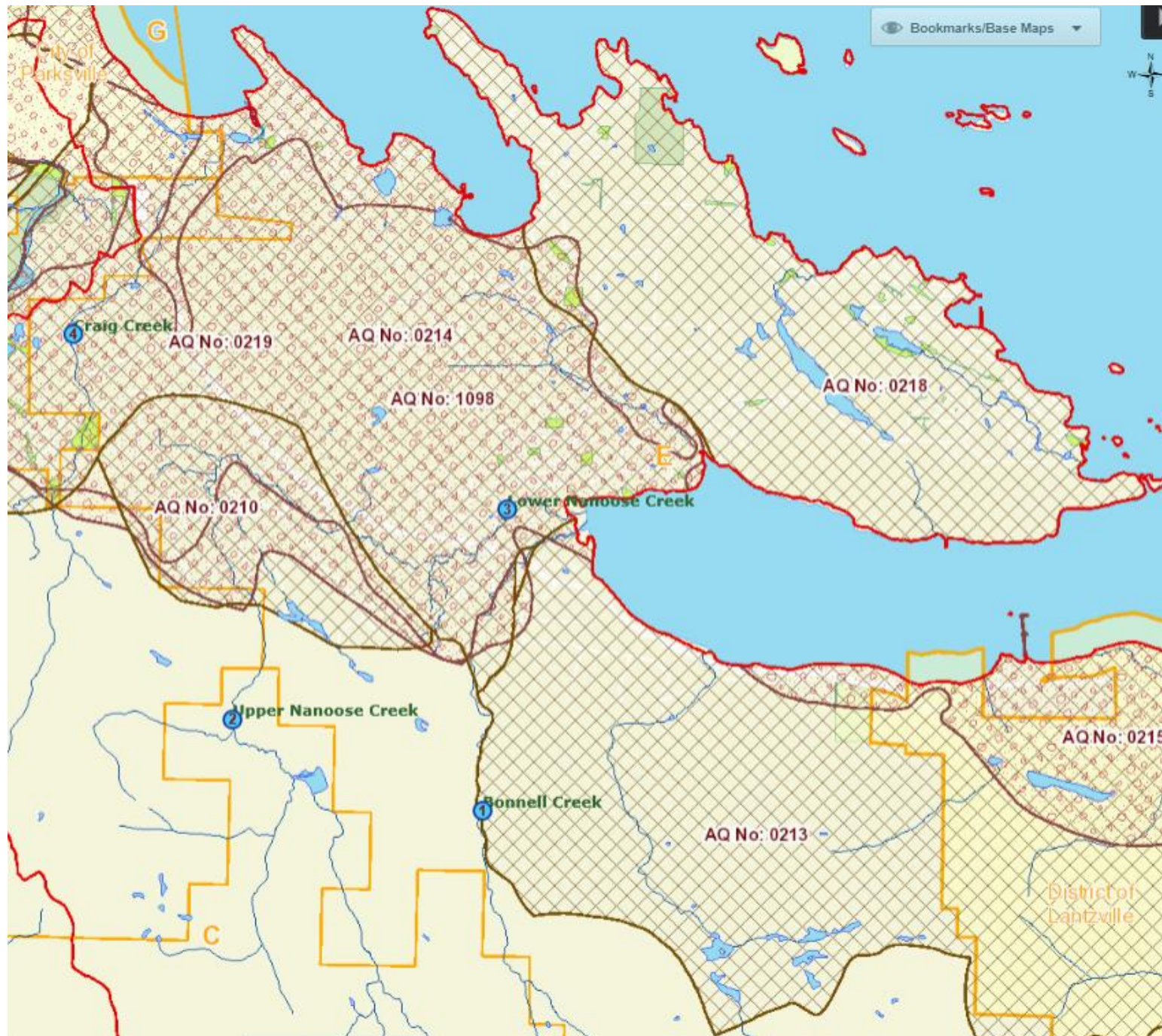
Gather area-specific information to improve understanding about Nanoose's water resources, to inform decision-making & better manage our water for the future.



AREA E RELIES ON GROUNDWATER

*Water stored underground
in cracks and pores*





AREA E

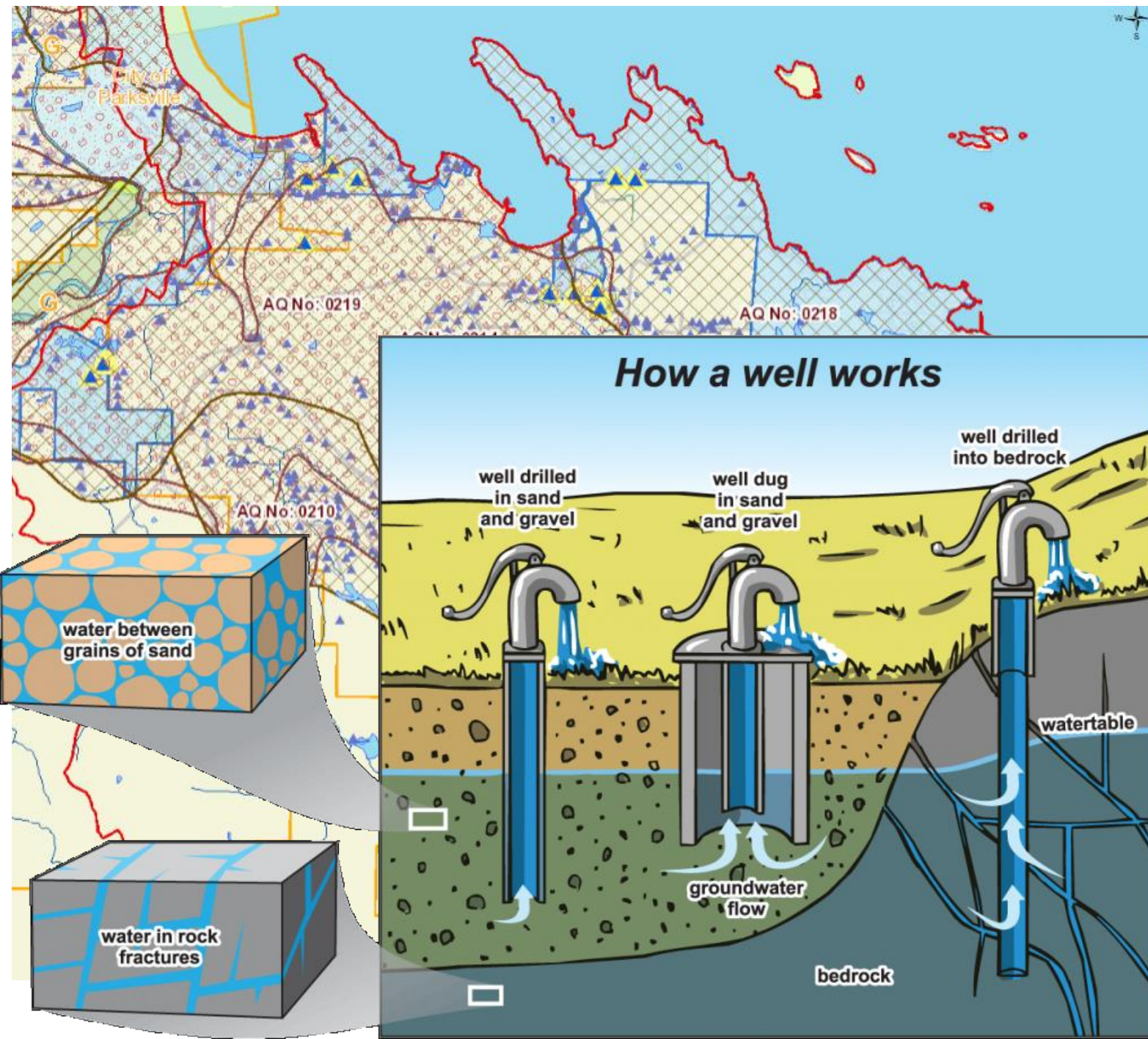
- coastal bedrock aquifers
- sand & gravel aquifers
- smaller creeks

AREA E

- RDN water service area on the Peninsula

- Served by RDN groundwater wells

- Private wells provide water in un-serviced locations





PRIMARY RECOMMENDATIONS

AREA E WATER MONITORING PLAN (Golder,2016)

Surface Water Levels

- Lower Nanoose Creek
- Upper Nanoose Creek
- Bonnell Creek

Climate

- Headwater of Nanoose Creek
- Nanoose Peninsula

Groundwater Levels

- Aquifer 210
- Aquifer 213
- Aquifer 214
- Aquifer 218
- Aquifer 219
- Aquifer 1098

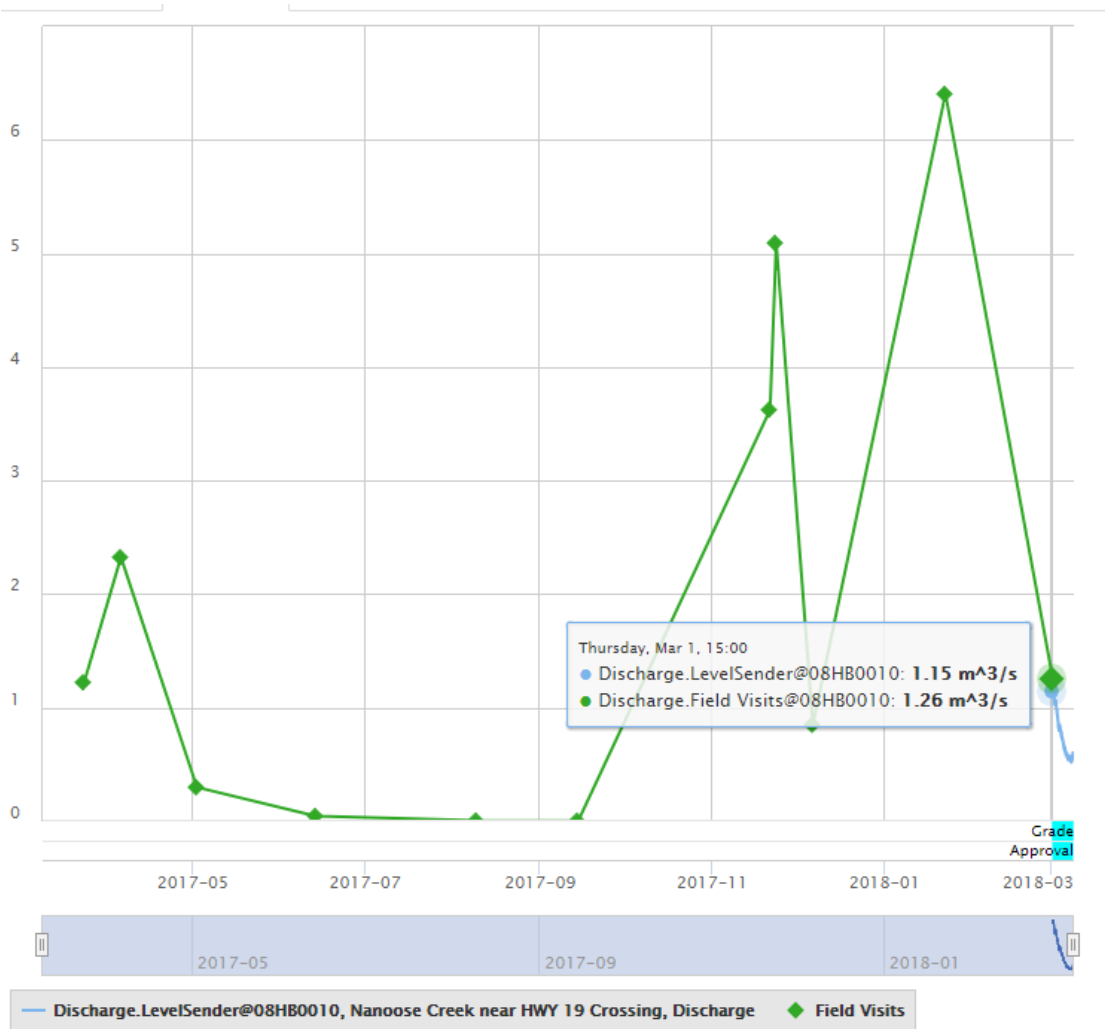


IMPLEMENTED TO DATE

PARAMETER	LOCATION	PARTNER	YEAR
Streamflow & Level	Lower Nanoose Creek	MFLRNO	2017
Climate – precipitation, temperature, wind	Upper Nanoose Creek	Island Timberlands	2018
Groundwater levels	1- Aquifer 213 (bedrock)	Private well owners	2016
	5 - Aquifer 214 (bedrock)		2015
	2- Aquifer 218 (bedrock)		2017
	5- Aquifer 219 (sand & gravel)		2015
	2- Aquifer 1098 (sand & gravel)		2015, 2017

Still looking for Aquifer 210 - Matthew / Morello Rd

PRELIMINARY RESULTS



Nanoose Creek

Streamflow Gauge

- only 1 year of data so far
- track low & high flows
- compare with groundwater levels – interaction?
- compare with precipitation – delay?

PRELIMINARY RESULTS



Upper Nanoose Creek Watershed

Climate Station

... will be installed this summer in
partnership with Island Timberlands

Precipitation

Wind

Temperature

PRELIMINARY RESULTS



Bedrock & Sand and Gravel Aquifers

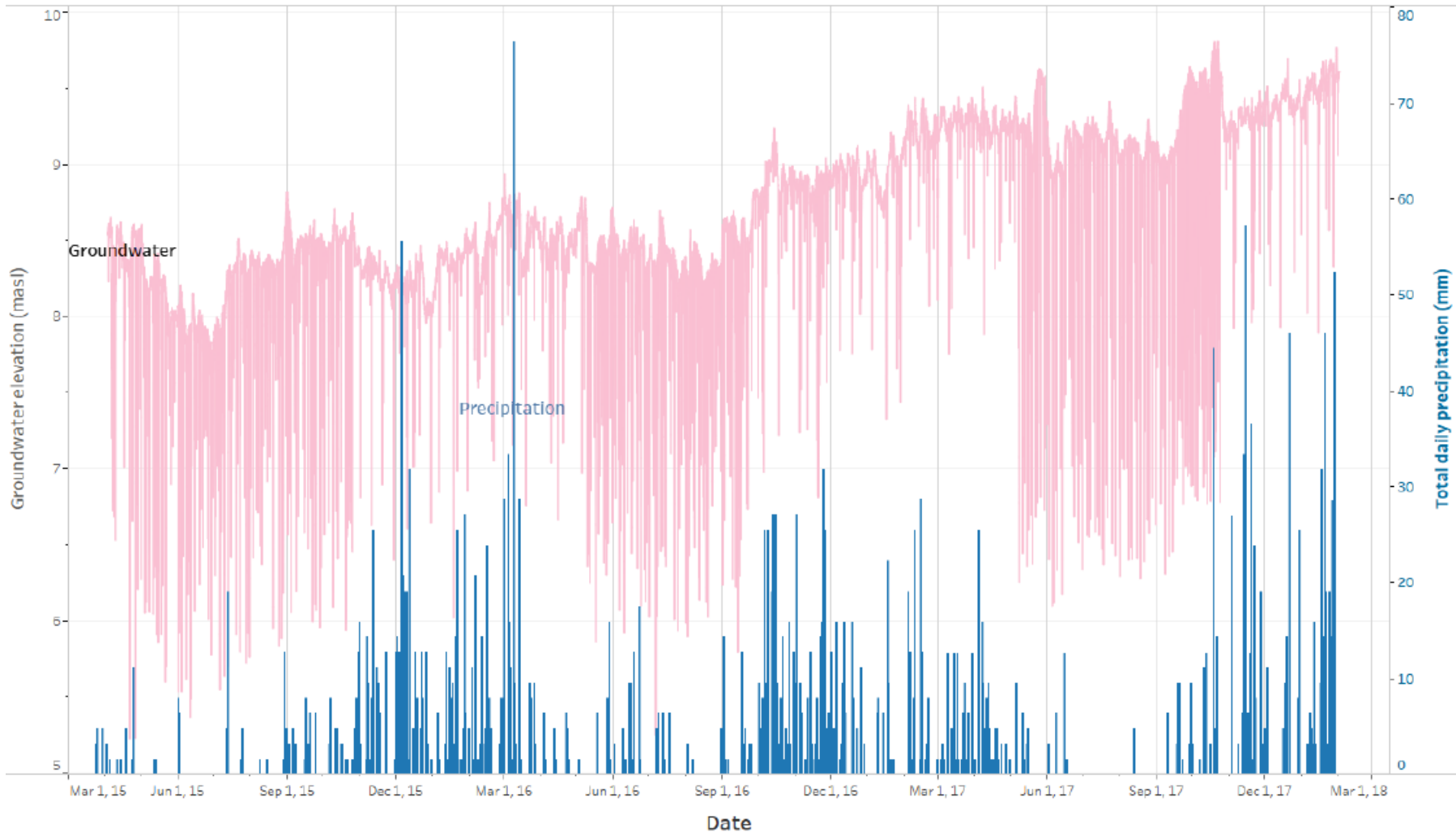
Groundwater Level Monitoring

- Need at least 5-10 years of data
- Observe water table fluctuations over time
- Track seasonal patterns
- Impacts of climate events, pumping
- Combine with other data to better quantify volumes / water availability

PRELIMINARY RESULTS

AQUIFER 219

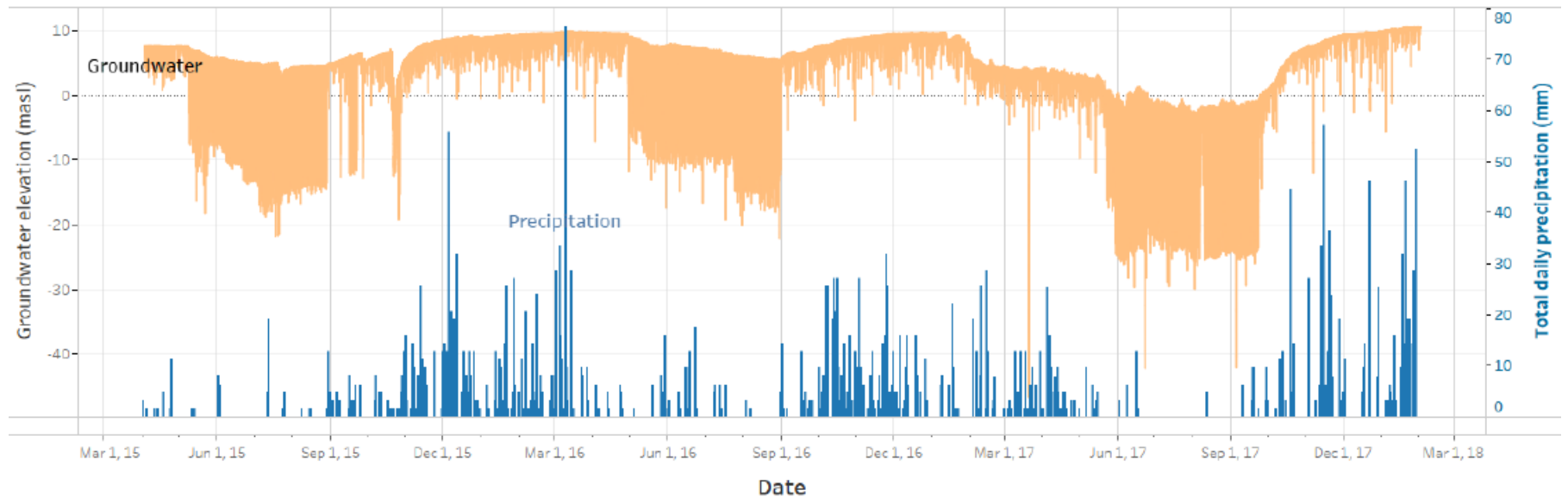
Groundwater elevation and precipitation in 05



PRELIMINARY RESULTS

AQUIFER 214

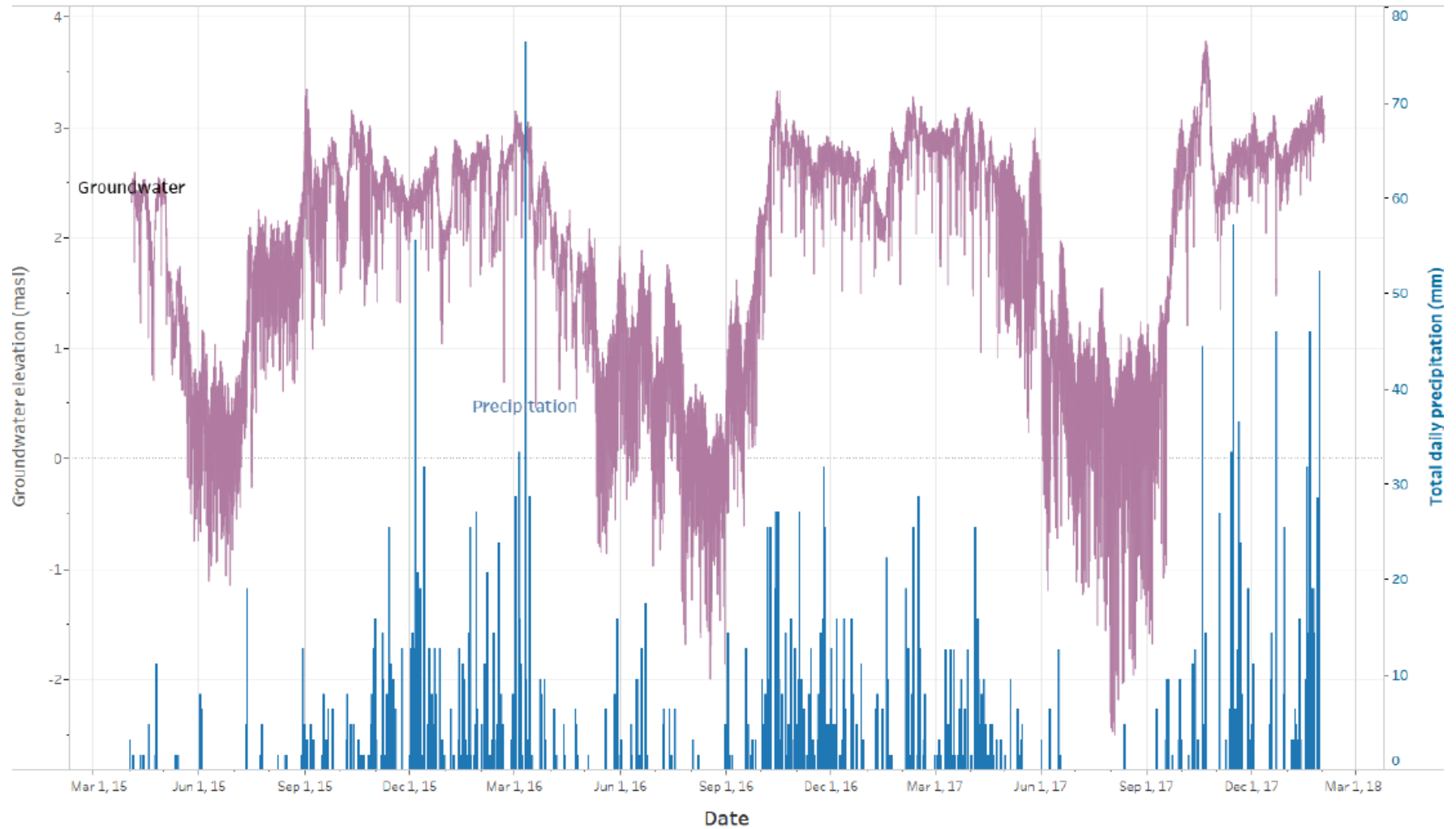
Groundwater elevation, precipitation and electrical conductivity in B3



PRELIMINARY RESULTS

AQUIFER 1098

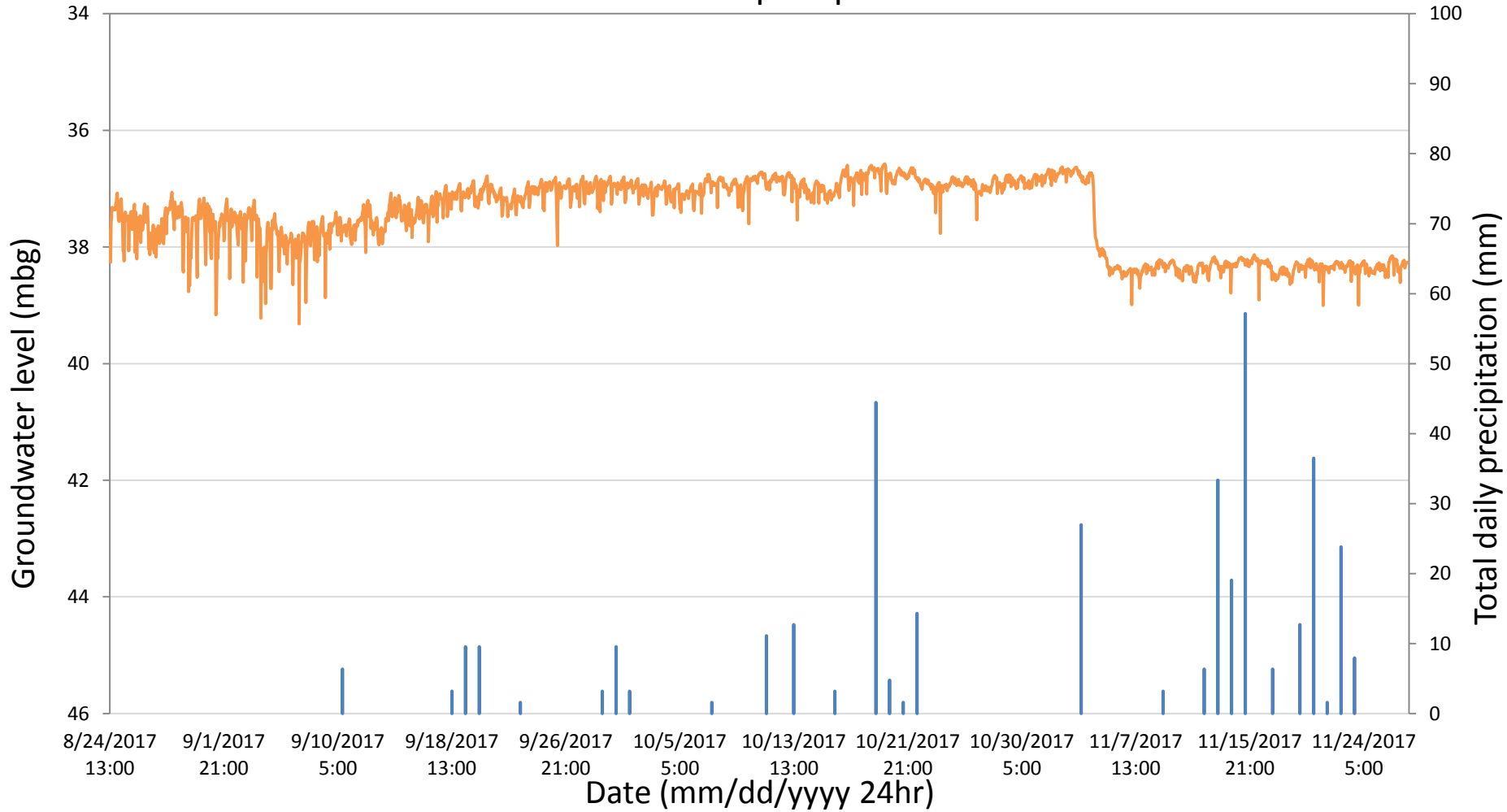
Groundwater elevation and precipitation in O6



PRELIMINARY RESULTS

AQUIFER 1098

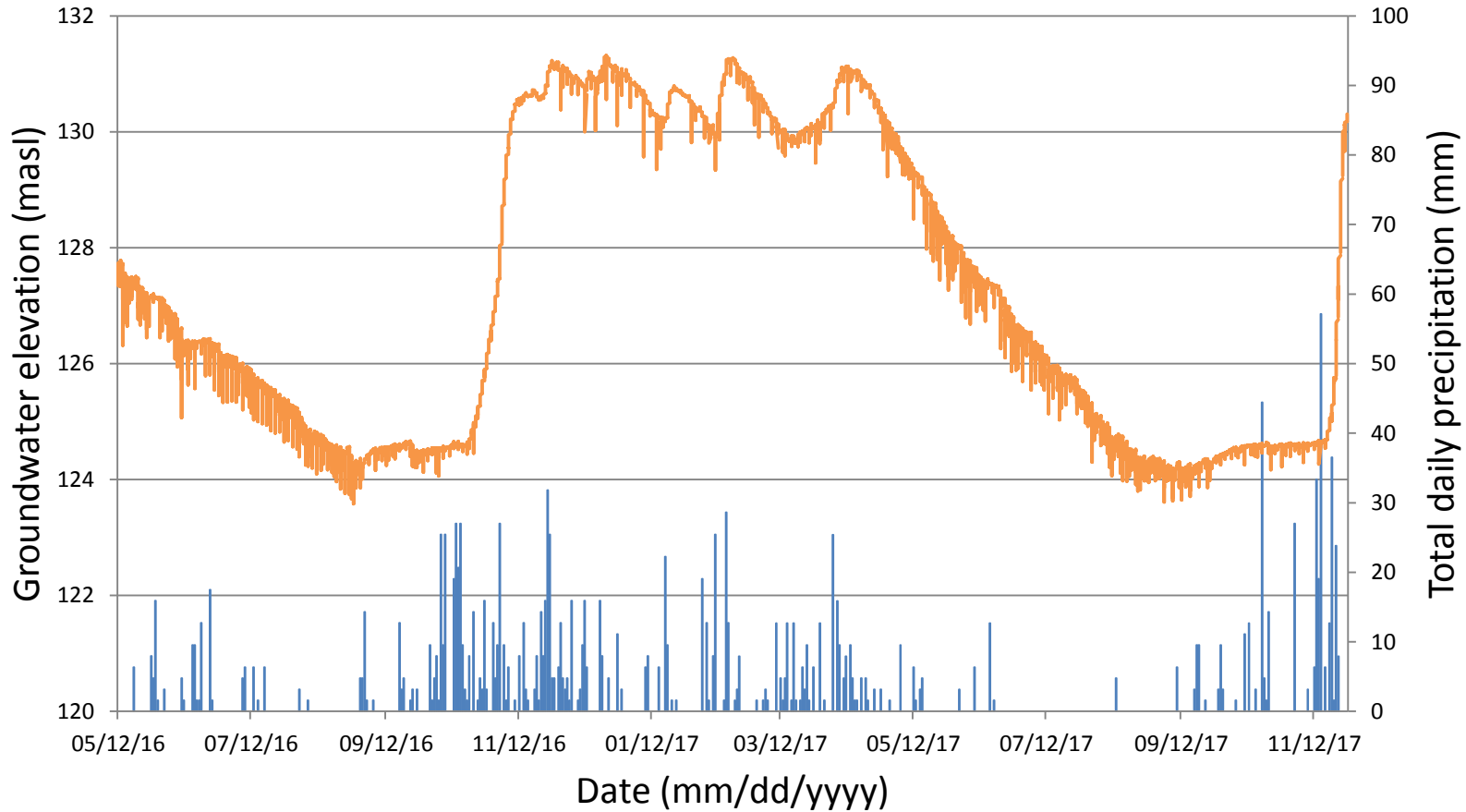
Groundwater level and precipitation in VOW25



PRELIMINARY RESULTS

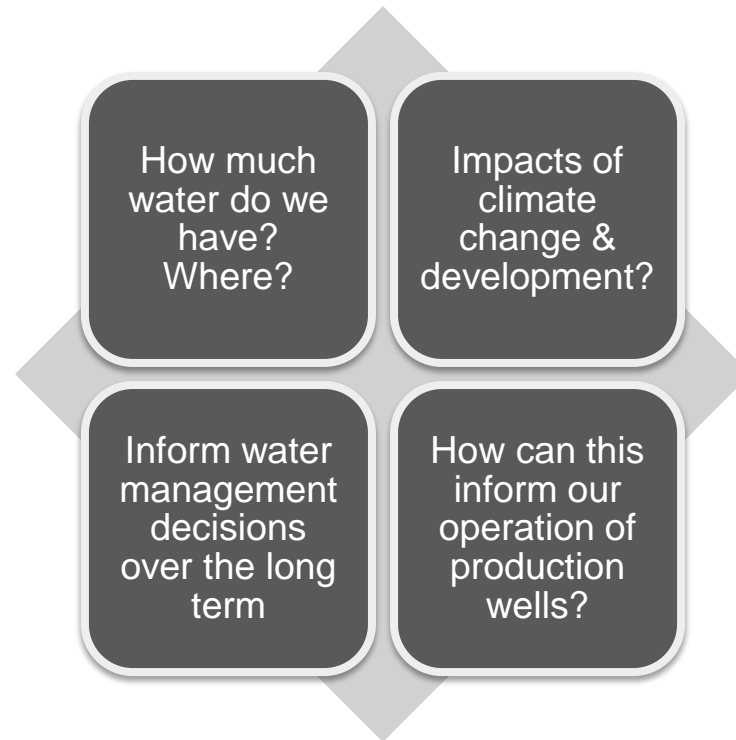
AQUIFER 213

Groundwater elevation and precipitation in VOW13



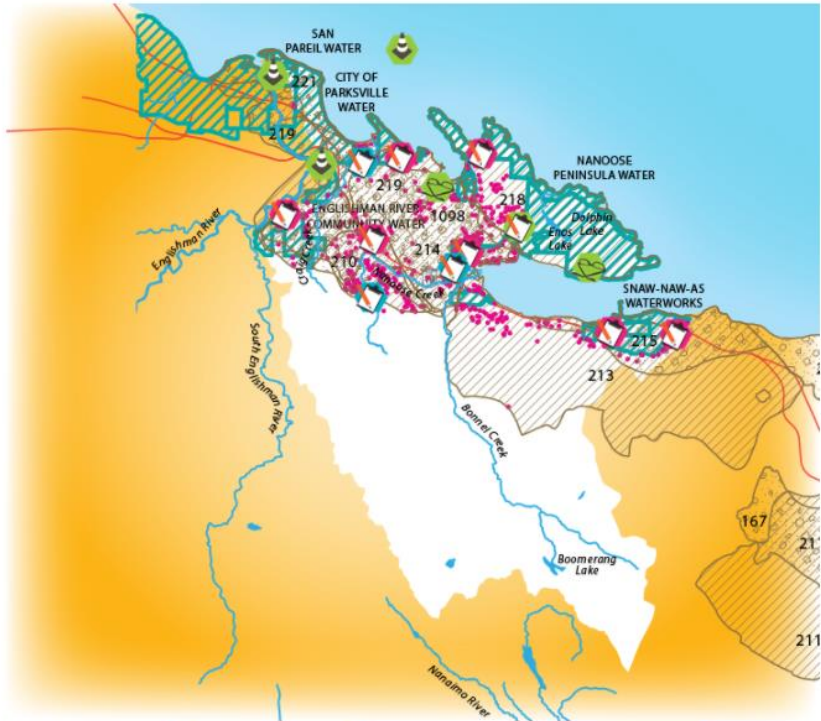
OUTLOOK / NEXT STEPS

- Continue to collect data → Analysis via numerical model
- Closer to answering the questions:



Our Water Regions | Drinking Water & Watershed Protection Program | www.dwwp.ca

RDN Watershed Map > Nanoose



Quick Facts

This subsection of Water Region 5 covers the Nanoose area. The forested headlands are drained by small creeks such as Bonnell and Nanoose Creeks. The water for residents in this region comes from groundwater sources - the bedrock and sand & gravel aquifers that underlie this area.

It includes RDN Electoral Area E, which is primarily rural residential and suburban.

- RDN Water Budget Study
- Team WaterSmart Tips!
- RDN Get Involved Page
- GIS Water Map

Reports Projects Cultural Site
Workshops Monitoring

- Land Use
- Water Supply**
- Aquifers
- Streams & Waterbodies
- First Nations Significance
- Community Programs

Water Supply

The drinking water supply in this water region is predominantly groundwater coming from the area's aquifers. Many residents supply their own water from private wells (indicated by the pink dots on the map).

The RDN **wellSMART** program provides information on private wells.



RDN
Drinking
Water &
Watershed
Protection
website
www.dwwp.ca

Nanoose
Water
Monitoring
Website

www.nanoosewatermonitoring.ca

Update on Area E Water Monitoring

QUESTIONS? FEEDBACK? IDEAS?

jpisani@rdn.bc.ca / www.dwwp.ca

Water Operations and Capital Projects Update

presented by: Gerald St. Pierre, P.Eng., PMP
Project Engineer, Water Services

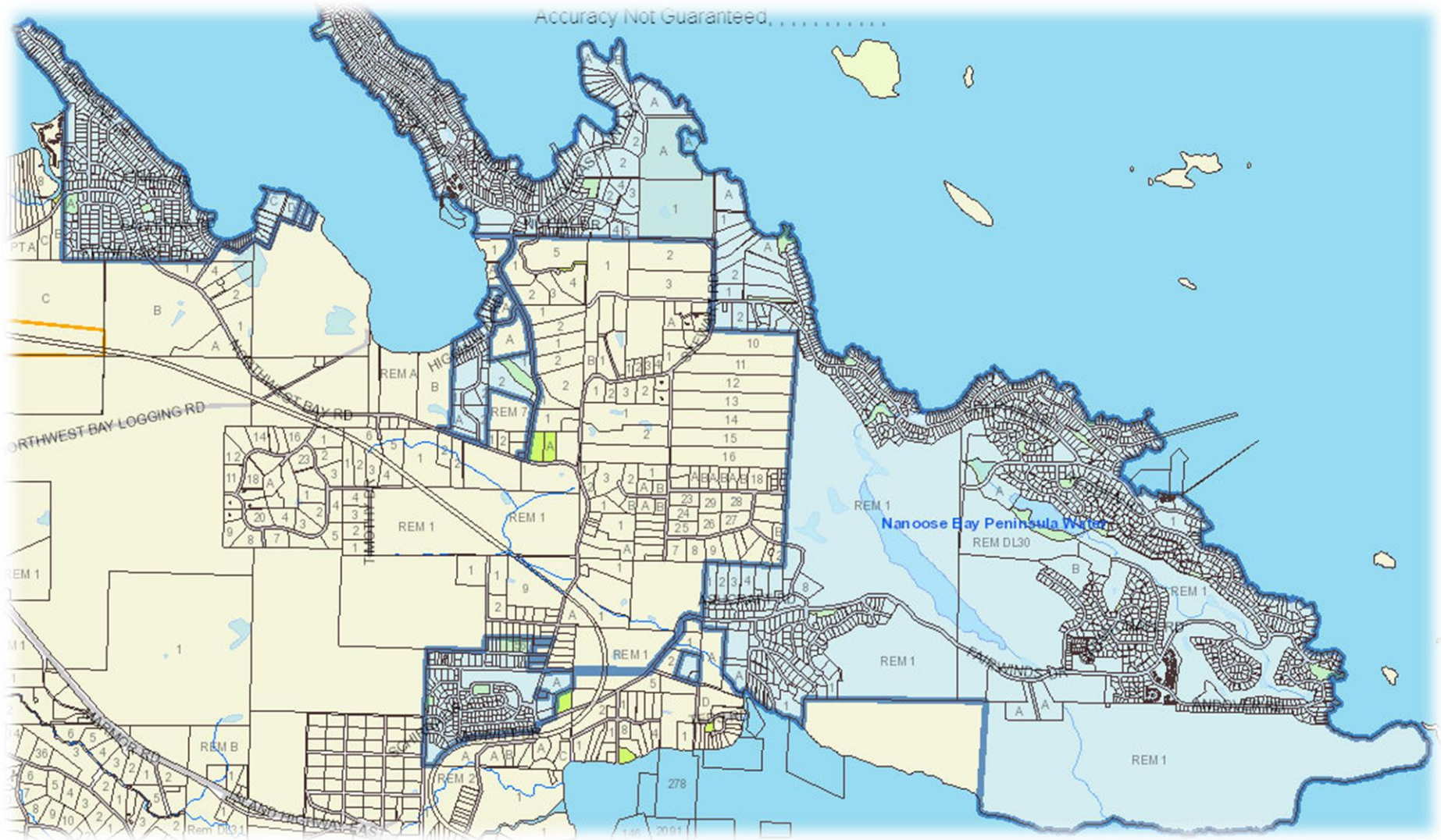


Water System Quick Facts

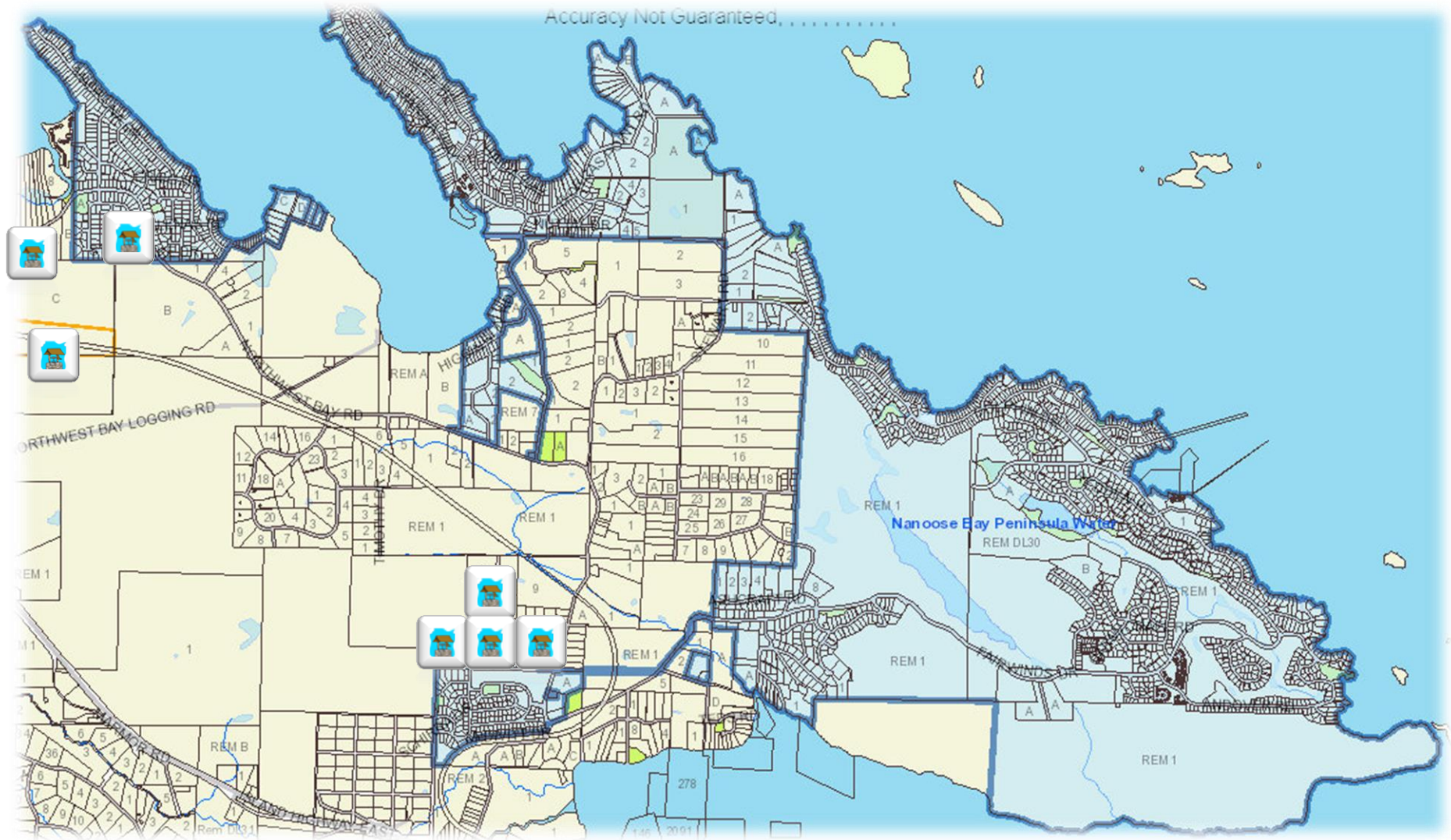
- 12 supply wells
- 6 reservoirs (3,243m³)
- 7 pressure zones
- 10 pressure reducing valves
- ~ 290 Fire Hydrants
- ~ 60km of watermain



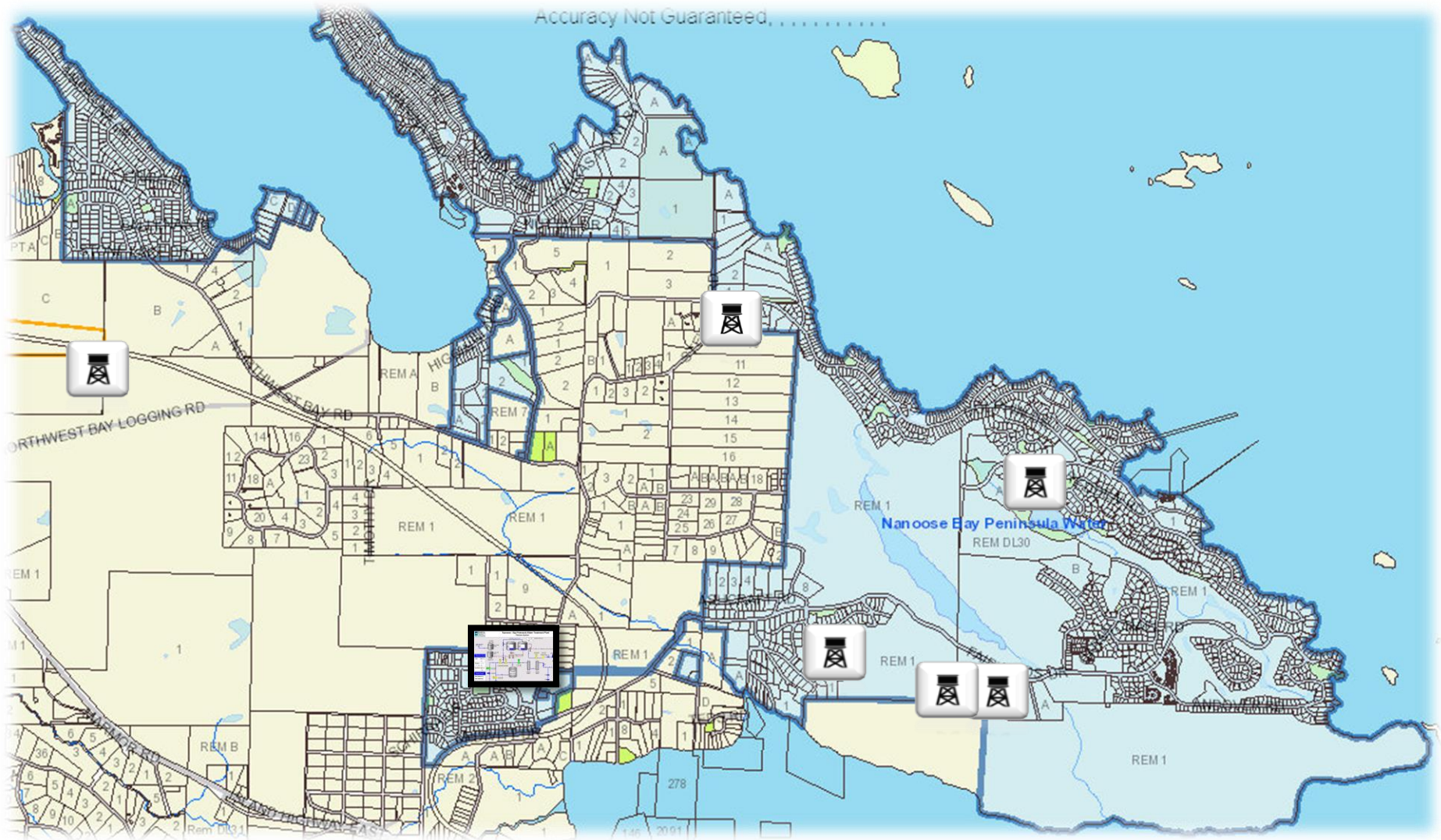
Extents of the Nanoose Water Service Area



Current Supply Well Locations



Reservoir Locations and WTP



Nanoose Water System Information

- A variety of information on your water system can be found here:

<http://www.rdn.bc.ca/nanoose-bay-peninsula>

- Weekly lab test results going back to 2005
- Groundwater and surface water production volumes
- Historical well level data
- Annual water system reports
- And more!



2014 Referendum Capital Projects Status

- A successful referendum in 2014 allowed for \$2.6 Million in borrowing
- 14 projects identified to be completed over a 5 year period
- Replacement of aging AC pipe and fireflow improvements

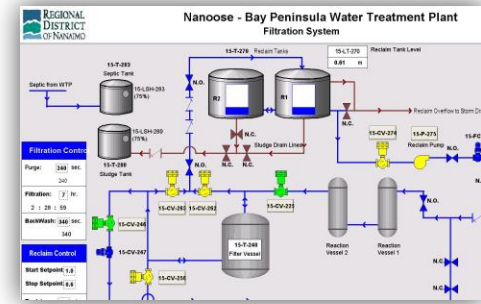
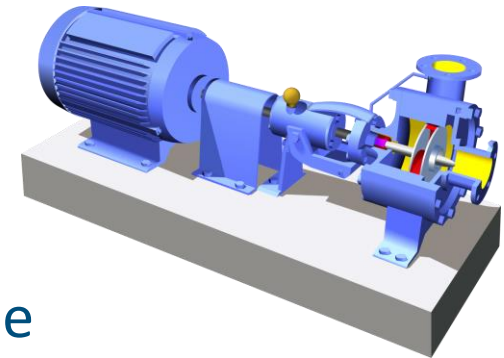


Current Status of Projects

Projects	Status
Garry Oak Drive Watermain and PRV	Complete
Harlequin/Sea Lion Loop & Footbridge	Cancelled
Arbutus Crescent Watermain	Complete
Hemlock Drive Watermain	Complete
Ashcraft Road Watermain	Complete
Schirra/McDivitt Watermain	Complete
West Bay PRV Upgrade	Complete
Marine Drive Watermain	Complete
Anchor Way Watermain	To be completed this summer
DCC Major Update Study	To be completed later this year
Dolphin Drive Watermain	Planned for 2019
Outrigger Road Watermain	Planned for 2019
West Bay Pumphouse Upgrade	Planned for 2019
Dorcas Point Road Watermain	Planned for 2019

Other 2018 Projects

- Nanoose Bay Pumpstation Design and Construction
- Water Systems SCADA Master Plan
- Installation of a backup generator at the Nanoose Water Treatment Plant
- Water Systems Condition Assessments and Capital Plans





Home ► Regional Services ► Water & Utility Services ► WaterSmart Communities ► Nanoose Bay Peninsula

REGIONAL SERVICES

- Building & Bylaw Services
- Corporate Services
- Current Planning
- Drinking Water & Watershed Protection
- Economic Development
- Emergency Services
- Energy & Sustainability
- Finance
- GIS/Mapping
- Long Range Planning
- Parks
- Recreation
- Regional Transit
- Solid Waste and Recycling
- Wastewater Services
- Water & Utility Services**

- Water Quality Tests
- WaterSmart Communities
- WATERnews

Nanoose Bay Peninsula

The Nanoose Bay Peninsula Water System was established in 2005 by amalgamating the water service areas locally known as Madrona, Wall Beach, Driftwood, Nanoose (Beachcomber), Fairwinds, Arbutus Park, and West Bay. The Nanoose Bay Peninsula Water System is comprised of 2014 water service customers. The water supply originates from 11 groundwater wells located in the area, and is supplemented seasonally (as required) with water from the Englishman River. The water supply is chlorinated and stored in several reservoirs throughout Nanoose Bay. A water treatment plant designed to remove iron, manganese, ammonia and sulphur from the well water was constructed in 2012. By the end of November 2012, Nanoose Bay Peninsula water system customers were receiving a much-improved combination of filtered and unfiltered drinking water. A link to a map of the Nanoose Bay Peninsula Water Service Area is provided at the bottom of this page.

NOTICES

- Referendum - Bylaw 1714 - Nanoose Bay Peninsula Water Service Area Capital Improvements
- RDN Water Conservation Plan, October 2013 (48 pgs)

Well Production

- Groundwater & Surface Water Production Volumes 2014-2018

Water Quality Reports

- Tap Water-Annual Potability Test Results
- Well Water-Annual Raw Water Test Results
- Vancouver Island Health Authority Test Results Click this link for V.I.H.A. testing, then select NANOOSE BAY, then select NANOOSE BAY PENINSULA WATER SYSTEM AREA

2018 Water Test Results

- 2018 Weekly Lab Test Results

Historic Water Test Results

- Tap Water-Annual Potability Test Results 2000-2012
- Well Water-Annual Raw Water Test Results 2000-2012
- 2017 Weekly Lab Test Results

Nanoose Bay Peninsula Water System webpage
 - water quality reports
 - historic water level data
 - well production volumes, etc.

www.rdn.bc.ca/nanoose-bay-peninsula



Update on NBP Water Operations & Capital Projects

QUESTIONS? FEEDBACK? IDEAS?

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Englishman River Water Service Update

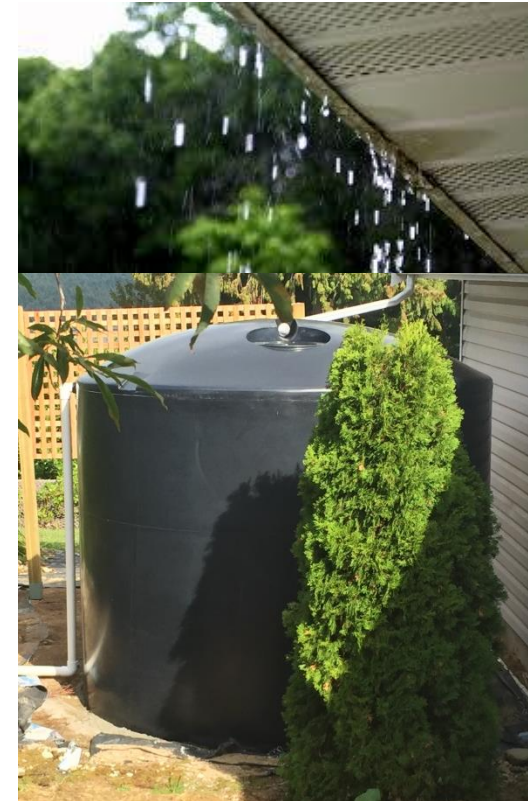
presented by: Vaughn Figueira



WATER CONSERVATION



- Target outdoor water use: *water demand doubles to triples in summer months*
- Educational workshops, community displays (www.teamwatersmart.ca)
- Irrigation Check-ups
- Rebates:
 - Rainwater Collection (up to \$750)
 - Irrigation Efficiency - drip, smart controllers, rain sensors etc. (up to \$550)
 - Soil Upgrades -adding topsoil, mulch to increase water retention (up to \$100)



WATERING RESTRICTIONS

- Clear region-wide framework for sprinkling to encourage efficiency & minimize waste.
- Provides means to require outdoor water-use reductions during drought periods or operational emergencies.

April & October

May to September

Only as Required

STAGE	1	2	3	4
Sprinkling Times	Between 7 PM - 7 AM	7-10 AM OR 7-10 PM for a max. of two hours	VOLUNTARY HEIGHTENED WATER USE REDUCTIONS	Sprinkling Ban: Lawn Watering Not Permitted
Frequency	Any day	Every Other Day Even # houses - Even days Odd # houses - Odd days		
Pop-up spray, Rotors & Sprinklers	Only during permitted times	Only during permitted times		
Hand-watering & Drip Irrigation (trees, shrubs, flowers)	Anytime	Anytime		Only between 7-10 AM or PM
Vegetable Gardens	Anytime	Anytime		Anytime

We love Area E Water 💧

THANK YOU FOR COMING!