Boones Ferry Fish, Wildlife and Trail Passage Partnership – Project Narrative

Project background: Existing conditions, ecological function, ability for nature experience

Tryon Creek main stem flows through neighborhoods, commercial centers, several Portland Parks and Metro natural areas, Tryon Creek State Natural Area (TCSNA) and into the Willamette River at the city of Lake Oswego. The Creek is home to populations of ESA listed salmonid species including steelhead trout *(Oncorhynchus mykiss),* coho salmon *(O. kisutch)* and Chinook salmon *(O.tshawytscha).* Other native fish include coastal cutthroat trout *(O. clarki),* Pacific lamprey (*Entosphenus tridentatus*) and western brook lamprey (*Lampetra richardsoni*). Terrestrial mammal species include black-tailed deer (*Odocoileus hemionus columbianus*) and North American beaver (*Castor canadensis*). Sensitive avian species include pileated woodpecker (*Dryocopus pileatous*), olive-sided flycatcher (*Contopus cooperi*) and band-tailed pigeon (*Patagioenas fasciata*).

At Boones Ferry Road (river mile 2.68), Tryon Creek flows through a 60-inch diameter corrugated metal culvert approximately 140 feet in length. There is a drop from the culvert outlet to stream surface at times as great as twelve inches. A grated concrete debris rack is located at the upstream end of the culvert which includes a vertical drop of approximately 15 inches that essentially blocks all upstream fish passage. Concurrently, during high flows, excessive velocities in the culvert prevent upstream passage of fish. There is currently no passage provision for wildlife or pedestrians.


Culvert upstream inlet

The location is cited as a priority for trail connectivity and/or undercrossing in a number of local and regional planning efforts including: 2013 Tryon Creek State Natural Area Comprehensive Plan; 2000 City of Portland's Southwest Urban Trail Plan; 2014 Metro Regional Trails Map; 2008 "Connecting Green" Blue Ribbon Committee for Trails Selection: Hillsdale to Lake Oswego Trail; City of Lake Oswego Trails and Pathways Master Plan; and Portland Parks and Recreation Recreational Trails Strategy. Currently, pedestrians are directed to local streets and must cross busy, high-speed Boones Ferry Road to access TCSNA to the south or Marshall Park to the north. A demand trail has been developed through TCSNA riparian and wetland resources and crosses Tryon Creek by using the existing culvert.

Metro's target areas for 2006 bond investments included this area as the Tryon Linkages http://library.oregonmetro.gov/files/target_areas.pdf . The refinement plan for Metro's Tryon Creek Linkages Target Area identifies the area as Tier I for public bond investments and Metro has already secured trail easements with some nearby land owners. http://library.oregonmetro.gov/files/tryon_creek_map_goals_and_objectives.pdf

This Passage Partnership seeks to address the most significant barrier to completing the Hillsdale to Lake Oswego Trail by replacing this undersized culvert with a bridge to include fish, wildlife and pedestrian passage. The project is in City of Portland right of way, Tryon Creek State Natural Area and on two adjacent private properties. New easements will be required for both construction and permanent use.

The project will significantly improve the connection between the upper and lower watersheds for pedestrian, fish and wildlife passage. Nearly two miles of upper watershed streams, currently not accessible to migratory fish, will be open and fish will be able to pass up and downstream unimpeded.

Describe how the project relates to the larger ecological or community circumstances.

The headwaters of Tryon Creek Watershed is highly developed. Infrastructure includes major transportation corridors, commercial centers and residential housing. The watershed transitions to a less developed part downstream, characterized by a network of public natural areas. The City of Portland, therefore has taken a two–prong strategy: to partner with transportation agencies on stormwater management in the headwaters areas and to collaborate with well-established Tryon partnerships for riparian restoration projects in the natural areas, including private property owners. See Map 1 – Completed BES Tryon Projects.

BES has been partnering with agency and community organization to address limiting factors (lack of large wood, invasive plants, fish passage impediments and infrastructure conflicts) by enhancing sections of Tryon Creek at the TCSNA and neighboring private properties since 2004. Successful stream enhancements, bank stabilizations, passage improvements, revegetation projects and a ten year fish monitoring project have increased the organizational capacities of partners to carryout complex collaborative projects.

Fish passage barriers in the Tryon Creek Watershed include Hwy 43, SW Boones Ferry Road and other road crossings above SW Boones Ferry Road. Oregon Department of Transportation is conducting a feasibility study related to the Hwy 43 barrier. Tryon Creek Watershed Council just competed the removal of the Stone Bridge impediment with Metro NIN funding support. Other limiting factors have been addressed by the partners through land acquisition, long-term revegetation efforts, and construction projects to protect sewer infrastructure that incorporate in-stream habitat improvements with large wood and rock.

The 2005 Fanno and Tryon Creek Watershed Plan identified the culvert as undersized and a passage impediment. The project was further developed in the 2008 Fanno/Tryon Water Quality and TMDL Capital Improvement Project Predesign (Predesign). Both efforts included advisory committees composed of community partners including agency representatives and non-profit organizations. Thus, the replacement of the culvert has been anticipated by the community since planning began in 2001. When the Predesign was completed in 2008, it generated great interest from the pedestrian community who have been trying to solve the issue of a regional trail crossing for SW Boones Ferry Road. The need for a trail crossing was identified in the development of the Metro Regional Trails designation.

In December of 2013, the City convened a Culvert Replacement Advisory Committee (Committee) to work together to identify issues and provide feedback on design alternatives – which were to include either an open bottom arch culvert or a bridge. In March of 2014, the Committee reviewed the engineering alternative analysis. The alternative analysis recommendation favored a culvert design, since a culvert would meet the minimum conveyance and fish passage criteria and the bridge option was estimated to increase the project cost by

$800,000 in additional funding over the City's budget. The culvert was estimated to be 120 feet long and the bridge underpass to be about 45 feet long.

The Alternatives Analysis Matrix is attached, a small summary table is inserted to the right and a report is also available upon request. The report cites Metro's Wildlife Crossing Manual (2009) for its recommendations for wildlife passage.

Note that the bridge scores better for attributes such as pedestrian and wildlife connectivity, enhanced fish passage and riparian zones and wetlands. Also note that scores are not given for stakeholder acceptance, since that value would need to be established by the community. The Committee felt that the bridge was a far better option and some felt that it was the only acceptable option, as it met additional important criteria.

The Committee requested that the City acquire additional funding for the bridge option to maximize the openness ratio for the passage of both wildlife and pedestrians. Sub-optimal openness resulting from the open bottom arch culvert creates barriers to some wildlife, reduces riparian zone footprint and creates undesirable and difficult to solve human uses of the underpass area.

	Weighted Factor Score	
Project Factors	**BRIDGE**	**CULVERT**
A. Traffic Mobility	**60**	30
B. Constructability	70	**78**
C. Utility Impacts	10	**20**
D. Pedestrian and Wildlife Connectivity	**80**	36
E. Downstream Hydraulics	50	50
F. Enhanced Fish Passage	**50**	15
G. City of Portland Road Design Requirements	50	50
H. Riparian Zones and Wetlands	**50**	22
I. Roadway Drainage	20	20
J. Right-Of-Way	**40**	33
K. Permitting Schedule	40	40
L. Tree Removal	20	20
M. Long-Term Maintenance	26	**47**
Total before stakeholder acceptance	**566**	**461**
N. Stakeholder Acceptance and Partnerships		

Scope of Work: The City of Portland and its partners propose to replace the culvert with a bridge and restore the stream bed and riparian zone to create fish and wildlife passage and habitat. Oregon Parks and Recreation District (OPRD) is committed to realigning a demand trail to meet with the under road passage and to be built to current trail standards. Other Tryon partners are firm in their ongoing commitments to monitor wildlife and water quality, restore the watershed and educate visitors, students and residents through a variety of programs.

BES led work

1. Remove culvert and fill (see Budget Item "Site Preparation") addresses ReNature Criteria 1. By removing the culvert the project will recover ecological functions by re-opening connectivity for wildlife. Removing fill and regrading the stream banks will restore riparian area for terrestrial plants and wildlife.

2. Build bridge (Budget "Bridge Construction") – building a bridge will maintain the City's transportation infrastructure and provide a safe underpass for pedestrians travelling on the Hillsdale to Lake Oswego Regional trail. Building a bridge addresses ReNature Criteria 1 since a bridge will provide more area for riparian plants and improve wildlife habitat. Including the safe underpass addresses ReNature Criteria 2, per the example provided in the Regional Conservation Strategy for Biodiversity Corridors. The strategy calls for "combining objectives" such as combining culvert replacements with trail improvement projects and combining trail improvements with wildlife crossings. The bridge will be a capital asset for the City of Portland.
3. Provide power and install fish monitoring equipment on the bridge (Budget "Bridge Construction") - This activity will provide additional data for a 19 year study of fish use of Tryon Creek and addresses ReNature Criteria 2, the Regional Conservations Strategy for Monitoring and Research and for Salmonid Conservation. The monitoring equipment is already purchased and capitalized by the City.
4. Place in-stream fish habitat elements (Budget "In-stream Enhancements"). A major portion of the project is to enhance the in-stream habitat with logs and appropriately sized boulders and rocky substrate to provide aquatic habitat. Though the design is not complete yet, a similar project just downstream included the placement of 39 large fir and cedar logs in a 600 foot length project. The item also includes stream bank restoration and addresses ReNature Criteria 1 since it will increase and recover in-stream and streamside ecological functions.
5. Build trail under bridge (Budget "Trail, Sidewalk and Curb Improvements") – This portion of the trail will be built to connect with the new trail constructed by OPRD (see below for scope of work) but will be built as part of the bridge construction and streamside restoration. It will be an asset of and maintained by OPRD. This project element addresses the ReGreen Criteria 1 since it enhances people's ability to access the newly linked portions of the TCSNA and other natural area parks.
6. Install fencing and plantings to keep walkers on the trail under the bridge (Budget "Trail, Sidewalk and Curb Improvements"). This project element will address ReNature Criteria 3 by discouraging people from entering the stream and private property and to move through the area (a place to linger and have a view will be provided at the Arnold Creek bridge – see scope of work below). The fencing will be to OPRDs design standards and will be maintained by OPRD.
7. Build transition trail to stair from south side of BFR to sidewalk and sidewalk along BFR to North Creek Trailhead (Budget "Trail, Sidewalk and Curb Improvements"). This important piece of infrastructure will be capitalized by the City of Portland and guide pedestrians from the underpass area to the nearby existing trailhead at TCSNA. This project element addresses the ReGreen Criteria 1 since it enhances people's ability to access the newly linked portions of the TCSNA and other natural area parks.
8. Revegetate construction area and additional areas adjacent to construction footprint (Budget "Other Habitat Enhancements"). Project partners including West Multnomah Soil and Water Conservation District, SOLVe, private property owners, Tryon Creek Watershed Council, the Friends of Tryon Creek State Park, OPRD and BES have invested several years removing invasive plants from the 7.4 acres immediately downstream of the project. Most of the area has been replanted with native trees and shrubs but some areas were purposefully left unplanted since impacts from the culvert replacement project were anticipated. The target area is 2.8 acres and will include invasive plant removal via Integrated Pest Management

methods including cuttings, herbicide application and manual removal of English ivy, blackberry, holly, etc. and replanting with native bare root trees and shrubs, live shrub pole cuttings and native grass and wildflower seed. This element addresses ReNature Criteria 2 Regional Conservation Strategy for Natural Areas that recommends the removal of invasives and enhancing with natives.

9. Enhance wetlands on public and private property (Budget "Other Habitat Enhancements). Wetlands at the project site are depicted on the enclosed project area map and total 0.2 acres. The wetland on the eastside private property will likely be impacted by construction activities including the construction of a stormwater swale. Mitigation of BES construction impacts will include removal of reed canary grass and blackberry followed by installation of native plants such as wetland emergents and seeding with a forb/wildflower mix. These wetland enhancements address ReNature Criteria 2 as conserving high-priority land is a Regional Conservation Strategy Action for Natural Areas.
10. Manage stormwater from the bridge and BFR using ROW and private property (Budget "Other Habitat Enhancements") – stormwater from the existing road and the new bridge will be filtered, slowed and infiltrated prior to entering Tryon Creek. Improving an existing roadside swale with check dams and native plants will help address an existing runoff problem and treat water from new impervious structures. This project element addresses ReNature Criteria 1 protecting water quality in Tryon Creek.

<u>*OPRD led work*</u>

In the spring of 2015, OPRD will be conducting a *trail restoration and reroute project* between Boones Ferry Road and Marshall Park. OPRD will partner with the 2015 International Trails Symposium to be held at the Portland Convention Center. As part of the symposium, hands on field workshops will be conducted by the Professional Trail Builders Association. It is through these workshops that portions of this trail will be completed. In addition, donations and additional funding have been secured to complete the trail gap which will provide access to the future pedestrian underpass under SW Boones Ferry Road. From June 2015, until the Boones Ferry culvert is replaced with a pedestrian underpass, the south end of this trail will enter/exit at the junction of Arnold Creek Road and Boones Ferry Road.

This new trail provides access from the existing TCSNA network of trails to an undeveloped portion of TCSNA, north of SW Boones Ferry Road (see map attached to letter from OPRD). This trail will extend the TCSNA North Creek Trail through this northern section to the trail system of the City of Portland's Marshall Park, a 26 acre natural area. To the north, Urban Trail #6 connects to three other identified and signed urban trails as well as City of Portland's Marquam Nature Park. To the south of this project, the trail connects to 14 miles of trails in TCSNA, which also connect to the City of Lake Oswego and the future Willamette River Trail extension. Specific tasks:

1. Install 0.6 mile of hiking/walking natural surface trail along the west slope of Tryon Creek between Boones Ferry Road and the City of Portland's Marshall Park at Maplecrest Drive (Budget OPRD Match). The project element addresses ReGreen Criteria 1 by providing trail access and ReNature Criteria 3 by relocating the trail away from Tryon Creek and wetlands.
2. Build a 35 foot bridge over Arnold Creek, two boardwalks in wet areas at the toe of the slope, and two smaller bridges of 20 and 18 feet long over two side slope ravines. (Budget OPRD Match). This activity addresses similar criteria to the trail activities noted above.
3. Create signage and interpretation for the area including native species present and ways visitors can protect wildlife and their habitats (Budget OPRD Match). This project element

addresses both ReNature Criteria 3 and ReGreen Criteria 3 by providing conservation education through both signage and programming to interpret the area through an ongoing commitment from OPRD.

4. Remove invasive plant species and revegetate area outside bridge project footprint. This is in conjunction with the Friends of Tryon Creek State Park volunteer program and is a part of their ongoing commitment to restoring TCSNA and addresses ReNature Criteria 2 as an action in the Regional Conservation Strategy regarding the removal of invasive plants and re-establishing natives.

US Fish and Wildlife Service led work

1. Monitor fish use of the area. This activity will provide ongoing data for a 19 year study of fish use of Tryon Creek and addresses ReNature Criteria 2, the Regional Conservations Strategy for Monitoring and Research and for Salmonid Conservation.

During a survey of Tryon Creek, biologists from the U.S. Fish & Wildlife Service caught this juvenile Lower Columbia River steelhead, a threatened fish under the Endangered Species Act.

Friends of Tryon Creek State Park, Tryon Creek Watershed Council and SW Trails PDX work

1. Environmental education, volunteer ecological restoration and trail activities ongoing.

Community Engagement: How has the community been engaged?

Community engagement has been an integral part of the project since it was identified as a priority in the 2005 Fanno and Tryon Watershed Management Plan. Various committee and planning process are described earlier, but in addition, it is worth noting that in 2008, both OPRD and SW Trails were interviewed by the SW Connection and supported the trail underpass as an opportunity that could be realized as part of the culvert replacement project. See article attached to letter from SW Trails, PDX

Community Partners:

- Oregon Parks and Recreation District is the property owner for a portion of the project and is lead on the trail project to bring pedestrians to the south side of Tryon Creek. Financial contribution is $50,000. John Mullen, Park Manager and Rocky Houston, Recreation Trails Coordinator are project contacts. john.mullen@oregon.gov
- The U.S. Fish and Wildlife Service has been partnering since 2010 to study fish passage in the Tryon Creek system. Contact is Tim Whitesel, PhD timothy_whitesel@fws.gov
- Friends of Tryon Creek State Park (Friends) have a long history with protecting and enhancing TCSNA. The Friends provide ongoing education opportunities, enhancement activities and representation on the Committee. Monica Smiley is the Executive Director and James Peale is the representative to the Advisory Committee. monica@tryonfriends.org

- SW Trails PDX promotes walking in southwest Portland and has been the project champion since it was first identified in the Tryon Watershed Management Plan. Don Baack is the representative on the Advisory Committee see letter for commitments. baack@q.com
- The Tryon Creek Watershed Council (TCWC) is a project champion and a member of the Advisory Committee. TCWC has new contacts with property owners adjacent to the new trail segment and will be working to revegetate these properties. Contact Corrina Chase tryoncreekwc@gmail.com
- Arnold Creek Neighborhood Association's mission includes the preservation of the wildlife and natural waterways of the area. Jessica Schimkowitsch and Hans Steuch are the ACNA representatives on the Advisory Committee. portlandjessica@gmail.com
- Portland Parks and Recreation District (Parks) manages property purchased by the City and Metro along Tryon Creek upstream of the State Natural Area. Jeff Hough, trails coordinator, will be providing on-the-ground support for the trail work led by OPRD. Astrid Dragoy is the Parks representative on the Advisory Committee. Astrid.dragoy@portlandoregon.gov
- The Portland Bureau of Transportation (PBOT) has been working with the community on options to for a trail crossing at SW Boones Ferry Road for many years and favors the under-the-road crossing. PBOT is a project partner on roadway, bridge and sidewalk design. Contacts: Cedar Heinle and Nicole Blanchard Cedar.heinle@portlandoregon.gov Nicole.blanchard@portlandoregon.gov
- The Oregon Department of Fish and Wildlife is represented on the committee and also advised on terrestrial wildlife enhancements. Elizabeth Ruther was the representative but has recently accepted a job outside the agency. Reassignment is pending.
- Two adjacent private property owners and two nearby property owners are involved in restoring their properties and/or participating in the Advisory Committee. Design opportunities and constraints include private property considerations. Daria Gray, Aaron McDuffie, Tom Hermach and Jordan Carter are the neighbors.

How are the design solutions *ecologically effective and cost efficient*?

This project builds on past investments in stormwater, restoration and revegetation projects both upstream and downstream of the project site by multiple partners. A Tryon Completed Project map, enclosed, shows major investments above the culvert including green streets, parking lot stormwater retrofits, a raingarden to treat I-5 runoff (in construction) and a daylighted creek segment. Investments below the site include projects to improve fish habitat such as placement of large logs, boulders and appropriately sized gravel substrate. The projects have stood the test of time, included multiple years of reporting to permit agencies and have met success criteria and include monitoring for usage by native fish.

Partners' work includes Tryon Creek Watershed Council work on private properties to remove invasive plants and restore with natives and a recent project, funded in part by Metro NIN, to replace the Stone Bridge, a passage barrier in TCSNA. Other work by the Friends of Tryon Creek State Park and OPRD include trail work to provide access but also curb erosion and keep people and horses from impacting natural resources.

Multiple benefits for people and nature

In addition to conveying stream flows and allowing for passage of fish and wildlife, the Partnership offers recreation benefits to people, additional volunteer opportunities for

monitoring, interpretive opportunities and increased interest in the area which is and will continue to increase revegetation efforts.

Contracting with MWESB

The City of Portland is committed to contracting with MWESB certified firms and as such has established an overall goal of 20% in awarding Professional, Technical and Expert Service (PTE) prime consultant and sub-consultant contracts to certified firms. In fiscal year 13/14, BES awarded 30 % of PTE dollars to certified firms. Additionally, the City has established a Prime Contractor Development Program (PCDP) for projects up to $350,000 to increase participation and capacity of certified minority and women prime contractors to perform work on the City's public works and improvement projects; and to address and correct the historical underutilization of minority and women prime contractors on City projects. Though this project will be over the PCDP threshold limit for prime participation, there will be MWESB subcontracting opportunities and outreach to State-certified firms will be conducted. Both the design and construction contracting opportunities for the Boones Ferry Culvert Project will include MWESB criteria in solicitations and scoring.

Project readiness and risk

The project match funding is secured in the current CIP for BES and has a professional design team including a culvert/bridge design contract with BergerABAM engineering firm. The BES project team includes watershed manager, Amin Wahab, project manager Eric Brennecke, PE, environmental coordinator Jennifer Devlin, fish and wildlife environmental specialist Melissa Brown and botanic specialist Ryan Durocher. Construction managers, inspectors and construction outreach staff will be assigned at 30% design. Contracts, including the design and construction contracts are held to the City's procurement standards. Project staff see the project through design, construction, revegetation and up to five year permit reporting and monitoring.

The project has passed the pre-design and alternatives analysis milestones and is on hold pending funding prior to design of the bridge option selected by the Advisory Committee.

BES anticipates restarting the design process focusing on a bridge option if Metro funds are awarded in May 2015. 30% design would be anticipated for September 2015, 60% at December 2015, 90% for March 2016, final design for May 2016 and construction starting September 2016. Public involvement occurs at the design milestones and during construction.

Project evaluation and/or monitoring

The project will require monitoring and reporting for permit compliance to the US Army Corps of Engineering and Oregon Division of State Lands. These reports include: photo monitoring of project elements such as habitat logs; vegetation survival and establishment activities and costs; and fish and wildlife studies. US Fish and Wildlife Service will be using data collected for a movement analysis to compare inter-reach movement and to estimate abundance upstream and downstream of the culvert. Success indicators will include use of the area by salmonids, movement of salmonids through the area, survivorship of plants and stability of habitat elements.

BES engineers prepare a "Lessons Learned" report for every project, which may be helpful when working with the Oregon Department of Transportation and other partners to replace the Tryon Creek culvert at Hwy 43.