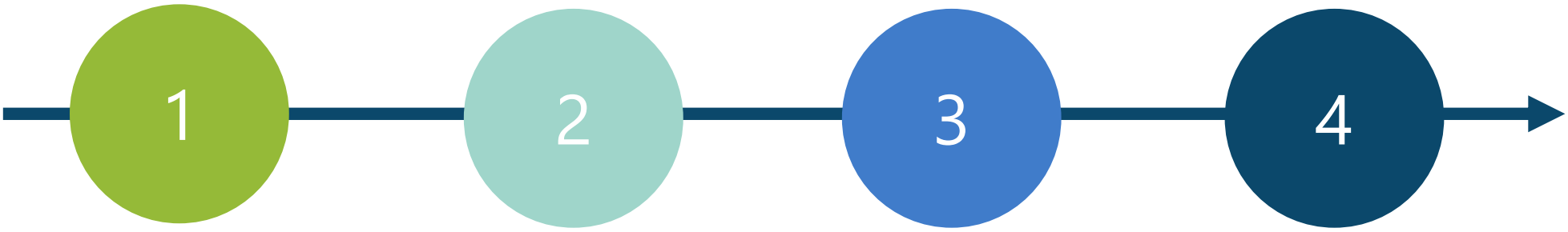
City of Sandy
City Council Meeting
Wastewater Discharge Alternatives Study

murraysmith

September 8, 2020

AGENDA


1
2
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Purpose & Background
Findings to date
Project Status
Next Steps

1. PURPOSE & BACKGROUND

PURPOSE

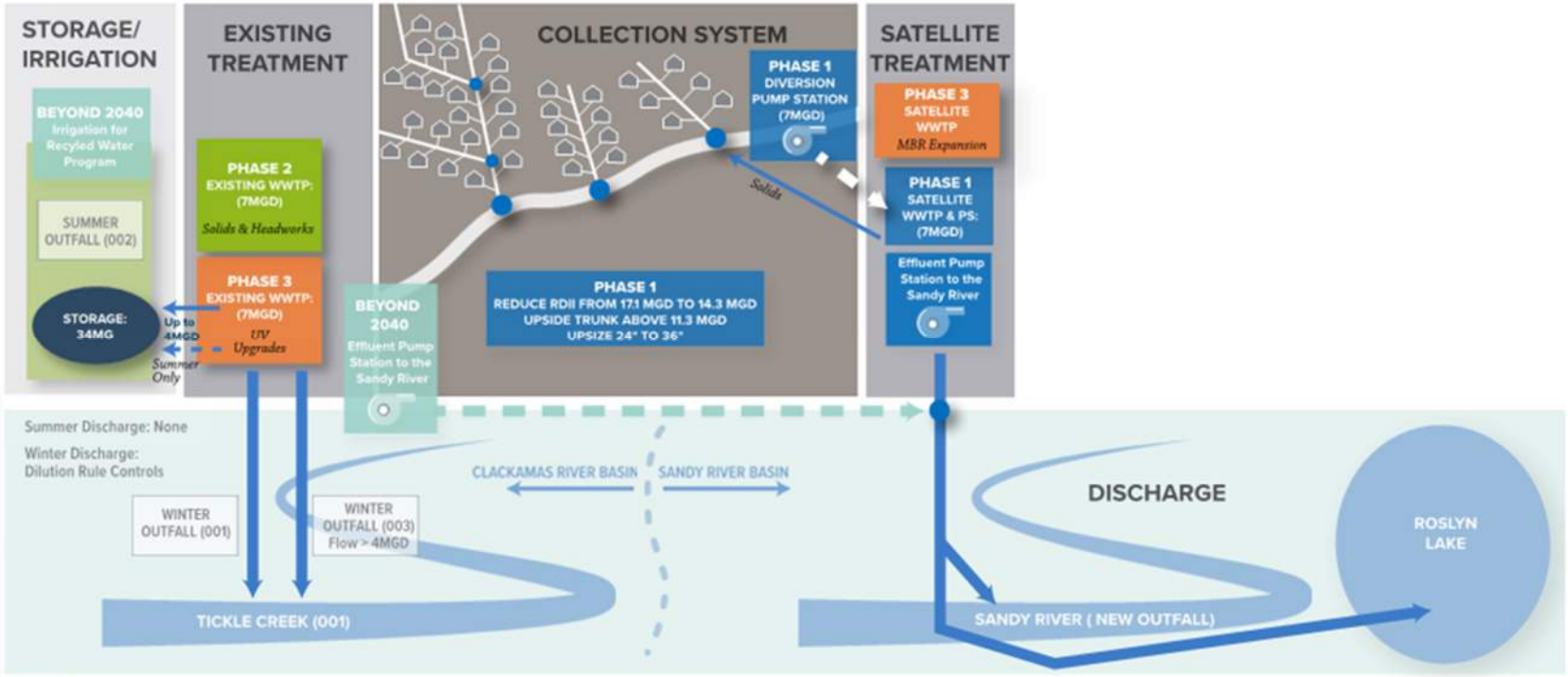
- Update on key findings from studies
- Update regarding status of key project elements

KEY ISSUES

- High Inflow and Infiltration in the City's sanitary sewer collection system
- Existing Wastewater Treatment Plant (WWTP) has limited capacity and is located on a constrained site
- Limited discharge capacity in Tickle Creek
- City now under Mutual Agreement and Order (MAO) from DEQ

OVERVIEW OF EXISTING SYSTEM

OVERVIEW OF APPROACH



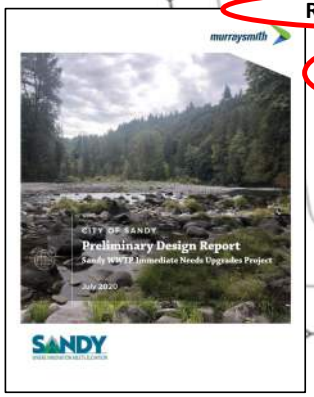
2. FINDINGS TO DATE

Treatment Facilities

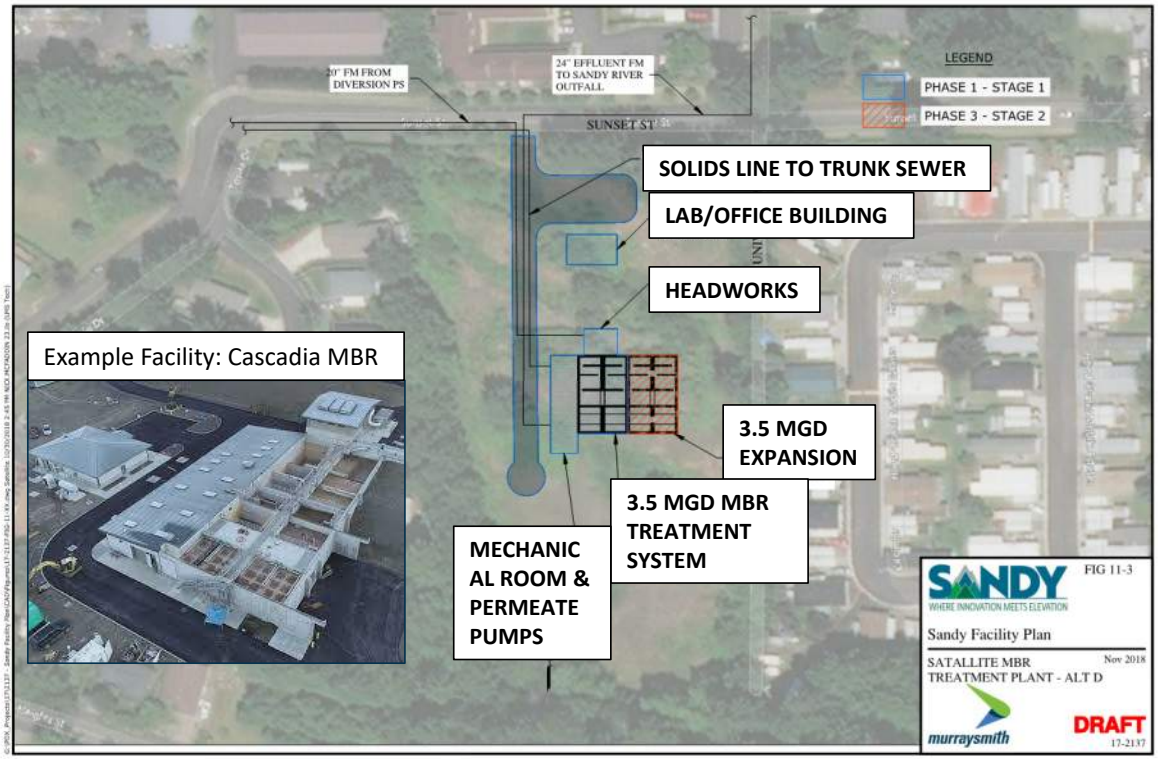
EXISTING WWTP

EASTSIDE SATELLITE TREATMENT FACILITY

EXISTING WWTP



EASTSIDE SATELLITE TREATMENT FACILITY

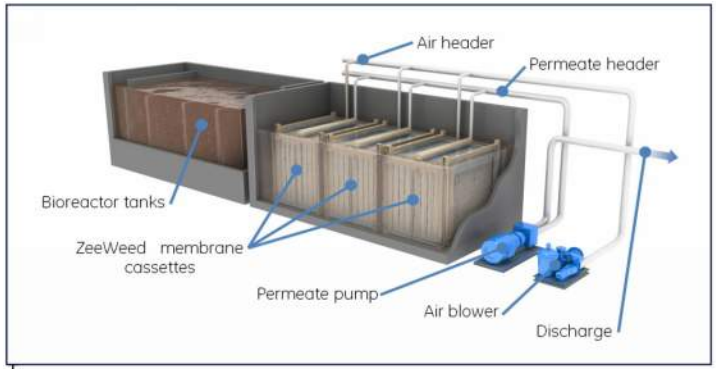


Projected Design Flows

Phase	ADWF	Peak Flow
1	0.46 MGD	3.5 MGD
3	0.93 MGD	7.0 MGD

HIGH QUALITY EFFLUENT

Membrane bioreactors (mbr) produce consistent, high quality finished water



Estimated MBR effluent quality:

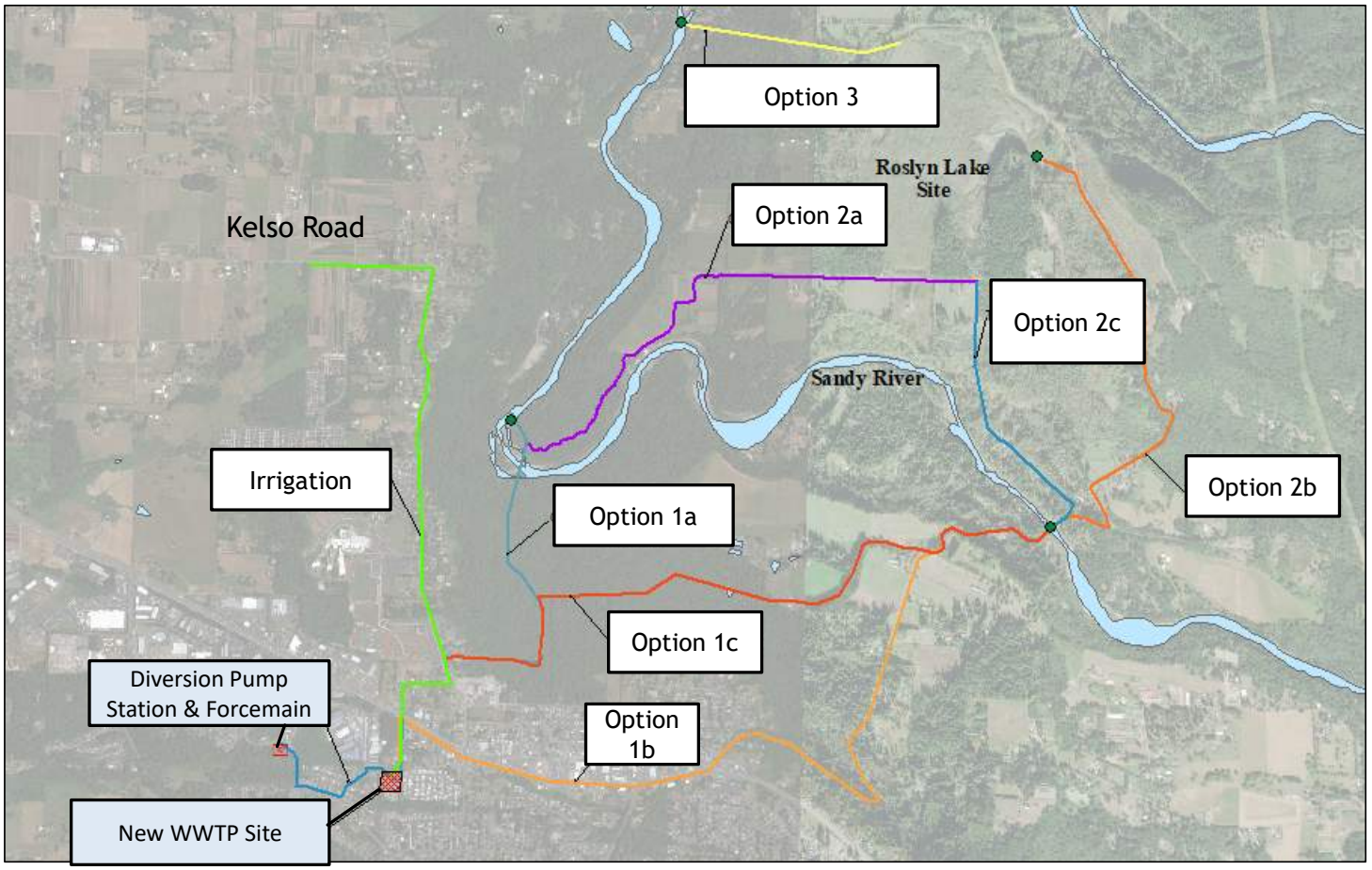
BOD_5:	< 5 mg/L
TSS:	< 1 mg/L
Total Nitrogen:	< 14 mg/L
Total Phosphorus:	< 1 mg/L
Turbidity:	< 0.2 NTU
Total Coliform	typ. non-detect

Sandy River Outfall Siting Study

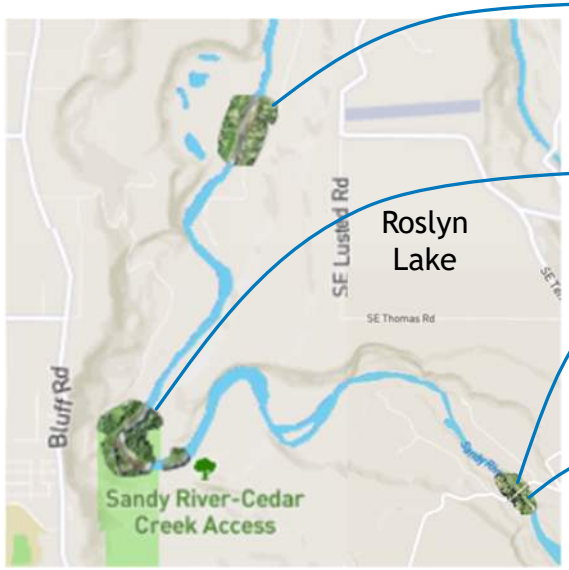
PIPELINE ALIGNMENTS

OUTFALL LOCATIONS

PIPE ROUTING AND POTENTIAL OUTFALL LOCATIONS



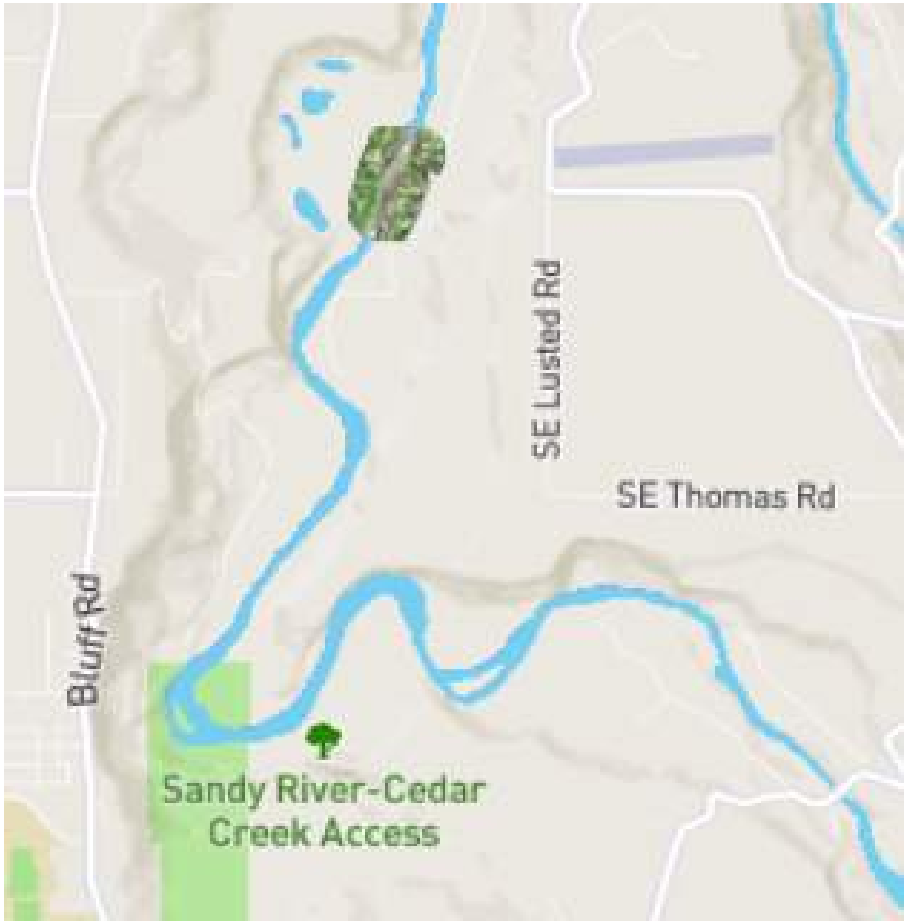
PLANNING LEVEL SITE REVIEWS



- Site west of Roslyn Lake and in the PGE easement appears to have geomorphic instability (Wolf Water Resources)
- Oxbow site has geomorphic instability (Wolf Water Resources)
- Revenue Bridge site has geomorphic stability and good mixing characteristics (Wolf Water Resources)
- Revenue Bridge site has fewer fishery and recreation concerns (Agency Meeting)

OXBOW POTENTIAL OUTFALL LOCATION

PGE POTENTIAL OUTFALL LOCATION



REVENUE BRIDGE POTENTIAL OUTFALL LOCATION

PIPE ROUTING AND DISCHARGE LOCATION MATRIX

		Sandy River Discharge			to Land Application Site				Alternatives Discharges		
		Option 1a	**Option 1b**	Option 1c	**Option 2a**	**Option 2b**	Option 2c	**Option 3a**	**Option 4**	**Option 5**	**Option 6**
	Description	**Oxbow**	**Revenue Bridge via Ten Eyck**	Revenue Bridge via Hatchery	**Via Oxbow**	**via Ten Eyck Road**	via Bacon Creek Ln	**Overflow Roslyn via PGE ROW**			
	Discharge Point	**Sandy River**	**Sandy River**	Sandy River	**Roslyn Lake**	**Roslyn Lake**	Roslyn Lake	**Roslyn Lake/ Sandy River**	**WES/(Clackamas County)**	**Gresham**	**Irrigation - Kelso Road**
Outfall	Preliminary Estimate	$14.2M	$11.4M	$10.4M	$7.8M	$5.7M	$3.2M	$2.5M	$64.4M	$74.2M	$7.6M
	Cost	-	0	+	-	0	+	0	-	-	-
Environmental Factors	*Water Quality*	-	-	-	+	+	+	-	+	0	0
	Geomorphic Stability	–	+	+	+	+	+	-	0	+	+
	Fisheries	-	0	+	+	+	+	-	+	0	0
	Other Natural Resources	-	0	+	+	+	+	-	+	0	0
Pipeline	*Maintenance*	-	0	0	0	0	0	-	0	+	+
	General Permittability	-	+	+	0	+	+	-	0	+	+
	Design	-	+	+	-	0	0	-	-	0	0
	Constructability	-	+	+	-	+	+	0	-	0	0
	Utility/Traffic Conflicts	+	0	0	+	0	+	+	+	-	-

Preferred Combined Alternative

		Sandy River Discharge	to Land Application Site	Alternatives Discharges		
		Option 1c	**Option 2c**	**Option 4**	**Option 5**	**Option 6**
	Description	**Revenue Bridge via Hatchery**	**via Bacon Creek Ln**	*100% Flow*	*100% Flow*	*<25% Flow*
	Discharge Point	**Sandy River**	**Roslyn Lake**	**WES/(Clackamas County)**	**Gresham**	**Irrigation - Kelso Road**
Outfall	Preliminary Estimate	$13.6M		$64.4M	$74.2M	$7.6M
	Cost	+	+	-	-	-
Environmental Factors	*Water Quality*	-	+	+	0	0
	Geomorphic Stability	+	+	0	+	+
	Fisheries	+	+	+	0	0
	Other Natural Resources	+	+	+	0	0
Pipeline	*Maintenance*	0	0	0	+	+
	General Permittability	+	+	0	+	+
	Design	+	0	-	0	0
	Constructability	+	+	-	0	0
	Utility/Traffic Conflicts	0	+	+	-	-

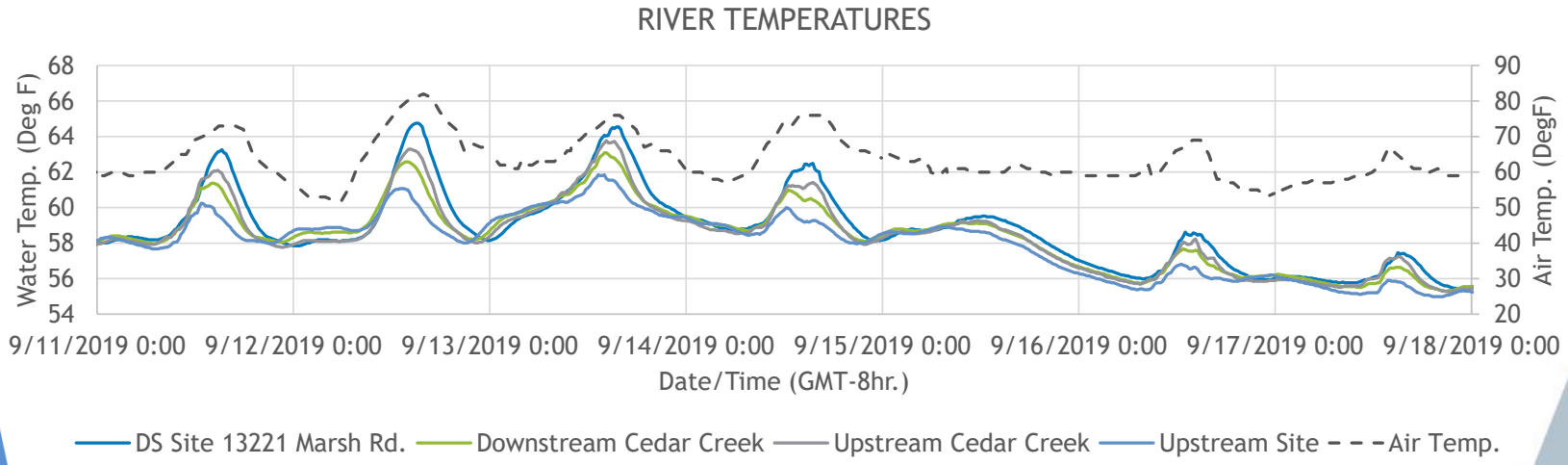
Recycled Water Opportunities

WETLAND CREATION

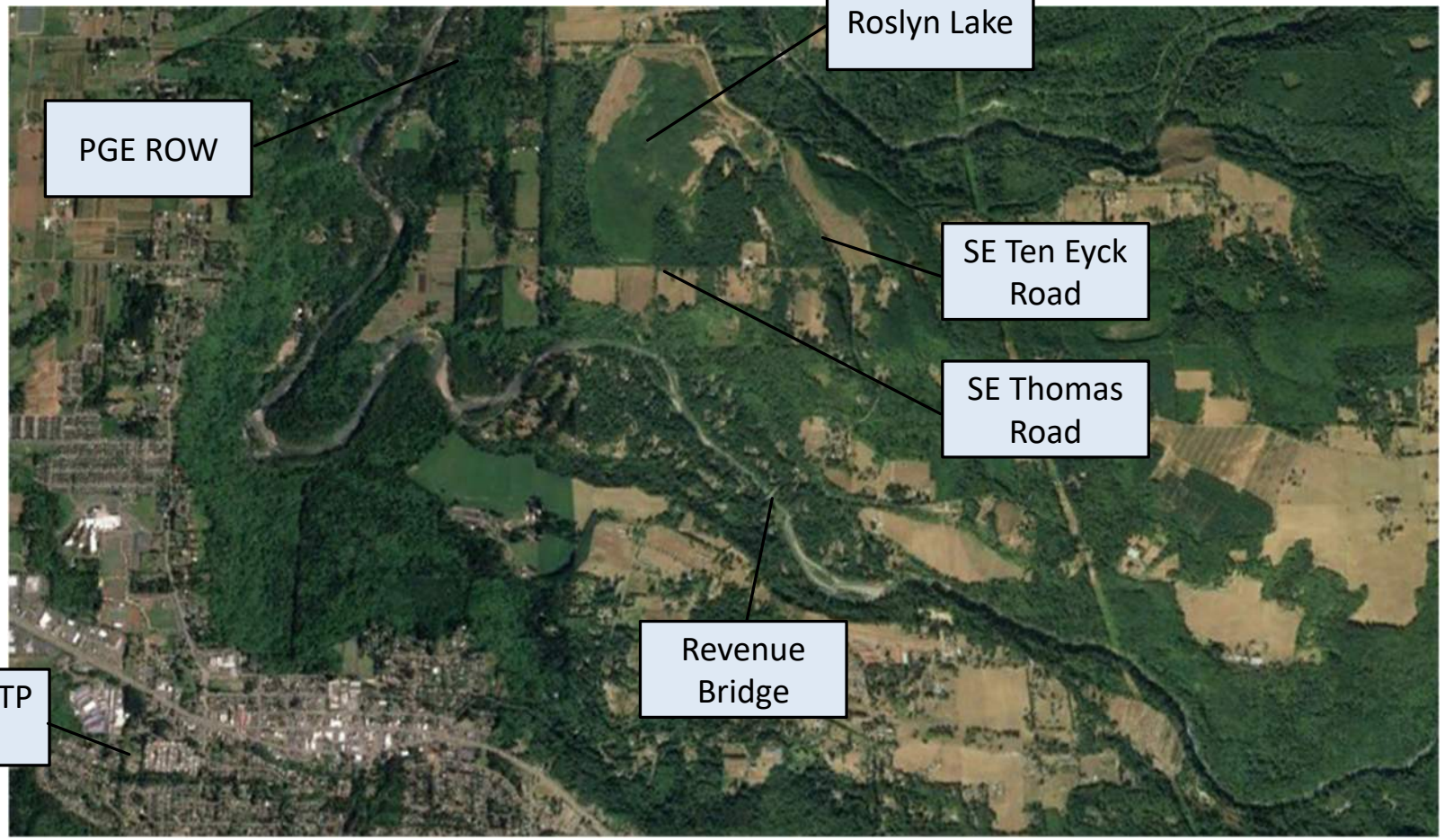
IRRIGATION OPPORTUNITIES

PRELIMINARY ANTIDEGRADATION RESULTS

- Discharge to the Sandy River is predicted to be limited due to temperature.
- Important to maximize land application during the summer months



ROSLYN LAKE DISCHARGE OPPORTUNITY



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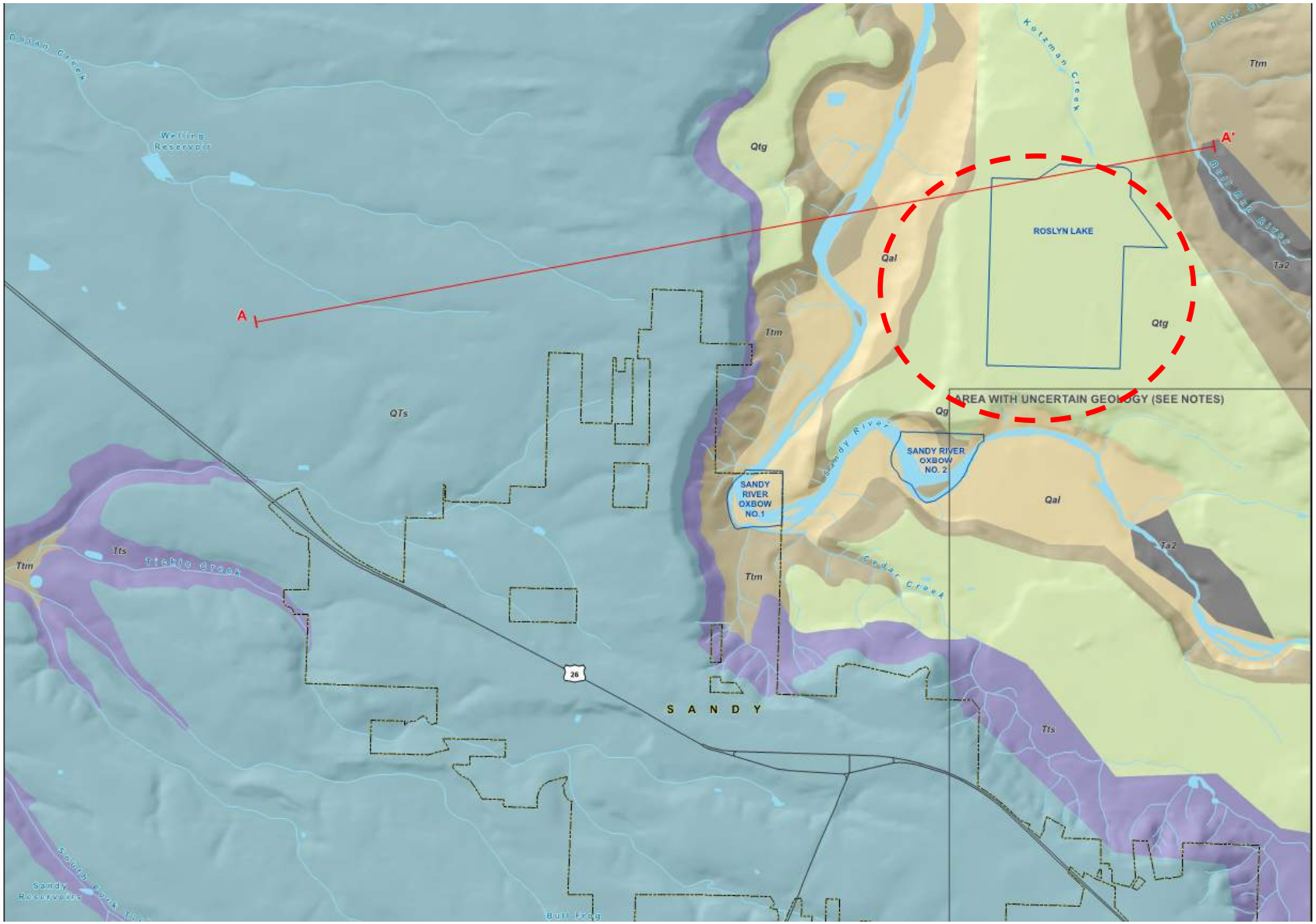
KEY FINDING: ROSLYN LAKE

- Roslyn Lake area has limited infiltration potential (GSI Water Solutions)
- Roslyn Lake area has existing wetlands that could be enhanced (Pacific Habitat Services)
- Enhancement of existing wetlands may provide for mitigation credit for other project impacts (Preliminary Agency Input)
- Summer/fall flows from MBR could be used to create/enhance wetlands in Roslyn Lake area (Murraysmith, Preliminary Findings)



Geologic Map

City of Sandy
Desktop Evaluation of Alternative Wastewater Discharge System Sites

LEGEND

- Cross Section Line

Geology

- Qal = Quarternary Alluvium
- Qtg = Terrace Deposits
- Qts = Springwater Formation
- Tts = Troutdale Formation Sandstone
- Ttm = Troutdale Formation Mudstone (Sandy River Mudstone)
- Ta2 = Rhododendron Formation

All Other Features

- Area of Interest
- Study Area
- City Boundary
- Major Road
- Watercourse
- Waterbody

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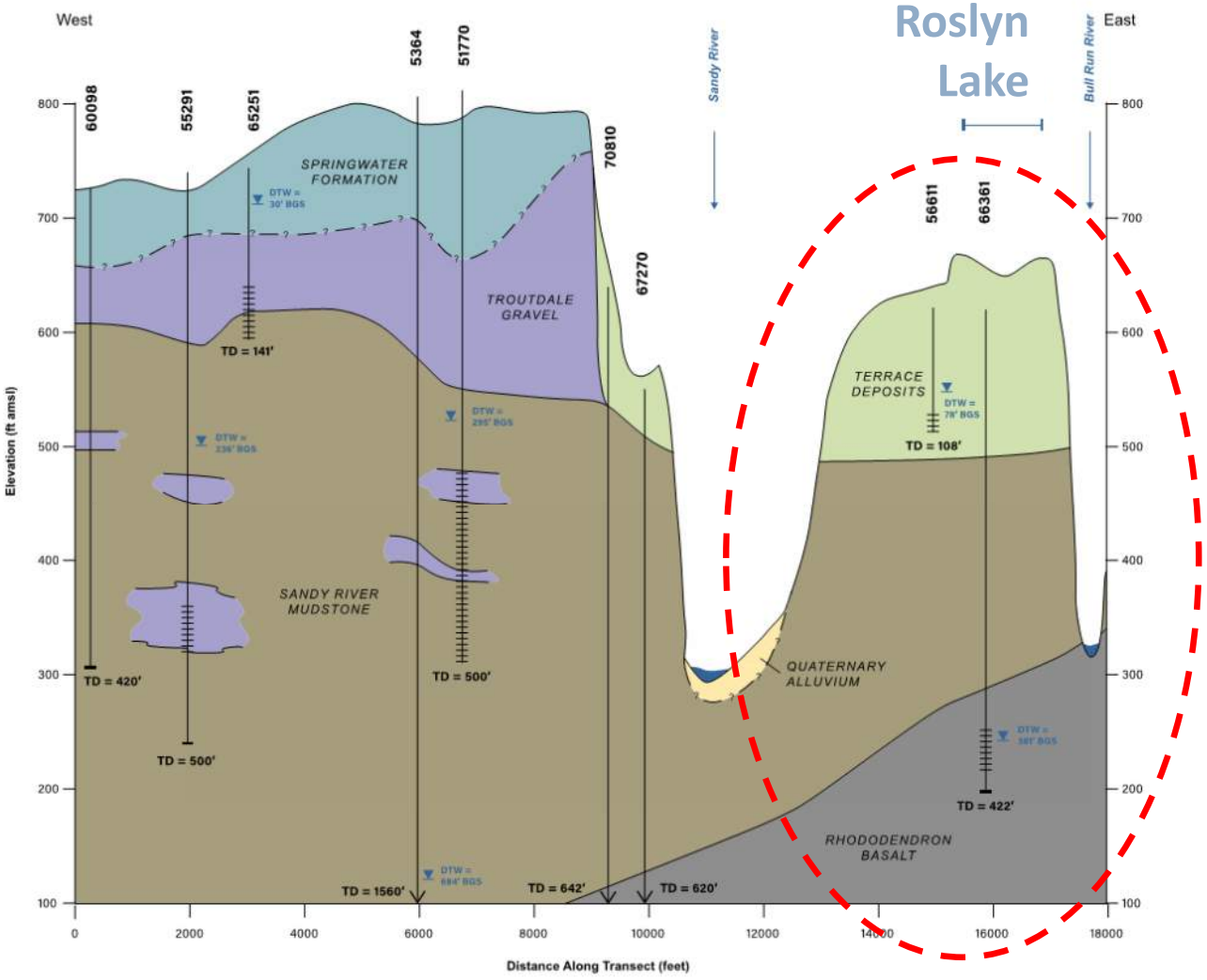
NOTE

Geologic maps lump units in this area into a single, undifferentiated sedimentary unit; geology is based on GSI extrapolating units from other maps into this area.

N

0 1,100 2,200 3,300
Feet



City of Sandy
Desktop Evaluation of Alternative Wastewater Discharge System Sites

LEGEND

Static Water Level

GEOLOGY LEGEND

- Quaternary Alluvium (Qal)
- Terrace Deposits (Qtg)
- Springwater Formation (Qts)
- Troutdale Formation Sandstone (Tts)
- Troutdale Formation Mudstone (Sandy River Mudstone) (Ttm)
- Rhododendron Formation (Ta2)

WELL LEGEND

Screen

TD = XXX'

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NOTES
AMSL: Above Mean Sea Level
BGS: Below Ground Surface
DTW: Depth to Water
TD: Total Depth

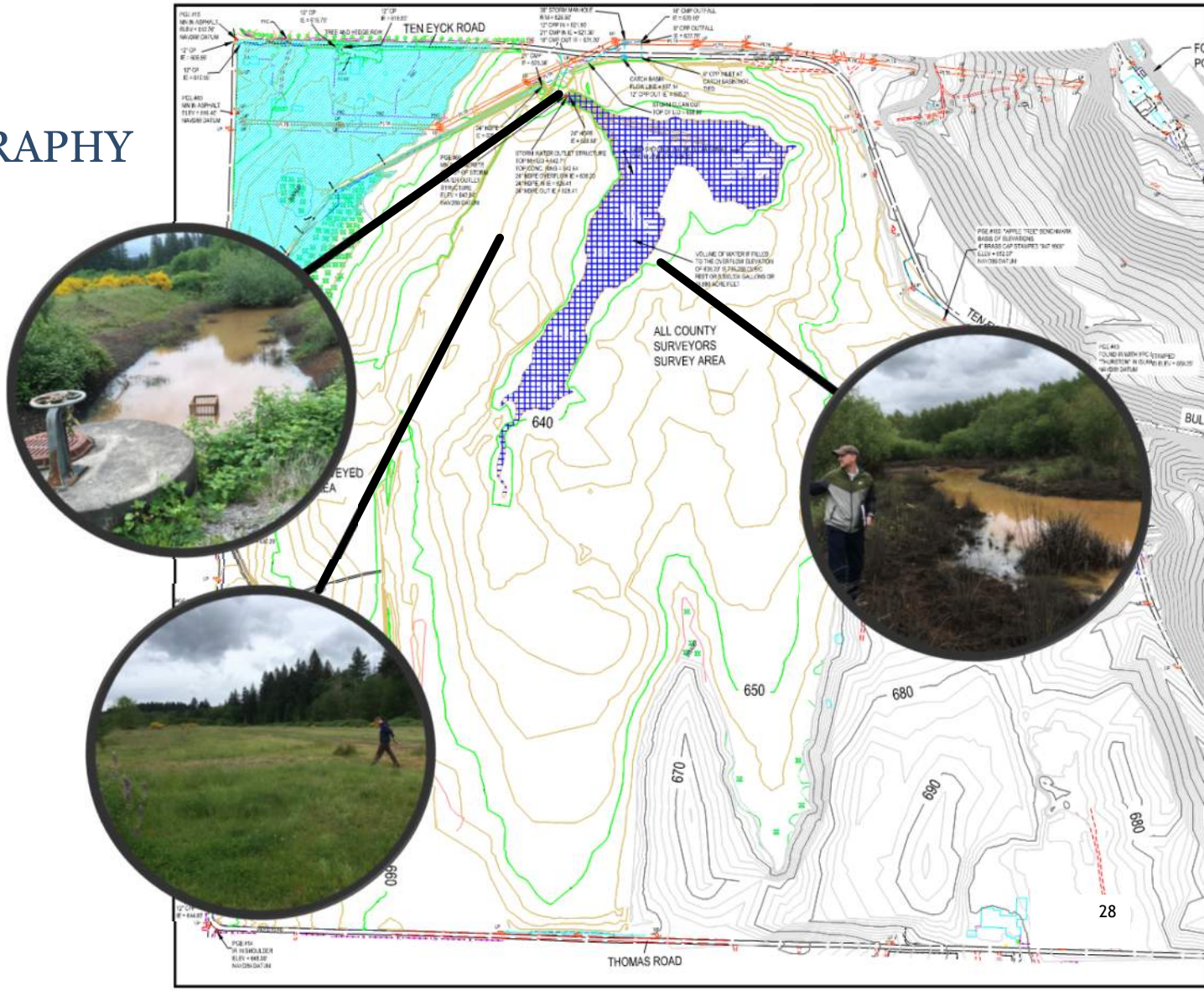
GSI Water Solutions, Inc.

ROSLYN LAKE EXISTING WETLAND

- TRACKERS EARTH
  - Environmental education
  - Conservation
  - Habitat restoration and stewardship
  - Ecological diversity

ROSLYN LAKE TOPOGRAPHY

- Approximately 30-60 acres
- Trails
- Native vegetation
- 3 – 5 feet deep



REUSE/IRRIGATION, HYPORHEIC DISCHARGE, AND POWER GENERATION

- Reuse/irrigation market is limited (Barney & Worth)
- Hyporheic Discharge Along the Sandy River – Challenges with geomorphic stability and meeting temperature restrictions (Wolf Water Resources)
- Hydropower generation may be feasible but requires further review (City, Murraysmith, Powerhouse Regen Group)

ENERGY TRUST OF OREGON

- Replacement of existing UV and aeration basin blowers provides opportunities for funding through Energy Trust of Oregon
- Funding for a feasibility study and capital cost incentive for small scale hydropower

3. PROJECT STATUS

PROJECT STATUS

85%

TASK 2: Alternative System Connection Options

- Analysis Complete
- Final documentation and technical memo remaining

65%

TASK 3: Sandy Wastewater Treatment Plant Basis of Design

- Analysis Complete
- Documentation and technical memo remaining

80%

TASK 4: Sandy River Water Quality Data Collection and Temperature Evaluation

- Near term sampling complete
- Long term sampling in progress
- Technical memo to be finalized

70%

TASK 5: Sandy River Outfall Siting Study

- Desktop study from sub consultants drafted but not finalized
- Meeting will be conducted with Sandy River Watershed Council

75%

TASK 6: Water Recycling Market Assessment

- Customer outreach completed
- Technical memo from sub consultant submitted
- Technical memo from Murraysmith to be completed and

50%

TASK 7: Indirect Discharge & Roslyn Lake Alternative Evaluation

- Conceptual plan discussed with several entities
- In-depth plan to be developed

85%

TASK 8: Sandy River Outfall Antidegradation Evaluation

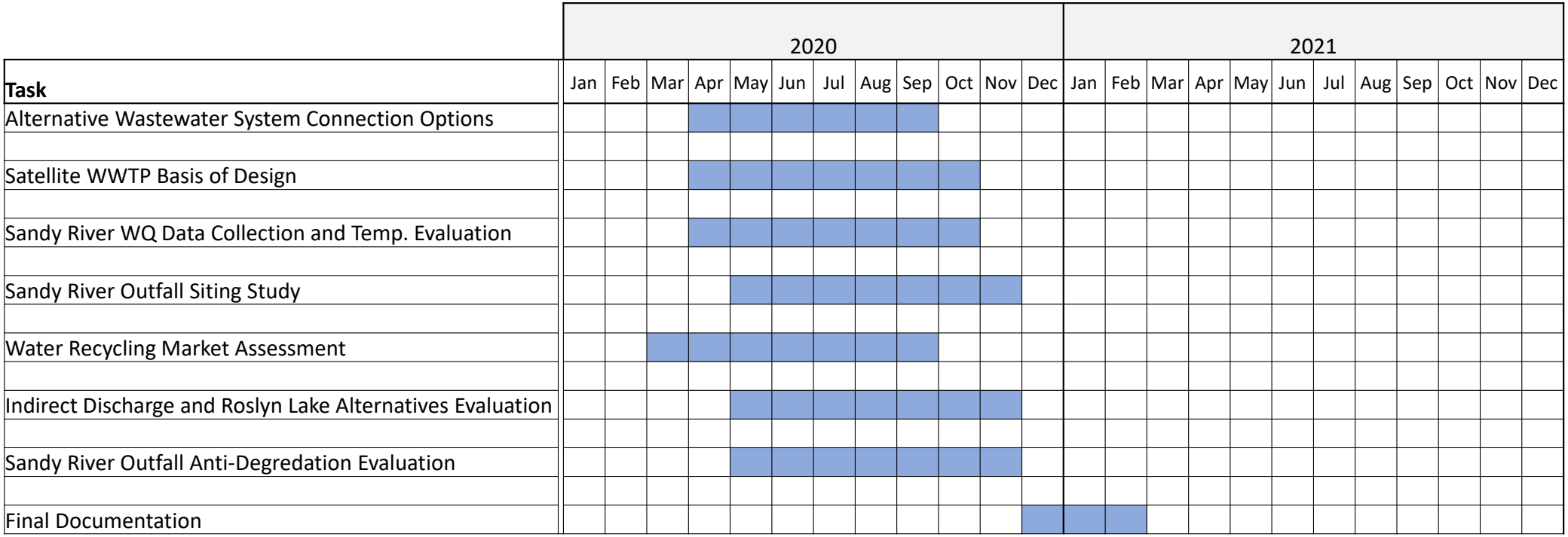
- Discharge location alternatives assessed
- Antidegradation report in internal review
- Life cycle costs and Technical memo to be completed

0%

TASK 9: Final Documentation and Review

- Executive summary of DDAE, final reports, and technical memo to be completed
- Summaries to be submitted to City and DEQ for final review

PROJECT SCHEDULE



4. NEXT STEPS

NEXT STEPS

EXISTING PLANT

- Follow-up meeting with DEQ

MBR PLANT

- Basis of design – Review with DEQ
- Flow management strategy

OUTFALL SITING STUDIES AND CONCEPTS

- Preliminary concepts for wetland
- Temperature compliance data collection
- Contact and establish agreements with property owners
- Draft summary of reports
- Submit to City and DEQ for final review

Questions