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SUMMER 2015 THE NEWSLETTER OF THE DESCHUTES ESTUARY RESTORATION TEAM (DERT)

Know Your Watershed: *The Deschutes*

A watershed is the area of land where all of the water that is under it or drains off of it goes into the same place.

The Deschutes Estuary Restoration Team is busy working on a couple of important watershed projects: the ***Deschutes Watershed Guide*** and associated weblinks, and the ***Watershed Health and Youth Project*** to educate future generations about the importance of this beautiful place.

DERT has toured the watershed, is working in committees, training our volunteers and spreading the word about how land and water work together to provide a sense of place we call home.

The upper Deschutes River near the upper falls, part of the Deschutes County Park. The park is currently closed due to hazardous conditions but slated to reopen in the near future.

Interesting Deschutes Watershed Facts

☞ The Deschutes Watershed includes the Deschutes River and its many tributaries covering an area of approximately 170 square miles.

☞ The Deschutes River is 52 miles long and starts in the Gifford Pinchot/ Snoqualmie National Forest.

☞ The highest point in the watershed is at an elevation of 3,870 feet near Cougar Mountain.

☞ The upper extent of the river from about river mile 41 to 52 has a moderately steep gradient. The river drops rapidly over the upper Deschutes Falls at river mile 41. The lower 41 miles of drainage consists of a broad prairie-type valley floor.

☞ The lower portion of the river flows through the City of Tumwater and the City of Olympia and was dammed at its mouth to form Capitol Lake in 1951, destroying the Deschutes estuary.

☞ Budd Inlet itself is about 7 miles long and has an average width of 1.15 miles. The average depth is 27 feet with a maximum depth of 110 feet occurring near the mouth of the inlet. The inlet is classified as a shallow, poorly mixing estuary. This is exacerbated by the dam holding back the Deschutes river from flushing into marine waters.

☞ The Budd Inlet/Deschutes Watershed is comprised of 143 identified streams that provide over 256 linear miles of drainage. (*Haring and Konovsky*, 1999) (*Thurston County*

Moxlie Creek Video now in the works

Moxlie Creek has been hidden in a pipe, running through downtown Olympia to East Bay, for about 100 years. Because it is underground, it has been forgotten.

Zena Hartung, DERT board member, is out to change that. She is working on a video to encourage the municipalities to organize a feasibility study and to begin imagining Moxlie Creek running through downtown Olympia and into a man-made estuary by the Children's Hands on Museum.

If you'd like to get involved, if you have specific skills, we need grips and gaffers for the video crew. Contact Zena at zhartung@gmail.com, 360-951-8445

Sentiments of Sediment

Back in the early 19th century, before Olympia was built, tides lapped the shores of Budd Inlet and the Deschutes River Basin all the way to Tumwater Falls.

River and tides formed an estuary of extensive oyster-friendly sand flats, as well as mud flats edged by vegetated marshlands rich with waterfowl.

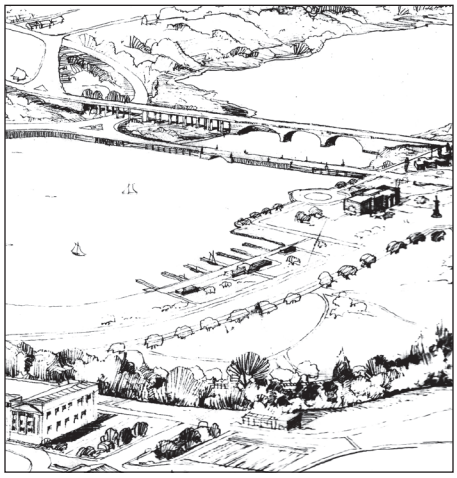
The estuary provided a fine winter home for the Steh Chass people of the Squaxin Island Tribe, who not only perfected the art of the clambake but also traded shells with inland Plateau people. When settlers moved in among the Indians and established Olympia near what was the Long House at today's Fourth and Columbia streets, they agreed that the "when the tide goes out, the table is set."

Logging, industry and real estate development brought changing attitudes toward the estuary and its sediments. The establishment of a tannery at the site of the Old Brewery and a sawmill at Percival Creek were among the first of many stressors to the estuary ecosystem. The rise of the timber industry turned the waterfront into a complex of log booms, rail lines and wharves.

As the scale of shipping grew, the local captains of industry grew impatient with shallow tidelands. The technology of steam dredging created a perfect combination of deepening channels to provide deeper draft for lumber-bearing ships and building real estate for industry and subdivisions. Compared to costly bridge construction, dredge material provided a cheap solution to the problem of crossing the 2,000 foot Deschutes river estuary and the mudflats at Swantown.

Industry transformed river sediment from the stuff of life to inert material to be managed and exploited.

But the river kept flowing, and the flurry of road construction from the river's edge to the depths of the upland forest set loose even more sediment, carried to the estuary with every winter storm.



A conceptual drawing of the Deschutes estuary at Olympia before the 5th Ave. Dam, done for the Olympia Planning Commission by G.S. Bennett. Date Unknown.

The Work of a River: Sediment Flow

Every year, watersheds deliver about 4.5 million pounds of sediment to Puget Sound. Because it is usually below the snowline, the Deschutes river carries most of its sediment during winter storms.

Today, the Deschutes River carries an average of 35,000 cubic yards of sediment every year. Since 1951, that has been enough to fill a football stadium to a height well over 1,200 feet.

In human-built environments, floods and their carried debris are dangerous.

In natural watersheds, carrying material is one of the most important jobs a stream can do. It nourishes life along the shoreline and tidelands. In return, shoreline plants help to capture and calm floodwaters and tidal surges.

However, too much sediment in the wrong place becomes a problem. Salmonids suffer when erosion brings fine soil into gravel beds where they spawn. It can even choke fish gills when storm surges or other disturbances cause very high turbidity.

During the days of the timber boom, poor forest road construction dumped large amounts of silt into the watershed. Since the 1990s, road improvements have steadily improved the streams. Yet according to studies conducted by the Squaxin Island Tribe, human activity still adds about half of the fine sediment entering the upper watershed.

Sediment in Capitol Lake

When the 5th Avenue dam closed and destroyed the Deschutes estuary in 1951, the basins of the Deschutes river below Tumwater Falls became traps for sediments that normally flowed into Budd Inlet. Forestry and farming added to the sediment load, and the material became trapped in the reservoir.

Today, Capitol Lake holds 60% less water than it did in 1951. The lake has been replaced by marshland near Tumwater Falls. The shallow waters of the lake reservoir are very warm and still.

The habitat has become harmful to river wildlife and excellent for invasive species, bacteria and harmful algae blooms.

When the river was dammed, local residents such as Peter Schmidt, a member of the family that owned the Olympia Brewery, predicted that it would quickly become marshland and fill with mosquitoes. Their predictions proved true. Fortunately, a large colony of mosquito-eating bats moved into a disused Weyerhaeuser Company wharf at Woodard Bay and feast on the mosquitoes regularly.

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Estuary restoration depends on the flow of sediment into the sea from the river.

If the mouth of the Deschutes river wasn't blocked by the 5th Avenue dam, sediment would naturally flow into the Deschutes estuary and be deposited along the beaches in Budd Inlet and the South Puget Sound, eventually reaching the Salish Sea. Over time, the estuary would achieve its own balance of sediment depending on the flow of the river to the sea and tidal action bringing the sea to the river.

For 64 years, life-giving Deschutes river sediment has been building up behind the dam, filling up the human-made lake and providing an ideal environment for invasive species to thrive.

We all know the conditions of the lake: warm, shallow, stagnant, and smelly.

How can we change this condition? Quite simply, by removing the 5th Avenue dam and returning significant freshwater flow to Budd Inlet which will let the natural process of estuary restoration begin.

When the dam is removed and the estuary begins its healing process, how do we manage sediment that will be coming in with the tide and leaving with river flows?

In the past, the state government periodically dredged sediment traps in the reservoir to accommodate more material. The dredges created park land along the river corridor.

Today, no dredging can occur until the Department of Enterprise Services develops a management plan that meets federal clean water standards. The third planning process for a basin management plan will begin soon. But until there is a defined strategy, including positive environmental outcomes and long-term financing, the reservoir will continue to fill.

Sediment Management Ideas

In the meantime, while we are waiting for the dam to be removed, DERT is collecting ideas to manage sediment (see a few ideas below).

We wanted to give our followers the chance to weigh-in with ideas as well. Let us know what you think and remember the importance of collaboration, partnerships and ecosystem health as we work to remedy this human-made problem.

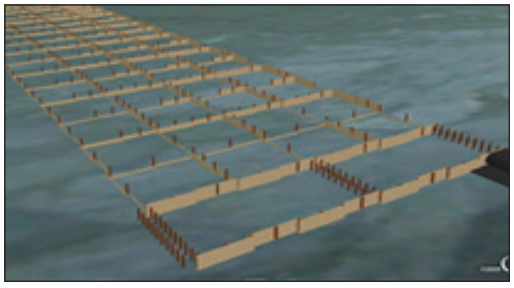
We are all in this together and we can never go completely back in time to re-create the historic and bountiful 2,000 foot estuary. But we can figure out a way to restore an estuarine environment that benefits everyone and balance the costs of ecosystem health with dam removal and an abundant waterfront community.

A Few Ideas for Trapping Sediment

DERT's graduate intern Jennifer Garlesky - Masters of Environmental Studies, The Evergreen State College - gathered a few design ideas for the pre-dam removal phase of estuary restoration. It's possible these structures could lessen the amount of sediment to be dredged. They employ an indirect approach, which would allow for the application of restoration techniques that guide where the sediment is transported.

2. Create low, medium, and high tidal marshes to trap sediment.

4. Install pile dikes to form pilot channels throughout the lower basin to create sinuosity for the sediment to be captured by the dikes.



1. Install sill basins to allow the tide to use its natural hydrodynamics to capture the sediment in the selected basins

3. Lockdown the sediment in areas to allow erosion to occur in selected sections of the basin as equilibrium is reached.

Save the Date

You are cordially invited to attend DERT's 4th Annual Meeting

Come and share a wonderful dinner, good times with many friends, and listen to a few speakers who will provide updates on the latest estuary restoration progress.

DERT is proud to be celebrating its fourth year of working to restore the Deschutes watershed, and efforts to reconnect the river to South Puget Sound. Please come celebrate with us and show your support for our estuary.

When: **October 24, 2015 6pm to 9pm**

Where: **The Woman's Club (Abigail Stuart House) 1002 Washington St. SE, Olympia**

Estuary Stewards speak out

" I noticed the closed lake and ugly abandoned buildings on the isthmus while exploring Olympia when I first moved here 3 years ago. I thought "something is wrong with this picture."

I found a DERT table with information a few weekends later while browsing at an event on Percival Landing and put my name on a list for information and volunteers.

It was good to attend the orientation and training for Estuary Stewards, but I have been amazed at the magnitude of the task before us and how involved and slow the daunting process before us appears to be. I am also frustrated at the lack on awareness and concern I have found when talking with people in our community."

– Steve Trapp

"As a recent addition to DERT, my volunteer experience is limited to a few meetings, some information sharing at a couple of local events, and some estuary science research.

I have learned a tremendous amount of local history and much about how the dam negatively effects our watershed.

I found DERT through an acquaintance. She sent me information regarding the volunteer orientation and I was instantly committed to DERT's mission & vision for a restored estuary.

I really enjoy sharing information regarding our estuary and the removal of the 5th St. dam. I look forward to working with DERT until the dam is removed and the estuary is thriving."

– Jenna Schroer

Thank you to our generous funders!

- **Rose Foundation:** Puget Sound Grassroots Fund
- **Squaxin Island Tribe**
- **Nisqually Indian Tribe**
- **Olympia Food Co-op**
- **Puget Soundkeeper Alliance**
- Our wonderful new and returning **Members**

DERT's ongoing work is enabled by the Puget Sound Stewardship and Mitigation Fund, a program created by the Puget Soundkeeper Alliance and administered by the Rose Foundation for Communities and the Environment.

Support Your Local Estuary

Become a DERT Member Today

As a DERT member you will receive regular newsletters and a Yestuary bumper sticker!

Annual Membership Dues

Student/Low Income	$10
Individual	$25
Family	$75
Business	$100

☑ **I say *YES* to the Deschutes Estuary!**

Enclosed are my membership dues $ _____

Additional Donation $ _____

Name: _____

Address: _____

_____

City/State/Zip: _____

Phone: _____

Email: _____

Join online, or mail this form to: DERT Membership, PO Box 11093, Olympia, WA 98508

www.deschutesestuary.org

DERT

The Deschutes Estuary Restoration Team is a nonprofit 501(c)(3) organization. Donations are tax deductible.

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