TMDL Implementation Plan
Second Annual Status Report
November 1, 2010

1. Background

This second Annual Status Report summarizes key activities and accomplishments for the City of Portland (City) fiscal year 2009-2010 (July 1, 2009 to June 30, 2010). This is the second Annual Status Report submitted by the City following the approval of the TMDL Implementation Plan (IP) on March 6, 2009 in accordance with the Willamette Basin TMDL Water Quality Management Plan (WQMP) that states:
"Following approval of the TMDL implementation plan, DMAs will be expected to submit to ODEQ an annual status report briefly describing the status of management strategies that implement TMDL pollutant allocations or reductions."
The City chose November 1 as the reporting date in order to synchronize the IP annual report with the NPDES MS4 annual compliance report as requested in the IP approval letter: *"This will allow us, over time, to synchronize the submission of both annual reports (Implementation and Stormwater Management Plans) which should optimize all our efforts."*

The City intends to update the IP after issuance of the City's renewed NPDES MS4 permit but prior to the submittal of the third Annual Status Report in order to meet DEQ's expectations referenced in the IP approval letter: *"..., DEQ expects that the next round of MS4 permits – and their associated Stormwater Management Plans – will include additional provisions to better align with the TMDL Implementation plans and achieve water quality goals."*

The fifth annual report scheduled to be submitted by November 1, 2013 will be much more comprehensive, provide a quantification of the cumulative pollutant reduction of all actions and activities in the IP, and will also contain an evaluation of the effectiveness of the IP in accordance with the expectations of the Willamette Basin WQMP: *"DMAs will be expected to prepare an annual report and undertake an evaluation of the effectiveness of their plans every five years to gauge progress toward attaining water quality standards." "Every fifth year DMAs will need to submit an evaluation report. The report will describe the effectiveness of the management strategies identified in the TMDL Implementation Plan and put into place during the preceding four years. The report will indicate whether implementation of their plan is adequately meeting the pollutant reduction goals."*

2. Annual Status Report Overview

This Second Annual Status Report summarizes key activities and accomplishments through June 30, 2010 – the end of the city's previous fiscal year. It also briefly reports on important multi-year projects that are in the planning or design phase.

The format of this second Annual Status Report does not follow the TMDL Implementation Plan in its entirety but is designed to focus on the most important on-the-ground activities activities. It also does not attempt to account for the pollutant load reduction of each activity mainly because reliable, consistent and universally accepted tools are currently not available to account for many of the activities implemented (e.g. pollution prevention, education, stream restoration). TMDL pollutant load reductions achieved by structural BMPs within the MS4 area are accounted for and were presented most recently in the 2008 NPDES MS4 Permit Renewal Submittal (http://www.portlandonline.com/bes/index.cfm?c=50333&a=246071). Many other activities conducted under the MS4 permit are quantified event though most do not provide a specific reduction of pollutant loads.

The Annual Status Report is separated into the following sections:

- Appendix A provides information from the implementation of the NPDES MS4 permit. It is organized by the BMPs in the Stormwater Management Plan and provides summaries of the performance measures.
- Appendix B shows some examples of watershed or stream restoration projects that are not included in Appendix A because they were implemented outside areas draining to the MS4.
- Appendix C is a listing of on-the-ground activities by watershed that were either completed recently or are currently ongoing. Activities shown in Appendix A and described in Appendix B in greater detail are also listed in Appendix C to provide a more complete overview of activities by watershed.

3. Temperature TMDL

The main activity to reduce stream temperature is the planting of trees within the riparian area of streams with the emphasis on smaller tributaries where increased shading will have the greatest impact.
A total of over 43,771 trees were planted on almost 270 acres along over 36,000 linear feet of stream bank (see Appendix A for details).

Removal of undersized or high invert elevation culverts that have a tendency to create upstream ponding may also assist in reducing stream temperature by decreasing the residence time and limiting the exposure to solar irradiation.
In the Columbia Slough, culvert replacements at NE 33rd Ave. and NE 112th Ave fall in this category (see Appendix C).

Any project that promotes infiltration, whether it is a floodplain reconnection or a green street project (see Appendix C), has the potential to increase summer base flow. However, quantifying the effect of such projects is rather difficult.

4. Cold Water Refugia

As discussed in the first annual status report submitted on November 1, 2009, a number of potential cold water refugia were either identified or confirmed through an infrared survey of various potential locations in the Willamette River. Below is a listing of specific projects, either completed recently or under way, that are designed to improve or protect existing or potential cold water refugia (some of these projects are discussed in more detail in Appendix B:

- Oaks Bottom Habitat Enhancement Project
- Powers Marine Natural Area Restoration
- Stephens Creek Confluence Habitat Enhancement Project
- Columbia Slough Confluence Habitat Enhancement Project
- Lower Columbia Slough Refugia
- Tryon Creek Confluence Project

A fish tagging study that would allow assessing the use of the Willamette River by salmonids is currently in the initial planning phase. Juvenile salmonids will be tagged with a receiver and a temperature logger to provide a combination of location and water temperature information. This study will provide information on the preferential locations juvenile salmonids are using over the course of the year. Funds for this study are currently being requested and may be available as early as 2012.

Appendix A – Summary of Specific Activities Required by the MS4 Permit

PI-1: Implement public information, education, involvement, and stewardship activities that will raise awareness, foster community stewardship, and promote pollution prevention and stormwater management.

- **Type of outreach and estimated number of people reached:**

Type of Activity	Estimated Number of Participants
Clean Rivers Education Programs	17,000
Stewardship Activities/Community Events	14,600
Naturescaping for Clean Rivers	1,223 workshop participants; 20,000 attending outreach events
Water bill inserts	Distribution to 214,000 accounts twice in FY
Website visits	Sustainable Stormwater Management Program: 234,000

PI-2: Obtain public review and comment on revisions to the Stormwater Management Plan (SWMP).

- **Summary of SWMP public review process, including description of outreach efforts to interested parties list and number of comments received during public review process.**

- No activities occurred.

OM-1: Operate and maintain components of the municipal separate storm sewer system (MS4) to remove and prevent pollutants in discharges from the MS4.

- **Location (watershed), type, and number (and percentage of total) of facilities cleaned; frequency of cleaning by type; amount of materials removed**

Inlets Inspected/Maintained and Cleaned							
	Columbia Slough	**Fanno Creek**	**Johnson Creek**	**Tryon Creek**	**Willamette River**	**Stephens Creek**	**Total**
Inspected/Maintained	36	96	71	35	354	0	592
Cleaned (Hansen data only)*	679	24	507	6	749	0	2,010
* Information on inlets cleaned was pulled from both Maximo (12,454 inlets) and Hansen (2,010 inlets). Only the information from Hansen can be separated out by watershed.							

Ditches and Culverts Cleaned						
	Columbia Slough	**Fanno/Rock Creek**	**Johnson Creek**	**Tryon Creek**	**Willamette River**	**Total**
Feet of Ditch Cleaned (linear feet)	487	155	4,716	2,748	36,714	44,820
Feet of Culvert Cleaned (linear feet)	85	32	88	252	4,272	4,729

Public Stormwater Management Facility Inspections						
	Columbia Slough	**Fanno/Rock Creek**	**Johnson Creek**	**Tryon Creek**	**Willamette River**	**TOTAL**
Number Inspected	136	84	84	26	56	386
Note: Each facility was inspected twice.						

Public Stormwater Management Facilities (SMFs) Cleaned/Repaired							
	Columbia Slough	**Fanno Creek**	**Rock Creek**	**Johnson Creek**	**Tryon Creek**	**Willamette River**	**TOTAL**
Surface SMFs*	7/3	1/0	0/0	4/0	0/0	0/2	12/5
Subsurface SMFs**	24/0	24/0	9/0	11/0	13/0	37/1	118/1
All SMFs	31/3	25/0	9/0	15/0	13/0	37/3	130/6
Percent of all public stormwater management facilities cleaned/repaired: 35 %							

* Surface facilities are: dry ponds, wet ponds, spill ponds, constructed treatment wetlands, vegetated swales, infiltration basins, and sand filters.

** Subsurface facilities are: sedimentation structures, canister filters

Repair or Construction of Inlets, Inlet Leads, and Culverts

	Columbia Slough	Fanno* Creek	Johnson Creek	Tryon Creek	Willamette River	TOTAL
Inlets	15	18	15	13	64	125
Inlet Leads (number of/linear feet)	22/1,077	28/1,144	70/1,649	7/243	186/14,940	313/19,053
Culverts (number of/linear feet)	4/411	18/872	6/513	4/142	4/236	36/2,174

Material Removed During Maintenance [a]

Watershed	Amount Removed (Tons)
Columbia Slough	18.0
Fanno Creek	5.7
Johnson Creek	175.0
Tryon Creek	102.0
Willamette River	1,360.0
Total	**1,660.7**

[a] Material primarily from conveyance system cleaning (ditches, culverts)

- **Number and type of training/educational sessions and number of participants**

  Maintenance Operations Environmental Systems Division attendance at three-day Water Environment School: 13 participants

  Note: Training related to other operations and maintenance activities is identified under OM-2 and OM-3.

OM-2: Operate and maintain components of public rights-of-way, including streets, to remove and prevent pollutants in discharges from the municipal separate storm sewer system.

- **Number and type of training/educational sessions and number of participants**
  - Pesticides management: all PBOT Maintenance Operations pesticides applicators
  - Equipment cleaning operations: 8 PBOT Maintenance Operations (mowing and brushing group) employees

  Note: Training related to other operations and maintenance activities is identified under OM-1 and OM-3.

- **Location (by watershed), miles (and percentage of total), and type of streets cleaned; frequency of cleaning by type**

  - Swept approximately 13,154 street miles within the City of Portland. As shown in the following table, 1,919 of the street miles are for streets that drain to the MS4 or to surface waters. (Note: Mileage reflects frequency of sweeping.)
  - Major arterials are swept six times a year. All curbed residential streets are swept one to two times a year.
  - Approximately 25,668 cubic yards of debris were collected from streets that drain to the MS4 or directly to surface waters. The following table shows estimated amounts collected in each watershed

Summary of Street Sweeping by Watershed[a]		
Location	**Miles Swept[b,c]**	**Material Collected (cubic yards)**
Columbia Slough	687	344
Johnson Creek	404	202
Fanno Creek	323	162
Tryon Creek	57	29
Willamette River	204	102
Rock Creek	244	122
Totals	**1,919**	**961**

[a] Information is for streets that drain to the MS4 or to surface water.
[b] Includes leaf collection miles.
[c] Miles swept account for frequency of sweeping.

OM-3: Operate and maintain other City facilities and infrastructure (not included in OM-1 or OM-2) to remove and prevent pollutants in discharges from the municipal separate storm sewer system.

- **Number and type of training/educational sessions and number of participants**

  - PBOT Maintenance Operations Pollution Prevention Team training monthly, including the following topics:
    - Water quality protection needs for vehicle and equipment washing
    - Spill kit usage and appropriate absorbents
    - Management of vehicle and equipment leaks
    - Spill reporting requirements
    - Stormwater protection BMPs
    - Ecoroofs

  Note: Training related to other operations and maintenance activities is identified under OM-1 and OM-2.

- **Location (watershed), type, and number of O&M changes made to City facilities and properties.**

  - PBOT Maintenance Operations continued to install, inspect, and maintain filtration and absorbent media at selected stormwater inlets.

  - PBOT Maintenance Operations continued modifications of the facility where street sweepers are rinsed to accommodate new sweepers and improve treatment of rinse water.

  - The Water Bureau implemented new discharge strategies (on a facility-by-facility basis) that will have zero to acceptable impact to the MS4.

  - The Bureau of Parks and Recreation increased the use of coarse wood chip mulches in the growing area of Mt. Tabor Nursery, in part to decrease erosion.

  - The City implemented retrofit projects to reduce emissions in its diesel fleet. The retrofits are currently 43 percent complete, with 166 emission control devices installed.

IND-1: Implement the Industrial Stormwater Management Program to control the discharge of pollutants from industrial and commercial facilities (both existing and those undergoing changes in operations) to the municipal separate storm sewer system.

- **Location (by watershed), number, and type of existing permits managed by the Industrial Stormwater Management Program.**

Table IND-A provides information about existing permits.

Table IND-A
Location (By Watershed), Number, and Type of Existing Permits with Discharges to the MS4 Managed by the Industrial Stormwater Management Program in FY 08/09

	Permit Type /Number of Permits Managed		
Location	**1200Z**	**1200COLS**	**TOTALS**
Willamette River	59	NA	**59**
Columbia Slough	NA	75	**75**
Johnson Creek	3	NA	**3**
Fanno Creek	0	NA	**0**
Tryon Creek	0	NA	**0**
Other (Columbia R.)	2	NA	**2**
TOTALS	**64**	**75**	**142**

- **Location (by watershed), number (and percentage of total), and frequency of inspections of permitted facilities.**

Table IND-B summarizes the location (by watershed) and number (permitted and non-permitted) of inspections for facilities that discharge to the MS4. Table IND-C shows similar information for facilities that discharge to other than the City's MS4.

Table IND-B
Number of Industrial Stormwater Inspections for Facilities that Discharge to the City's MS4

INSPECTION TYPE:	**Permitted**	**Non-Permitted**	**TOTALS**
Willamette River	77	37	**114**
Columbia Slough	82	67	**149**
Johnson Creek	4	2	**6**
Fanno Creek	0	1	**1**
Tryon Creek	0	0	**0**
Other (Columbia R.)	2	3	**5**
TOTALS	**165**	**110**	**275**

Table IND-C Number of Industrial Stormwater Inspections for Facilities that Do Not Discharge to the City's MS4			
INSPECTION TYPE:	**Permitted**	**Non-Permitted**	**TOTALS**
Willamette River	33	7	**40**
Columbia Slough	58	44	**102**
Johnson Creek	4	4	**8**
Fanno Creek	1	0	**1**
Tryon Creek	0	0	**0**
Other (Columbia R.)	5	2	**7**
TOTALS	**101**	**57**	**158**

Table IND-D shows the frequency of inspections of permitted facilities that discharge to the MS4. In general, permitted industries are inspected once per year.

Table IND-D Inspection Frequency for Permitted Facilities Discharging to the City's MS4				
Location	**Number Facilities Not Inspected**	**Number Facility Inspections***	**Number Facilities Inspected More than Once**	**Percent of Total Number of Permitted Facilities Inspected**
Willamette River	2	77	13	97
Columbia Slough	0	82	8	100
Johnson Creek	0	4	1	100
Fanno Creek	No permitted facilities to MS4			NA
Tryon Creek	No permitted facilities to MS4			NA
Other (Columbia R.)	0	2	0	100
TOTALS	**2**	**165**	**22**	**99**
* Based on totals in Table IND-B.				

IND-2: Provide educational programs and materials and technical assistance to reduce industrial and commercial pollutant discharges to the municipal separate storm sewer system.

- **Type of outreach and estimated number of people reached**

Type Of Outreach and Estimated Number of People Reached	
Type of Activity	**Number of Participants**
Eco-logical Business Program • Businesses certified (within City of Portland) • Promotional campaign to promote the Eco-logical Business message.	 Total to date since program implemented: Automotive repair and service shops: 40 Landscape services: 11 Unknown
Columbia South Shore Well Field Wellhead Protection Program	18 phone consultations and 5 site visits to regulated businesses Public outreach to 1,538 participants/ contacts
BEST Business Center	• 380 phone or email contacts from Portland businesses to date • BEST Awards to 7 businesses in 2010 • Portland Climate Champion award to 15 businesses to date

ILL-1: Identify, investigate, control, and/or eliminate illicit discharges (illicit connections, illegal dumping, and spills) to the municipal separate storm sewer system. Evaluate and, if appropriate, control non-stormwater discharges to the municipal separate storm sewer system.

- **Results of non-stormwater discharge evaluations; related changes in policies or practices**

  - BES completed and submitted the non-stormwater discharge evaluation report as part of the IER submittal to DEQ in May 2006. That report closes out the City's targeted evaluation of the non-stormwater discharges listed in the MS4 permit. A number of new policy and procedure changes have been implemented in response to the evaluation findings.

- **Type of outreach and estimated number of people reached**

  - The BES Spill Response Hotline received and responded to:
    - 1,300 daytime calls
    - 367 after-hours complaint calls
    - 2,200 additional daytime information-only calls

  Note: These numbers are citywide, not for just the MS4.

- **Number of illicit connections discovered; number of illicit connections corrected; amount of materials collected/removed (where appropriate)**

  - The Illicit Discharges Elimination Program did not identify any illicit discharges in FY09-10.

  - The Industrial Stormwater Management Program identified 15 illicit discharges; all were addressed and/or corrected.

ND-1: Control erosion, sediment, and pollutant discharges from active construction sites.

- **Number and location (by watershed) of active public and private construction sites**

Number of Active Private Construction Permits (Citywide) Subject to Erosion Control Inspection, by Watershed (as of 7/22/09)	
Location	**Number of Permits**
Columbia River	15
Columbia Slough	1,129
Fanno Creek	343
Johnson Creek	959
Multnomah Channel	5
Rock Creek (Washington County)	110
Tryon Creek	213
Willamette River	2,039
Total	**4,818**

Number of Active Public Construction Projects with Erosion Control Components (Citywide), by Watershed	
Location	**Number of Permits**
Columbia Slough	40
Fanno Creek	20
Johnson Creek	15
Tryon Creek	8
Willamette River	156
Total	**239**

- **Number of inspections of active public and private construction sites, estimated by watershed**
  - In general, public works permit sites are inspected daily during construction.
  - Private property inspections conducted during permit year 15 are summarized below. This number includes only approved inspections. Private sites are also subject to spot inspections.

Number of Approved Erosion Control Related Inspections – Private Sites (Citywide)	
Location	**Number of Inspections**
Columbia River	11
Columbia Slough	975
Fanno Creek	247
Johnson Creek	914
Multnomah Channel	10
Rock Creek (Washington County)	64
Tryon Creek	139
Willamette River	1,772
Totals	**4,138**

Notes:

- The number of inspections reflects only those for permits approved by the City of Portland; inspections conducted by other jurisdictions (e.g. DEQ) are not included.

- The number of inspections includes only inspections related to an approval signoff for the building permit, not interim inspections.

ND-2: Implement and refine stormwater management requirements for new development and redevelopment projects to minimize pollutant discharges and erosive stormwater flows.

- **Location (by watershed), number, and type of stormwater management facilities planned for construction**

New Facilities and Properties Covered by an O&M Plan, FY 2000-10[1]

	Willamette River	*Columbia Slough*	*Johnson Creek*	*Fanno Creek*	*Tryon Creek*	*Other*	**Total**
Constructed Treatment Wetland							**0**
Detention Pond (wet)	2	1					**2**
Detention Pond (dry)							**0**
Drywell	11	5	3				**19**
Ecoroof	10	3					**13**
Flow-through Planter Box	41	4	5	2	7	4	**63**
In-line Detention Facility	3					1	**4**
Infiltration Basin	6	12	17	1		1	**37**
Infiltration Planter Box	7	2	1				**10**
Manufactured Facility	9	6	2			3	**20**
Oil / Water Separator		1					**1**
Porous Pavement	8	8	2	1			**19**
Sand Filter						1	**1**
Sedimentation Manhole	2	2					**4**
Soakage Trench	1		1				**2**
Spill Control Manhole		1					**1**
Stormwater Reuse System							**0**
Swale	9	22	1	3	3	7	**45**
Tree							**0**
Vegetated Filter	1	2					**3**
Unknown							**0**
Total Facilities	**125**	**69**	**32**	**9**	**9**	**0**	**244**
Total Properties[2]	**57**	**37**	**14**	**8**	**8**	**3**	**127**
Area Treated (acres)[2]	**122**	**104**	**6.4**	**0.4**	**0.7**	**13.9**	**247**

Notes

1. The installation date is unknown. For the purposes of this report, O&M recorded dates were used to determine facilities planned for construction in the 2008-2009 reporting year.

2. Two properties are double-counted because they lie in multiple watersheds.

- **Location (by watershed) and number (and percentage of total constructed) of inspections, including overall compliance rate (number and percentage in compliance and number and percentage corrected), by type of stormwater management facility**

A total of 1,410 facility inspections were conducted, representing 17 percent of the total facilities inspected under the program at commercial and industrial sites, as shown below.

MIP Inspections, FY 2009-10							
	Willamette River	*Columbia Slough*	*Johnson Creek*	*Fanno Creek*	*Tryon Creek*	*Other*	**Total**
Facility Inspections	648	347	341	17	10	47	**1,410**
Property Inspections *	232	144	142	9	5	9	**541**

Note
Ten property inspections were double counted because the inspected properties lie in more than one watershed. Sixty-nine property inspections were not included in the watershed counts above because they were re-inspections of the same properties.

Inspection Results, FY 2009-10			
	Inspections	*Observed Deficiencies **	*Corrections***
Constructed Treatment Wetland			
Detention Pond (wet)	6	1 (17%)	
Detention Pond (dry)	4	2 (50%)	
Drywell	313	26 (8%)	
Ecoroof	5	1 (20%)	
Flow-through Planter Box	173	52 (30%)	2
HazMat Control Structure	1		
In-line Detention Facility	10	3 (30%)	
Infiltration Basin	102	33 (32%)	1
Infiltration Planter Box	18	3 (17%)	
Manufactured Facility	173	41 (24%)	9
Oil / Water Separator	40	13 (33%)	1
Porous Pavement	23	3 (13%)	1
Sand Filter	11	2 (18%)	1
Sedimentation Manhole	190	65 (34%)	15
Soakage Trench	28	3 (11%)	
Spill Control Manhole	16	5 (31%)	
Stormwater Reuse System	2	0	
Swale	262	113 (43%)	22
Tree	7		
Vegetated Filter	11	1 (9%)	
Contained Planter	10	1 (10%)	
Infiltration Trench	5	1 (20%)	
Totals	**1410**	**369** (26%)	**52** (14%)

Notes
* Deficiencies are defined as having one or more of the following issues: missing parts, a significant lack of vegetation, or high amounts of accumulated sediment.
** Numbers include corrections made to facilities found deficient during the FY09-010 inspection period.

In addition, 136 O&M plans were found to be deficient in the 2009-2010 reporting year. O&M deficiencies consist of plans and maps that do not accurately reflect the type, number, or location of facilities built. Thirty six of the deficient O&Ms were corrected by property owners who either submitted a revised site map and/or recorded a new O&M plan with the county.

- **Location (by watershed), number, and type of source control measures required by the Stormwater Management Manual**

Source Control Type	Willamette River	Columbia Slough	Johnson Creek	Fanno Creek	Tryon Creek	Other	Totals
Trash/Recycling/Compactor	331	102	39	6	6	1	485
Grease Management	67	24	3	2			96
Extra Strength Charge	44	14	3	1			62
Fueling	7	6					13
Tank Farms	5		1				6
Liquid Storage	14	10	3				27
DEQ Permits	31	40	3	2	3		79
Groundwater Depth	33	26	4	1			64
Loading Docks	16	12	1	2			31
Covered Parking	12	2					14
Water Feature	7	5					12
Extra Bulk Material Storage	1	6	1	1			9
Boiler and Chiller	5	2					7
Dewatering	20	7		2			29
Contamination	37	18	6				61
Wash Rack	2	5					7
Dental Program	2	1		1			4
Subgrade Structure	8						8
Submeter Program	10						10
Water Reclaim & Reuse	1						1
Totals	**653**	**280**	**64**	**18**	**9**	**1**	**1,025**

STR-1: Structurally modify components of the storm drainage system to reduce pollutant discharges. Implement structural improvements on existing development to reduce pollutants in discharges from the municipal separate storm sewer system.

- **Location (watershed), number, and type of projects implemented**
- **Type and amount of area managed by structural facilities**

Ditches to Swales Retrofits		
Watershed	**Location**	**Linear Feet**
Fanno Creek	6400-7200 SW Garden Home Rd.	220
Subtotal		***220***
Ditches to Porous Shoulder Retrofits		
Watershed	**Location**	**Linear Feet**
Columbia Slough	10300 NE 6th Avenue	70
Fanno Creek	6400-7200 SW Garden Home Rd.	880
Tryon Creek	9500 SW 8th Drive	30
Subtotal		***980***
Total		**1,200**

- Completed the following structural stormwater facilities:
  - Ramsey Stormwater Wetlands
  - SW 32nd at SW Capitol Highway Green Street Stormwater Facility (detains and treats stormwater runoff from 14,500 square feet of impervious area)
  - SW 34th Green Street Stormwater Facility (detains and treats stormwater runoff from 4,300 square feet of impervious area)
  - SW Capitol Highway at SW 33rd Green Street Stormwater Facility (detains and treats stormwater runoff from 3,000 square feet of impervious area)
  - Portland Community College Sylvania Campus Stormwater Facility (treats runoff from 16,200 square feet of existing impervious parking and street areas)
  - 25 ecoroof projects, totaling 46,446 square feet
  - Green Streets projects:
    - Two blocks on Portland State University campus
    - Two swales on N Channel Ave (managing 8,500 square feet of street runoff)
    - Two curb extensions on N Central Ave (managing 18,800 square feet of street runoff)
    - Two curb extensions in Multnomah Village (managing 6,000 and 5,000 square feet of street runoff, respectively)

    - Three facilities along N Russell Ave (managing 22,000 square feet of street runoff)

- Clean River Rewards registrations (citywide)
  - 33,246 single-family residential ratepayers account for a total of 71,991,732 square feet of impervious area managed for stormwater.
  - 1,099 multifamily, commercial, and industrial ratepayers account for a total of 39,621,109 square feet of impervious area managed for stormwater.

NS-1: Protect and enhance natural areas and vegetation that help prevent pollutants from entering into the municipal separate storm sewer system.

- **Number of trees and shrubs planted and location (by watershed)**

Watershed Revegetation Program Number of Trees and Shrubs Planted in FY09/10					
	Riverbank [linear feet]	**Area [acres]**	**Trees**	**Shrubs**	**TOTALS**
Willamette River	23,670	66	14,450	31,783	**46,233**
Columbia Slough	8,076	127	21,543	15,805	**37,348**
Johnson Creek	5,020	73	7,343	11,134	**18,477**
Tryon Creek		1	350	707	**1,057**
Fanno Creek		1.5	85	100	**185**
TOTALS	**36,766**	**268.5**	**43,771**	**59,529**	**103,300**

Parks Projects:
- Fanno Creek Watershed: 1,556 native plants
- Tryon Creek Watershed: 191 native plants
- Willamette Watershed: 6,355 native plants

City of Portland/ODOT:
- 4,448 street trees; 6,359 yard trees

City Support of Other Programs:
- SOLV:
  - Willamette River Watershed: 600 native plants
  - Johnson Creek Watershed: 545 native plants
  - Columbia Slough Watershed: 315 native plants
  - Tryon Creek Watershed: 1,225 native plants
- Johnson Creek Watershed Council: 6,285 native plants

Appendix B – Examples of Non-MS4 Watershed Activities

Willamette River Watershed Projects

Oaks Bottom Habitat Enhancement Project

Timeline

Design 2009-2010; Construction summer 2012

Project Description

This large scale habitat enhancement project is designed to benefit wildlife and people. The project will enhance 75 acres of wetland habitat by:

- Replacing an existing culvert with a larger box culvert to enhance fish passage and significantly improve the flow of Willamette River water in and out of the refuge
- Excavating tidal slough channels and enhancing wetland habitats at the southern end of the refuge to provide off-channel refuge for ESA-listed salmon
- Removing invasive vegetation, such as purple loosestrife, and revegetating with native species to improve wildlife habitat
- Enhancing opportunities for environmental education and interpretation of the refuge from the Springwater on the Willamette Trail

Powers Marine Natural Area Restoration

Timeline

The project was completed in summer 2009.

Project Description

Powers Marine Park is a narrow 14-acre area of black cottonwood floodplain forest that extends south for almost a mile from the Sellwood Bridge to the Portland city limits. Invasive species were removed and native trees, shrubs and forbs were planted. Restoration of the floodplain forest improves terrestrial and shallow water salmon habitat.

Placing large wood along the riverbank in Powers Marine Park improved the amount and quality of rearing and refuge habitat for native salmon, steelhead and lamprey. Each of the three large wood complexes has a different design and is placed at a different elevation along the river's edge.

Tabor to the River

Timeline

Construction began in 2009 and will continue for more than 10 years.

Project Description

The Tabor to the River project area extends from the Willamette River to Mt. Tabor between SE Hawthorne and SE Powell boulevards, and covers about 2.3 square miles. Tabor to the River integrates hundreds of sewer, green stormwater management, tree planting and other watershed projects to improve sewer system reliability, stop sewer backups in basements and street flooding, control combined sewer overflows (CSOs) to the Willamette River, and restore watershed health.

The project includes:

- Adding more than 500 green street facilities, vegetated curb extensions and streetside planters that will collect street stormwater runoff and let it soak into the ground as soil and vegetation filters pollutants
- Repairing or replacing 81,000 feet of sewer pipe, adding new pipe and installing new manholes as necessary
- Planting nearly 4,000 street trees to absorb rain and reduce and slow stormwater runoff
- Restoring natural areas in the basin by removing invasive vegetation and introducing native plants
- Working with private property owners to construct facilities that will collect and manage roof and parking lot runoff.

Stephens Creek Watershed Projects

Stephens Creek Confluence Habitat Enhancement Project

Timeline

Construction was completed December 2008 with revegetation, maintenance and monitoring going on through 2013.

Project Description

The Stephens Creek confluence with the Willamette River is an important off-channel refuge area for juvenile salmon in the Willamette River. This habitat project includes removal of an abandoned concrete sewer pipe; stabilization of the stream bank; installation of large wood complexes; and removal of invasive species.

Stephens Central Canyon Water Quality Improvements

Timeline

Pre-design began in summer 2010.

Project Description

The project includes a stormwater treatment facility and potentially other enhancements to control stormwater runoff from I-5 and Barbur Boulevard to prevent erosion in Stephens Creek. The project will improve water quality in Stephens Creek and protect a sanitary sewer pipe. Two parcels of undeveloped land around the creek were purchased to enable this project.

Columbia Slough Watershed Projects

Columbia Slough Confluence Habitat Enhancement Project

Timeline

Construction began in fall 2009 and was completed in early 2010. Monitoring will continue for five years.

Project Description

The 12-acre confluence project is located at Portland's Kelley Point Park, a 100 acre natural area and developed park, and land across the slough from the park. The project site is at the tidal junction of the Columbia Slough and the Willamette River. Anchored trees and root wads were placed in-stream and along the slough banks to enhance in-stream and riparian habitat. Revegetation will increases shade, control invasive species, and increase native emergent scrub shrub and riparian wetland plant communities.

Columbia Slough Restoration Project

Timeline

2002 to 2012

Project Description

The Section 1135 (authorization for Corps of Engineers to improve the quality of the environment where Corps projects have affected environmental conditions) Restoration Project will improve water quality and create and restore wetlands along a seven-mile segment of the Columbia Slough. The project consists of these main components:

- Creation of wetland benches and a meandering channel between NE 18th Avenue and NE 158th Avenue. The benches will be planted to provide emergent wetland and riparian scrub-shrub wetland vegetation.
- Replacing five undersized, blocked, deteriorated, and/or high invert elevation culverts in the Columbia Slough to improve water flow, temperature and quality.
- Enhancing a nine acre wetland marsh and restoring nine acres of adjacent riparian woodland habitat in the upper Slough by removing invasive species and planting native species.
- Restoring a 23-acre wetland in the Big Four Corners Natural Area and constructing a water quality facility

Lower Columbia Slough Refugia

Timeline

This project is in the pre-design phase and construction is anticipated for 2012.

Project Description

The project will restore multiple sites in the nine miles of Lower Columbia Slough where juvenile salmon rest during migration to the Pacific. The project will also enhance habitat for other species, revegetate slough banks, control invasive species and provide shade.

Johnson Creek Watershed Projects

Crystal Springs Restoration and Culvert Replacement Project

Timeline

Construction was completed in summer 2010.

Project Description

City of Portland and Reed College worked together to complete projects to enhance Crystal Springs Creek and remove barriers to fish passage.

Reed completed site restoration and stream re-meandering on the west end of Reed campus and constructed a new green street along the restoration frontage on SE 28th.

The City replaced a culvert at SE 28th Avenue, the first of many fish barrier removal projects in Crystal Springs Creek that will occur over the next few years.

Luther Road Habitat Restoration Project

Timeline

The Luther Road project is currently in design. Construction is scheduled to start in spring 2013 and will be complete by fall 2013.

Project Details

- Relocate and restore 2,000 feet of creek channel and floodplain
- Bury the Lents Interceptor Sewer crossing and manhole to protect them
- Collect and treat stormwater runoff from a nearby industrial area
- Create and improve habitat for fish and wildlife including those listed as threatened and endangered under the Endangered Species Act
- Establish open space for habitat and recreation purposes

East Lents Floodplain Restoration Project

Timeline

Design was finalized in 2009 and construction will be completed in 2011.

Project Description

The East Lents Floodplain Restoration Project will restore historic floodplain along Johnson Creek. The project site is south of SE Foster Road from about SE 106th Avenue to SE 110th Drive. It will add flood storage, reduce the frequency of flooding on Foster Road, area homes and businesses, improve habitat for fish, birds and other wildlife, recreate stream channels and shade the creek, help meet State of Oregon water quality standards and Endangered Species Act requirements, and help revitalize the Lents area.

Errol Creek Confluence Project

Timeline

The project was completed in October 2009.

Project Description

The Errol Creek Confluence Project included vacating SE 44th Avenue, removing fish barriers and day-lighting the section of Errol Creek that once flowed underneath SE 44th to improve fish passage between Johnson Creek and Errol Creek. The project moved the confluence of Johnson Creek and Errol Creek 50 feet south and created a new, longer, more sinuous channel. The first 50 feet of the old channel remains in place as a backwater channel to provide high flow refuge for fish and flood water storage from Johnson Creek.

The project created about 300 feet of new tributary habitat to increase in-stream complexity, and enhanced 1.4 acres of surrounding riparian and floodplain habitat by creating wetland benches and planting native vegetation.

Veterans Creek Restoration

Timeline

Pre-design began in spring 2010.

Project Description

A four-acre property was acquired for restoration and protection, man-made structures will be removed from the channel of Veteran's Creek, banks will be reshaped and restored, and the riparian area will be treated for invasive species and replanted with native vegetation.

Tryon Creek Watershed Projects

Tryon Creek Confluence Project

Timeline

The project was completed in summer 2010

Project Description

The project includes stream enhancement of about 900 feet of Tryon Creek, beginning at its confluence with the Willamette River as well as removal of invasive plants and revegetation with native species on about 3.5 acres.

The project will:

- Improve in-stream and stream bank habitat quality and complexity for salmon and steelhead listed as threatened under the Endangered Species Act; lamprey, which are listed as a species of concern; and other native species
- Improve floodplain connectivity
- Improve riparian and upland habitat by removing invasives and establishing native plant communities

Appendix C – Active and Recently Completed Projects
Excerpt from City of Portland Project Database

Willamette River - completed

ID	Project Name	Description	Sub Watershed	Project Types	Location
727	NE Royal & 43rd Curb Extensions	Two green street curb extensions	Holladay-Sullivan	1-Facility Construction(Green Street:Planter, Infiltration)	NE Royal Ct & 43rd Ave
541	SW Virginia Green Streets	SW Virginia Green Streets. 3 facilities		1-Facility Construction(Green Street:Swale, infiltration)	SW Virginia at Nebraska and Florida
543	NE Glisan and 63rd Green Street	NE Glisan at 63rd Green Street, Providence contributed $9,000 to compensate for a DEQ violation. Includes a ped ramp		1-Facility Construction(Green Street:Planter, Infiltration)	NE Glisan and 63rd
726	SE Division & 57th Curb Extensions	Two green street curb extensions	Taggert	1-Facility Construction(Green Street:Planter, Infiltration) 2-Facility Construction(Green Street:Swale, infiltration)	SE Division St & 57th Ave
542	SE 38th and Main Green Street	Green Street at SE 38th and Main Street		1-Facility Construction(Green Street:Swale, infiltration)	SE 38th and Main
600	Humboldt & Gantenbein Green Street	Two stormwater extensions with a pedestrian crossing diretcly in front of Humboldt Elementary School. Built as part of the federally funded Safe Routes to Schools (SR2S) Program. Gantenbein converted to one way traffic (south) between Alberta and Humboldt.	Beech-Essex-Wheeler	1-Facility Construction(Green Street:Swale, infiltration)	N Gantenbein & Humboldt
681	N Channel Blvd Green Street	Green street adjacent to CBO funded trail extension on Swan Island. Built by PBOT-MO.		1-Facility Construction(Green Street:Swale, infiltration)	N Channel Ave (Swan Island)
669	Tabor Commons	Retrofit of existing building and site for complete on-site stormwater management; remove asphalt, add stormwater swale and porous pavers.	Taggert	1-Facility Construction(Pervious Pavement:Pavers) 2-Facility Construction(Swale:Infiltration)	SE 57th and Division St.
687	SE Spokane and 13th Green Street Semi-Diverter	A green street that is also a traffic semi-diverter. This is a new bike boulevard tool.		1-Facility Construction(Green Street:Swale, infiltration)	SE Spokane and 13th
717	Ladd Tower Ecoroof	Ecoroofs over newly constructed skyscraper in the downtown area		1-Facility Construction(Ecoroof)	1300 SW Park Ave
713	Marsicek-Roberts Residential Ecoroof	Ecoroofs over newly constructed residential addition		1-Facility Construction(Ecoroof)	4208 NE 8th Ave
714	Martin Residential Ecoroof	Residential ecoroof over a newly constructed garage		1-Facility Construction(Ecoroof)	2734 NW Savier
712	Rust Residential Ecoroof	Ecoroofs over newly constructed residential awning		1-Facility Construction(Ecoroof)	4234 NE Rodney Ave
711	Sacramento Lofts Ecoroofs	1802 sq. ft ecoroofs over newly constructed condominiums		1-Facility Construction(Ecoroof)	506-528 NE Sacramento
707	Shiley Hall Ecoroof - University of Portland	Ecoroof over newly constructed school of engineering building at the University of Portland		1-Facility Construction(Ecoroof)	University of Portland--Shiley Hall
709	Zuniga Residential Ecoroof	Ecoroof over newly constructed residential addition.		1-Facility Construction(Ecoroof)	301 NE 65th
102	Portland Mall Light Rail - South Corridor	Tri-Met South Bus Mall Light Rail Project. Five facilities on the east side of 5th from College to Market.	Mill-Jefferson	1-Facility Construction(Green Street:Planter, Infiltration) 2-Facility Construction(Green Street:Swale, infiltration)	SW 5th Ave, from College St to Market St
433	South Waterfront Green Streets	South Waterfront Green Streets	Marquam-Woods	1-Facility Construction(Green Street:Planter, Infiltration)	SW Moody Ave, from Gaines St to Bancroft St
762	Oak Basin CP-B	Green street (14 facilities) and sewer replacement CIP project in the Oak combined sewer basin. Located along Ankeny and side streets from 16th to 20th.	Oak-Alder-Divison	1-Facility Construction(Green Street:Planter, flow-through) 2-Facility Construction(Green Street:Planter, Infiltration)	

ID	Project Name	Description	Sub Watershed	Project Types	Location
89	NE Davis Green Street	NE Davis Green Street	Oak-Alder-Divison	1-Facility Construction(Green Street:Planter, Infiltration)	
386	Hawthorne Hostel Rainwater Demonstration Project	Rainwater Harvesting Demonstration Project - Two 40,000 gallon cisterns were installed to harvest rainwater from the roof. Harvested rainwater gets re-used for flushing toilets and irrigation. Overflow from the cisterns infiltrates into a swale. There was an ecoroof previously installed on a portion of the roof.	Oak-Alder-Divison	1-Facility Construction(Swale:Infiltration)	3031 SE Hawthorne Blvd
444	92nd & Tolman, SE	PDOT pedestrian crossing project, part of the Lents Town Center Traffic Safety program. A total of four extensions - two at the intersection of 92nd & Duke and two at the intersection of 92nd & Tolman.	Lents-Insley-Sellwood	1-Facility Construction(Green Street:Planter, Infiltration)	SE 92nd Ave & Tolman St
91	Everett & 16th, NW	NW Everett & 16th Green Street	Tanner	1-Facility Construction(Green Street:Planter, flow-through)	NW Everett St & 16th Ave
99	Foster & 87th, SE	SE Foster & 87th Green Street	Lents-Insley-Sellwood	1-Facility Construction(Green Street:Swale, infiltration)	SE Foster Rd & 87th Ave
105	Foster, SE (88th to 91st; Reedway)	SE Foster Green Street (88th to 91st; Reedway)	Lents-Insley-Sellwood	1-Facility Construction(Green Street:Planter, Infiltration) 2-Facility Construction(Green Street:Swale, infiltration)	SE Foster Blvd, from 88th Ave to 91st Ave
445	Front & 15th, NW	NW Front & 15th Green Street	Tanner	1-Facility Construction(Green Street:Swale, flow-through)	NW Front Ave & 15th Ave
456	Killingsworth Green Street (Maryland to Michigan)	Transportation project along Killingsworth between Michigan and Maryland. Six extension were installed: (2) south side between Michigan & I-5, (1) south side between Minnesota and Montana, and (2) south side and (1) north side between Montana and Maryland. Facility Area = 348 sf / Drainage Area = 12,900 sf	Riverside	1-Facility Construction(Green Street:Swale, infiltration)	N Killingsworth, from Maryland to Michigan
457	NE Siskiyou & 82nd	NE Siskiyou & 82nd Green Street	East Willamette River	1-Facility Construction(Green Street:Swale, infiltration)	NE Siskiyou & 82nd Ave
437	NW 35th & Yeon	NW 35th & Yeon	Kittridge	1-Facility Construction(Green Street:Planter, Infiltration)	NW 35th Ave & Yeon Ave
72	Sandy Boulevard - Facility #1 (Davis St)	One of 5 rain gardens created as part of the NE Sandy Blvd Resurfacing and Streetscape project funded by an ODOT grant as part of the intergovernmental agreement that transferred jurisdiction of Sandy from ODOT to the City. Sized for water quality treatment. Facility Area = 1,800 sf / Drainage Area = 37,000 sf.	Oak-Alder-Divison	1-Facility Construction(Green Street:Basin, rain garden, infiltratio	NE Sandy Blvd & Davis St
73	Sandy Boulevard - Facility #2 (21st Ave)	NE Sandy & 21st Green Street	Oak-Alder-Divison	1-Facility Construction(Green Street:Basin, rain garden, infiltratio	NE Sandy Blvd & 21st Ave
74	Sandy Boulevard - Facility #3 (22nd Ave)	NE Sandy & 22nd Green Street	Oak-Alder-Divison	1-Facility Construction(Green Street:Basin, rain garden, infiltratio	NE Sandy Blvd & 22nd Ave
82	Sandy Boulevard - Facility #4 (39th Ave)	NE Sandy & 39th Green Street	Holladay-Sullivan	1-Facility Construction(Green Street:Basin, rain garden, infiltratio	NE Sandy Blvd & 39th Ave
83	Sandy Boulevard - Facility #5 (Kelly Plaza)	Kelly Plaza Green Street (NE Sandy & 42nd)	Holladay-Sullivan	1-Facility Construction(Green Street:Basin, rain garden, infiltration	NE Sandy Blvd & 45th Ave

Willamette River - active

ID	Project Name	Description	Sub Watershed	Project Types	Location
674	NW Thurman & 15th Green Street	Citizen request green street funded through the Grey to Green Initiative. One parking space on the SW corner will be converted to a green street planter.	Tanner	1-Facility Construction(Green Street:Planter, Infiltration)	NW Thurman & 15th
675	SW Barbur & Sheridan Green Street	Green street funded by '1% for Green' green street to improve pedestrian, bicycle, and traffic safety. Long, narrow planter on SE corner along Barbur.	Marquam-Woods	1-Facility Construction(Green Street:Planter, flow-through)	SW Barbur & Sheridan
609	Tabor to the River: Street Trees FY10	As part of the Tabor to the River Program Livability Element, plant street trees adjacent to pipes with hydraulic problems throughout the Tabor to the River basin. The FY10 goal is to plant 200 residential and 10 commercial street trees. The total goal over the life of the T2R Program is to plant 3,544 street trees.	Taggert	1-Revegetation(Installation)	Taggart D
88	Legacy Parking Lot Retrofit	Legacy Parking Lot Retrofit	Oak-Alder-Division	1-Facility Construction(Swale:Infiltration)	815 NE Davis St.
764	SE Clay-Taylor Green Streets	Tabor to the River project. SE Clay-Taylor Reconstruction and Green Streets (TGD-24/31) to manage basement sewer backups. It is the combination of the first two of 35 capital projects recommended for implementation in the Taggart D Final Pre-design. Project includes: installation of 70 vegetated stormwater facilities, 7,734 linear feet of 12" sewer pipe, 258 feet of mainline 36" sewer pipe, and the removal of 10 party sewer laterals by extension.	Taggert	1-Facility Construction(Green Street:Planter, Infiltration) 2-Facility Construction(Green Street:Swale, infiltration)	
684	NW Pettygrove and 26th Green Street	An early action project for the Pettygrove green connector. Adjacent to Wallace Park and Chapman School, this is also a SR2S improvement and was identified as an inflow control need in the NW Neighborhood Predesign. The funding is coming from NW 23rd reconstruction off-site management fees.		1-Facility Construction(Green Street:Swale, infiltration)	NW Pettygrove and 26th
670	NE Fremont & 90th Green Street	Citizen request green street funded through the Grey to Green Initiative. Facility is an 80 ft long swale overflowing to the existing storm sewer. Citizen contact was made through BES Maintenance Engineering. Erosion along the frontage was filling the downstream catch basin causing a maintenance burden.	East Willamette River	1-Facility Construction(Green Street:Swale, infiltration)	NE Fremont & 90th
763	SE Tibbetts-Harrison Green Streets	Tabor to the River project (TGD-12/14) to manage basement sewer backups. Will include approx. 67 green street facilities.	Taggert	1-Facility Construction(Green Street:Planter, Infiltration) 2-Facility Construction(Green Street:Swale, infiltration)	
685	NE Fremont and 9th-11th Green Street	Green street adjacent to Irving Park. Project initiated and managed by the neighborhood.		1-Facility Construction(Green Street:Swale, infiltration)	NE Fremont and 9th
660	Stark Inflow Controls	This CIP project was recommended as part of the 2002 Holiday, Stark, and Sullivan Predesign. It is comprised of three separate inflow control projects designed to relieve the risk of sewer backups in the vicinity of Laurelhurst Elementary School, NE 45th & Davis, and SE 56th & Ankeny. The work is being bundled together because of the proximity of the areas and the similarity of the work in the areas. Approximately 30 green streets will be built.		1-Facility Construction(Green Street:Swale, infiltration)	Multiple

ID	Project Name	Description	Sub Watershed	Project Types	Location
765	SE Division Green Streets	Tabor to the River project. SE Division Green Streets (TGD-09) project is one of 35 capital projects recommended for implementation in the Taggart D Final Pre-design Report. The project will relieve basement sewer backups. The area extends from SE Division St. and SE Woodward St. between SE 13th Ave and SE 40th Ave. Project specifics include the installation of an estimated 47 vegetated stormwater facilities.	Taggert	1-Facility Construction(Green Street:Planter, Infiltration) 2-Facility Construction(Green Street:Swale, infiltration)	
654	Burlingame Sewer Repair & Stream Restoration	Conduct effectiveness monitoring for five years to determine if desired outcomes are being met: protection of new sewer infrastructure, revegetation, and streambank stability.	Stephens	1-Environmental Monitoring(Habitat) 2-Restoration(Stream)	Stephens Creek: I-5/Terwill to SW Taylors Ferry Rd
766	Stephens Central Canyon Stormwater Facility Projec	Facility on Stephens Creek trib, treating runoff from I-5, Barbur Blvd, residential areas.	Stephens	1-Facility Construction(Swale:Infiltration) 2-Property Acquisition(Riparian) 3-Restoration(Stream) 4-Revegetation(Installation)	Stephens Creek near SW Brier & SW Custer
653	Stephens Creek Confluence Restoration & Monitoring	Conduct effectiveness monitoring for five years to determine if the desired outcomes for vegetation, hydrology/sedimentation, and aquatic/terrestrial enhancement are being met for the Stephens Creek Confluence Habitat Enhancement Project.	Stephens	1-Environmental Monitoring(Habitat) 2-Restoration(Riparian)	Stephens Creek confluence
645	Tabor to the River: Mt Tabor Park Reveg FY10	Remove invasive plants to plant native plants in Mt. Tabor Park natural areas as part of the Tabor to the River Program's Livability Element.	Taggert	1-Revegetation(Installation) 2-Revegetation(Invasive Removal) 3-Revegetation(Maintenance)	Mt. Tabor Park
662	Oaks Bottom	A habitat enhancement project to improve the hydrologic connection between Oaks Bottom and the Willamette River. Project elements include removing water control structure, replacing existing culvert with a 12-foot box culvert, extensive revegetation work and channel excavation and interpretation enhancements. Funded with grant from LCREP and pending Army Corps of Engineers funding. Also small grant awarded from USFWS - NAWCA.	Lents-Insley-Sellwood	1-Restoration(Floodplain) 2-Restoration(Riparian) 3-Restoration(Structure Removal:Culvert) 4-Restoration(Wetland) 5-Revegetation(Installation) 6-Revegetation(Invasive Removal) 7-Revegetation(Maintenance)	East banks Willamette River, N. of Sellwood Bridge
18	Cathedral Place Ecoroof	Cathedral Place Ecoroof	St. Johns	1-Facility Construction(Ecoroof)	
643	CWSP: 09-10 St Francis - Onsite Stormwater Mgmnt	Council approved grant		1-Facility Construction(Pervious Pavement)	St Francis Catholic Church
629	CWSP: 09-10 Three Rivers Land Conservancy	Council Approved Grant		1-Public Engagement(Involvement) 2-Revegetation(Installation) 3-Revegetation(Invasive Removal)	Baltimore Woods
376	Lower Willamette River Riparian Enhancement	Revegetation	Riverview	1-Revegetation(Installation) 2-Revegetation(Invasive Removal)	
678	NE Sandy Blvd (47th - 82nd) Green Street	PBOT street reconstruction with the opportunity for four large green street basin facilities in triangular spaces along alignment (48th, 60th, 64th, & 78th). Additional curb extensions and planters will be installed to improve drainage from 72nd to 82nd.	East Willamette River	1-Facility Construction(Green Street:Basin, rain garden, infiltratio 2-Facility Construction(Green Street:Planter, Infiltration)	NE Sandy Blvd, from 47th to 82nd
683	NW Pettygrove and 16th Green Street	An early action project for the Pettygrove green connector. The green street is an addition to an adjacent existing private development project.		1-Facility Construction(Green Street:Swale, infiltration)	NW Pettygrove and 16th
377	SW Texas Green Street Wetland	Green Street and wetland	Stephens	1-Restoration(Wetland) 2-Revegetation(Installation)	
85	Swan Island PS O&M Building Ecoroof	Swan Island PS O&M Building Ecoroof	Riverside	1-Facility Construction(Ecoroof)	

Columbia Slough - Complete

ID	Project Name	Description	Sub Watershed	Project Types	Location
252	Culvert to Bridge NE 112th Ave	Remove 2 culverts at NE 112th Avenue, regrade and revegetate bank	Middle Slough	1-Restoration(Floodplain) 2-Restoration(Stream) 3-Restoration(Structure Removal:Culvert) 4-Revegetation(Installation) 5-Revegetation(Maintenance)	
718	Dekum Corner Ecoroofs	Two ecoroof projects as part of a multi-use redevelopment project	Lower Slough	1-Facility Construction(Ecoroof)	818 NE Dekum
710	Wynton Residential Ecoroof	Ecoroof over newly constructed residential shed	Lower Slough	1-Facility Construction(Ecoroof)	3121 N Arlington place
723	N Central & St. John	Two green street curb extensions. A citizen request adjacent to a City Repair intersection	Lower Slough	1-Facility Construction(Green Street:Swale, infiltration)	N Central and N St John
716	K4 Condominiums Ecoroof	Ecoroof project at newly constructed condominium development	Middle Slough	1-Facility Construction(Ecoroof)	5506 - 5514 NE Killingsworth
383	1135 Culverts to Bridges on Buffalo Slough	1135 Culverts to Bridges on Buffalo Slough	Middle Slough	1-Facility Construction(Culvert:Replacement) 2-Restoration(Structure Removal:Culvert) 3-Revegetation(Installation) 4-Revegetation(Maintenance)	
381	1135 Culverts to Bridges on Whitaker Slough	1135 Culverts to Bridges on Whitaker Slough	Middle Slough	1-Facility Construction(Culvert:Replacement) 2-Restoration(Structure Removal:Culvert) 3-Revegetation(Installation) 4-Revegetation(Maintenance)	
243	Big Four Corners Management Plan	Big Four Corners Management Plan. This document was produced as part of OWEB requirements for the $200,000 grant to purchase this property. This document pertains to the 44-acre northern piece of Big Four Corners habitat area, which is covered by the conservation easement we granted to OWEB; it does not pertain to the entire Big Four Corners Core Habitat Area, which is over 150 acres.	Upper Slough	1-Planning, Long-Term(Plan) 2-Restoration(Upland Habitat)	
423	City Banks Opposite Kelley Point	City Banks Opposite Kelley Point	Lower Slough	1-Revegetation(Installation)	
69	Fremont & 131st, NE	Fremont & 131st, NE	Middle Slough	1-Facility Construction(Green Street:Swale, infiltration)	NE Fremont St & 131st Ave
447	Sumner & MLK, N	N Sumner & MLK Green Street	Lower Slough	1-Facility Construction(Green Street:Planter, Infiltration)	N Sumner Ave & MLK Blvd
210	Water Quality Facility - 92nd Ave	Water Quality Facility - NE 92nd Ave	Middle Slough	1-Facility Construction(Swale:Flow-through)	
93	Willamette & Denver, N (Simple Green Street)	Willamette & Denver, N (Simple Green Str	Lower Slough	1-Facility Construction(Green Street:Swale, infiltration)	N Willamette Blvd & Denver Ave
449	Winchell & Mallory, NE	NE Winchell & Mallory Green Street	Lower Slough	1-Facility Construction(Green Street:Swale, infiltration)	NE Winchell & Mallory
448	Winchell, N - Montana to Minnesota	N Winchell & Montana Green Street	Lower Slough	1-Facility Construction(Green Street:Swale, infiltration)	N Winchell, from Montana to Minnesota

Columbia Slough - Active

ID	Project Name	Description	Sub Watershed	Project Types	Location
382	1135 Culvert Replacement at NE 33rd Avenue	This project is a component of the 1135 Partnership with the Army Corps of Engineers. It consists of replacing the 4' culvert at NE 33rd Drive and Buffalo Slough with a lower, higher, bigger culvert in order to improve hydrology, water quality and upstream wetland habitat.	Middle Slough	1-Facility Construction(Culvert:Rehabilitation) 2-Restoration(Structure Removal:Culvert) 3-Revegetation(Installation)	NE 33rd Drive and Buffalo Slough
446	47th & Columbia, NE	Two planters on either side of NE 47th, just N of Columbia Blvd. Meets SWMM requirements for water quality.	Middle Slough	1-Facility Construction(Green Street:Planter, Infiltration)	NE 47th Ave & Columbia Blvd
251	Culverts to Bridges	Culverts to Bridges	Middle Slough	1-Facility Construction(Culvert:Replacement) 2-Restoration(Structure Removal:Culvert)	
639	CWSP: 09-10 Holy Redeemer - Community Garden	Approved grant project		1-Facility Construction(Swale:Infiltration)	Holy Redeemer Catholic Church
235	MCDD Coordination - flow management	MCDD Coordination - flow management	Middle Slough	1-Restoration(Floodplain) 2-Restoration(Stream) 3-Restoration(Wetland)	
673	N Moore & Highland Green Street	Citizen request green street funded through the Grey to Green Initiative.	Lower Slough	1-Facility Construction(Green Street:Swale, infiltration)	6364 N Moore
679	NE 102nd and Wygant Green Street	A curb extension that incorporates safe route to school and EPAP identified need.	Middle Slough	1-Facility Construction(Green Street:Planter, flow-through)	NE 102nd and Wygant
367	NE 122nd Ave Green Streets	Construct 6 green street facilities on NE 122nd between Freemont and Shaver. The unlined facilities will filter stormwater before it enters the Columbia Slough. NE 122nd drains to OF 100. This is in the upper slough	Lower Slough	1-Facility Construction(Green Street:Planter, flow-through)	NE 122nd Ave
672	NE Mason & 47th Green Street	Citizen request green street funded through the Grey to Green Initiative. Facility will be located on Mason on the SW corner.	Middle Slough	1-Facility Construction(Green Street:Swale, infiltration)	NE Mason & 47th
418	Ramsey Refugia Phase II	Ramsey Refugia Phase II	Lower Slough	1-Restoration(Floodplain) 2-Restoration(Stream)	
242	Salmon Habitat Restoration - LWD placement	Salmon Habitat Restoration - LWD placement	Lower Slough	1-Restoration(Stream)	
366	Water Quality Facility at NE 148th Avenue	Water Quality Facility at NE 148th Avenue - this is not actually a swale, but there was not a subtype that fit the description better.	Upper Slough	1-Facility Construction(Filtration)	NE 148 south of Sandy Blvd
379	WIF - 1135 Mason Flats and Winmar	WIF - 1135 Mason Flats and Winmar	Upper Slough	1-Restoration(Floodplain) 2-Restoration(Wetland) 3-Revegetation(Installation)	
368	WIF - Confluence Salmon Habitat Restoration	WIF - Confluence Salmon Habitat Restorat	Lower Slough	1-Restoration(Stream)	
357	WRDA - Kenton Cove Restoration	WRDA - Kenton Cove Restoration	Lower Slough	1-Restoration(Floodplain) 2-Restoration(Riparian) 3-Restoration(Stream) 4-Revegetation(Installation) 5-Revegetation(Maintenance)	

Fanno Creek - completed

ID	Project Name	Description	Sub Watershed	Project Types	Location
474	Gabriel Park Skate Park Swale	Water Quality Swale	Mainstem	1-Facility Construction(Swale:Infiltration)	Gabriel Park
71	Hillsdale Filterra WQ Planters	Hillsdale Filterra WQ Planters	Mainstem	1-Facility Construction(Planter:Flow-through)	SW Capitol Hwy in Hillsdale
81	Lodi Lane SW	SW Lodi & Shattuck Rock Swale		1-Facility Construction(Green Street:Swale, infiltration)	SW Lodi Ln & Shattuck

Fanno Creek - active

ID	Project Name	Description	Sub Watershed	Project Types	Location
402	Beaverton Hillsdale Highway Water Quality Swale	Water quality swale to treat runoff from Beaverton Hillsdale Hwy and adjacent property. DEQ SEP Project Engineering Services Project Manager Bill Owen	Mainstem	1-Facility Construction(Swale:Flow-through)	SW 35th Ave and Beaverton Hillsdale Hwy
389	Capitol Highway Improvement	PBOT is undergoing a refinement planning process for SW Capitol Highway between SW Taylors Ferry and Multnomah Boulevard. BES funded the design survey, provided a drainage analysis, and will provide technical support to PBOT as part of the Capitol Hwy Refinement Planning process.	Vermont Creek	1-Facility Construction(Green Street:Swale, flow-through)	Capitol Hwy between Taylors Ferry and Multnomah
496	Fanno Creek Tree Protection	Beaver guarding and tree plantings	Mainstem	1-Revegetation(Installation) 2-Revegetation(Maintenance)	Fanno Creek between Shattuck and 35th
657	Green Streets: Bridlemile	Design and construct stormwater management facilities on SW 44th between SW Bancroft and SW Tunnelwood Streets and on the north side of SW Seymour Street between SW 50th and SW 47th Avenues to treat over 60,000 square feet of impervious area.	Mainstem	1-Facility Construction(Green Street:Planter, Infiltration) 2-Facility Construction(Green Street:Swale, infiltration)	SW 44th and SW Seymour
652	Multnomah Stormwater Improvements CIP #E09168	Design and construction of stormwater retrofits along SW Multnomah Blvd in conjunction with Fanno Pressure Line Repair Project - #E09168 Fanno Watershed - project team member and project support.	Woods Creek	1-Facility Construction(Green Street:Swale, flow-through) 2-Facility Construction(Planter:Flow-through) 3-Facility Construction(Swale:Flow-through)	Various Locations Mult Blvd - SW 30th - Garden Hm
493	Multnomah Village Green Street: Raindrop Walk	Design and construction of a sidwalk expansion and vegetated stormwater facilities along SW Capitol Highway between SW 35th and SW 36th in Multnomah Village to treat 8,500 square feet of impervious right-of-way.	Vermont Creek	1-Facility Construction(Green Street:Swale, flow-through)	Capitol Hwy between 35th to 36th Ave
338	PCC Sylvania Parking Lot Stormwater Retrofits	Parking lot stormwater retrofit. DEQ SEP Project	Red Rock Creek	1-Facility Construction(Swale:Flow-through)	PCC Parking Lot
488	South Ash Creek Stream Enhancement	Stream enhancement and sewer protection project on South Ash Creek in the Ash Creek Natural Area.	South Ash Creek	1-Restoration(Stream)	South Ash Creek
754	SW Hamilton Drainage Improvements	Drainage and road shoulder improvements along SW Hamilton between Shattuck and Dosch Roads.	Mainstem	1-Facility Construction(Swale:Flow-through)	SW Hamilton between Shattuck and Dosch

Tryon Creek - Complete

ID	Project Name	Description	Sub Watershed	Project Types	Location
492	Multnomah Village Green Street: SW Troy at 33rd	Design and construction of a vegetated curb extension located on SW Troy at SW 35th in Multnomah Village to treat 9,300 square feet of impervious right-of-way.	Mainstem	1-Facility Construction(Green Street:Swale, infiltration)	SW Troy at 35th Ave
415	Tryon Creek Trib Culvert (High Bridge) Replacement	Removed culvert and restored a tributary stream in Tryon Creek State Natural Area	Mainstem	1-Restoration(Stream)	Tryon Creek State Natural Area
494	Multnomah Village Green Street: Lucky Lab	Design and construction of a vegetated curb extension located on SW 32nd at SW Capitol Hwy in Multnomah Village to treat 22,000 square feet of impervious right-of-way.	Mainstem	1-Facility Construction(Green Street:Swale, flow-through)	32nd Ave at Capitol Hwy
414	Tryon Creek Highway 43 Culvert Retrofit	BES and ODOT partnership to install baffles in the Tryon Creek culvert under highway 43 and elevated the downstream pool to improve fish passage.		1-Facility Construction(Culvert:Rehabilitation) 2-Restoration(Stream)	Tryon Creek at Highway 43
583	Multnomah Village Starbucks	Design and construction of a vegetated curb extension located on SW Capitol Hwy at SW 34th in Multnomah Village to treat 4,300 square feet of impervious right-of-way.	Mainstem	1-Facility Construction(Green Street:Swale, infiltration)	SW Capitol Hwy at 34th
656	Multnomah Village Green Street: SW Capitol Hwy @33	Design and construction of a vegetated curb extension located on SW Capitol Hwy at 33rd in Multnomah Village to treat 3,200 square feet of impervious right-of-way.	Mainstem	1-Facility Construction(Green Street:Swale, infiltration)	SW Capitol Hwy at 33rd Ave
90	Holly Farms (SW Comus St)	Holly Farms Green Street (SW Comus St)	Falling Creek	1-Facility Construction(Green Street:Swale, infiltration)	SW Comus St & Capitol Hwy

Tryon Creek - Active

ID	Project Name	Description	Sub Watershed	Project Types	Location
490	Barbur Blvd Transit Center Stormwater Retrofits	Stormwater Retrofits	Falling Creek	1-Facility Construction(Swale:Flow-through)	
330	ODOT Maintenance Yard Stormwater Retrofits	Stormwater retrofits at ODOT Maintenance Yard	Falling Creek	1-Facility Construction(Planter:Flow-through)	9637 SW 37th Drive
755	SW Stephenson Drainage Improvements	Drainage and road shoulder improvements along SW Stephenson between SW 35th and SW Boones Ferry Road	Mainstem	1-Facility Construction(Swale:Flow-through)	SW Stephenson between SW 35th and Boones Ferry Rd
114	Tryon Creek Confluence Habitat Enhancement	Floodplain connectivity, aquatic and terrestrial habitat enhancement, invasives removal and reveg at the Confluence of the Willamette River and Tryon Creek. Located in the City of Lake Oswego on property owned by City of Lake Oswego, Metro and City of Portland.	Mainstem	1-Restoration(Floodplain) 2-Restoration(Riparian) 3-Restoration(Stream)	14110 Stampher Rd., Lake Oswego, OR
510	Tryon Sanitary Sewer Protection	Design and construction of 4 sewer protection and stream enhancement projects identified in the Fanno and Tryon Creeks Water Quality and TMDL CIP Pre-design.	Mainstem	1-Restoration(Stream) 2-Revegetation(Installation)	Tryon Creek State Natural Area

Johnson Creek - Complete

ID	Project Name	Description	Sub Watershed	Project Types	Location
65	Zenger Farm	The redevelopment of a 16 acre historic farm. Farm is a station for sustainable agriculture and environmental education. Sustainable stormwater management components include swale, vegetated infiltration strips, pervious concrete pavers and cisterns.	Middle Mainstem	1-Facility Construction(Swale:Infiltration)	11741 SE Foster Rd
390	Errol Confluence	The purpose of the Errol Creek Confluence project is to create high-quality rearing habitat, summertime cold-water refuge, and winter off-channel habitat for chinook, steelhead, coho, and cutthroat trout. Create a new creek channel that is about 300 feet longer than the old channel. Retain the first 50 feet of the old channel as wintertime backwater channel. Fill in remaining channel and remove two fish barriers. Create backwater wetlands and revegetate.	Errol Creek	1-Restoration(Floodplain) 2-Restoration(Riparian) 3-Restoration(Stream) 4-Restoration(Wetland) 5-Revegetation(Invasive Removal)	SE 44th and Harney Street
439	SE 152nd (Henderson to Barbara Welch)	SE 152nd Green Street (Henderson to Barbara Welch)	Middle Mainstem	1-Facility Construction(Green Street:Swale, infiltration)	SE 152nd Ave, from Henderson St to Barbara Welch
473	Errol Heights Wetlands Restoration	Restoration of 1 acre of wetlands at Errol Heights. Remove fish pasage barrier and fill material and restore with native wetland plants. Create 3 ponds.	Errol Creek	1-Restoration(Stream) 2-Restoration(Structure Removal:Other) 3-Restoration(Wetland)	SE 46th and Harney Drive
97	SE Foster & Barbara Welch Green Street	SE Foster & Barbara Welch Green Street		1-Facility Construction(Green Street:Swale, infiltration)	SE Foster Rd & Barbara Welch Rd

Johnson Creek - Active

ID	Project Name	Description	Sub Watershed	Project Types	Location
129	Community Restoration Partnership	Program will work to acquire environmentally sensitive habitat along Johnson Creek, focusing on four targeted locations where small stream restoration can have the biggest impact. Where possible partnerships with community members will be reached for donation of the necessary property, otherwise the program will look for purchasing easements, or doing lot line adjustments to buy outright the necessary property.	Lower Mainstem	1-Property Acquisition(Floodplain) 2-Property Acquisition(Riparian)	
634	CWSP: 09-10 Fransicscan Montessori - Strmwtr	Council approved grant		1-Facility Construction(Basin (Rain Garden):Infiltration)	SE 148th and Division
635	CWSP: 09-10 FTJP - Biomonitoring & Restoration	Council approved grant	Lower Mainstem	1-Environmental Monitoring(Macroinvertebrates) 2-Revegetation(Installation) 3-Revegetation(Invasive Removal)	Tideman Johnson Park
130	Freeway land Company restoration	Restore natural floodplain functions, add flood storage and conveyance on the Freeway Land Company	Middle Mainstem	1-Property Acquisition(Floodplain) 2-Restoration(Floodplain)	SE Foster Rd and SE 101st
659	Grey to Green- Crystal Springs Culvert Improvement	Improving culvert passibility for all salmonids in Crystal Springs. Sites are SE Umatilla, Tenino, 28th Ave, Eastmoreland Golf Course and newly acquired property at 8220 SE 21st Ave.		1-Restoration(Stream)	Crystal Springs focus but can occur in other sheds

ID	Project Name	Description	Sub Watershed	Project Types	Location
138	JC East Lents Floodplain	Floodplain restoration in Lents, south of Foster	Middle Mainstem	1-Restoration(Floodplain) 2-Restoration(Riparian) 3-Restoration(Stream)	
139	JC East Powell Butte Phase III	East Powell Butte Phase III	Middle Mainstem	1-Restoration(Floodplain) 2-Restoration(Stream)	
690	JC/Mitchell Creek Restoration at Centennial School	Restore Mitchell Creek on Centennial School property	Kelley Creek	1-Restoration(Stream) 2-Restoration(Structure Removal)	SE 172nd and Foster
204	Lents 1 & 2	This project is a predesign study for Lents Basins 1 & 2. These two basins are combined sewer basins located in the Johnson Cr watershed in SE Portland. Specifically, this study will address three types of identified system deficiencies: Basement flooding (system capacity problems), structurally deteriorated pipes, and CSO at levels in excess of ASFO design storms.	Lower Mainstem	1-Facility Construction(Drywell)	Lents 1 and 2 sewer basins
132	Lents Crossing _Luther Rd	The purpose is to restore Johnson Creek and its floodplain, improve stream habitat and water quality, and protect public health and ecosystem integrity. The project will stabilize and protect the exposed 76-inch Johnson Creek Lents Sewer Interceptor and implement the stream restoration activities initially identified in the Johnson Creek Restoration Plan for this area. BES will also assist in the development of a neighborhood park proposed by NCPRD for the site. Joe Richards is PM.	Lower Mainstem	1-Restoration(Floodplain) 2-Restoration(Stream)	SE 76th and Luther Road in Clackamas County
686	SE 28th Green Street Reed College	Green street adjacent to Reed College property improvements	Crystal Springs Creek	1-Facility Construction(Green Street:Swale, infiltration)	SE 28th
137	Springwater Wetland Restoration	Up to 40 acres of wetland and riparian restoraiton to improve habitat for wide variety of wildlife species, including Neotropical migratory birds, waterfowl, shorebirds, amphibians, reptiles and mammals. Will have ancilllary benefit to help attenuate flood waters during flood events.	Middle Mainstem	1-Restoration(Wetland)	SE 117th and Foster
724	Veterans Creek Restoration Project	Restore a portion of Veterans Creek that runs through a 4-acre parcel on Mt. Scott Blvd.	Middle Mainstem	1-Restoration(Riparian) 2-Restoration(Stream) 3-Restoration(Structure Removal) 4-Restoration(Upland Habitat) 5-Restoration(Wetland) 6-Revegetation(Invasive Removal)	Mt Scott Blvd and SE 98th
429	Westmoreland Park	Work with PP&R and USACOE at Westmoreland Park on pond removal and restoration	Crystal Springs Creek	1-Restoration(Stream) 2-Restoration(Structure Removal:Other)	Westmoreland Park 7125 SE McLoughlin Blvd