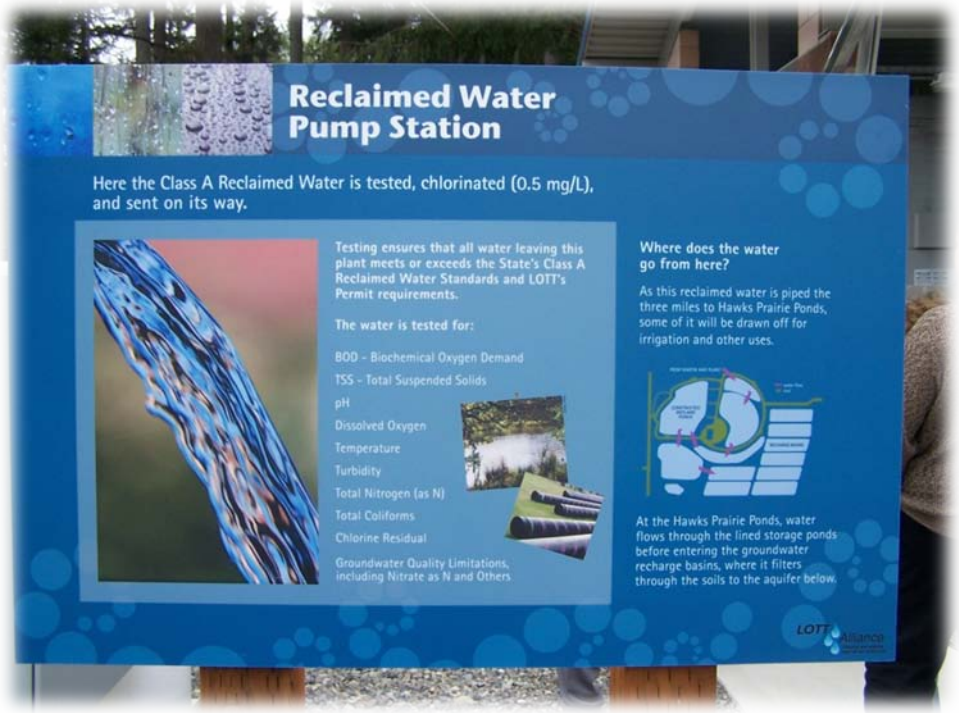
May | 2011

Fostering a Successful Reclaimed Water Groundwater Recharge Program

LOTT Clean Water Alliance



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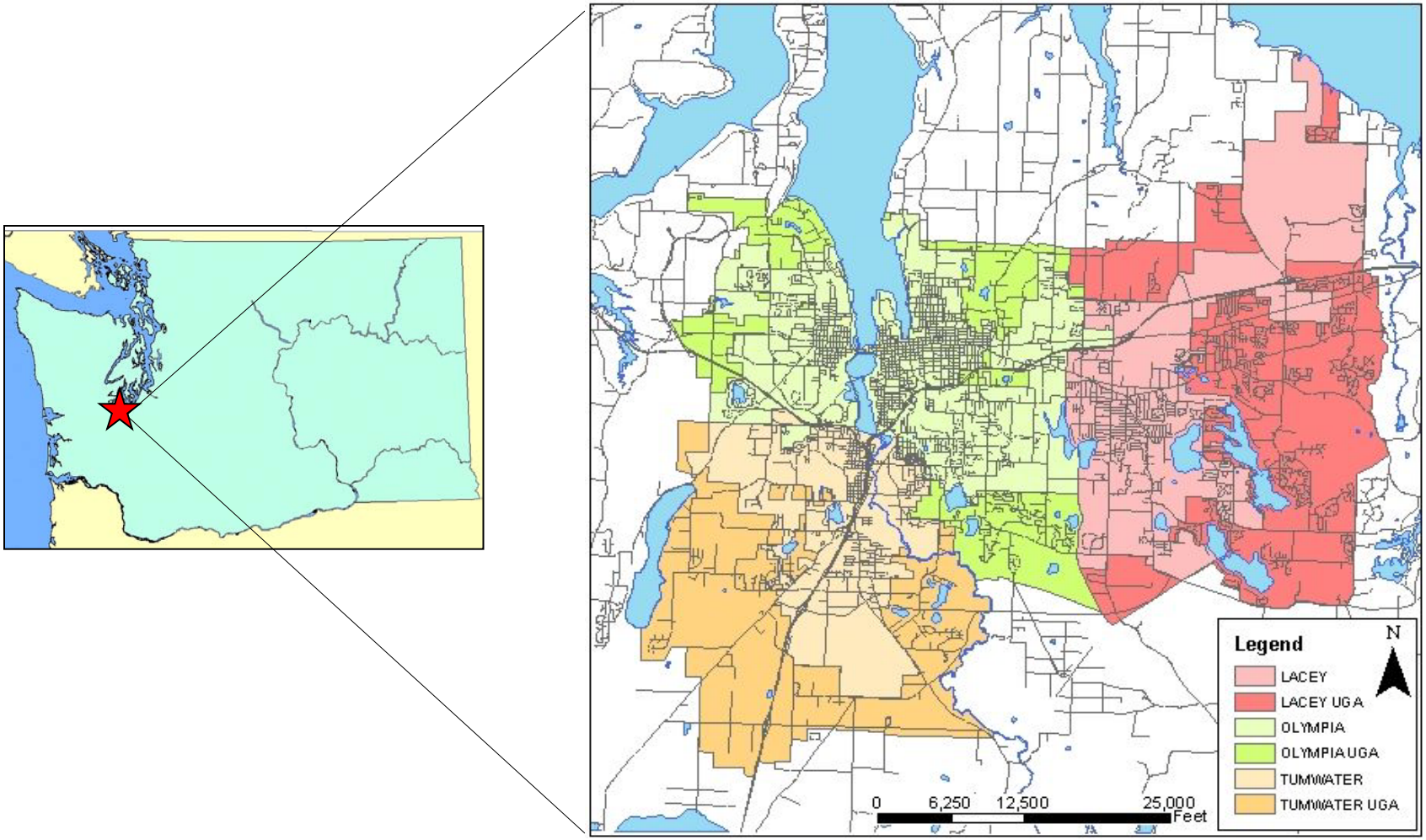
The LOTT Clean Water Alliance

- Located at the southern end of Puget Sound
- Regional wholesale wastewater and reclaimed water service provider
- The Alliance Members:
  - Lacey
  - Olympia
  - Tumwater
  - Thurston County
- The Cities provide retail services

LOTT Service Area



The Vision for Reclaimed Water

- **1998** – Adoption of the "Wastewater Resource Management Plan", aka the "Highly Managed Plan", with the goal of minimizing surface water discharge (Budd Inlet) and maximizing the use of reclaimed water as a resource.
- **2001** - Planning and development of the Martin Way Satellite Reclaimed Water Plant and the Hawks Prairie Groundwater Recharge Basins.
- **2005** – Initiation of the Reclaimed Water Routing and Groundwater Recharge (Routing and Recharge BCE).
- **2005** – Budd Inlet WWTP expanded to include reclaimed water generation.
- **2006** – Martin Way and Hawks Prairie facilities brought on line.
- **2010** – Completion of the Routing and Recharge BCE.

The Highly Managed Plan

- Community **Values:**
  - Desire to recycle water
  - Build only what you need
- Future wastewater treatment capacity through reclaimed water projects – **reclaimed water becomes the new "outfall"**
  - Direct use through alliance partners and customers
  - Groundwater recharge
  - Diminished reliance on Budd Inlet discharge
- Recycle water near potential use sites – a **satellite facility approach**
  - Capacity management is priority
  - Add new capacity in small increments – as needed.
  - Generate Class A water only

Budd Inlet Reclaimed Water Plan

- In 2005, reclaimed water production began at the regional Budd Inlet WWTP.
- Planned to facilitate TMDL effluent criteria (TIN of 3 mg/L) at the WWTP, providing additional capacity at Budd Inlet.
- Reclaimed water generated downtown would facilitate uses at the capitol campus, parks, and the Port of Olympia.
- TIN at Budd Inlet WWTP now at approximately 2.5 mg/L, additional users have also come on-line.

Martin Way and Hawks Prairie Facilities

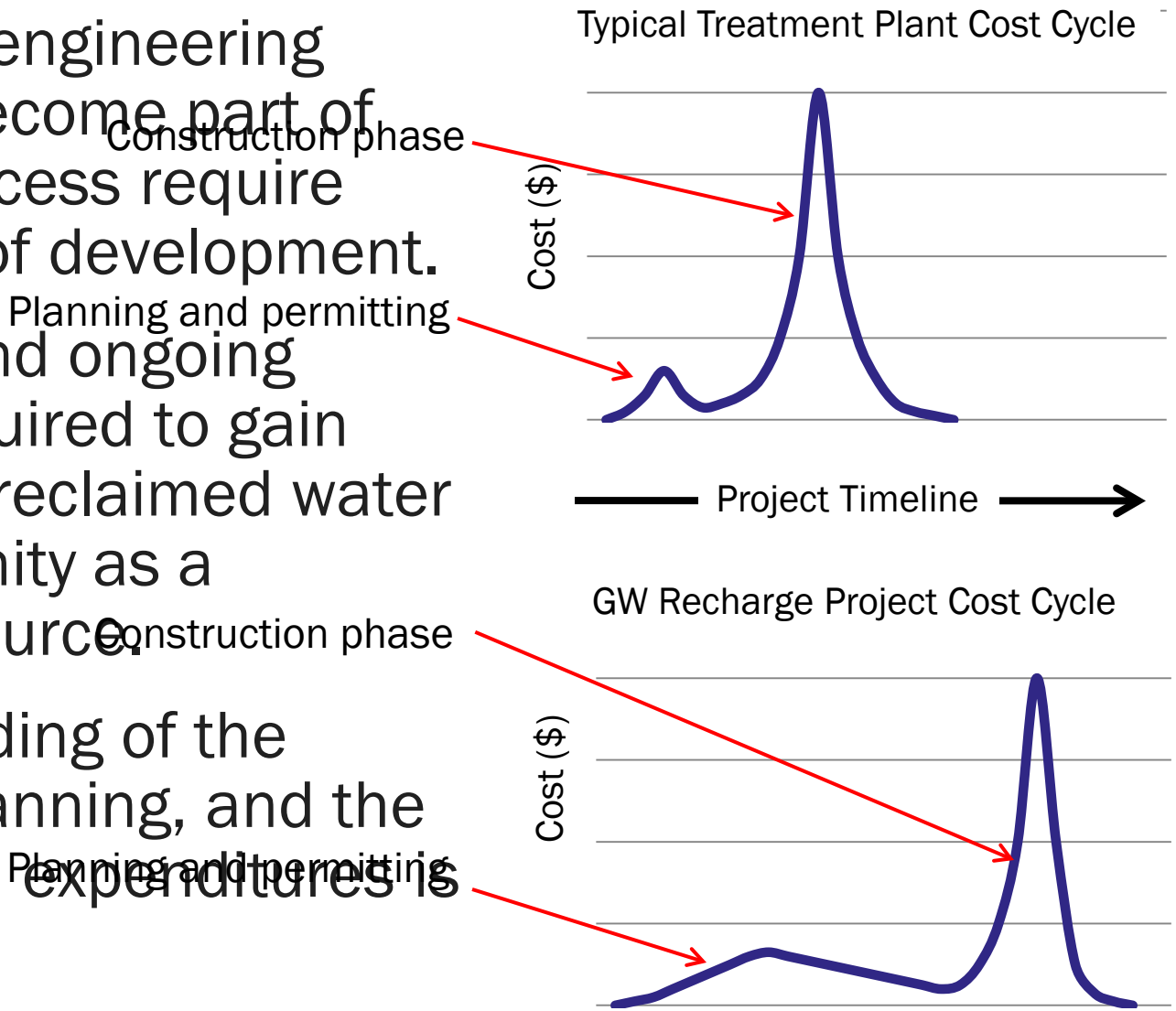
- Planning and design phases began in 2001.
- Plant and recharge basins on-line in 2006.
- Over the course of the implementation process, **timing and strategic planning were identified as critical success factors.**
  - Greater emphasis on the engineering and scientific evaluations to provide a strong backbone during permitting, as well as supporting public involvement and education.
- Provided a foundation to develop reclaimed water as a resource throughout the LOTT service area.

Martin Way and Hawks Prairie Facilities

Not just a reclaimed water plant and discharge facility, but a means of educating the public and developing a place the community can enjoy.

Laying the Foundation for Groundwater Recharge Projects

- Scientific and engineering studies that become part of the design process require several years of development.
- Many years, and ongoing efforts are required to gain recognition of reclaimed water in the community as a beneficial resource.
- An understanding of the timeline for planning, and the cycle of capital expenditures is paramount.

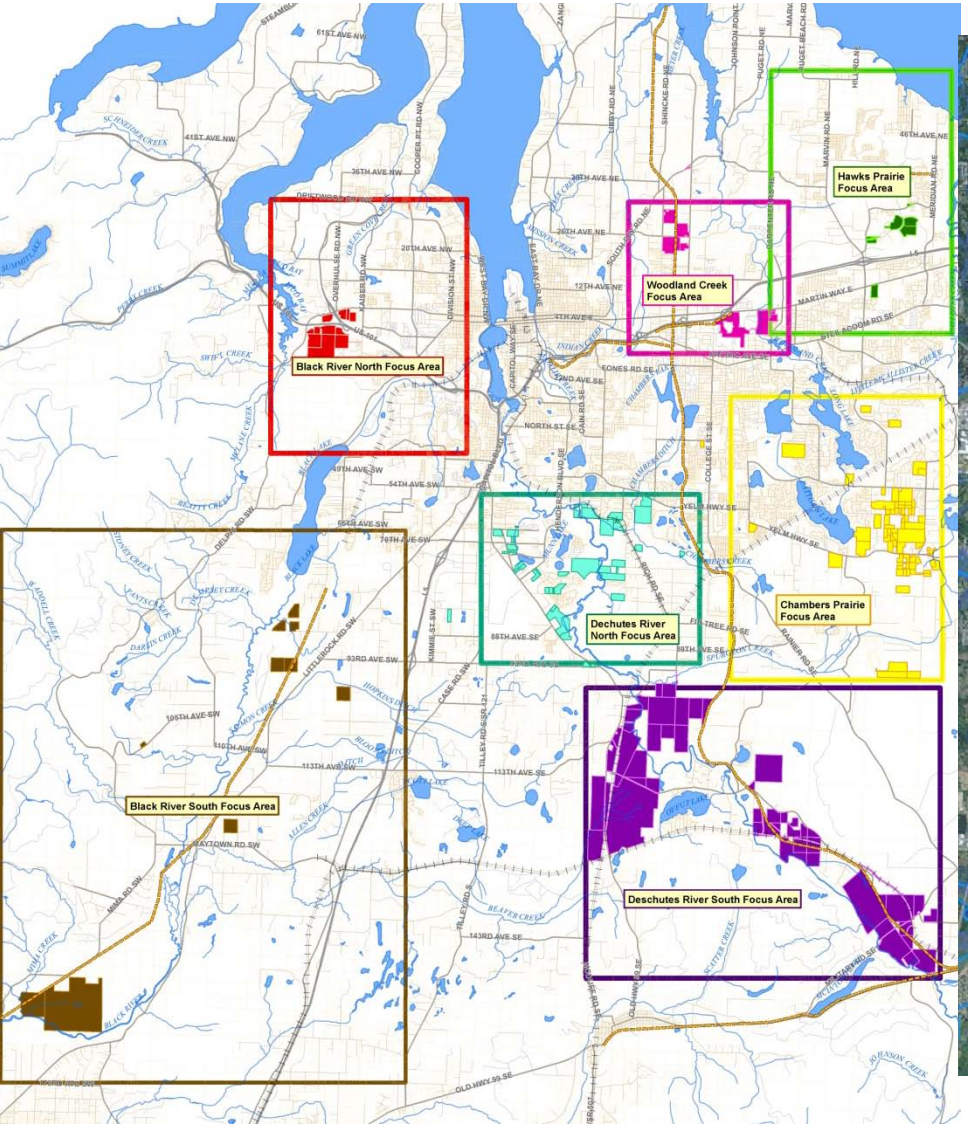


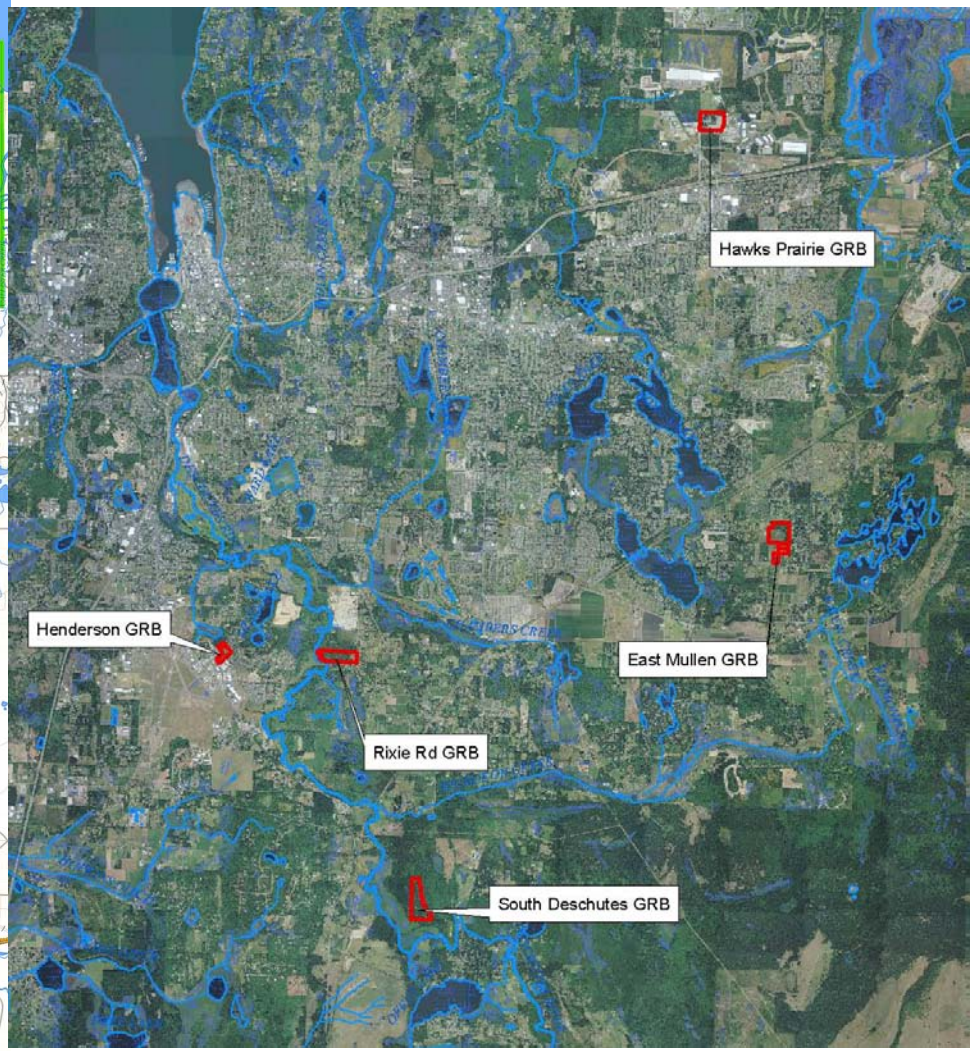
Reclaimed Water Routing and Groundwater Recharge Basin Business Case Evaluations

2005 – 2010, Planning phase project evaluated potential groundwater recharge sites and reclaimed water transmission alternatives using a **Business Case Evaluation (BCE) approach.**

- Provide a roadmap for alternative selection based on a comprehensive evaluation of the life-cycle costs, benefits, risks to LOTT, its customers and stakeholders, and the environment.
- Stakeholder involvement – partner jurisdictions formed the Reclaimed Water Technical Advisory Committee (TAC).
  - Established shared goals and objectives
  - Development of regional levels of service
- Dynamic project delivery ensured project objectives reflected the needs of the system and information from the TAC.
  - Scarcity of water resources – water resource augmentation
  - Water rights mitigation – support jurisdictional mitigation efforts
  - Environmental stewardship – minimize discharge to Budd Inlet

Reclaimed Water Routing and Groundwater Recharge Basin Business Case Evaluations





Identification of Reclaimed Water Plant Opportunities

Expansion of two existing reclaimed water plants, and construction of two new facilities timed with LOTT's flow and loading projections and CIP development

Facility name	Ultimate production capacity (mgd)
Budd Inlet Treatment Plant	22.5
Martin Way Reclaimed Water Plant	8.0
Tumwater Reclaimed Water Plant	5.0
Mullen Road Reclaimed Water Plant	2.0

37.5 mgd

Potential recharge basin	Potential infiltration capacity (mgd)
Hawks Prairie	8
East Mullen	2
Rixie Rd	2
Henderson Blvd	3
South Deschutes	10

25 mgd

Ongoing efforts to acquire new properties for recharge sites, using "opportunistic" approach

Recharge Basin Values

Task	Henderson Blvd	East Mullen	Rixie Rd	South Deschutes
Additional site investigation	$153,000	$153,000	$151,000	$278,000
Groundwater flow modeling	$77,300	$51,800	$71,300	$109,000
Pilot testing	$492,000	$492,000	$492,000	$492,000
Permitting	$434,000	$383,000	$376,000	$1,010,000
Site preparation	$151,000	$103,000	$151,000	$359,000
Basin shaping	$996,000	$665,000	$675,000	$2,550,000
Mechanical	$504,000	$290,000	$379,000	$1,260,000
Electrical/instrumentation	$101,000	$58,000	$75,800	$252,000
Testing and commissioning	$76,100	$76,100	$76,100	$76,100
Landscaping and site improvements	$970,000	$1,360,000	$1,040,000	$2,890,000
Indirect costs	$818,000	$588,000	$648,000	$1,780,000
Total Construction Costs	*$3,610,000*	*$3,140,000*	*$3,040,000*	*$9,170,000*
Total Project Costs	*$4,770,000*	*$4,220,000*	*$4,130,000*	*$11,100,000*
Estimate site capacity (mgd)	**3.0**	**2.0**	**2.0**	**10.0**
Cost per 1,000 gal capacity	**$1,600**	**$2,100**	**$2,100**	**$1,100**

Recharge Basin Values – Water Rights Considerations

Groundwater recharge basin	Estimated infiltration capacity		Projected water right offset value	
	mgd	ac-ft/yr	Full offset	50% offset
Henderson Blvd	3.0	3,360	$ 5,208,000	$ 2,604,000
East Mullen	2.0	2,240	$ 3,472,000	$ 1,736,000
Rixie Rd	2.0	2,240	$ 3,472,000	$ 1,736,000
South Deschutes	10.0	11,200	$ 17,360,000	$ 8,680,000

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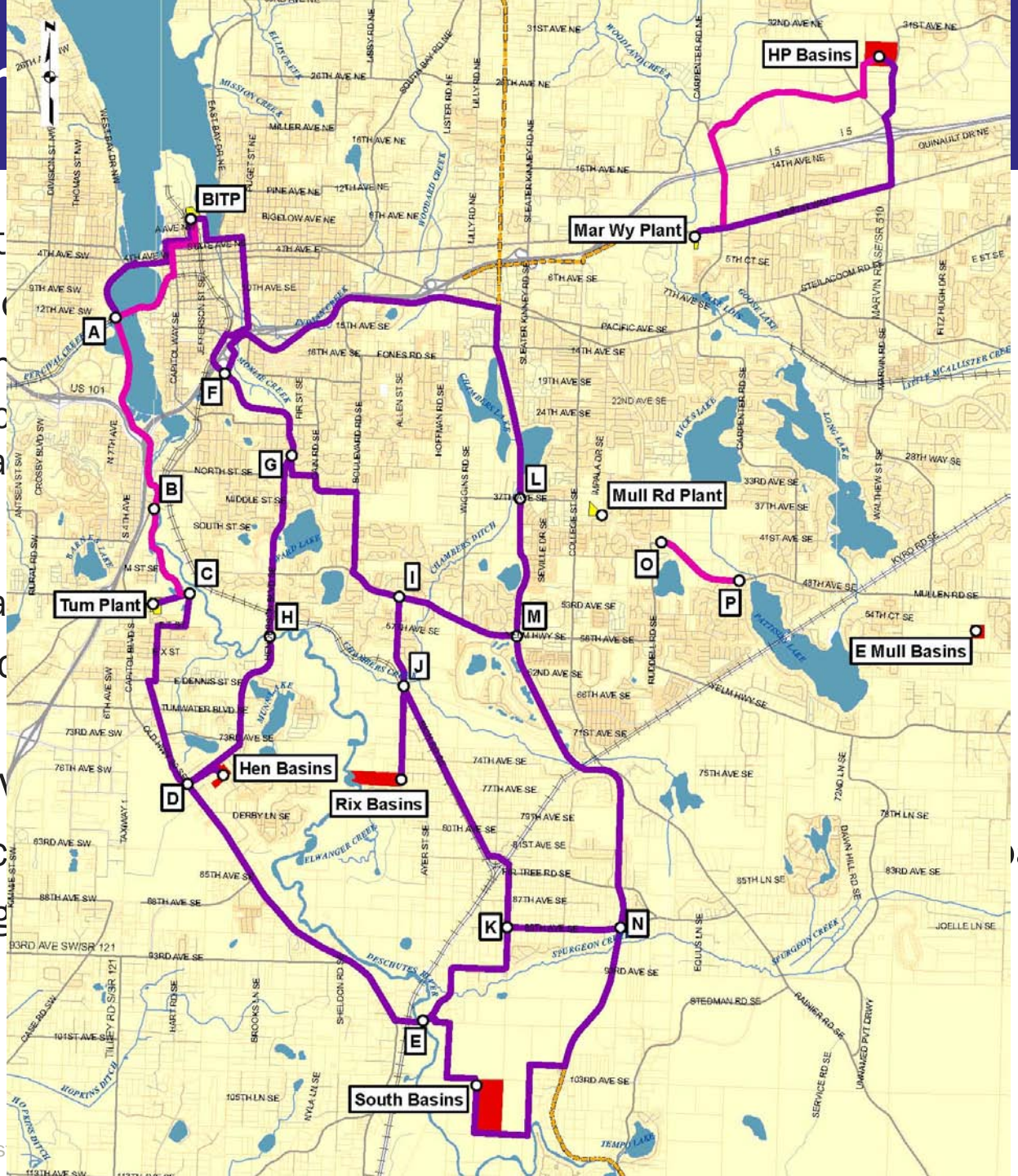
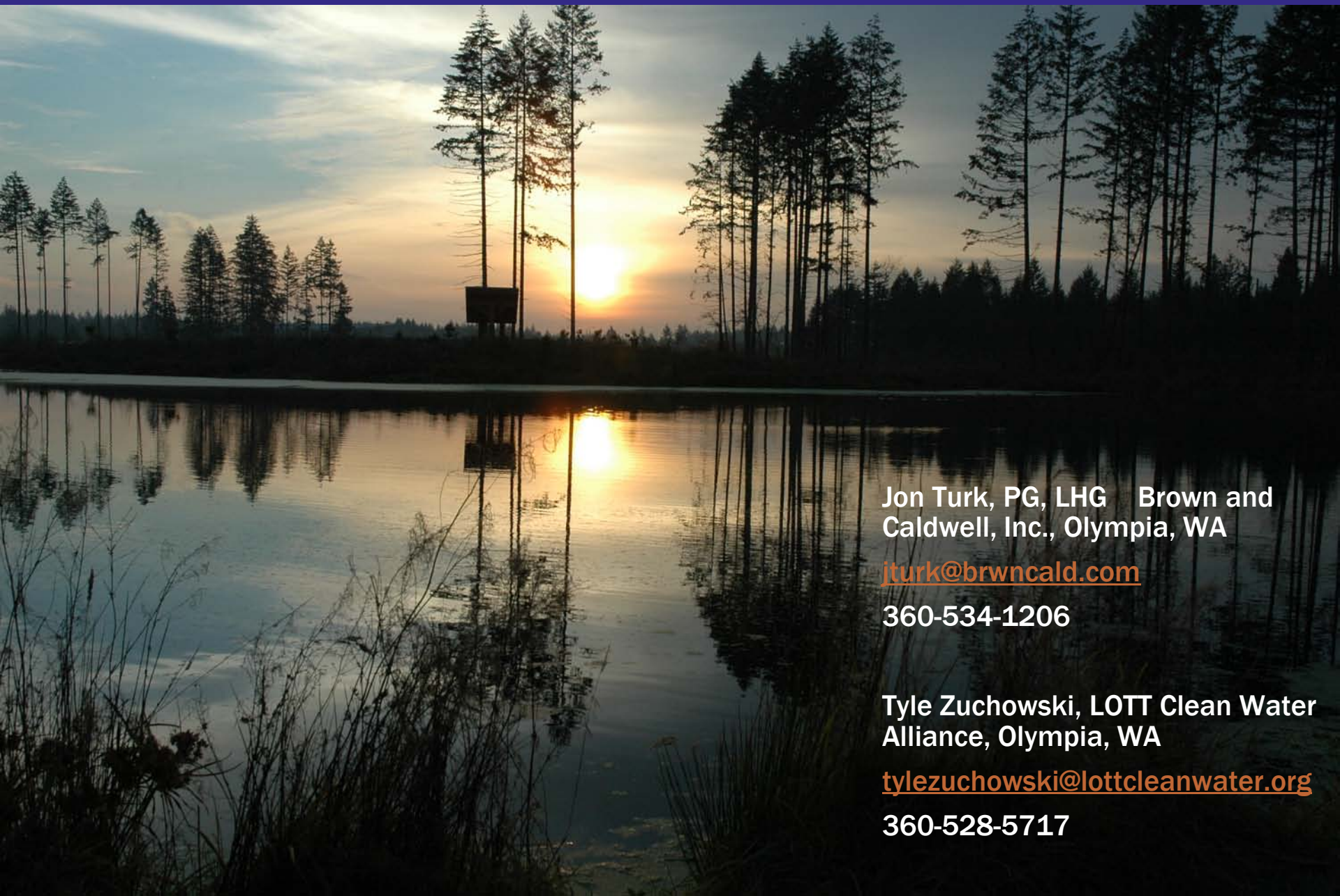


Summary of Success Factors

- Dedication to environmental stewardship
  - Public outreach and education
  - Strong messaging of natural resource values
- Stakeholder involvement
  - Ensures support from multiple organizations
  - Partnerships support moving toward a common goal
- Long-range planning
  - Secure investments that support the overall vision early; opportunistic approach to site acquisition.
  - Develop sites and facilities on an “as needed” basis; manages the dynamics of evolving CIP cycles.
  - Ensures adequate time for engineering and scientific studies to lay the groundwork for site development

Questions?



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