ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

LOWER COLUMBIA SLOUGH REFUGIA PROJECT

Final Grant Report

for

Oregon Department of Environmental Quality's

Columbia Slough Natural Resources Damages Fund

December 23, 2015

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1.0 PROJECT BACKGROUND

This report represent the completion of the Lower Slough Refugia Project. The project improved salmon habitat and riparian shade on the Lower Columbia Slough. The Slough provides nine miles of rare refugia habitat for federally listed salmon and is Critical Habitat for Chinook and steelhead under the Endangered Species Act. A legacy of industrial development, flood control and environmentally destructive land use practices have largely denuded slough banks of trees and removed wood from the channel. Wood is very important for juvenile salmon who seek shelter in the Slough as they migrate to the ocean. Improved in-stream complexity will also support other native fish and wildlife.

The goal of this project was to rectify wood deficiency by placing engineered log jams (ELJs) in the Slough. Wood structures have been designed to meet Oregon Department of Fish and Wildlife (ODFW) habitat targets and serve the needs of both migratory and resident fish. Implementing habitat projects that incorporate large wood into streams is a primary objective of three federal salmon recovery plans that cover Critical Habitat in the City of Portland.

The project also aims to reduce water temperatures in the Slough by clearing invasive vegetation and replanting banks with native riparian trees and shrubs. This is part of a strategy to address Oregon Department of Environmental Quality (DEQ) temperature Total Maximum Daily Load (TMDL) for the Slough. Cooler water temperatures will improve habitat suitability for salmon. Planted trees will also serve as a new source of in-stream logs in the future.

Thirty-five ELJs were installed in two reaches in the Lower Slough: the Ramsey Reach and Wright & Moore Islands. Revegetation work is underway on private properties on the south Slough bank across from Portland International Raceway (see Appendix A – Project Locations Map). All in-water construction activities were completed from barges and floating platforms on the water to avoid impacts to Slough beds, banks and City owned natural areas.

This project was developed and implemented by the City of Portland's Bureau of Environmental Services (BES). The BES project number is E10176 and the City's grant number is ES000044. DEQ's Columbia Slough Natural Resources Damages Fund contributed $200,000 to this project; the total project cost was approximately 2 million dollars.

2.0 Description of Work Performed

2.1 Summary of March 2015 Progress Report

The grant progress report submitted to DEQ on March 31, 2015 detailed work performed from summer 2014 to March 2015 in the following areas:

- Contract Documents and Procurement
- Construction Management

- Staging Area Mobilization
- Pre-Project Photo Monitoring

2.2 Large Wood Installation

In-water mobilization began during the first week of April 2015 with the arrival of two construction barges from Astoria. Starting on this date required an extension of the regulated in-water work window. All in-water work was completed by sub-contractor Bergersen Construction. Based in Astoria, Bergersen specializes in marine and in-water construction. R&G Excavating was the prime contractor and the majority of the wood was sourced from Digger Mountain Forestry, near the Alsea River in Oregon's Coast Range. Wood from Digger Mountain provided the key structural logs for the ELJs. In addition, BES salvaged and stored trees and rootwads from various locations around Portland. The salvaged logs were placed in and adjacent to the jams to supplement the structural logs. Sources for salvaged urban wood include:

- Fallen streets trees removed by Portland's Urban Forestry Department.
- Conifers cleared from the new industrial park under construction on the former Colwood Golf Couse in Northeast Portland, adjacent to Columbia Slough.
- Black Cottonwoods cleared from a wetland site at Portland Airport for an aircraft safety project implemented by the Port of Portland.
- Black Cottonwoods cleared for Trimet's Portland-Milwaukee Orange Line Light Rail construction.
- Trees cleared for a new office building at the BES Columbia Boulevard Wastewater Treatment Plant.

Bergersen used two barges to complete the work: a materials barge and a construction barge. Barges were moved with two small work boats. Logs and anchors were delivered and stored at the staging area off North Portland Road. From there they were loaded by crane onto the materials barge and transported on the Slough to each of the 35 wood installation locations.

The construction barge was positioned and stabilized at each ELJ location; the crew constructed one ELJ a time and then moved to the next installation site. The general construction sequence was: install helical anchors, build base layer of logs, add slash, add logs for middle layer, add slash, place tops logs and secure structures to anchors with chains. Anchors were installed at depths of 17 to 27 feet below the bed surface. Installed anchors were strength tested at prescribed intervals throughout the project and all passed. Overlapping logs were pinned together at one or both ends for additional stability.

Five different types of ELJs were installed on the project: the smallest had two anchors and five logs while the largest had 12 anchors and 28 logs. On some installations, additional loose, un-anchored logs were placed between the ELJ and the bank. The loose logs were stripped cottonwoods trees obtained from Trimet. Since they were not anchored, we anticipated some would eventually float away to "seed" the Slough with additional wood. In fact, one of these

cottonwoods was later observed more than a mile from the project site. This "wood seeding" approach was a small, but innovative component of the project.

Bergersen started with wood installation on the north side of Wright and Moore Islands in April 2015. Work continued through mid-May until all 25 ELJs on the shorelines of the islands were completed. The crew then moved to the Ramsey Reach to build the remaining ten wood structures. The 35th and final structure was completed on June 30th, 2015.

The annual Slough hydrograph used to design the project was based on more than two decades of water level data from the USGS gauge near the mouth of the Slough. It shows a predictable peak in May and June (the "freshet") and then lowest levels occur annually in September. This pattern is largely driven by the Columbia River's hydrograph. The spring of 2015 saw near record low water levels in the Lower Columbia Basin, including the Lower Slough. Due to a severe lack of snow pack, the freshet never materialized in 2015. May and June on the Sough often looked more like September with ample mudflats and only a few feet of water in the deepest part of the channel.

The unexpected low water posed a significant challenge for construction throughout the project. Barge movements had to be planned around high tides and barges were stranded on several occasions. In the end, Bergersen's strong commitment to complete the work and their willingness to adapt made the project a success. Working with the tides meant the crew often worked very early (pre-dawn) and had to work quickly and efficiently on some long days and weekends.

2.3 Turbidity Monitoring

Turbidity monitoring and record keeping were completed in accordance with the conditions outlined in the project's DEQ 401 Water Quality Certification. The only exceedances were temporary and occurred when the construction barge was moving from one installation location to another location. This occurred a limited number of times, and since the activity was temporary, turbidity levels quickly moved back towards baseline.

A major goal of this project was to implement low impact techniques during construction. During the permit process, National Marine Fisheries Service (NMFS) recommended we not deploy sediment curtains around ELJ construction sites because curtain installation was likely to cause more disturbance than anchor installation and log placement. The water-based techniques used by Bergersen were very low impact and resulted in negligible impacts to beds, banks, vegetation and water quality.

In the event of turbidity impacts, we were prepared to deploy sediment curtains around each ELJ construction. Per the ODFW and NMFS, this would have required fish salvage at each ELJ construction site. In order to be fully prepared, BES acquired a Fish Salvage Permit from ODFW. However, since turbidity remained low throughout the project, sediment curtains were not deployed and fish salvage was not necessary. In the end, this was both good for the resource and good for the project, as 35 separate fish salvages would have significantly complicated and slowed the project.

2.4 Revegetation Work

BES has identified 17 contiguous private properties along the south bank of Lower Columbia Slough for riparian canopy establishment and enhancement. Generally, these are industrial sites with a narrow, degraded riparian zone. Tree canopy is either absent or sparse.

The success of this effort is dependent on property owners voluntarily entering into agreements with BES to conduct work on their property. To date, we have secured agreements on two contiguous tax lots that represent one of the larger opportunity areas at 3.2 acres. The owners are Familian Northwest/Ferguson Enterprises and Arclin Surfaces.

BES initiated invasive vegetation control on the Familian Northwest/Ferguson Enterprises and Arclin Surfaces sites in November 2012 and continued with cutting and spraying Armenian blackberry and English holly through the spring of 2013. The site was seeded in the fall of 2013 and planted with native tree and shrub seedlings in February 2014. Maintenance sprays and cuts of invasive species continued in the summer and fall of 2014. Additional site seeding occurred in late March 2015. A total of 4,790 bare root native riparian trees and shrubs have been installed on the two properties to date. Additional seeding of native herbaceous species has also occurred. A weed spray treatment occurred on April 16, 2015 and we have followed up with various site assessments. A maintenance cut is scheduled for 2016 and a couple more are planned through mid-2017. Follow up seeding and planting will depend on site progression and monitoring. The plants have established well and the revegetation project is the right track.

No additional property owners have signed voluntary agreements with BES at this time. This stretch of shoreline represents one of the last, large south bank opportunity areas for establishing shade and reducing water temperatures on the Lower Slough. Because this is a priority area, BES has shifted our strategy to a new approach: we are exploring purchasing conservation easements from property owners. These easements would enable us to complete vegetation work and manage sites for environmental benefit in perpetuity. BES' real estate consultant has researched property owner status and is in the process of determining the value of acquiring conservation easements on the 15 remaining target properties. Letters of interest have been distributed to those property owners and the consultant is in the process of following up via phone.

2.5 Photo Monitoring

BES staff completed the first set of post-project photo points at 15 stations in July 2015. High water photo points for some stations were obtained in early December 2015. See Appendix B for a summary of photo monitoring.

2.6 Public Outreach

The grant progress report submitted to DEQ on March 31, 2015 detailed outreach efforts. The following outreach has occurred since the last report was submitted:

- May 28, 2015 – Site visit and short tour for members of the Columbia Boulevard Wastewater Treatment Plant Citizens Advisory Committee and employees from the BES Columbia Boulevard Wastewater Treatment Plant, located adjacent to the project area.
- June 4, 2015 – Boat tour of entire Lower Slough Refugia project area for DEQ staff, including staff that administer the DEQ Columbia Slough Natural Resource Damages Fund (the source of this grant).
- July 27, 2015 – Site visit and short tour for Columbia Slough Watershed Council board of directors and staff.
- A short video was developed by BES staff near the completion of the project. The video was posted to the City of Portland's Green City Blog and Facebook page. The video was also posted on the DEQ's Columbia Slough webpage.
  Video link: https://www.youtube.com/watch?v=2JO2Dr0SNfU

3.0 Watershed Context

The Columbia Slough and its associated network of channels and wetlands were once a dynamic part of the Columbia River's free flowing floodplain. Today, a legacy of industrial land use, urban development and flood control have left the Slough in an altered state. The entire topographic Columbia Slough watershed (as delineated by BES) is 33,400 acres of residential, industrial and open space land cover that includes regionally significant natural resources. While the Upper Slough is connected to the major rivers only by pumps, the Lower Slough is still open to the Pacific Ocean due its free flowing connection to the Willamette River. As such, the Lower Slough has been designated as critical habitat for ESA-listed Chinook and steelhead.

The Lower Slough serves as off-channel refuge habitat for juvenile salmon and steelhead as they migrate out to the ocean. These small fish seek out side channels like the slough for their slower velocities and to elude large predatory fish in the bigger rivers. Studies have found that these young fish are indeed residing in the Slough and that in-stream wood – a key element for fish – is lacking from the Slough system. Like many waterways, wood has been systematically removed from the Slough and limited tree cover along the banks means little new wood is entering the channel. Implementing habitat projects that incorporate large wood into streams is a primary objective of three federal salmon recovery plans that cover critical habitat in the City of Portland.

The Lower Slough Refugia Project is the most recent in a series of large projects aimed at improving in-stream conditions for ESA-listed fish and other species in the Slough. This is the third BES project with the primary goal of improving fish habitat in the Lower Slough. The Port of Portland has also implemented several mitigation projects on the Lower Slough to improve habitat.

4.0 Changes Made To Original Proposal

No changes were made to the project. Turtle nesting habitat was shown in the original plan set as part of a restoration plan for temporary impacts to a staging area. But that staging area was never impacted or used, so no restoration was necessary.

5.0 Determination of Project Effectiveness

The primary goal of this project was to improve in-stream habitat for ESA-listed salmon, native fish and wildlife. Our objectives for construction included:

1. Install 35 log jams with five design types at very specific elevations within the Slough.

2. Improve on large wood design from the Kelley Point project by:
    a. Increasing wood volumes to meet ODFW targets
    b. Add slash to log jams
    c. Increase variation in size and configuration of log jams
    d. Ensure log jams stay at their target elevation as water levels fluctuate

3. Complete all of the above while avoiding adverse impacts on the beds, banks or water quality of the Slough. This meant no heavy equipment was allowed on the banks and no excavation was permitted (the project avoided known contamination hot spots, but excavation elsewhere could mobilize low levels of contamination present in the sediment).

Going into construction, we were aware these goals would require new and creative water-based construction methods that had not yet been implemented in the Slough or on any BES projects. Bergersen came prepared with the specialized equipment and skills needed to meet our objectives.

In terms of project effectiveness, we successfully met all of the above objectives. Our project achieved more than 90 percent of ODFW's wood volume target for streams in Oregon. Long term wood monitoring will verify the success of objective 2d over time. BES will continue long term monitoring of fish populations in the Lower Slough (and throughout Portland) through our Portland Area Watershed Monitoring and Assessment Program. Based on existing studies, we know ESA-listed fish use the Slough and that wood is both essential and highly lacking in the channel. We successfully increased wood volumes without negative impacts to the Slough.

6.0 Lessons Learned and Future Projects

6.1 Lessons Learned

1. Water levels are unpredictable. Despite a historical pattern of the spring freshet on Lower Columbia and our own analysis of 26 years of daily data on the Slough confirming the

annual hydrograph, the pattern did not hold in 2015. We have not completed a follow-up analysis, but spring 2015 must have been among the lowest May and June water levels ever recorded for the Lower Columbia Slough. Our construction timeline was based on the typical freshet hydrograph and the lack of water presented significant and unexpected challenges. Daily high tides became the critical work window and our contractor adapted well to the conditions. Working with the tides often meant starting pre-dawn and working long, late days. Work was also suspended for several weeks. Bergersen brought the skills, equipment and commitment to complete the work. Had the contractor been unable to adapt to the tides, our project may have been jeopardized.

2. High volumes of wood can be anchored in the Slough with minimal disturbance. Water-based construction in the Slough can be a low impact and low disturbance approach for construction below ordinary high water. This approach is contingent upon regulatory agencies granting extension of the in-water work window.

3. There are numerous obstacles to obtaining revegetation agreements for Slough banks on private industrial property. Although BES has had much success with this approach, we have not met our target in this reach; only two of the seventeen properties have permitted access for revegetation. Obstacles include: security (on one property, invasive blackberry removal was contingent upon BES constructing a security fence to replace it), small sites where aggressive invasives would remain on adjacent un-treated properties, out-of-state corporate owners that are difficult to locate, and potential complications on DEQ regulated clean-up sites.

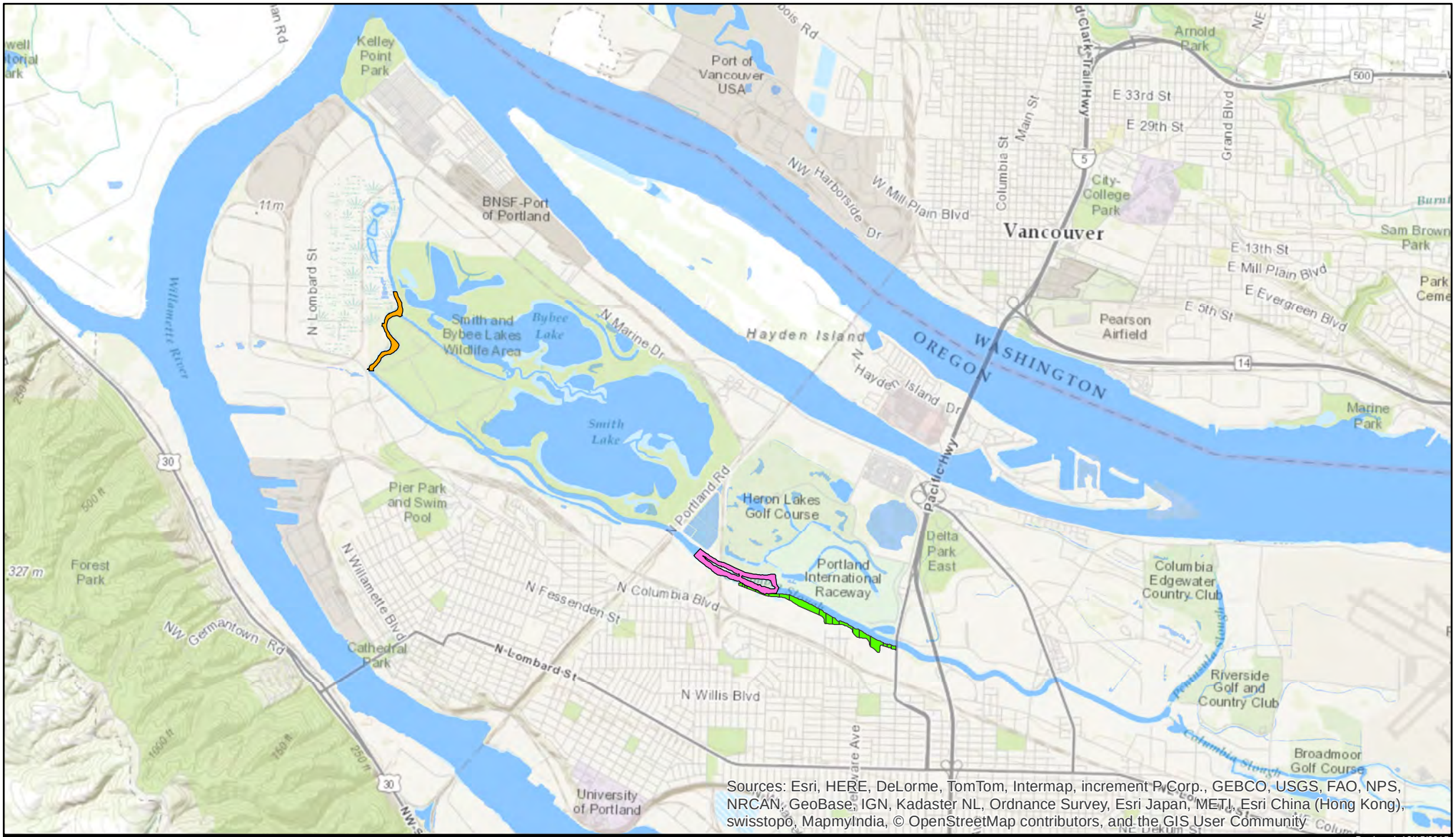
6.2 Recommendations for Future Projects

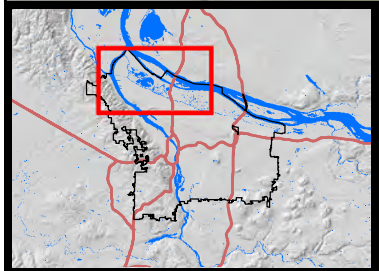
1. BES, DEQ, and other partners can work together to replicate this project in other parts of the Lower Slough. This project developed a successful design and construction approach for placing large volumes of wood in the Lower Slough with minimal disturbance. A future project could save considerable expense on design costs (including engineering and geotechnical investigations).

2. DEQ and BES should work together to pursue establishment of riparian canopy on the south bank of the Slough from North Denver west to the wastewater treatment plant (this project's revegetation target area, see Appendix A). This stretch of 17 private industrial sites represent one of the last, large opportunity areas on the Lower Slough for addressing TMDL temperature targets with new tree canopy.

APPENDIX A
Project Location Maps

Lower Columbia Slough Refugia Project





Legend

- Ramsey Reach
- Wirght & Moore Islands
- Revegetation Target Area

Project Locations

N

0 0.3 0.6 1.2 Miles

1:60,000

Produced: 12/15/2015

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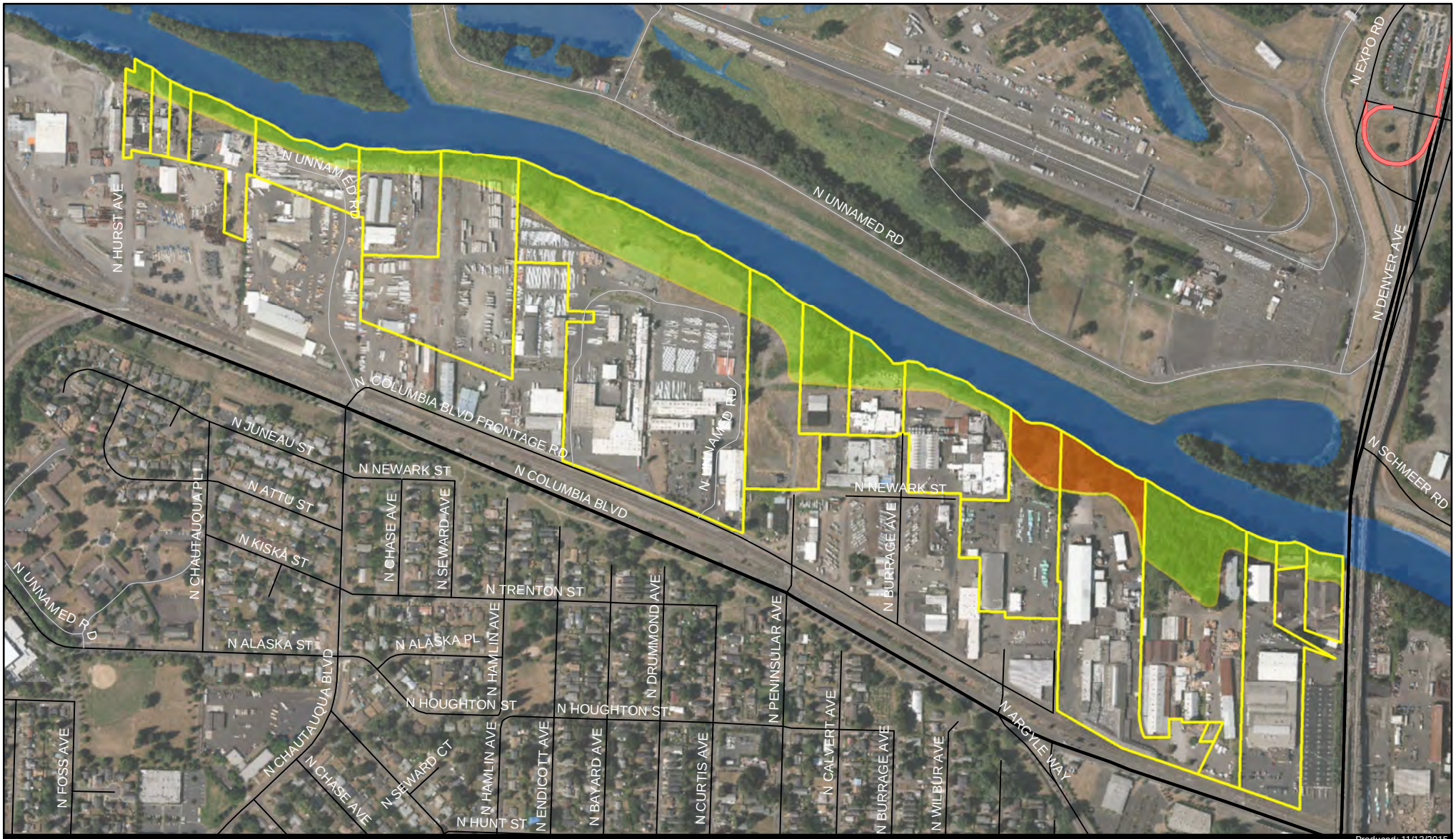
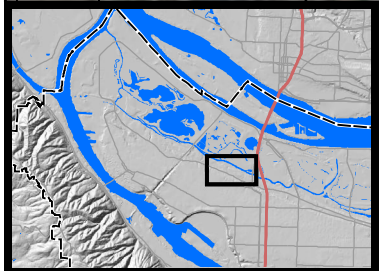
Document Path: S:\Columbia Slough\GIS\MXDS\PROJECTS\Lower Slough Refugia\LSR_Loc_Map20151215.mxd

Lower Columbia Slough Refugia Project





Slough Bank Revegetation

Legend

- Private Properties Planned for Access Agreements
- Conservation Overlay Area Targeted for Revegetation
- Access Secured and Revegetation Work Currently Underway

Produced: 11/13/2015

N

0 0.04 0.08 0.16 Miles

1:7,743

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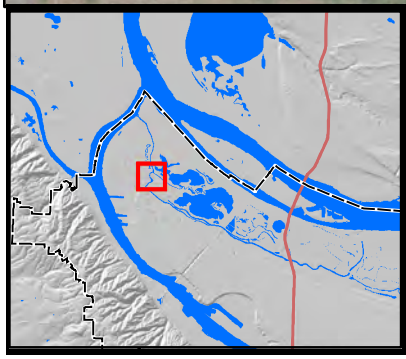
Lower Columbia Slough Refugia Project



Produced: 12/22/2015

Log Jam Locations in Ramsey Reach

N

0 150 300 600Feet

1:5,589

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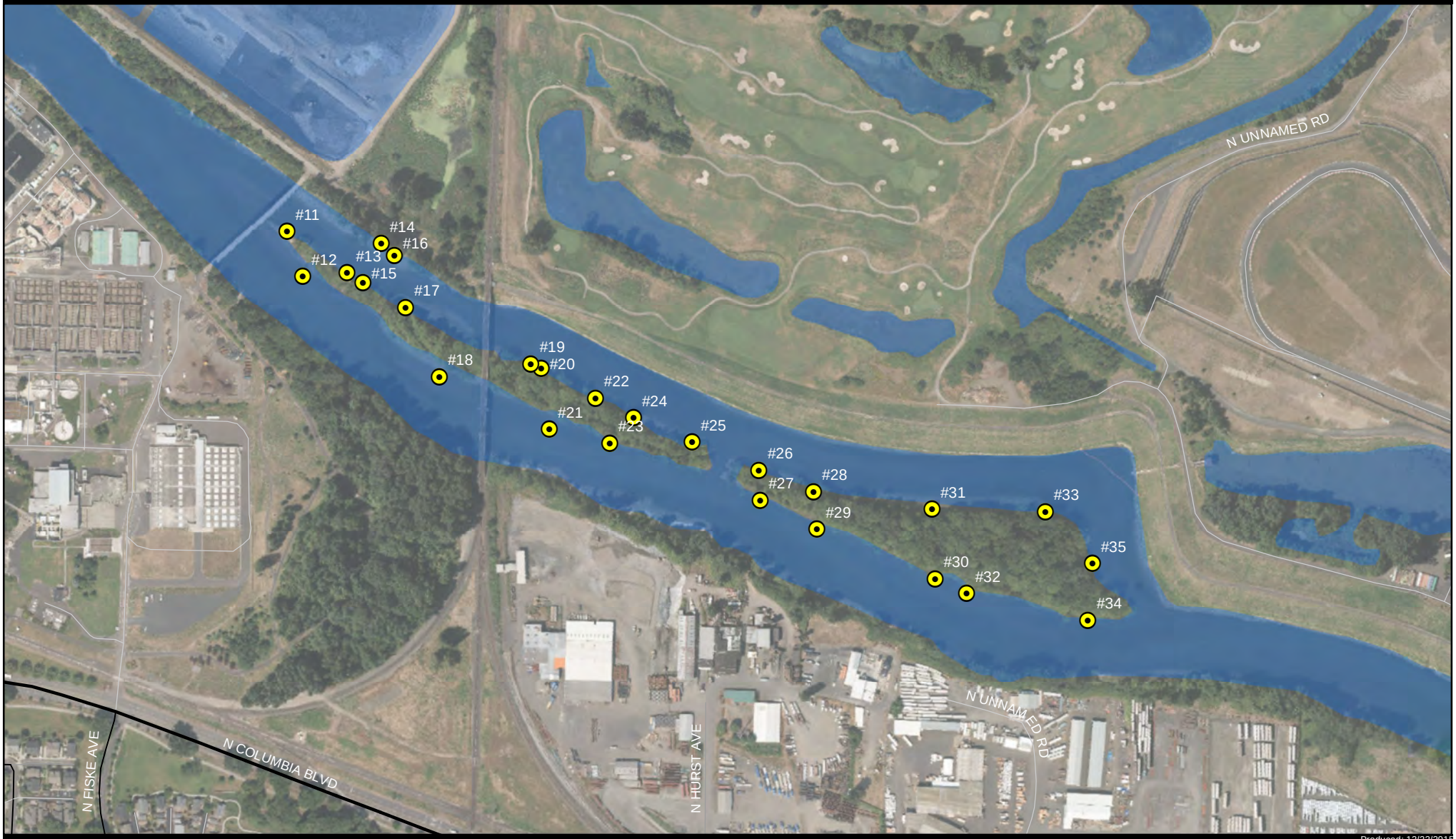
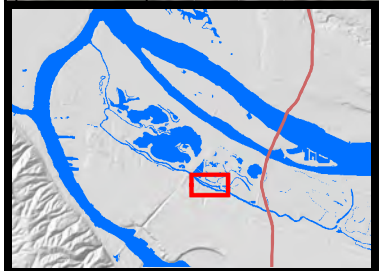
Legend

- Engineered Log Jams

Document Path: S:\Columbia Slough\GIS\MXDS\PROJECTS\Lower Slough Refugia\LSR_Ram_W

Lower Columbia Slough Refugia Project





Log Jam Locations Around Wright and Moore Islands

Legend

- Engineered Log Jams

N

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1:5,105

Produced: 12/22/2015

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Document Path: S:\Columbia Slough\GIS\MXDS\PROJECTS\Lower Slough Refugia\LSR_WM_W

APPENDIX B
Photo Point Monitoring

Photo Point 31
November 18, 2014
Preconstruction. Looking north, downstream, in the Ramsey Reach. The Saint John's Landfill is visible in the upper right. Water surface elevation: 5.8 feet (COP datum).

Photo Point 31
July 15, 2015
ELJ # 6, one of the smallest ELJ types, with 2 anchors at the upper end. This style of structure is designed to float up some, in high water. Water surface elevation: 5.9 (COP datum).

Photo Point 31
December 9, 2015
High water event in early December. Water surface elevation: 14.2 feet (COP datum).

Photo Point 25A
September 25, 2014
Preconstruction. Looking east in the Ramsey Reach, near Wapato Jail. Water surface elevation: 7.0 feet (COP datum).

Photo Point 25A
July 15, 2015
ELJ #2, approximately one month after construction. Water surface elevation: 5.9 feet (COP datum).

Photo Point 25A
December 09, 2015
This is the smallest ELJ type; it is designed for a steep bank and will float up in high water conditions (as in this photo). Water surface elevation: 14.2 feet (COP datum).

Photo Point 23
September 25, 2014
Preconstruction. Looking southeast, upstream, in the Ramsey Reach, near Wapato Jail. Water surface elevation: 7.0 feet (COP datum)

Photo Point 23
July 15, 2015
ELJ # 1, approximately one month after construction. Water surface elevation: 5.9 feet (COP datum).

Photo Point 23
December 9, 2015
This is the smallest ELJ type. It is designed for a steep bank and will float in high water conditions (as in this photo). Water surface elevation: 14.2 feet (COP datum).

Photo Point 26
September 25, 2014
Preconstruction. Looking north, downstream, in the Ramsey Reach. Water surface elevation: 5.9 feet (COP datum).

Photo Point 26
July 15, 2015
ELJ # 5, approximately one month after construction. This is the largest of the five ELJ designs with 28 logs/rootwads and 12 anchors. It does not float. Water surface elevation: 5.9 feet (COP datum).

Photo Point 26
December 9, 2015
The ELJ is functioning as designed for this water level, with the entire structure inundated, except for the top layer of logs. Water surface elevation: 14.4 feet (COP datum).

Photo Point 9 November 18, 2014
Preconstruction. Looking upstream at the western end of Wright Island in low water. Water surface elevation: 5.8 feet (COP datum).

Photo Point 9 July 2, 2015
Recently constructed ELJs on Wright Island (11 and 12) and the north bank (14 and 16). Water surface elevation: 7.8 feet (COP datum).

Photo Point 24 September 25, 2014
Preconstruction. Looking north, downstream, in the Ramsey Reach, near Wapato Jail. Water surface elevation: 7.0 feet (COP datum).

Photo Point 24 July 15, 2015
ELJ # 1. Water surface elevation: 5.9 feet (COP datum)

Photo Point 10z March 25, 2014
Preconstruction. Looking southeast, upstream, at the north shoreline of Wright Island. Water surface elevation: 9.9 feet (COP datum).

Photo Point 10z July 2, 2015
ELJ # 13 and 15. These are smaller ELJs with four anchors that do not float. Water surface elevation: 7.8 feet; functional ordinary high water is about 13 feet (COP datum).

Photo Point 20z September 22, 2014
Preconstruction. Looking west at the western shoreline in the Ramsey Reach. Water surface elevation: 5.5 feet (COP datum)

Photo Point 20z July 1, 2015
ELJ # 9. The second largest of the ELJ design types with 18 logs/rootwads and 8 anchors. Supplemental, un-anchored wood is visible to the right of the ELJ. Water surface elevation: 7.3 feet (COP datum.)

Photo Point 22 September 22, 2014
Preconstruction. Looking north, downstream, from the Saint John's Landfill at the western bank. Water surface elevation: 5.5 feet (COP datum).

Photo Point 22 July 1, 2015
ELJ # 3. Water surface elevation: 7.3 feet; functional ordinary high water is about 13 feet (COP datum).

Photo Point 27 February 17, 2015
Preconstruction. Looking east, upstream. Wright Island is on the left.

Photo Point 27 July 6, 2015
ELJ # 18. The second largest of the ELJ design types, with 18 logs and 8 anchors. Water surface elevation: 8.0 feet, functional ordinary high water is 13 feet (COP datum).

Photo Point 28 October 9, 2014
Preconstruction. Looking west, downstream.
Treatment plant pedestrian bridge is in the background. Wright Island is on the right.
Water surface elevation: 6.8 feet (COP datum)

Photo Point 28 July 6, 2015
ELJ # 18 (ELJ # 12 in background). Water surface elevation: 6.9 feet, functional ordinary high water is 13 feet (COP datum).

APPENDIX C
Construction Photographs

Crane at staging area off North Portland Road. The crane was used to load wood and slash onto the materials barge.

Preparing to install one of the helical anchors. The anchor is slowly rotated by a torque motor on the excavator head as it drives into the Slough bed.

Attaching the anchor chain to the mooring head at the top of the helical anchor.

The set up for helical anchor strength testing. All tested anchors passed.

Moving base layer of logs into place after anchors have been installed.

Close and regular communication between the contractor and BES inspectors and designers was a key element of success.

Moving a rootwad log into place to start building the next layer of the ELJ.

Driving a pin to secure logs to each other.

Each log was carefully placed to match design and accommodate natural variation in size and shape.

The materials barge in transit.

Constructing ELJs on the north bank of Columbia Slough. The materials barge is in the foreground with the construction barge behind it. Completed ELJs are visible in the top right, on the north shoreline of Wright Island.

Ensuring rootwads met specifications was a key element of success: they are at least 6 feet in diameter and untrimmed with ample fine root structure.

Construction barge in Slough near completed ELJ.

1st photo in series of 3

ELJ #5

Placing slash between logs in first of the rootwad layers. The base layer of logs is already installed and visible, but mostly submerged. The base logs do not have rootwads.

2nd photo in series of 3

ELJ # 5

Adding a second layer of rootwad logs. Slash was then packed between these.

3rd photo in series of 3

ELJ # 5

A third layer of rootwad logs has been added with slash again packed between each log. A final layer of top logs were added and anchoring chains were attached to the ends of the top logs.

APPENDIX D
Project Financial Summary

Phase	SAP Code	Description of Work	SAP Cost	% of Total Cost	%Total of Const. Cost
Predesign	12	Project Management	$7,565.51	0.36	0.58
	14	Engineering	$63,005.34	3.03	4.8
	41	Survey	$105,125.68	5.05	8
	42	Material Testing Lab	$19,213.74	0.92	1.46
	43	CAD	$96.56	0	0.01
	46	Environ. Assessment & Doc.	$2,510.45	0.12	0.19
	54	PCL - Field Operations	$1,336.00	0.06	0.1
	73	Miscellaneous	$378.00	0.02	0.03
		subtotal	$199,231.28	9.57%	13.37%
Advertise - NTP	20	Construction Management	$15,924.62	0.77	1.21
	30	Inspection	$2,269.07	0.11	0.17
		subtotal	$18,193.69	0.87%	1.22%
Design	14	Engineering	$194,070.08	9.32	14.77
	20	Construction Management	$14,722.80	0.71	1.12
	30	Inspection	$13,231.24	0.64	1.01
	41	Survey	$93,759.88	4.5	7.14
	42	Material Testing lab	$23,601.74	1.13	1.8
	43	CAD	$9,968.52	0.48	0.76
	44	Modeling	$99.04	0	0.01
	46	Environ. Assessment & Doc.	$1,007.38	0.05	0.08
	47	Public Involvement	$299.87	0.01	0.02
	64	Land/ROW/Easement - Labor	$2,725.00	0.13	0.21
		subtotal	$353,485.55	16.98%	23.72%
Construction	12	Project Management	$2,904.16	0.14	0.22
	14	Engineering	$64,235.21	3.09	4.89
	21	Contract Management	$37,423.38	1.8	2.85
	27	Safety & OSHA	$1,716.29	0.08	0.13
	30	Inspection	$67,439.01	3.24	5.13
	54	PCL - Field Operations	$555.00	0.03	0.04
	60	Construction Contract	$1,313,946.34	63.15	100
	61	Inter-Agency Construction	$1,499.98	0.07	0.11
	73	Miscellaneous	$311.55	0.01	0.02
	n/a	DEQ NRD GRANT	($200,000.00)	n/a	n/a
		subtotal	$1,490,030.92	71.57%	n/a
Startup/Closeout	21	Contract Management	$5,047.43	0.24	0.38
	30	Inspection	$102.56	0	0.01
	71	Plant Estab. & Monitoring	$15,761.94	0.76	1.2
		subtotal	$20,911.93	1.00%	1.40%
		GRAND TOTAL:	**$2,081,853.37**		