Underground Injection Control Management Plan

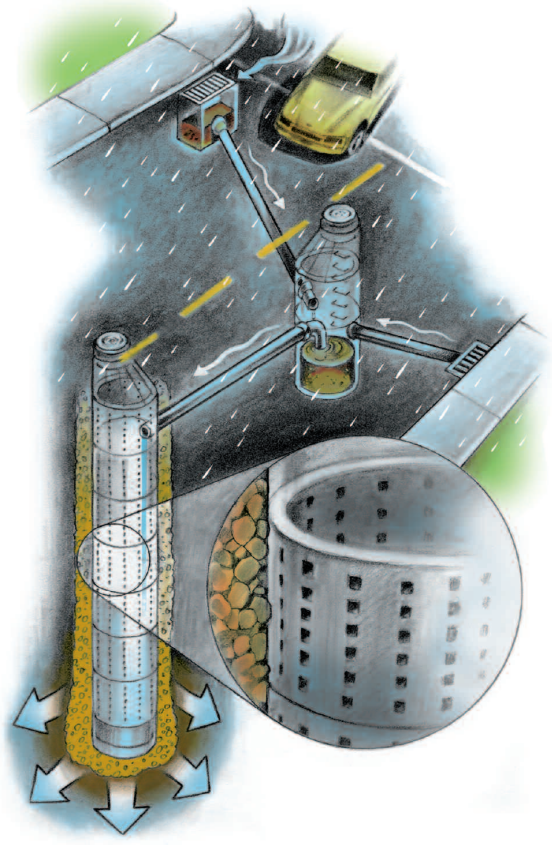
Water Pollution Control Facilities (WPCF) Permit

Class V Stormwater Underground Injection Control Systems

DEQ Permit Number 102830

Annual Report No.6

Fiscal Year 2010 - 2011
(July 1, 2010 - June 30, 2011)



November 1, 2011

Prepared by

ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

— CITY OF PORTLAND —
ENVIRONMENTAL SERVICES
1120 SW Fifth Avenue, Room 1000, Portland, Oregon 97204-1912 ▪ Sam Adams, Commissioner ▪ Dean Marriott, Director

November 1, 2011

Ms. Barbara Sellars
Senior Hydrogeologist
Oregon Department of Environmental Quality
2020 SW 4th Avenue, Suite 400
Portland, Oregon 97201

Subject: Submittal of UICMP Annual Report No. 6
City of Portland
DEQ Water Pollution Control Facilities Permit No. 102830

Dear Barbara:

The City of Portland's Bureau of Environmental Services is pleased to submit the *Underground Injection Control Management Plan Annual Report No. 6 – Fiscal Year 2010-2011.* This document was prepared in accordance with the Water Pollution Control Facilities (WPCF) permit (DEQ Permit No.102830) for the City's Class V Stormwater Underground Injection Control Systems (UIC). The permit was issued on June 1, 2005.

The *UICMP Annual Report No. 6* summarizes programmatic activities implemented by the City in fiscal year (FY) 2010-11 (July 1, 2010 – June 30, 2011), and proposed activities for the coming FY 2011-12. Completed activities, key accomplishments, and activities for the coming fiscal year are organized and described relative to the following four UIC program elements:

System Management summarizes citywide actions implemented under five BMP categories to prevent, minimize, and control pollutants prior to infiltration conducted during FY 10-11. It also identifies the main projected activities for FY 11-12.

System Monitoring summarizes the sixth-year results of UIC monitoring conducted under the *Stormwater Discharge Monitoring Plan* (SDMP) and submitted in the sixth-year *Stormwater Discharge Monitoring Report* (July 15, 2011).

Evaluation and Response provides an overview of evaluation and response actions conducted during FY 10-11 and the main projected activities for FY 11-12.

Corrective Actions summarizes the corrective actions implemented during FY 10-11 and projected main activities for FY 11-12 to address UICs that do not meet permit requirements.

The report also contains the following appendices:

Appendix A: UICs Identified, Constructed, or Removed during Fiscal Year 10-11
Appendix B: Status of Category 2 and Category 3 UICs
Appendix C: Spills That Have Occurred within Areas Serviced by UICs

If you have questions or need additional information, please call me at 503-823-5737. I look forward to our continued collaboration on implementing the WPCF Permit.

Sincerely,

Barbara Adkins
UIC Program Manager
City of Portland
Bureau of Environmental Services

Enclosures:
Underground Injection Control Management Plan Annual Report No. 6 – 3 hard copies

(w/enclosed electronic copy)

cc: UIC project file w/ enclosures

City of Portland, Oregon

Water Pollution Control Facilities (WPCF) Permit For
Class V Stormwater Underground Injection Control Systems

Permit Number: 102830

Underground Injection Control Management Plan Annual Report No. 6

Fiscal Year 2010-2011
(July 1, 2010 – June 30, 2011)

November 1, 2011

Prepared By:
City of Portland, Bureau of Environmental Services

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Introduction

This *Underground Injection Control Management Plan (UICMP) Annual Report No. 6* is submitted to the Oregon Department of Environmental Quality (DEQ) to fulfill reporting requirements for the City of Portland's Water Pollution Control Facility (WPCF) Permit for Class V Stormwater Underground Injection Control Systems (UICs). The report summarizes UIC program activities during the sixth permit reporting year (July 1, 2010 through June 30, 2011).

Background

DEQ issued the WPCF permit to the City on June 1, 2005. As required by the permit, the City prepared a *UIC Management Plan* (UICMP) and submitted it to DEQ for approval on December 1, 2006. The UICMP describes the activities the City will implement throughout the permit term (June 1, 2005 – May 31, 2015) to protect groundwater and meet WPCF permit requirements. The permit also requires the City to submit a UICMP annual report that summarizes the status of implementing the UICMP and each of its components.

The City has organized the UICMP and the annual report into the following four major program elements:

- **System Management** includes ongoing, programmatic activities (best management practices, or BMPs) that prevent, minimize, or control pollutants.
- **System Monitoring** includes ongoing actions to demonstrate that UICs are operated in a manner that protects groundwater and meets WPCF permit conditions.
- **Evaluation and Response** describes the process and criteria used to identify, evaluate, and prioritize actions needed to protect groundwater and meet permit requirements.
- **Corrective Action** includes the processes to evaluate, rank, select, and implement appropriate corrective actions to address UICs that do not meet WPCF permit requirements.

This annual report describes the activities that occurred in FY10-11 in each of these four areas. Key accomplishments are summarized below and described in more detail in the body of the report.

Key Accomplishments

Program-wide

- Submitted a *UIC Management Plan Five Year Review Report* to DEQ on November 1, 2010. The review determined that the UICMP is functioning effectively and continues to meet the management goals of the City's UIC Program.

System Management

- Submitted quarterly *UIC Registration Database* updates to DEQ on September 1, 2010, December 1, 2010, March 1, 2011, and June 1, 2011.

- Continued to implement the *Systemwide Assessment Follow-up Actions* (submitted to DEQ December 1, 2006) workplan to address the approximately 950 UICs that were identified for follow-up as part of the systemwide assessment.

- Received and responded to 25 calls regarding spills located within or near an area where UICs are the primary method for stormwater disposal.

- Continued to provide oversight to ensure that commercial and industrial facilities comply with retrofit requirements under the Columbia South Shore Well Field Wellhead Protection Program.

- Continued to provide education, outreach, and technical assistance to residents and businesses affected by the Columbia South Shore Well Field Wellhead Protection Program, in conjunction with the Columbia Corridor Association and Columbia Slough Watershed Council.

- In accordance with the City's *Stormwater Management Manual* requirements, signed off on permits for approximately 1,065 source control measures (citywide) at sites with high-risk characteristics or activities.

- Conducted 4,092 erosion control-related inspections of private construction sites (citywide).

- Inspected 207 active public construction projects with erosion control components (citywide).

- Responded to 27 erosion control complaints.

- Through the Clean Rivers Education Program, involved approximately 17,000 students (citywide) in hands-on activities that teach them about the causes and effects of water pollution and how individuals can help protect water resources.

- Participated in numerous community activities and events involving stormwater management and watershed protection issues and actions.

- Continued to educate employees on permit requirements and groundwater protection.

- Continued to develop employee training and public education.

- Cleaned 852 sedimentation manholes and UICs.

- Swept major arterials six times during the year.

- Continued ongoing evaluation of the review and approval process for private UICs to achieve a more streamlined and consistent registration process for both public and private UICs.

System Monitoring

- Submitted year 6 (October 2010 – 2011) UIC compliance and supplemental monitoring locations to DEQ on September 1, 2010.

- Implemented year 6 stormwater compliance and supplemental monitoring. Forty-five UIC locations were sampled in year 6 and tested for common and priority pollutants.

- Compiled and evaluated year 6 stormwater data. Notified DEQ of year 6 annual mean concentration exceedances of the permit's maximum allowable discharge limits (MADLs).

- Prepared and submitted the *Annual Stormwater Discharge Monitoring Report – Year 6 – October 2010 – May 2011* to DEQ on July 15, 2011.

- Performed a preliminary stormwater discharge trend analysis for the 6 years of data, using box plots to identify potential differences in pollutant concentrations.

- Prepared and submitted year 7 (October 2011 – 2012) UIC monitoring locations to DEQ.

Evaluation and Response

- Reviewed UICs that previously received a "no further action" (NFA) designation to determine if previous NFA decisions are still protective of groundwater and if additional analyses need to be performed.

- Identified and evaluated additional UICs with potentially inadequate separation as new data became available. Performed compliance determinations on UICs identified to have potentially inadequate separation distance. Prioritized and reported newly identified Category 3 UICs to DEQ.

- Identified four new Category 4 UICs. Identified four locations that exceeded the annual geometric mean for the first year; with approval by DEQ, moved directly to corrective action without sampling for a second year.

- Responded to year 6 MADL exceedances. During year 6 stormwater discharge monitoring, four common pollutants were detected during individual sampling events at concentrations above their respective MADLs: PCP, B(a)P, DEHP, and lead.

Corrective Action

- Completed corrective actions for all Category 2 UICs.

- Initiated design activities for Category 3 UICs, in accordance with the scope of the *Systemwide Assessment Follow-Up Actions* work plan.

- Removed 33 UICs from the Category 3 UIC list through either corrective actions or compliance confirmation.

1 Introduction

1.1 Overview

The Oregon Department of Environmental Quality (DEQ) issued the City of Portland's Water Pollution Control Facility (WPCF) Permit for Class V Stormwater Underground Injection Control Systems (UICs) on June 1, 2005 (Permit No. 102830).

As required by Schedule D(1) of the WPCF permit, the City prepared a *UIC Management Plan* (UICMP) and submitted it to DEQ for approval on December 1, 2006. The UICMP describes the activities the City will implement throughout the permit term (June 1, 2005 – May 31, 2015) to protect groundwater and meet WPCF permit requirements. (See Section 1.2 for additional information about the UICMP.)

The WPCF permit also requires the City to submit a UICMP annual report that summarizes the status of implementing the UICMP and each of its components. Accordingly, this annual report summarizes activities that occurred during the sixth fiscal year of permit implementation (July 1, 2010 through June 30, 2011). This includes detailed information, including proposed timelines and implementation schedules, for work associated with the following:

- UICs in areas of shallow groundwater
- UICs within close proximity to commercial and industrial facilities
- Overall monitoring strategy

Table 1-1 summarizes the WPCF permit requirements for the annual report and identifies where the requirements are addressed in this annual report.

Table 1-1
Summary of WPCF Permit Annual Report Requirements[a]

Requirement	Permit Reference	Where Requirement is Addressed in Annual Report
General Requirements		
The Permittee must notify the Department of any changes in key personnel or areas of responsibility.	D(5)(b)	Section 1.7
Unusual conditions encountered	D(15)(a)(i)	No unusual conditions were encountered.
Permit violations that may have occurred	D(15)(a)(ii)	No permit violations have occurred.
Minor and/or major permit modifications	D(15)(a)(vi)	Section 1.8
A demonstration of legal authority to implement the UICMP	D(15)(i)	Section 1.6
A discussion of significant land use changes that alter traffic volume, patterns of potential pollutants to a Permittee owned or operated public UIC. If the affected public UIC is a permanent trend monitoring point, then the Permittee must discuss the impact to the trend analyses and identify, for Department approval, a replacement UIC for trend analysis.	D(15)(j)	Included in *Annual Stormwater Discharge Monitoring Report - Year 6* (July 2011).
The status of implementing the UICMP and each of its components	D(15)(d)	Section 1.9
A discussion of any proposed changes to the UICMP or its components	D(15)(f)	Section 1.10
System Management		
Employee Training and Public Education program must be developed and implemented to educate Permittee's personnel and the public of the permit conditions and requirements	D(10)(d)	Section 2.4
…summarize any public UIC discovered or identified during or after the system-wide assessment	C(20)(b)	Section 2.2
A list of newly constructed …. public UICs during the reporting period	D(15)(k)	Section 2.2
A summary of BMPs implemented during the annual reporting period and the results of those BMPs and a description of BMPs to be employed during the next reporting year	D(15)(h)	Sections 2.2 through 2.6
Summarize the decommissioning of motor vehicle floor drains that discharge to public UICs.	C(13)(d)	Not applicable; no floor drains identified as draining to public UICs.
A summary of maintenance activities and supporting data.	D(15)(c)	Information on inspections, cleaning, and repair activities included in Section 2.5. O&M conducted as a response action described in *Stormwater Discharge Monitoring Plan*.

Requirement	Permit Reference	Where Requirement is Addressed in Annual Report
System Monitoring		
Any other information, finding, condition, spills and/or action that is relevant to the management of the Permittee's public UICs or groundwater protection during operation of the public UICs.	D(15)(n)	Sections 3 and 4
A summary and analysis of BMP monitoring accumulated during the annual reporting period	D(15)(l)	Section 3
Provide BMP monitoring results in the annual UICMP reports.	D(10)(c)(iv)	Section 3
Provide a brief overview summary of the monitoring results provided in the annual monitoring report for the reporting period.	D(15)(b)	Section 3
Include a comparison of the data to data from previous annual reporting periods.	D(15)(g)	Section 3
Violations (i.e., exceedances of permit established limits)	F(4)(d)	Section 3
Corrective Actions		
Identify Category 2 UICs.	C(12)(d) C(20)(c)	Identified in first annual report; update provided in Section 5
Identify Category 3 UICs.	C(12)(e)	Sections 4 and 5 and Appendix B.
Identify Category 4 UICs.	B(7)(j)	Sections 3, 4, and 5
Provide a summary of the UIC system management for the reporting period, including: (iii) Corrective actions taken to prevent further permit violations (iv) Other corrective actions taken or initiated	D(15)(a)	Section 5
An updated prioritized list of non-compliant public UICs with implementation and completion schedules	D(15)(a)(v)	Section 5 and Appendix B.
A discussion of any compliance response action taken during the reporting period	D(15)(e)	Included in *Annual Stormwater Discharge Monitoring Report – Year 6* (July 2011) and summarized in Section 5.
Provide a prioritized list of all non-compliant public UICs by category. Include a prioritized subset of the non-compliant public UICs that must be corrected during the CIP year.	D(15)(m)	Section 5
Any part of the UIC system placed under a Department Order for a regional corrective action and the nature of the Department Order (if applicable)	D(15)(a)(vii)	Section 5
[a] Where applicable, permit requirements are grouped by the UICMP categories developed by the City of Portland.		

1.2 Overview of the UICMP

As required by the WPCF permit, the UICMP identifies and discusses the best management practices (BMPs) the City will employ throughout the permit period to protect groundwater quality, support watershed health, and meet permit conditions. These include structural, non-structural, and institutional controls. In accordance with the permit, the UICMP also includes the following:

- UIC Registration Database
- Operations and Maintenance (O&M) Plan
- BMP Monitoring Program
- Employee Training and Public Education
- Spill Prevention and Pollution Control (SPPC) Plan
- Abandonment, Decommissioning, or Alteration of Public UIC Injection Systems Plan

The UICMP also meets the requirements of OAR 340-044-0018(3)(b)(C). These requirements specify that municipalities with 50 or more stormwater injection systems must prepare and implement a written UIC management plan that includes a systemwide assessment, system controls, monitoring, and a plan for record keeping and reporting.

The UICMP is organized into the following four major elements:

- **System Management** includes ongoing, programmatic activities (best management practices, or BMPs) that prevent, minimize, or control pollutants before they can be discharged to a UIC. BMPs are organized into the following five categories:

  - System Inventory and Assessment (SA)
  - Pollution Control (PC)
  - Education and Training (ET)
  - Operations and Maintenance (OM)
  - Policy and Regulation (PR)

- **System Monitoring** includes ongoing actions to demonstrate that UICs are operated in a manner that protects groundwater and meets WPCF permit conditions. It includes two types of monitoring: stormwater discharge monitoring and BMP monitoring.

Information collected through implementation of System Management and System Monitoring activities are used to identify program improvements or UICs that may require additional evaluation, response action, or corrective action.

- **Evaluation and Response** uses data and information from System Management (e.g., UIC location, depth to groundwater) and System Monitoring (e.g., results of maximum allowable discharge limits [MADL] monitoring) activities to assess UIC compliance status. It also defines the process and criteria used to identify, evaluate, and prioritize actions necessary to protect groundwater and meet permit requirements.

- **Corrective Action** addresses UICs shown to be non-compliant with WPCF permit requirements through the Evaluation and Response process. It includes the process used to evaluate, rank, select, and implement appropriate corrective actions. A variety of corrective actions are available, including options that do not involve construction (such as institutional controls or an assessment to demonstrate protectiveness), structural/engineering controls, and UIC closure.

1.3 Relationship of the UICMP to the UIC Program and UICMP Annual Reports

The UICMP is a comprehensive plan that describes the City's overall UIC program. It includes processes, tasks, and, where possible, implementation schedules. In many cases, however, it is difficult to determine implementation details years in advance because so many variables are involved. For that reason, UICMP implementation details will be included on a yearly basis in the UICMP annual reports. This annual report provides information about key accomplishments during FY10-11 (July 1, 2010 to June 30, 2011) and identifies activities planned for implementation in the next fiscal year (FY11-12).

1.4 Other UIC Program Documents

The WPCF permit requires the City to prepare a variety of documents that together describe the programmatic actions and management practices the City will implement to protect groundwater and meet permit requirements. Some of these documents are included as appendices to the UICMP, while others were submitted to DEQ separately. Table 1-2 shows the relationship of these documents to the four major UICMP elements.

1.5 Other Program Reporting Requirements

In addition to the UICMP annual report, the City will fulfill reporting requirements specified in the WPCF permit by submitting the following reports to DEQ:

- *Annual Stormwater Discharge Monitoring Locations* (due September 1 of each year)
- *Annual Stormwater Discharge Monitoring Report* (due July 15 of each year)
- Interim compliance reporting:
  - Detection of priority pollutant screen (PSS) pollutants
  - Exceedance of MADLs for individual sampling events
  - Exceedance of annual mean concentration for any MADL
  - Quarterly reports

Table 1-2
UIC Program Documents Related to UICMP Elements

UICMP Element/Document	Submittal Information
System Management	
Systemwide Assessment	Submitted July 15, 2006
UIC Registration Database	Submitted September 1, 2005 and updated quarterly
UIC Management Plan	Submitted December 1, 2006 DEQ Public Comment Period: June 24-July 24, 2008 DEQ Approval: October 6, 2008
UIC Management Plan Five Year Review Report	Submitted November 1, 2010
Operations and Maintenance Plan	Submitted December 1, 2006 (UICMP Appendix B) DEQ Public Comment Period: June 24-July 24, 2008 DEQ UICMP Approval: October 6, 2008
Spill Prevention and Pollution Control Plan	Submitted December 1, 2006 (UICMP Appendix C) DEQ Public Comment Period: June 24-July 24, 2008 DEQ UICMP Approval: October 6, 2008
Decommissioning Procedure for Underground Injection Control Systems	Draft submitted November 1, 2006 Final submitted December 1, 2006 (UICMP Appendix D) DEQ Public Comment Period: June 24-July 24, 2008 DEQ UICMP Approval: October 6, 2008
WPCF UIC Permit Modification #1	DEQ Approval: December 10, 2009
System Monitoring	
Stormwater Discharge Monitoring Plan (SDMP) - *Sampling Design Plan* - *Quality Assurance Project Plan (QAPP)* - *Sample Analysis Plan (SAP)*	Submitted July 15, 2005 Final submitted August 30, 2006 DEQ Public Comment Period: June 24-July 24, 2008 DEQ Approval: October 6, 2008
BMP Monitoring Program	Submitted December 1, 2006 (UICMP Appendix E) DEQ Public Comment Period: June 24-July 24, 2008 DEQ UICMP Approval: October 6, 2008
Annual Stormwater Discharge Monitoring Report – Year 1 (October 2005 - May 2006)	Submitted July 15, 2006

UICMP Element/Document	Submittal Information
Annual Stormwater Discharge Monitoring Report – Year 2 (October 2006 - May 2007)	Submitted July 15, 2007
Annual Stormwater Discharge Monitoring Report – Year 3 (October 2007- May 2008)	Submitted July 15, 2008
Annual Stormwater Discharge Monitoring Report – Year 4 (October 2008- May 2009)	Submitted July 15, 2009
Annual Stormwater Discharge Monitoring Report – Year 5 (October 2009- May 2010)	Submitted July 15, 2010
Annual Stormwater Discharge Monitoring Report – Year 6 (October 2010- May 2011)	Submitted July 15, 2011
Evaluation and Response/Corrective Actions	
Corrective Action Plan (CAP)	Submitted July 15, 2006 DEQ Public Comment Period: June 24 – July 24, 2008 DEQ Approval: October 6, 2008
Corrective Action Plan Update	Submitted November 1, 2010
Corrective Actions: Category 1 Underground Injection Control Systems	Submitted July 15, 2005; completed July 2006
Compliance Determination Procedure	Submitted December 1, 2006 (UICMP Appendix F) DEQ Public Comment Period: June 24-July 24, 2008 DEQ UICMP Approval: October 6, 2008
Prioritization Procedure	Submitted December 1, 2006 (UICMP Appendix G) DEQ Public Comment Period: June 24-July 24, 2008 DEQ UICMP Approval: October 6, 2008
Evaluation and Response Guidelines	Submitted December 1, 2006 (UICMP Appendix H) DEQ Public Comment Period: June 24-July 24, 2008 DEQ UICMP Approval: October 6, 2008
Systemwide Assessment Follow-up Actions Workplan	Submitted December 1, 2006 DEQ Approval: October 6, 2008
Category 4 UIC Corrective Actions – Groundwater Protectiveness Demonstrations (UICs identified in sampling year 2)	Submitted May 30, 2008 DEQ No Further Action Determination – May 30, 2008

UICMP Element/Document	Submittal Information
Category 4 UIC Corrective Actions – Groundwater Protectiveness Demonstrations (UICs identified in sampling year 3)	Submitted March 30, 2009 DEQ No Further Action Determination – May 30, 2008
Evaluation of Vertical Separation Distance – Groundwater Protectiveness Demonstration	Submitted May 27, 2008 DEQ Approval: June 5, 2008
Decision Making Framework for Groundwater Protectiveness Demonstrations	Submitted June 19, 2008 DEQ Approval: October 20, 2008
Category 3 UICs – Groundwater Protectiveness Demonstration – Vertical Separation Distance ≥5 Feet – No Further Action Request	Submitted June 18, 2008 DEQ Approval: October 6, 2008
Ubiquitous Pollutants – Groundwater Protectiveness Demonstration	Submitted July 17, 2008 DEQ Approval: October 6, 2008
UICs within Permit-Specified Well Setbacks – Groundwater Protectiveness Demonstration – No Further Action Request	Submitted July 24, 2008 DEQ Approval: October 6, 2008
City of Portland Parks UICs Groundwater Protectiveness Demonstration No Further Action Request	Submitted July 13, 2009 DEQ Approval: October 21, 2009
Category 2 UIC Corrective Actions Request for Timeline Extension City of Portland WPCF Permit No. 102830	Submitted February 19, 2010 DEQ Approval: February 25, 2010
Groundwater Protectiveness Demonstration and Request for Approval of 5- foot Separation Distance for Three Category 2 UIC Corrective Actions	Submitted May 14, 2010 DEQ Approval: August 5, 2010
Groundwater Protectiveness Demonstration and Request for Approval of 5-foot Separation Distance for New UICs	Submitted July 20, 2011 DEQ Approval, July 28, 2011

UICMP Element/Document	Submittal Information
Annual UICMP Reports	
Underground Injection Control Management Plan – Annual Report No. 1 - Fiscal Year 2005-2006 (July 1, 2005 – June 30, 2006)	Submitted December 1, 2006
Underground Injection Control Management Plan – Annual Report No. 2 - Fiscal Year 2006-2007 (July 1, 2006 – June 30, 2007)	Submitted November 1, 2007 DEQ Approval: October 14, 2008
Underground Injection Control Management Plan – Annual Report No. 3 - Fiscal Year 2007-2008 (July 1, 2007 – June 30, 2008)	Submitted November 1, 2008
Underground Injection Control Management Plan – Annual Report No. 4 - Fiscal Year 2008-2009 (July 1, 2008 – June 30, 2009)	Submitted November 1, 2009
Underground Injection Control Management Plan – Annual Report No. 5 - Fiscal Year 2009-2010 (July 1, 2009 – June 30, 2010)	Submitted November 1, 2010
Underground Injection Control Management Plan – Annual Report No. 6 - Fiscal Year 2010-2011 (July 1, 2010 – June 30, 2011)	Submitted November 1, 2011

1.6 Legal Authority

The Charter of the City of Portland grants broad authority to the City "to exercise any power or authority granted to the City by statute *** and [provides that the City] may do any other act necessary or appropriate to carry out such authority, or exercise any other power implied by the specific power granted." Such authority includes, among other things, "all powers commonly known as the police power to the same extent as the State of Oregon has or could exercise said power and make and enforce *** [as] necessary or appropriate water, local, police, sanitary and safety laws and regulations." *Chapter 2-105, Charter of the City of Portland, Oregon*

In addition, the Portland City Code addresses regulation of stormwater discharges, building requirements, zoning, erosion and sediment control and public improvements in Chapters 10, 17, 24, 29, and 33. Chapter 17.38 and 17.39 specifically address Drainage and Water Quality and Stormwater Discharges, respectively.

1.7 UIC Program Staff

1.7.1 Key Roles and Responsibilities

The WPCF permit designates the Bureau of Environmental Services (BES) as the bureau responsible for implementing the WPCF permit and for identifying and managing the regulatory and technical components of the UIC program citywide and across bureaus. Key staff roles and responsibilities for the UIC program are summarized in the November 1, 2010, *UIC Management Plan Five Year Review Report.*

1.7.2 Personnel Changes

As part of a reorganization of BES in FY 10-11, the UIC Program Team was reassigned from Watershed Services to Pollution Prevention Services. Barbara Adkins is the UIC Program Manager, reporting to Matt Criblez, Environmental Compliance Manager, and Marveita Redding, Pollution Prevention Services Group Manager.

1.8 Minor and/or Major Permit Modifications

A minor permit modification was completed during FY10-11. It includes two parts:

1) Approval to change the submittal date for the annual *UIC Stormwater Discharge Monitoring Report* from July 15 to November 1. This date is consistent with the submittal date of the annual *UIC Management Plan Annual Report*.

2) Recognition of staff updates to the following documents.
   - UICMP: Section 7; Appendix B, Section 10; Appendix C, Section 6, Table 6-1; Appendix D, Section 3
   - CAP: Section 2, Tables 2-1 and 2-2
   - SDMP/QAPP: Section 2, Table 2-1

The City also requested a permit modification to change the monitoring requirements in the *Decommissioning Procedure and Stormwater Discharge Monitoring Plan*. The changes include:

- Require sampling prior to decommissioning a UIC only in the following situations:
  - Visible evidence of contamination is observed in the UIC;
  - The UIC is located within 500 feet or the 2-year time of travel of a water supply well; or
  - The UIC catchment area encompasses a cleanup site with a confirmed release.

- Move BTEX (benzene, toluene, ethylbenzene, and xylenes) and nitrates from the common pollutant list to the priority pollutant screen list in Schedule A, Table 1 of the permit.

(Note: DEQ issued the permit modification in FY11-12, on October 4, 2011.)

1.9 Status of Implementing the UICMP and Its Components

This annual report provides the status of implementing the UICMP and it components.

1.10 Proposed Changes to the UICMP or Its Components

The UICMP and its components will be updated to reflect the permit modifications noted in Section 1.8 above.

1.11 City Budget and Funding

The City of Portland has invested more than $825 million in stormwater management services and facilities over the past 16 years.[1] The revenue requirements for FY10-11 totaled approximately $91 million, allocated as follows:

Major Program Category	Requirements	Percentage Share
Enforcement and Development Review	$ 5.8 million	6%
Watershed Program & Habitat Restoration	18.3 million	20%
Facilities Operations and Maintenance	21.0 million	23%
Capital Improvements*	45.8 million	50%
Total Revenue Requirements	**$ 90.9 million**	
* Includes debt service, facilities planning and engineering, construction engineering, and construction contracts.		

Eighty-five percent of these revenue requirements are financed through direct monthly user fees. The remaining revenue sources include direct charges for new private development (system development charges), service charges, permit fees, and regulatory charges and penalties. More details on City revenues are provided below.

[1] The 16-year time period reflects the implementation period of the City's NPDES MS4 permit.

In FY11-12, the City plans to invest $91.0 million in stormwater management services and facilities. Direct monthly user fees will pay for 84 percent of these investments.

Stormwater Management Charges

City Council approves revised stormwater monthly user fees and stormwater system development charges (SDCs) at the start of each fiscal year. Monthly user fees are adjusted to reflect operating, maintenance, and capital costs of the City's sanitary sewer and drainage system. The rate adjustments are based upon cost of service principles, ensuring equity by charging ratepayers according to the amount of sewer and drainage service they use.

The following table reports the monthly single-family stormwater management charge and the monthly stormwater rate per 1,000 square feet of impervious area for the last five permit years:

	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011
Single-Family Residential Charge	$16.82	$17.33	$18.55	$19.80	$21.79
Residential rate per 1,000 square feet of impervious area	$7.01	$7.22	$7.73	$8.25	$9.08
Non-residential rate per 1,000 square feet of impervious area	$7.56	$7.91	$8.43	$8.86	$9.66

At the close of FY 10-11, City Council increased the monthly stormwater management charge for single-family residences from $21.79 to $22.36. The residential rate increased from $9.08 to $9.32 per 1,000 square feet of impervious surface per month, and the commercial rate increased from $9.66 to $9.97 per 1,000 square feet of impervious area per month.

Stormwater System Development Charges

The methodology for assessing system development charges (SDCs) for new development and significant redevelopment includes two components. One component represents the charge for stormwater facilities that handle runoff from individual properties. For FY10-11, this onsite portion was assessed based on $154.00 per 1,000 square feet of impervious area. Riparian properties that drain directly to the Columbia Slough, Columbia River, or Willamette River are exempt from this portion of the SDC. The other portion represents the cost of stormwater facilities that handle runoff from public rights-of-way. This portion was assessed based on the use of the transportation system, using road frontage and vehicle trips to allocate the costs. For FY10-11, the rates were $4.78 per linear foot and $2.51 per vehicle trip. At the end of FY10-11, City Council increased the rates for stormwater system development charges to $164.00 per 1,000 square feet of impervious area, $5.12 per linear foot of frontage, and $2.68 per daily vehicle trip.

Discounts may be granted only for the "onsite" part of the charge for facilities constructed as part of new development. Discounts range from 80 percent for retention of the 100-year event to no discount for control of the 10-year storm.

1.12 Organization of the Annual Report

The remainder of this annual report contains the following sections:

Section 2: System Management, identifies citywide actions implemented under the five BMP categories to prevent, minimize, and control pollutants prior to infiltration. Where relevant, it also identifies projected main activities for FY11-12.

Section 3: System Monitoring, summarizes the sixth-year results of UIC monitoring conducted under the *Stormwater Discharge Monitoring Plan* (SDMP) and submitted in the *Annual Stormwater Discharge Monitoring Report, Year 6, October 2010-May 2011* (July 15, 2011).

Section 4: Evaluation and Response, identifies evaluation and response actions conducted during FY10-11 and projected main activities for FY11-12.

Section 5: Corrective Actions, summarizes the corrective actions implemented during FY10-11 and projected main activities for FY11-12 to address UICs that do not meet permit requirements.

Appendix A identifies UICs identified/constructed/removed during FY10-11.
Appendix B identifies the status of Category 2 and 3 UICs.
Appendix C identifies spills that occurred within areas serviced by UICs.

2 System Management

2.1 Overview

The System Management program element involves a series of actions, called best management practices (BMPs) that serve to prevent, minimize, and control pollutants in stormwater prior to discharge to a UIC. These BMPs are organized into the following five general BMP categories and are applied to the entire UIC system on an ongoing basis.

- System Inventory and Assessment
- Pollution Control
- Education and Training
- Operations and Maintenance
- Policy and Regulation

2.2 System Inventory and Assessment (SA)

Ongoing activities necessary to provide stormwater drainage infrastructure include the registration and construction of new UICs, replacement of existing UICs, and decommissioning of existing UICs. Ongoing system inventory and assessment activities are important to manage all known public UICs within the City of Portland and to assess drainage to each UIC for potential impacts to groundwater. This BMP category focuses on updating and refining information related to the location and physical characteristics of existing and new UICs. It fulfills two WPCF requirements:

- Develop and implement a comprehensive *UIC Registration Database*.
- Evaluate UICs relative to the factors that could present a risk to groundwater quality.

SA-1: Install, replace, retrofit, and decommission UICs as needed to provide public infrastructure for stormwater management. Maintain a comprehensive system inventory/data management system to register new UICs and track the location, physical characteristics, and status of all public UICs.

2.2.1 SA-1: Key Accomplishments for FY10-11

- Submitted quarterly *UIC Registration Database* updates to DEQ on September 1, 2010, December 1, 2010, March 1, 2011, and June 1, 2011.

- Identified 76 new public UIC[2] records in quarterly *UIC Registration Database* updates:
  - 18 new UIC records in the September 1, 2010 database update
  - 9 new UIC records in the December 1, 2010 database update
  - 23 new UIC records in the March 1, 2011 database update
  - 26 new UIC records in the June 1, 2011 database update

  These UIC records are listed in Appendix A.

- Submitted decommissioning pre-closure reports for 2 UICs to DEQ in FY10-11.

- Removed 7 public UIC records in quarterly UIC *Registration Database* updates. The removals may have been decommissioned or identified through field investigations as not existing. These records are listed in Appendix A.

2.2.2 SA-1: Projected Main Activities for FY11-12

- Continue to regularly update the *UIC Registration Database* to include new and decommissioned UICs and other relevant information.

- Continue to submit quarterly *UIC Registration Database* updates to DEQ.

SA-2: Evaluate the location of public UICs relative to factors that may create adverse impacts to groundwater.

2.2.3 SA-2: Key Accomplishments for FY10-11

- Continued to implement/complete the *Systemwide Assessment Follow-up Actions* (submitted to DEQ December 1, 2006) workplan to address the approximately 950 UICs that were identified for follow-up as part of the systemwide assessment. The work addresses and evaluates UICs that meet any of the following criteria.
  - UICs with inadequate separation distance from groundwater (see Sections 4 and 5).
  - UICs that receive drainage from facilities that store, handle, or use hazardous or toxic materials in quantities requiring registration under the Superfund Amendment and Reauthorization Action Title III (work completed).
  - UICs that receive drainage from commercial/industrial properties with site activities that may cause stormwater entering a public UIC to exceed MADLs established in the permit (work completed).
  - UICs within close proximity to domestic or public water wells (work completed).

[2] Some UICs identified as new facilities in quarterly reports may not be recently discovered or newly constructed UICs. UICs may be identified as new as a result of database management. For example, correcting a database identifier for a facility from a sedimentation manhole to a UIC would trigger the UIC to appear as a new sump in the BES database, even though the facility itself is not new.

2.2.4 SA-2: Projected Main Activities for FY11-12

- Continue implementation of remaining actions identified in the *Systemwide Assessment Follow-up Actions* workplan, specifically for UICs with inadequate separation distance from groundwater.

- Evaluate newly constructed or identified UICs for the four characteristics that may potentially create adverse impacts to groundwater. Incorporate the resulting information into the Evaluation and Response process, as appropriate.

- Integrate new system data into the *UIC Registration Database*, as appropriate.

2.3 Pollution Control (PC)

Activities and practices such as spills, illegal disposal, improper site management, and erosion can increase the discharge of pollutants to public UICs, with potential negative impacts to groundwater. This BMP category focuses on reducing such pollutant discharges from both public and private sites and activities. It fulfills two WPCF permit requirements:

- Implement a *Spill Prevention and Pollution Control (SPPC) Plan*.
- Identify activities conducted on commercial/industrial properties or SARA Title III facilities that may result in a violation of MADLs in stormwater discharging to a public UIC.

PC-1: Identify, prevent, minimize, and control activities and practices that can increase pollutant discharges to public UICs.

2.3.1 PC-1: Key Accomplishments for FY10-11

Spill Prevention and Pollution Control (SPPC) Plan

- Continued to implement the SPPC Plan (submitted in December 2006), which includes improving ongoing citywide pollution control activities to identify and control activities on private properties, including commercial/industrial properties and SARA Title III facilities where site activities (e.g., illegal disposal, improper storage and handling of materials, and erosion) could result in a violation of MADLs in stormwater discharging to a UIC.

Spill Protection-Citizen Response (SPCR) Team

SPCR staff responds immediately to emergency spills and investigates pollution complaints regarding spills, illegal disposal, improper site management, and erosion. Citizens can call in reports on a dedicated spill response hotline 7 days a week, and staff is available 24 hours a day to respond to spills, slicks, and other suspicious or inappropriate discharges. The program refers problems to other enforcement agencies as appropriate. The SPCR team also provides education

and technical assistance to property owners to improve site management and address work practices that may impact stormwater discharges. SPCR staff support the entire City, including areas that use UICs for management of stormwater.

- In FY10-11, received 25 calls regarding spills located within or near an area where UICs are the primary method for stormwater disposal. Only seven of these spills entered a UIC system. All of the spills were of a very small amount and, upon inspection, were determined to have little to no impact. All of the systems were cleaned as appropriate. Appendix C shows this information in table format, including date, release type, volume, location, identification of the closest UIC, and if the spill entered a UIC.

- The BES Spill Section continued a communication protocol with the Portland Fire Bureau that automatically pages the BES duty officer for a two-alarm event. Upon receiving the page, the duty officer contacts the Fire Bureau to identify if the duty officer is needed by the fire responders. Many events do not require the duty officer to respond to the site. In FY10-11, seven two-alarm fire events resulted in pages to the duty officer.

- The BES Spill Section continued a communication protocol with the towing companies on the City of Portland towing contract. This notification ensures that BES will be contacted for auto fluid clean-up actions and for events that threaten to impact a stormwater facility (catch basin and downstream stormwater system). The duty officer may respond to events, depending on the reported information. Many events do not require the duty officer to respond. In FY10-11, 19 after-hours calls were received by the duty officer from towing companies. No enforcement actions were taken.

- BES and the Water Bureau continued to implement Columbia South Shore Well Field (CSSW) Protection Area signage. The signs list the BES spill response hotline number and read: "TO REPORT SPILLS CALL (503) 823-7180."

Regional Spill Response Committee

- This multi-agency committee was established in 1995 to consult and debrief on spill response activities throughout the region. It also provides staff training and coordination. Members include representatives from the Oregon Emergency Response System, Environmental Protection Agency Criminal Investigations (EPA CID), United States Coast Guard (USCG), Oregon Department of Environmental Quality (DEQ), Oregon Department of Transportation (ODOT), Clean Water Services (CWS), Water Environment Services (WES), Port of Portland, Portland Fire Bureau (PFB) Hazmat, City of Gresham, City of Milwaukie, City of Portland Water Bureau, and BES. BES chairs and attends all of the meetings.

Columbia South Shore Well Field Wellhead Protection Program

The City continued to implement the Columbia South Shore Well Field Wellhead Protection Program and reference manual for the City of Portland (and also in effect in Gresham and Fairview). The program focuses on groundwater protection through the implementation of mandatory spill containment BMPs and facility inspections for commercial and industrial

facilities located within the Columbia South Shore Well Field Wellhead Protection Area (WHPA) overlay zone. The program also includes education and outreach efforts to affected residents and businesses and one-on-one technical assistance to businesses to help them comply with program requirements. Program requirements include structural and operational BMPs to reduce the occurrence of spills and minimize spill impacts.

- Conducted 174 inspections (includes re-inspections, regular fire inspections, and building final inspections) of businesses in the wellhead protection area, and conducted 29 plan reviews. Forty violations were identified. Of these, 21were violations of the wellhead protection code and the rest were fire code violations. Most violations were related to containment, spill kits, labeling, and reporting requirements. There were 113 abatements; some of these were for violations from previous years.

- Promoted hazardous waste reduction and non-hazardous alternatives.

- Providing education and outreach to affected residents and businesses and one-on-one technical assistance to businesses to help them comply with requirements of the program, in conjunction with the Columbia Corridor Association and Columbia Slough Watershed Council.

Source Control Measures

The City's *Stormwater Management Manual* (SWMM) requires storm and sanitary source controls for site uses and characteristics that generate, or have the potential to generate, specific pollutants of concern. These requirements apply to new development projects, redevelopment projects, tenant improvements, and existing sites proposing new offsite discharges.

- The City conducted 323 land use reviews for source control measures at sites subject to SWMM requirements and signed off on permits for approximately 1,065 source control measures at sites with high-risk characteristics or activities. These numbers are citywide and are not limited to areas draining to UICs. (Note: When the SWMM is applied, drainage from high-risk areas is prohibited from draining to public UICs, and stormwater is managed onsite.)

- Began review of Chapter 4 of the SWMM to identify potential source control requirement updates.

Erosion Control

- There were 4,753 active private construction permits subject to erosion control inspection (citywide). The Bureau of Development Services (BDS) conducted 4,092 erosion control-related inspections of private construction sites (citywide).

- All private development sites with qualifying ground disturbance areas were inspected for temporary and permanent erosion control measures at the beginning and near or at completion of the project. Interim checks were performed as time allows

- There were 207 active public construction projects (citywide) with erosion control components. In general, public sites are inspected daily during construction.

- Erosion control complaints (received through the complaint hotline or staff referrals) were tracked through the City's building permit tracking program, TRACS. A total of 27 cases were opened and responded to, with 20 cases closed (citywide).

- The pre-permit-issuance site meeting program was continued, where the applicant's team meets onsite to discuss erosion control and other sensitive site issues. No pre-issuance site visits were done this fiscal year.

Prevention of Illegal Disposal

- Continued to implement solid waste and recycling programs (curbside recycling and yard debris collection, and neighborhood cleanup collection events) to help prevent illegal dumping.

2.4 Education and Training (ET)

This BMP category fulfills the WPCF permit requirement for an employee training and public education program to educate City personnel and the public of the conditions and requirements of the permit.

ET-1: Implement public education activities that will raise awareness of groundwater protection and promote pollution prevention and control.

2.4.1 ET-1: Key Accomplishments for FY10-11

Clean Rivers Education Program

This program involves hands-on activities that teach students about the causes and effects of water pollution and what individuals can do to protect water resources. The programs also provide community service projects, teacher workshops, and curriculum resources. A number of the programs focus on stormwater and pollution prevention. An estimated 17,000 students participated in these activities citywide.

- Reached 8,916 students (grades K-12) with classroom programs that provide hands-on, interactive science education about stormwater and other environmental issues.

- Involved 5,533 students (K-12) in education field programs that offer watershed investigations and field assessments, stormwater tours, boat tours, and restoration experiences. Of these, 1,767 students combined education with natural area restoration service projects.

- Provided canoe trips to 300 students in the Columbia Slough and northern Willamette River watersheds. These included classroom studies and stewardship projects related to stormwater pollution.

- Checked out stormwater and watershed curriculum kits and field equipment to 8 Portland elementary and middle school teachers.

- Presented Stormwater - Soak it Up, a 75-minute classroom program for grades 4-12 and special interest groups, totaling 1,339 students and teachers.

- Presented Tours of Stormwater Solutions to 207 students. Students visited bioswales, stormwater planters, ecoroofs, porous pavement, and creative downspout disconnections.

- Presented Watershed Awareness to 760 students, grades 3-6. This program focuses on common non-point sources of pollution and pollution prevention.

- Continued the permanent storm drain curb marker program. Participating community and school volunteers also distributed doorhangers with stormwater pollution prevention messages and clean river tips to nearby residences. Number of participants: 127.

- Targeted schools with onsite stormwater facilities for extended outreach. Students learned about stormwater pollution prevention and their school's sustainable stormwater facilities and participated in maintenance activities for their facilities.

- Presented *Futures Working for Clean Rivers* career education programs to 35 students in the Willamette River and Johnson Creek watersheds.

- Continued quarterly Education Advisory Committee meetings to provide input and feedback for public education approaches and activities.

Stewardship Activities and Community Events

- Sponsored, co-sponsored, and participated in numerous community activities and events throughout the City's watersheds that involved stormwater management and watershed protection issues and actions. Over 17,000 people took part in these activities.

Citywide Focus Groups

- In June 2010, a BES contractor conducted four focus groups (two on the east side and two on the west side of the City) to evaluate the current level of public awareness and understanding of the work BES does and identify public recommendations for future BES priorities. Participants were ratepayers with a wide range of ages and occupations. The data analysis and report were completed in July/August 2010. Key findings included:
  - Participants identified the improvement of water quality as an environmental issue the City of Portland should be addressing in the next 5 to 10 years.
  - When asked to rate how important it is for the City to address nine environmental issues, participants gave the highest rating to improving water quality.

- Participants appear to have understood the message that individuals contribute to water pollution.

Regional Coalition for Clean Rivers and Streams

- In spring 2011, the coalition conducted an online survey of community members in the Portland-Vancouver metropolitan area to assess the public's awareness of the impacts individuals have on water quality, their behaviors, and motivations for change. The survey included questions about the health and water quality of local rivers and streams, what individuals can do to maintain water quality, what behavior changes responders made within the last year, and what actions responders took in the past year (e.g., planting trees, disconnecting downspouts, building rain gardens). About 1,090 people completed the survey. Key findings included:
  - 74% felt informed about what they can do to maintain the health and water quality of rivers and streams.
  - 70% rated their household as good or very good at doing what they can to maintain water quality.
  - 55% said they made some (48%) or a significant (7%) change in the last year to protect the health and quality of local rivers and streams.

Publications and Signage

- Included inserts in City water/sewer bills:
  - June-Nov 2010: GreenBucks bill insert was distributed to 214,000 account holders. GreenBucks allows ratepayers to add $1, $3, or $5 to their bills to help maintain sustainable stormwater management facilities at schools that serve Portland students.
  - Dec/Jan/Feb 2011: A bill insert titled "Rain - Floodplains, Watersheds, Clean Rivers" was distributed to 214,000 account holders.
  - March/April/May 2011: A Regional Coalition bill insert titled "Don't Be a Water Hazard" with information and tips regarding stormwater runoff was distributed to 214,000 account holders.

- Updated and posted fact sheets, brochures, and educational materials on the BES website about Sustainable Stormwater Management and the Treebate program. The materials included information about the Green Streets Stewards Program, Treebate incentive for planting yard trees, ecoroof incentive for installing an ecoroof, ecoroof program activities, volunteering for watershed health projects, and how to install rain gardens and disconnect downspouts for onsite watershed management. Over the permit year, the Treebate web pages recorded 5,004 page views, and the Sustainable Stormwater Program pages recorded 248,246 views.

- Launched the Green Street Steward Program, a community involvement program that allows volunteers to adopt a Green Street and partner with the City in Green Street care and maintenance. The program conducted neighborhood workshops and developed educational and outreach materials, advertising, and a website where residents, businesses and community groups can register and download information.

- Distributed a variety of educational materials at community meetings and events.

Eco-logical Business Program

- Continued to work with the Regional Pollution Prevention Outreach Team for the Portland metropolitan region to certify automotive repair and service shops and landscape service businesses. By the end of FY10-11, 39 automotive shops and 18 landscape service businesses were certified in the City of Portland. In addition, the program was expanded into the car washing sector; program materials and checklists were provided to businesses, and 3 car washers were newly certified.

- Continued a promotional campaign to raise awareness and communicate the importance of supporting businesses that operate environmentally responsible business practices. The campaign used newspapers, the Redirect Guide, the Chinook Book, and local news advertising to promote the Eco-Logical Business message.

- Continued participation in local environmental and neighborhood events, including the annual sustainability fair and the greener home and garden show, to promote use of certified automotive and landscape services businesses.

BEST Business Center

- The BEST Business Center assists Portland businesses with resources and information to help them green their operations. The center is run by the Bureau of Planning and Sustainability, in partnership with the Portland Water Bureau, Bureau of Environmental Services, Bureau of Transportation, Metro, Portland General Electric, Pacific Power, and the Energy Trust of Oregon. BEST conducted on-site assessments for 76 businesses this year.

- The BEST Business Center administers the annual BEST Awards, which recognize Portland's most sustainable businesses. Seven businesses received the BEST Award for their efforts to reduce waste and toxics, conserve energy, develop green products and services, and promote sustainable food systems.

- The BEST Business Center also administers an award called Portland Climate Champions to recognize businesses that have taken measurable steps to reduce their greenhouse gas emissions through energy efficiency, renewable power, transportation incentives, water conservation, recycling and waste prevention. To date, 32 businesses have been certified.

ET-2: Conduct employee training to ensure that UICs on public property are designed, constructed, operated, and closed in ways that meet WPCF permit requirements and protect groundwater.

2.4.2 ET-2: Key Accomplishments for FY10-11

- Continued to educate employees on groundwater protection and permit requirements.
- Continued to develop employee training and public education.
- Provided ongoing coordination with BES Source Control. Responded to UIC site-specific questions and programmatic issues related to *Stormwater Management Manual* review and implementation.
- Conducted training for new duty officer staff on the BES spill response hotline and staff response duties.

2.4.3 ET-2: Projected Main Activities for FY11-12

- Continue to develop information focused on groundwater protection and UICs for City staff.
- Continue to coordinate with BES engineering and construction groups to identify any UIC process issues and data gaps.
- Continue to coordinate with BDS development review staff on UIC design standards and on the review and approval process for UICs registered on private property.
- Continue to work with other bureaus to coordinate with and provide training on source control, operations and maintenance, spill prevention and response, and development review.
- Continue evaluation of existing training approaches and schedules and revise/update as needed.

2.5 Operations and Maintenance (OM)

Operations and maintenance BMPs for City UICs are important in order to both remove pollutants from UICs (e.g., UIC cleaning) and prevent pollutant discharges into UICs (e.g., street sweeping). This BMP category identifies O&M practices both for UICs located in City-managed rights-of-ways and for UICs on other City-owned property. It fulfills the WPCF permit requirement to implement an O&M Plan for public UICs.

OM-1: Implement operations and maintenance practices to remove or prevent pollutants from entering public UICs located in City-managed rights-of-ways and on other City-owned property.

2.5.1 OM-1: Key Accomplishments for FY10-11

Facility Maintenance

- Implemented the UICMP *Operations and Maintenance Plan*.
- Continued discussions with other City bureaus to standardize operations and maintenance procedures for UICs on City property, based on the O&M templates established in the City's *Stormwater Management Manual*.
- Made inlet inspection/maintenance visits to 347 locations citywide (multiple visits to some locations after major rain events). (This number includes, but is not limited to, UIC-specific visits.)
- Cleaned approximately 12,388 inlets (citywide).
- Cleaned 852 sedimentation manholes and UICs.
- Repaired or constructed 126 inlets and 2,174 linear feet of culvert (citywide).
- Continued to implement retrofits to the existing storm drainage system, as identified during routine operations and maintenance activities. Completed conversion of a total of 1,715 linear feet from ditches to swales or porous shoulders (citywide).
- Continued to evaluate UIC stormwater quality monitoring data to evaluate the relationship between stormwater quality, maintenance frequency, and traffic volumes.

Street Sweeping

- Swept major arterials six times during the year.

Portland Bureau of Transportation Maintenance Operations (PBOT Maintenance Operations) BMPs

- Continued to implement BMPs within the right-of-way to protect water quality, including:
  - Following ODOT's *Routine Road Maintenance Water Quality and Habitat Guide Best Management Practices.*
  - Using the trenchless liner repair system.
  - Using bio-pillows for sediment control on impervious surfaces to trap sediment during all sediment-disturbing activities.
  - Using low-disturbance sign installation methods to avoid or minimize digging.

- Using mild cleaners, with no solvents, to clean signs.
- Monitoring weather conditions during asphalt grinding
- Hand-applying asphalt where necessary to prevent these materials from entering the storm drain system
- Using water-based asphalt emulsions and biodegradable asphalt release agents.

- Continued to pilot test alternative methods, products, and practices to reduce pollutant discharges. This fiscal year, started to use a biodegradable bar oil for chainsaws to reduce environmental impacts.

Site-specific O&M actions conducted as a response action are discussed in Section 4: Evaluation and Response.

2.5.2 OM-1: Projected Main Activities for FY11-12

- Continue to use UIC stormwater quality monitoring data to evaluate the relationship between stormwater quality, maintenance frequency, and traffic volume. Where appropriate, adjust current O&M Plan maintenance schedules and targets.

- Continue to standardize operations and maintenance procedures for UICs on City property, based on the O&M templates established in the *Stormwater Management Manual*. Develop applicable tracking systems.

2.6 Policy and Regulation (PR)

The development of policies, codes, and administrative rules is a key element in providing long-term protection of groundwater. This BMP category includes City initiatives, such as policies that promote the implementation of green streets as alternatives or retrofits for UICs, as well as code and administrative rules pertaining to groundwater protection.

PR-1: Review and modify City policies, codes, and regulations to enhance groundwater protection.

2.6.1 PR-1: Key Accomplishments for FY10-11

Development Review Process and UICs

- Continued evaluation of the review and approval process for private UICs, identifying issues and process gaps and identifying strategies for a more streamlined and consistent registration process for both public and private UICs.

Policy Initiatives

- As required by the permit, the City submitted the *UIC Management Plan Five Year Review Report* to DEQ on November 1, 2010. The review determined that the UICMP is functioning effectively and continues to meet the management goals of the City's UIC Program. As a result, no new policy initiatives occurred in FY 10-11.

- There are inconsistencies between water supply well construction rules and UIC rules. The City will resume discussions with the Oregon Water Resources Department (OWRD) and DEQ about this issue when those agencies initiate revisions to the UIC rules.

Regional Coordination

- The City participated in the ACWA (Association of Clean Water Agencies) Groundwater Committee and participated in the DEQ regional WPCF permit template development process.

Stormwater Management Manual Revision

- The last revision of the *Stormwater Management Manual* occurred in October 2008. UIC updates or changes will be provided for the next revision.

Land Acquisition

- The Johnson Creek Willing Seller Program acquired approximately 0.41 acre of floodplain property in FY 10-11. Since June 1997, the program has purchased a total of approximately 142 acres. Much of the property that has been acquired as part of this program is located in areas of shallow groundwater and adjacent to identified Category 2 and Category 3 UICs.

- The Grey to Green Land Acquisition Program acquired 213 acres of natural area.

2.6.2 PR-1: Projected Main Activities for FY11-12

- Participate in the UIC rules revision process (OAR 340-044 and 340-071) when initiated by DEQ and OWRD.

- Continue to coordinate the review and approval process for private UIC registrations and development issues.

3 System Monitoring

The System Monitoring program element involves ongoing UIC monitoring activities conducted to demonstrate that UICs are operated in a manner that meets WPCF permit requirements and protects groundwater as a drinking water resource. System Monitoring includes two types of monitoring:

- Stormwater discharge monitoring of a representative subset of UICs, as identified in the *Stormwater Discharge Monitoring Plan* (SDMP). This is subsequently referred to as compliance monitoring.

- Monitoring to determine the effectiveness of BMPs in controlling pollutant discharges to UICs and to identify technologies that can be used to improve stormwater quality or successfully implement corrective actions, as identified in the *BMP Monitoring Program*.

3.1 Compliance Monitoring

3.1.1 Key Accomplishments for FY10-11

- Submitted year 6 (October 2010 – 2011) UIC compliance and supplemental monitoring locations to DEQ on September 1, 2010. Supplemental monitoring locations were selected to assess the quality of stormwater discharged to UICs located near commercial and industrial facilities.

- Implemented year 6 stormwater compliance and supplemental monitoring. Forty-five UIC locations were sampled in year 6 and tested for common and priority pollutants as defined by the permit.

- Compiled and evaluated year 6 stormwater data. Notified DEQ of year 6 annual mean concentration exceedances of the permit's maximum allowable discharge limits (MADLs) on June 23, 2011.

- Prepared and submitted the *Annual Stormwater Discharge Monitoring Report – Year 6 – October 2010 – May 2011* to DEQ (July 15, 2011). The report results are summarized in Section 3.1.2, below

- Performed a preliminary stormwater discharge trend analysis for the 6 years of data, using box plots to identify potential differences in pollutant concentrations. Preliminary results are summarized in Section 3.1.2, below.

- Prepared and submitted year 7 (October 2011 – May 2012) UIC monitoring locations to DEQ on August 25, 2011, including 30 compliance monitoring locations selected in accordance with the SDMP. Because of annual geometric mean exceedances for pentachlorophenol and

di(2-ethylhexyl)phthalate (DEHP) MADLs, four additional sites from year 6 will be sampled again in year 7.

3.1.2 UIC Stormwater Year 6 Monitoring Summary

The City of Portland's UIC compliance monitoring program was implemented in accordance with the final SDMP. The monitoring program was designed to be representative of the estimated 9,000 City-owned/operated UICs. Five sampling events were completed, as required by the permit, between October 2010 and May 2011. Stormwater samples from discharges to City-owned UICs were analyzed for common pollutants and priority pollutants derived from the analytical methods for common pollutants, as defined by the permit. Field and laboratory data collected during year 6 met the data quality objectives defined in the SDMP.

Forty-five UIC locations, stratified based on estimated traffic volume (>1,000 vehicle trips per day [TPD] and <1,000 TPD), were sampled in year 6, as follows:

- Thirty UICs selected to implement the year 6 compliance monitoring (i.e., monitoring network) described in the SDMP:
  - Panel 1 (15 rotating UIC locations sampled in permit years 1 and 6)
  - Panel 6 (15 fixed UIC locations sampled in permit years 1 through 10)

- Five sites carried over from year 5 because of annual MADL exceedances.

- Ten supplemental UICs located near commercial and industrial facilities.

Year 6 Results [3]

- All of the 14 common pollutants and one priority pollutant analyte (2,4-D) were detected in year 6.

- Four common pollutants—pentachlorophenol (PCP), di(2-ethylhexyl)phthalate [DEHP], benzo(a)pyrene [B(a)P], and lead—were detected in year 6 at concentrations above their respective MADLs in at least one sample. Detected concentrations of other common and priority pollutant analytes were below their respective MADLs. The City reported MADL exceedances to DEQ, as required by the permit.[4]

- All 26 ancillary pollutants (i.e., pollutants detected using the analytical methods for common pollutants) were detected at low concentrations. The nine ancillary pollutants detected at the highest frequencies (greater than 50 percent) for individual sampling events are polycyclic aromatic hydrocarbons (PAHs): chrysene, phenanthrene, naphthalene, pyrene,

[3] A full discussion of monitoring methodology and results can be found in the *Annual Stormwater Discharge Monitoring Report – Year 6* (July 2011).

[4] Actions taken in response to individual MADL exceedances are reported in Section 4.5: Response Actions.

benzo(a)anthracene, benzo(b)fluoranthene, benzo (g,h,i)perylene, fluoranthene, and indeno (1,2,3-cd)pyrene.

Annual Mean Concentrations

- Annual mean concentrations were calculated for pollutants that were detected during individual sampling events at concentrations >50 percent of the MADL. Theoretically, the mean concentration cannot exceed the MADL if detected concentrations during the five individual sampling events are <50 percent of the MADL.

- Annual geometric mean concentrations for nine UIC locations exceeded the MADL for at least one constituent. Eight of the nine UIC locations exceeded the MADL for pentachlorophenol (1.0 µg/L); four of these eight UICs also exceeded the MADL for DEHP (6.0 µg/L). The remaining UIC exceeded only the MADL for benzo(a)pyrene (0.2 µg/L). Annual geometric means for UICs exceeding a MADL were from 1.02 to 2.24 µg/L for pentachlorophenol; 6.09 to 7.09 µg/L for DEHP; and 0.32 µg/L for benzo(a)pyrene. All were slightly above their respective MADLs.

- The WPCF permit requires the City to identify UICs in which the annual geometric mean concentration exceeds the MADL for two consecutive years as Category 4 UICs.[5] Five UICs exceeded a MADL for one constituent for a second consecutive year. Of these, four exceeded the MADL for PCP and one exceeded the MADL for benzo(a)pyrene. One UIC (P6_1) that exceeded the MADL for PCP was previously identified as a Category 4 UIC in Year 2 and has continued to exceed the MADL in Years 2 through 6. The remaining four locations (P5_15, SP4_2, SP4_10, and P5_5) are new Category 4 UICs and will move forward for corrective action.

- The remaining four UICs had geometric means that exceeded the MADL for a constituent for the first time in Year 6: one for PCP (SP5_2) and three for both PCP and DEHP (P1_10, SP5_9, and SP5_10).

- Annual geometric mean concentrations for arsenic and lead were less than their respective MADLs.

Preliminary Trend Analysis

Years 1 through 6 pollutant concentration data were compared using box plots. Box plots were prepared to identify potential differences in pollutant concentrations between:

- Permit years (year 1, year 2, year 3, year 4, year 5, year 6)
- Traffic categories (<1,000 TPD, ≥1,000 TPD)
- Sample panels (Panel 1, Panel 6, supplemental panel [SP5]).

[5] Category 4 UICs are those UICs that become non-compliant by failing to meet the annual mean MADL within one wet season after the exceedance or failing to satisfy any groundwater protection conditions of Schedule A of the permit.

- In general, the box plots prepared for years 1, 2, 3, 4, 5, and 6 data are very similar for each variable. For the pollutants evaluated (lead, arsenic, PCP, DEHP, and benzo(a)pyrene), most concentration ranges for annual medians and geometric means were generally narrow, and most concentrations of the evaluated compounds were <50 percent of their respective MADLs. Pollutant concentrations appear to be slightly higher in the ≥1,000 TPD traffic category than in the <1,000 TPD category and very similar among sample panels.

Response Actions

Section 4 summarizes the actions taken during the year 6 wet season (October 2010 – May 2011) to further understand pollutant sources, prevent pollutants of concern from exceeding respective MADLs, and respond to conditions identified during implementation of the stormwater discharge monitoring program. These actions are discussed in the *Annual Stormwater Discharge Monitoring Report – Year 6* (July 2011).

3.1.3 Projected Main Activities for FY11-12

- Select UIC locations for year 7 monitoring (i.e., Panels 2, 6, and SP6). (UIC locations were submitted to DEQ on September 1, 2010.)

- Implement year 7 UIC compliance monitoring in accordance with the SDMP.

- Document, analyze, and report results of the 2011-2012 (year 7) stormwater monitoring in the *Annual Stormwater Discharge Monitoring Report – Year 7*. That report will be submitted to DEQ by November 1, 2012 (per DEQ Permit Action Letter dated July 14, 2011).

- Continue to work with DEQ to demonstrate through the SDMP-required compliance monitoring that discharges to public UICs meet permit MADLs and are protective of groundwater quality (see Section 4).

- Initiate planning and selection of year 7 compliance, year 6 carryover, if any, and supplemental panel stormwater monitoring locations.

- Notify DEQ of year 8 stormwater monitoring locations by September 1, 2012.

3.2 BMP Monitoring

The City continually evaluates BMP designs to ensure functionality, groundwater protection, and public safety. In addition, UIC water quality monitoring is used to confirm that structural and non-structural BMPs are meeting the requirements of the current WPCF permit and protecting groundwater.

3.2.1 Key Accomplishments for FY10-11

- Reviewed BMP designs for functionality, groundwater protection, and public safety.

3.2.2 Projected Main Activities for FY11-12

- Continue to evaluate BMP designs for functionality, groundwater protection, and public safety.

4 Evaluation and Response

The Evaluation and Response program element uses data and information from System Management (e.g., UIC location, depth to groundwater) and System Monitoring (e.g., results of stormwater discharge monitoring) activities to assess UIC compliance status. It also defines the process and criteria used to identify, evaluate, and prioritize actions necessary to protect groundwater and meet permit requirements.

4.1 Decision Making Framework for Groundwater Protectiveness Demonstrations

During FY 07-08, a Groundwater Protectiveness Demonstration (GWPD) tool was developed by the City and approved by DEQ. This tool is a solute transport spreadsheet model that evaluates the reduction of stormwater pollutant concentrations entering the UIC by unsaturated soil before the infiltrated stormwater reaches groundwater. The tool is used to evaluate the fate and transport of pollutants in different geologic units by modifying the appropriate physical and chemical input parameters to characterize the properties of the geologic materials and pollutants.

In June 2008, the City submitted the *Decision Making Framework for Groundwater Protectiveness Demonstrations,* to DEQ, which includes the protocols for applying the GWPD tool to UICs that fall within four specific categories identified during permit negotiations and permit implementation:

- UICs with inadequate separation distance
- UICs located within permit-specified setbacks from domestic or public water wells
- UICs with stormwater concentrations exceeding permit-specified MADLs at end-of-pipe where stormwater enters the UIC
- UICs that have ubiquitous stormwater pollutants (e.g., PCP in stormwater)[6]

The decision making framework includes a groundwater fate and transport analysis, which demonstrates that identified domestic and public water wells located within permit UIC setbacks (i.e., Category 2 and Category 3 UICs, both non-compliant because of inadequate vertical separation distances) are protected pending the completion of corrective actions. DEQ approved

[6] Ubiquitous pollutants are defined as "pollutants frequently detected in stormwater as a result of their widespread, non-point source origin, such as PCP associated with treated wood utility poles found throughout the urban environment" (*Ubiquitous Pollutants Groundwater Protectiveness Demonstration,* submitted to DEQ July 17, 2008). They have also been defined as "a pollutant detected in the City's Year 1 and Year 2 Stormwater Discharge Monitoring Program at a detection frequency of > 75% and with a concentration of ≥50% of the MADL (*Decision Making Framework for Groundwater Protectiveness Demonstrations,* submitted to DEQ July 19, 2008).

the *Decision Making Framework for Groundwater Protectiveness Demonstrations* on October 20, 2008.

The City applied the decision-making framework to evaluate the four categories identified above. As a result, the City received "no further action" (NFA) determinations for UICs identified within those categories. Specific details about the framework development and applications for NFAs can be found in *UICMP Annual Reports No. 3, 4, and 5* and in the reports listed in Table 1-2.

As part of this UICMP annual report, UICs that received an NFA designation in each of the four categories were reviewed to verify that the previous NFA decisions are still protective of groundwater and ensure that additional analyses do not need to be performed. The following key assumptions of the GWPD were used as the basis of the review:

- **Vertical separation distance:** Separation distances are calculated using the most current total UIC depth and USGS-generated depth to groundwater estimates for the Portland area. If the depth-to-groundwater estimates are revised or modified, separation distances must be recalculated, and the minimum 5-foot separation distance must be verified.
- **Results of the stormwater discharge monitoring program**: Results must be reviewed to ensure that:
    - Pollutants detected are similar in concentration and frequency of detection to those identified in Year 1 – Year 6 monitoring.
    - New pollutants of interest are not identified.
    - Significant increases in pollutant concentrations or pollutant concentration trends are not identified.

Sections 4.2 to 4.4 provide the results of this review.

4.2 Further Evaluation of UIC Separation Distance

The WPCF permit requires that UICs more than 5 feet deep must have a minimum separation distance of 10 feet between the bottom of the UIC and seasonal high groundwater. UICs less than 5 feet deep must have a minimum separation distance of 5 feet. See section 5.1 of this report for a current summary of UICs with inadequate vertical separation distance.

4.2.1 Decision Verification

During FY10-11, the City identified one new Category 3 UIC (APR303). Construction details are provided in Appendix B, Table B-4.

In addition, two more UICs (APS154, APQ382) were identified as Category 3 UICs as part of the September 1, 2011 quarterly update. Although these two locations were identified during FY11-12, they are discussed in this report to prevent any confusion concerning the complete list of Category 3 UICs. Construction details are provided in Appendix B, Table B-4.

Of the list of Category 3 UICs identified in *UICMP Annual Report No.5*, 33 have been removed through either the completion of a corrective action or determination of permit compliance (see Appendix B, Table B-3).

Section 5 of this report provides further details about the three new additions and the removal of 33 UICs from the Category 3 list, as well as the overall scope and schedule for the remaining Category 3 UICs.

For the 163 UICs previously identified as having a vertical separation distance between $\geq$ 5 feet and < 10 or located in a City of Portland park, and that previously received an NFA confirmation, the decision verification process was applied (as required annually, per the permit) through the steps below. (Refer to Appendix B of *Annual Report No.5* for the complete list of UICs that have received NFA confirmation.)

- **Verification of vertical separation distance:** USGS depth to groundwater data were used in combination with existing construction information to calculate vertical separation distance between the bottom of the UIC and seasonal high groundwater. All locations previously identified as having > 5 feet and < 10 feet vertical separation distance were confirmed and are reported in section 5 of this report. All vertical separation distances are reported and updated as part of the UIC database quarterly updates.
- **Verification of stormwater discharge monitoring results:** In general, pollutants detected in year 6 monitoring are similar to detections, frequency, and concentration ranges in years 1 - 5. Common pollutants detected in years 1 - 6 data are generally at low concentrations and below their respective MADLs. Concentration ranges for pentachlorophenol, DEHP, and lead are similar for years 1 - 6. Concentrations are generally low and within narrow ranges at individual UIC locations. Concentrations for the $\geq$1,000 trips per day (TPD) traffic category appear to be slightly higher than the <1,000 TPD traffic category in years 1- 6.

  In year 6, the City identified the first UIC that was non-compliant for benzo(a)pyrene, but it was within levels outlined in the *Decision Making Framework for Groundwater Protectiveness Demonstrations* as protective of groundwater.

  For details, refer to *Annual Discharge Monitoring Report – Year 6 (October 2010 – May 2011)*.

4.2.2 Key Accomplishments for FY10-11

- Continued evaluation and selection of corrective action alternatives for UICs determined to be non-compliant with the permit (see Section 5).
- Identified and evaluated additional UICs with potential inadequate separation as new data became available. Performed compliance determinations on UICs identified to have potentially inadequate separation distance. Reported and prioritized newly identified Category 3 UICs to DEQ in accordance with the permit requirements (see Section 5).

4.2.3 Projected Main Activities for FY11-12

- Continue identification and evaluation of UICs as new data become available.
- Perform compliance determinations on any new UICs identified with potentially inadequate separation distance. Report and prioritize any newly identified Category 3 UICs to DEQ in accordance with the permit, as appropriate.
- Apply the protocols in the *Decision Making Framework for Groundwater Protectiveness Demonstrations* to any new UICs identified with vertical separation distances >5 feet to determine if groundwater is protected or corrective action is required.

4.3 Further Evaluation of Stormwater Pollutants Exceeding MADLs

The WPCF permit requires the City to notify and report stormwater discharges that exceed the MADLs defined in Table 1 of the permit. Notification and reporting requirements of individual stormwater event and annual mean MADL exceedances are described in the *Quality Assurance Project Plan* (QAPP; City of Portland, 2006). In addition, annual monitoring reports must include (per Permit Schedule B, Section 7) identification and discussion of any exceedance of an individual storm event MADL or annual mean MADL concentration, including:

(1) Any potential cause of the exceedance, to the extent practicable and if known; and

(2) Actions taken during the wet season to reduce the concentration of the pollutant of concern.

Actions taken to assess the potential cause of the exceedance were evaluated in general accordance with *UICER Guideline No. 2: MADL Exceedances* and are described below. Actions taken during the wet season to reduce concentrations are described as response actions in Section 4.5.

4.3.1 Decision Verification

Nine UICs were previously identified as Category 4 UICs and received NFAs based on groundwater protectiveness demonstrations. The decision verification process was applied through the following steps:

- **Verification of vertical separation distance:** USGS depth to groundwater data (as described in Section 4.2) were used in combination with existing construction information to calculate vertical separation distance between the bottom of the UIC and seasonal high groundwater for the seven Category 4 UICs with NFA designations. Based on the updated USGS depth to groundwater information, all nine locations still have >10 feet vertical separation distance and meet the conditions of the groundwater protectiveness demonstration.

- **Verification of stormwater discharge monitoring results:** In general, pollutants detected in year 6 monitoring are similar to detections, frequency, and concentration ranges in years 1 - 5. Common pollutants detected in years 1 - 6 data are generally at low concentrations and below their respective MADLs. Concentration ranges for pentachlorophenol, DEHP, and lead are similar for years 1 - 6. Concentrations are generally low and within narrow ranges at individual UIC locations. Concentrations for the ≥1,000 trips per day (TPD) traffic category appear to be slightly higher than the <1,000 TPD traffic category in years 1- 6.

  In year 6, the City identified the first UIC that was non-compliant for benzo(a)pyrene, but it was within levels outlined in the *Decision Making Framework for Groundwater Protectiveness Demonstrations* as protective of groundwater.

  For details, refer to *Annual Discharge Monitoring Report – Year 6 (October 2010 – May 2011)*.

4.3.2 Key Accomplishments for FY10-11

- Reported MADL exceedances to DEQ within 7 days following receipt of validated analytical data for five storm events. Forty-three sample concentrations from 14 UIC locations exceeded the MADL of 1.0 µg/L for PCP. Four individual sample concentrations from three UIC locations exceeded the MADL of 10 µg/L for lead. Seventeen individual sample concentrations from nine UIC locations exceeded the MADL of 6.0 µg/L for DEHP. Six individual sample concentrations from three UIC locations exceeded the MADL of 0.2 µg/L for benzo(a)pyrene.

- Four new Category 4 UICs were identified in FY10-11. Details are provided in the July 2011 *Annual Stormwater Discharge Monitoring Report – Year 6*.

4.3.3 Projected Main Activities for FY11-12

- Implement year 7 stormwater compliance monitoring, and report MADL exceedances in accordance with the permit and QAPP.

4.4 Further Evaluation of UICs near Domestic Wells

The WPCF permit requires that stormwater discharges meet the MADLs defined in Table 1 of the permit for UICs that are located:

- Less than 500 feet from a domestic well;
- Within a 2-year time of travel of a public water well; or
- Less than 500 feet from a public water well without a delineated time of travel.

Stormwater quality discharge limits established in the WPCF permit are designed to protect groundwater as a drinking water resource in accordance with OAR 340-040.

4.4.1 Decision Verification

Previously, 398 UICs were identified within the permit-specified setbacks from confirmed and unconfirmed drinking water wells. These locations have received NFAs based on groundwater protectiveness demonstrations. The decision verification process was applied through the following steps:

- **Verification of vertical separation distance:** USGS depth-to-groundwater data were used in combination with existing construction information to calculate vertical separation distance between the bottom of the UIC and seasonal high groundwater. Based on that information, 20 locations were identified with < 5 feet vertical separation distance and have been identified for corrective actions, as described in section 5. The remaining 378 locations were determined to have > 5 feet vertical separation distance and still meet the conditions of the groundwater protectiveness demonstration.

- **Verification of stormwater discharge monitoring results:** In general, pollutants detected in year 6 monitoring are similar to detections, frequency, and concentration ranges in years 1 - 5. Common pollutants detected in years 1 - 6 data are generally at low concentrations and below their respective MADLs. Concentration ranges for pentachlorophenol, DEHP, and lead are similar for years 1 - 6. Concentrations are generally low and within narrow ranges at individual UIC locations. Concentrations for the ≥1,000 trips per day (TPD) traffic category appear to be slightly higher than the <1,000 TPD traffic category in years 1- 6.

  The City identified the first UIC that was non-compliant UIC for benzo(a)pyrene, but within levels outlined in the *Decision Making Framework for Groundwater Protectiveness Demonstrations* as protective of groundwater.

  For details, refer to *Annual Discharge Monitoring Report – Year 6 (October 2010 – May 2011)*.

4.4.2 Key Accomplishments for FY10-11

- Completed corrective actions on all Category 2 UICs.

- Implemented corrective action engineering pre-design and design activities on Category 3 UICs identified as having inadequate separation distance and located near domestic wells.

4.4.3 Projected Main Activities for FY11-12

- Collect year 7 stormwater quality data. Compliance stormwater monitoring data will be used to evaluate the quality of stormwater entering UICs and confirm that groundwater is protected. Projected timeline: October 2011 – May 2012.

- Evaluate stormwater quality data. Continue evaluation of the results of the annual compliance monitoring program (described in the SDMP). Projected timeline: October 2011 – November 1, 2012.
  - Identify pollutants, if any, that exceed permit limits during individual sampling events or annual geometric mean concentration (see Section 4.3).
  - Verify the results of the *UICs within Permit-Specified Well Setbacks - Groundwater Protectiveness Demonstration – No Further Action Request.* This document was prepared by the City of Portland Bureau of Environmental Services and submitted to DEQ for approval in July 2008. DEQ's approval was obtained on October 6, 2008.

- Continue corrective action engineering design activities on Category 3 UICs identified as having inadequate separation distance and located near domestic wells. The City is actively evaluating corrective action alternatives for these UICs to provide adequate separation distance, meet permit requirements, and protect groundwater in accordance with OAR 340-040, which protects all groundwater as a drinking water resource. A detailed description of the City's efforts to address Category 3 UICs is provided in Section 5 of this report.

4.5 Response Actions

Response actions are intended to reduce elevated stormwater discharge concentrations at the surface in order to meet permit discharge limits. Meeting permit limits (i.e., MADLs) at the "end of pipe" demonstrates compliance with state and federal requirements for the protection of "underground sources of drinking water" and "waters of the state." Response actions are intended to be implemented in a timely manner and are considered interim in nature, until a final compliance determination is made or a final corrective action is implemented.

Implementation of *UIC Evaluation and Response Guidelines* (UICER) Nos. 1 through 8 (see UICMP - Appendix H) is considered to be applicable and appropriate response actions. UICER guidelines implemented since July 2010 are described in this section.

4.5.1 Key Accomplishments for FY10-11

- Implemented *UIC Evaluation and Response Guidelines* (UICER) No 2 in response to year 6 individual and annual mean MADL exceedances (see Section 3). During year 6 stormwater discharge monitoring, four common pollutants were detected during individual sampling events at concentrations above their respective MADLs: PCP, B(a)P, DEHP, and lead.

4.5.2 Projected Main Activities for FY11-12

- Implement actions, as needed and appropriate, in response to any year 7 individual stormwater discharge monitoring MADL exceedances, unusual conditions observed during UIC sampling, inspections, or citizen complaints.

5 Corrective Actions

The Corrective Actions program element addresses UICs that are determined to be non-compliant with WPCF permit requirements through the Evaluation and Response process. This program includes the processes used to evaluate, rank, select, and implement appropriate corrective actions. A variety of corrective actions are available, including options that do not involve construction (such as institutional controls or an assessment to demonstrate protectiveness), structural/ engineering controls, and UIC closure.

5.1 Summary of UICs with Inadequate Separation Distance

UICMP Annual Report No 3 identified 308 Category 3 UICs. That group included 186 Category 3 UICs with < 5 feet vertical separation distance that would require corrective action; 119 Category 3 UICs that received NFA designations through the use of a groundwater protectiveness demonstration (GWPD); and 3 locations determined to be compliant based on updated construction information. For a summary of UICs with inadequate separation distance prior to FY 09-10, refer to *UICMP Annual Report No 4*.

In early 2009, the USGS modified the depth to groundwater information for the City of Portland. As a result of that modification, the City identified changes to the list of Category 3 UICs reported in *UICMP Annual Report No.4*. Updated information was reported to DEQ through written correspondence titled *Changes to USGS Depth to Groundwater Data Modifications to Category 3 UIC List* (April 1, 2009). As a result of those changes, the prioritized Category 3 list of UICs with < 5 feet vertical separation distance was updated to 190 UICs.

Since *UICMP Annual Report No. 4,* two of the 190 UICs have been removed from the Category 3 list. Twenty-two UICs located in City of Portland parks have also received an NFA designation (October 21, 2009) through application of the GWPD. In FY10-11, 33 UICs were removed from the Category 3 list through either completion of a corrective action or determination of permit compliance (as discussed above in section 4.2.1). This leaves 134 Category 3 UICs that still require corrective action. The updated and prioritized list of Category 3 UICs is provided in Appendix B, Table B-2.

5.2 Category 2 UICs

The permit defines Category 2 UICs as those identified as non-compliant during the *Systemwide Assessment*. Twenty-nine (29) Category 2 UICs were identified and prioritized in *UICMP Annual Report No. 1* (December 2006). On February 25, 2010, the City received a one-year extension to the corrective action timeline. Under the new timeline, all Category 2 UIC corrective actions must be completed by November 1, 2011. As part of the permit modification to extend the completion timeline for Category 3 UICs, one of these Category 2 UICs (ADU751) was included with the Category 3 UICs and is to be completed by May 31, 2015. As of November 1, 2011, all corrective actions for remaining Category 2 UICs have been completed.

5.2.1 Key Accomplishments for FY10-11

- Completed corrective actions for all Category 2 UICs.

Appendix B, Table B-1 lists former Category 2 UICs and the completed corrective action.

5.2.2 Projected Main Activities for FY11-12

- Corrective actions have been completed for all Category 2 UICs. These locations are now in compliance, and no further activities are needed or planned. All future UICs identified for corrective actions will fall under the Category 3 status.

5.3 Category 3 UICs

The permit defines Category 3 UICs as those identified as non-compliant following completion of the *Systemwide Assessment*. The permit requires Category 3 corrective actions to be completed within three full CIP cycles following the annual report date for the reporting period in which the non-compliant public UICs are reported as discovered, or in accordance with a DEQ-approved regional corrective action. An updated Category 3 UIC list is provided in Appendix B (Table B-2). Specific changes to the Category 3 list are described in the following section.

5.3.1 Key Accomplishments for FY10-11

- Initiated design activities for Category 3 UICs, in accordance with the scope of the *Systemwide Assessment Follow-Up Actions* work plan.

- Removed 33 UICs from the Category 3 UIC list through either completion of corrective action or determination of permit compliance.

- Met with DEQ on a periodic basis to provide an overview of work completed to date and discuss next steps.

5.3.2 Eliminated Category 3 UICs

Thirty-three Category 3 UICs were removed from the corrective action list for the following reasons:

- Corrective actions were completed on 25 Category 3 UICs.

- Based on field investigation, it was discovered that ADP904 was previously abandoned as part of a pre-permit transportation project.

- ADW248 was determined to be under private ownership.

- Based on field investigations, depth values were confirmed at ACP672, ADU732, ADV125, ADV244, ANB177, ADT459. New depth values indicated locations with > 5 feet separation distance. Appendix B, Table B-4 provides the details.

These UICs are compliant with the permit and have been removed from the Category 3 list. Appendix B (Table B-3) lists these 33 UICs.

5.3.3 New Category 3 UICs

Three new Category 3 UICs have been identified since the last annual report (APR303, APS154, APQ382). These UICs were identified by field crews during routine system inspections. Based on measured depths, all three UICs were determined to have a separation distance of less than 10 feet between the lowest perforation of the UIC and seasonal high groundwater.

- Two of the UICs (APR303 and APQ154) have a separation distance of < 5 feet. They have been added to the list of Category 3 UICs that will receive corrective actions that will include retrofits to increase separation distance or decommissioning. Appendix B, Table B-4 summarizes these UICs.

- One UIC (APQ382) has been identified as having a separation distance > 5 feet. This location will be addressed through application of the *Decision Making Framework for Protectiveness Demonstration* discussed below in section 5.3.4.

5.3.4 Category 3 UICs – No Further Action Determinations

Because the new Category 3 UIC APQ382 was identified as having a vertical separation distance >5, the *Decision Making Framework* can be applied to receive NFA designation, using a protectiveness demonstration as the identified corrective action. NFAs are identified as appropriate corrective actions under Schedule D, Section 12(c) of the WPCF permit. The corrective action was selected in accordance with the Corrective Action Plan (BES 2006).

The following steps from the *Decision Making Framework* were applied:

1) Identify UICs of interest and summarize UIC characteristics. (Appropriate information is provided in Appendix B, Table B-4).

2) Determine if groundwater is protected.
    a. UICs with vertical separation distance < 5 feet have been identified and reported as Category 3 UICs (see section 5.3.3).
    b. Vertical separation distances are ≥5 feet and the following assumptions apply.
        i. UIC is managed (i.e., operated and maintained) under the City of Portland's permit.
        ii. UIC receives urban right-of-way runoff.
        iii. UIC construction is similar to that described in the Conceptual Site Model presented in section 7 of the *Decision Making Framework.*
        iv. Stormwater pollutant types concentration entering the UIC are represented by the pollutants identified in Table 4-2 of the *Decision Making*

Framework. For average stormwater pollutant types, refer to *Annual Stormwater Discharge Monitoring Report, Year 6*, July 2011.

The assumptions listed above are all true; therefore, groundwater is protected when the vertical separation distance is > 5 feet for UIC APQ382, and an NFA is warranted.

3) Decision documentation and verification:
    a. Appropriate UIC information is documented in Table B-4, and water quality information is documented in the *Annual Stormwater Discharge Monitoring Report, Year 6*, July 2011.

Decision verification for all Category 3 UICs will be reviewed on an annual basis and reported as part of the UICMP annual report. Verification of existing UICs that previously received NFAs is located is Section 4.2 of this report.

5.3.5 Projected Main Activities for FY11-12

- Continue design and implementation of corrective actions for the remaining 136 Category 3 UICs with separation distance < 5 feet (see Appendix B, Table B-2). Projected timeline: Complete by May 31, 2015.

- Meet with DEQ on a periodic basis to provide an overview of work completed to date and discuss next steps. Projected timeline: September 2011 – July 2012.

5.4 Category 4 UICs

The permit defines Category 4 UICs as those that become non-compliant by failing to meet the annual geometric mean MADL within one wet season after the exceedance or failing to satisfy any groundwater protection conditions of permit Schedule A.

5.4.1 Key Accomplishments for FY10-11

- Based on the results of the year 6 stormwater monitoring data, identified four new Category 4 UICs in year 6 (see Sections 3.1.2 and 4.3.2).

5.4.2 Summary of Category 4 UICs

Previously Identified Category 4 UICs (in Years 2 through 5)

UICs in which the annual mean concentration exceeds the MADL for two consecutive years are identified as Category 4 UICs. Tables 5-1, 5-2, and 5-3 list Category 4 UICs that were identified in years 2, 3, and 5. No Category 4 UICs were identified in year 4. Category 4 UICs are reported in the annual *Stormwater Discharge Monitoring Report*.

Table 5-1
Category 4 UICs Identified in Year 2

Location Code	Approximate Address	BES UIC No.	Traffic Category (TPD)	Estimated Separation Distance Between UIC and Groundwater (ft)	Year 1 Annual Geometric PCP Conc. (µg/L)	Year 2 Annual Geometric PCP Conc. (µg/L)
P1_1	6940 N. Macrum Ave.	AAG769	< 1000	73	1.1	1.2
P6_1	3500 SE 112th Ave.	ADW577	≥ 1000	64	1.2	1.0
P6_7	608 NE 87th Ave.	ADV645	< 1000	148	2.0	1.8
P6_14	4289 NE Prescott St.	ADQ252	≥ 1000	64	1.5	1.4

Table 5-2
Category 4 UICs Identified in Year 3

Location Code	Approximate Address	BES UIC No.	Traffic Category (Trips per Day)	Separation Distance [a] (ft)	Year 2 Annual Geometric Mean Pentachlorophenol Concentration (µg/L)	Year 3 Annual Geometric Mean Pentachlorophenol Concentration (µg/L)
P2_5	10150 SE Ankeny St.	ADR885	≥ 1,000	158	3.2	1.7
P2_13	4107 SE Reedway St.	ADU790	≥ 1,000	58	1.9	1.1
P2_14	8409 N. Woolsey Ave.	AAH289	≥ 1,000	55	2.5	1.3

a The estimated separation distance is defined as the approximate depth in feet from the bottom-most perforation in the UIC to the approximate seasonal-high groundwater level. The bottom-most perforation is defined as the bottom of the UIC minus 2 feet. Two feet were added to all separation distance calculations to account for the standard depth of the sediment trap ring on standard City UIC design.

Table 5-3
Category 4 UICs Identified in Year 5

Location Code	Approximate Address	BES UIC No.	Traffic Category (Trips per Day)	Separation Distance [a] (ft)	Year 4 Annual Geometric Mean Pentachlorophenol Concentration (µg/L)	Year 5 Annual Geometric Mean Pentachlorophenol Concentration (µg/L)
SP3_6	490 NE 133rd Ave.	ADS048	≥ 1,000	96	1.3	1.8
SP3_8	12198 SE Holgate Blvd.	ADW251	≥ 1,000	8	1.4	3.88

a The estimated separation distance is defined as the approximate depth in feet from the bottom-most perforation in the UIC to the approximate seasonal-high groundwater level. The bottom-most perforation is defined as the bottom of the UIC minus 2 feet. Two feet were added to all separation distance calculations to account for the standard depth of the sediment trap ring on standard City UIC design.

Corrective actions for the Category 4 UICs listed above were identified, evaluated, and selected in accordance with the *Corrective Action Plan* (CAP) (2006). The corrective action for these Category 4 UICs was a groundwater protectiveness demonstration (i.e., risk assessment), performed in accordance with *UICER Guideline No. 6: Groundwater Protectiveness Demonstration*. The groundwater protectiveness demonstrations were developed with DEQ input, and the final documents were reviewed and approved by DEQ (see Section 4.1).

DEQ issued an NFA determination for the four Category 4 UICs identified in year 2 on May 30, 2008. A copy of that letter is included in the *Decision Making Framework for Groundwater Protectiveness Demonstrations.*

The groundwater protectiveness demonstration for the three Category 4 UICs identified in year 3 and the two Category 4 UICs identified in year 5 were performed in accordance with the *Decision Making Framework for Groundwater Protectiveness Demonstration*. Based on the results of the analyses for year 3 and year 5 Category 4 UICs, it was determined that groundwater is protected and no further actions were warranted. The Groundwater Protectiveness Demonstrations and No Further Actions were submitted to DEQ for year 3 Category 4 UICs on March 30, 2009 and for year 5 Category 4 UICs on April 4, 2011.

Category 4 UICs Identified in Year 6

Following completion of the year 6 monitoring, four new Category 4 UICs were identified in year 6 (see Sections 3.1.2 and 4.3.2), as shown in Table 5-4. Corrective actions will be evaluated, selected, and implemented within three CIP cycles.

Table 5-4
Category 4 UICs Identified in Year 6

Location Code	Approximate Address	BES UIC No.	Traffic Category (Trips per Day)	Separation Distance [a] (ft)	Year 4 Annual Geometric Mean Pentachlorophenol Concentration (µg/L)	Year 5 Annual Geometric Mean Pentachlorophenol Concentration (µg/L)
P5_15	5190 N Vancouver Ave.	ADP960	≥ 1,000	129	2.69	2.24
SP4_2	8335 SE Division St.	ADP094	≥ 1,000	106	2.44	2.2
SP_4	10475 SE Division St.	ADW349	≥ 1,000	97	2.15	1.93
P5_5	10331 SE Clinton St.	ADW558	< 1000	84	0.25	0.324

a The estimated separation distance is defined as the approximate depth in feet from the bottom-most perforation in the UIC to the approximate seasonal-high groundwater level. The bottom-most perforation is defined as the bottom of the UIC minus 2 feet. Two feet were added to all separation distance calculations to account for the standard depth of the sediment trap ring on standard City UIC design.

5.4.3 Projected Main Activities for FY11-12

- Implement corrective actions for UICs identified as Category 4 UICs in FY 10-11.
- Move directly to corrective action, instead of monitoring for a second year, for the four UICs that had an annual geometric mean exceeding a MADL for the first time in year 6 (see Section 3.1.2).
- Evaluate whether any year 7 UICs will be identified as Category 4 UICs.

Appendix A
Public UICs Identified, Constructed, or Removed
FY10-11

Appendix A: Public UICs Identified, Constructed, or Removed FY10-11

Date UIC Reported	BES Unit ID	UIC DEQ ID	EPA UIC Classification	Current Status [1]	UIC Location	Traffic Volume	Pre-treatment Type	Action Type
9/1/2010	APL895	10102-9564	Class V Injection Well	AC	10151 NE WEIDLER ST	>1000	No Sed MH	Add
9/1/2010	APM442	10102-9565	Class V Injection Well	UC	10508 SE CLINTON ST	< 1000	Swale, Sed MH	Add
9/1/2010	APM098	10102-9566	Class V Injection Well	AC	9009 N FOSS AVE	>1000	No Sed MH	Add
9/1/2010	APM099	10102-9567	Class V Injection Well	AC	9009 N FOSS AVE	>1000	No Sed MH	Add
9/1/2010	APM263	10102-9568	Class V Injection Well	AC	6300 N ALBINA AVE	N/A	No Sed MH	Add
9/1/2010	APM306	10102-9569	Class V Injection Well	AC	6301 N KERBY AVE	N/A	No Sed MH	Add
9/1/2010	APM307	10102-9570	Class V Injection Well	AC	6301 N KERBY AVE	N/A	No Sed MH	Add
9/1/2010	APM308	10102-9571	Class V Injection Well	AC	6300 N ALBINA AVE	N/A	No Sed MH	Add
9/1/2010	APM309	10102-9572	Class V Injection Well	AC	6301 N KERBY AVE	N/A	No Sed MH	Add
9/1/2010	APM312	10102-9573	Class V Injection Well	AC	6301 N KERBY AVE	N/A	No Sed MH	Add
9/1/2010	APM313	10102-9574	Class V Injection Well	AC	6301 N KERBY AVE	N/A	No Sed MH	Add
9/1/2010	APM314	10102-9575	Class V Injection Well	AC	6301 N KERBY AVE	N/A	No Sed MH	Add
9/1/2010	APM315	10102-9576	Class V Injection Well	AC	6301 N KERBY AVE	N/A	No Sed MH	Add
9/1/2010	APM316	10102-9577	Class V Injection Well	AC	6301 N KERBY AVE	N/A	No Sed MH	Add
9/1/2010	APM317	10102-9578	Class V Injection Well	AC	6125 N KERBY AVE	N/A	No Sed MH	Add
9/1/2010	APM887	10102-9579	Class V Injection Well	AC	6937 NE CLAREMONT AVE	< 1000	No Sed MH	Add
9/1/2010	APM888	10102-9580	Class V Injection Well	AC	6937 NE CLAREMONT AVE	< 1000	No Sed MH	Add
9/1/2010	APM889	10102-9581	Class V Injection Well	AC	6937 NE CLAREMONT AVE	< 1000	No Sed MH	Add
12/1/2010	AMX875	10102-9582	Class V Injection Well	PA	8439 NE COLUMBIA BLVD	>1000	No Sed MH	Add
12/1/2010	APN853	10102-9583	Class V Injection Well	AC	5516 SE 72ND AVE	< 1000	No Sed MH	Add
12/1/2010	APN854	10102-9584	Class V Injection Well	AC	8219 NE GLISAN ST	>1000	No Sed MH	Add
12/1/2010	APN855	10102-9585	Class V Injection Well	AC	6700 SE HARNEY ST	< 1000	No Sed MH	Add
12/1/2010	APN856	10102-9586	Class V Injection Well	AC	6700 SE HARNEY ST	< 1000	No Sed MH	Add
12/1/2010	R00214	10102-9587	Class V Injection Well	UC	NE 97th Ave - 175' S of NE Glisan St	< 1000	Swale	Add
12/1/2010	R00215	10102-9588	Class V Injection Well	UC	NE 97th Ave - 175' S of NE Glisan St	< 1000	Swale	Add
12/1/2010	APN373	10102-9589	Class V Injection Well	AC	9018 SE DIVISION ST	>1000	No Sed MH	Add
12/1/2010	APN752	10102-9590	Class V Injection Well	AC	10130 N PORTLAND RD	>1000	Sed MH	Add
3/1/2011	APN274	10102-9591	Class V Injection Well	AC	12347 SE BOISE ST	< 1000	Swale	Add
3/1/2011	APN291	10102-9592	Class V Injection Well	AC	12347 SE BOISE ST	< 1000	Swale	Add
3/1/2011	APN296	10102-9593	Class V Injection Well	AC	12347 SE BOISE ST	< 1000	Swale	Add
3/1/2011	APN305	10102-9594	Class V Injection Well	AC	12347 SE BOISE ST	< 1000	Swale	Add
3/1/2011	APN322	10102-9595	Class V Injection Well	AC	3931 SE 125TH AVE	< 1000	Sed MH	Add
3/1/2011	APP143	10102-9596	Class V Injection Well	UC	2446 SE 87TH AVE	< 1000	Sed MH	Add
3/1/2011	APP144	10102-9597	Class V Injection Well	UC	2446 SE 87TH AVE	< 1000	Sed MH	Add
3/1/2011	R00225	10102-9598	Class V Injection Well	UC	5513 N MARYLAND AVE	< 1000	Swale	Add
3/1/2011	R00226	10102-9599	Class V Injection Well	UC	NE THOMPSON ST & NE 48TH AVE	>1000	Planter, Sed MH	Add
3/1/2011	R00227	10102-9600	Class V Injection Well	UC	NE SANDY BLVD & NE 60TH AVE	>1000	Planter, Sed MH	Add

Appendix A: Public UICs Identified, Constructed, or Removed FY10-11

Date UIC Reported	BES Unit ID	UIC DEQ ID	EPA UIC Classification	Current Status [1]	UIC Location	Traffic Volume	Pre-treatment Type	Action Type
3/1/2011	R00228	10102-9601	Class V Injection Well	UC	NE SISKIYOU ST & NE 64TH AVE	< 1000	Planter, Sed MH	Add
3/1/2011	R00229	10102-9602	Class V Injection Well	UC	NE 81ST AVE & NE SANDY BLVD	>1000	Planter, Sed MH	Add
3/1/2011	R00230	10102-9603	Class V Injection Well	UC	NE MADSON ST & NE SANDY BLVD	>1000	Planter, Sed MH	Add
3/1/2011	R00231	10102-9604	Class V Injection Well	UC	NE SANDY BLVD & NE 73RD AVE	>1000	Planter, Sed MH	Add
3/1/2011	R00232	10102-9605	Class V Injection Well	UC	NE 74TH AVE & NE SANDY BLVD	>1000	Planter, Sed MH	Add
3/1/2011	R00233	10102-9606	Class V Injection Well	UC	NE 76TH AVE & NE SANDY BLVD	>1000	Planter, Sed MH	Add
3/1/2011	R00234	10102-9607	Class V Injection Well	UC	NE FAILING ST & NE SANDY BLVD	< 1000	Planter, Sed MH	Add
3/1/2011	R00235	10102-9608	Class V Injection Well	UC	8721 NE Beech St	< 1000	Sed MH	Add
3/1/2011	R00236	10102-9609	Class V Injection Well	UC	NE 81st Ave and NE Tillamook St	< 1000	Sed MH	Add
3/1/2011	R00237	10102-9610	Class V Injection Well	UC	NE Tillamook St and NE 81st Ave	>1000	Sed MH	Add
3/1/2011	R00238	10102-9611	Class V Injection Well	UC	NE Tillamook St and NE 81st Ave	>1000	Sed MH	Add
3/1/2011	R00239	10102-9612	Class V Injection Well	UC	5006 NE Simpson St	>1000	Sed MH	Add
3/1/2011	R00240	10102-9613	Class V Injection Well	UC	1710 SE 82ND AVE	>1000	Sed MH	Add
6/1/2011	R00242	10102-9615	Class V Injection Well	UC	9320 SE RAMONA ST	< 1000	Planter	Add
6/1/2011	R00243	10102-9616	Class V Injection Well	UC	10455 NE Fargo	< 1000	Sed MH	Add
6/1/2011	R00244	10102-9617	Class V Injection Well	UC	318 NE 97th Ave	< 1000	Planter, Swale	Add
6/1/2011	R00245	10102-9618	Class V Injection Well	UC	317 NE 97th Ave	< 1000	Planter, Swale	Add
6/1/2011	R00246	10102-9619	Class V Injection Well	UC	232 NE 97th Ave	< 1000	Planter, Swale	Add
6/1/2011	R00247	10102-9620	Class V Injection Well	UC	231 NE 97th Ave	< 1000	Planter, Swale	Add
6/1/2011	APQ255	10102-9621	Class V Injection Well	UC	12005 SE RAYMOND ST	< 1000	Sed MH	Add
6/1/2011	APQ254	10102-9622	Class V Injection Well	UC	12118 SE RAYMOND ST	< 1000	Sed MH	Add
6/1/2011	APQ223	10102-9623	Class V Injection Well	UC	12700 SE STEELE ST	< 1000	Sed MH	Add
6/1/2011	APQ256	10102-9624	Class V Injection Well	UC	5432 SE 118TH AVE	< 1000	Sed MH	Add
6/1/2011	APQ208	10102-9625	Class V Injection Well	UC	13100 SE RAYMOND ST	< 1000	Sed MH	Add
6/1/2011	APQ301	10102-9626	Class V Injection Well	UC	5016 SE 128TH AVE	>1000	Sed MH	Add
6/1/2011	APQ446	10102-9627	Class V Injection Well	UC	5109 SE 118TH AVE	< 1000	Sed MH	Add
6/1/2011	APQ462	10102-9628	Class V Injection Well	UC	13218 SE MALL ST	< 1000	Sed MH	Add
6/1/2011	APQ277	10102-9629	Class V Injection Well	UC	12419 SE ELLIS ST	< 1000	Sed MH	Add
6/1/2011	APQ507	10102-9630	Class V Injection Well	UC	12637 SE LONG ST	< 1000	Planter, Swale	Add
6/1/2011	APQ508	10102-9631	Class V Injection Well	UC	12637 SE LONG ST	< 1000	Planter, Swale	Add
6/1/2011	APQ513	10102-9632	Class V Injection Well	UC	7907 SE 46TH AVE	< 1000	Sed MH	Add
6/1/2011	APQ515	10102-9633	Class V Injection Well	UC	9703 SE CLAYBOURNE ST	< 1000	Sed MH	Add
6/1/2011	APQ211	10102-9634	Class V Injection Well	UC	5102 SE 132ND AVE	>1000	Sed MH	Add
6/1/2011	APQ469	10102-9635	Class V Injection Well	UC	12728 SE LONG ST	>1000	Sed MH	Add
6/1/2011	APQ470	10102-9636	Class V Injection Well	UC	12728 SE LONG ST	>1000	Sed MH	Add
6/1/2011	APQ485	10102-9637	Class V Injection Well	UC	5728 SE 99TH AVE	< 1000	Sed MH	Add
6/1/2011	APJ141	10102-9638	Class V Injection Well	AC	15610 SE EVERGREEN DR	< 1000	Sed MH	Add

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Date UIC Reported	BES Unit ID	UIC DEQ ID	EPA UIC Classification	Current Status [1]	UIC Location	Traffic Volume	Pre-treatment Type	Action Type
6/1/2011	APJ140	10102-9639	Class V Injection Well	AC	15610 SE EVERGREEN DR	< 1000	Sed MH	Add
6/1/2011	APR303	10102-9640	Class V Injection Well	AC	2542 SE 18TH AVE	< 1000	Sed MH	Add
6/1/2010	ADW248	10102-5879	Class V Injection Well	AC	12151 SE HAROLD ST	>1000	No Sed MH	Remove
6/1/2010	ADV247	10102-6197	Class V Injection Well	AC	3900 SE 170TH AVE	< 1000	No Sed MH	Remove
6/1/2010	ADW536	10102-7029	Class V Injection Well	AC	2731 SE 84TH AVE	< 1000	No Sed MH	Remove
9/1/2010	APJ146	10102-9261	Class V Injection Well	AC	800 NW 6TH AVE	>1000	No Sed MH	Remove
12/1/2010	ANA733	10102-861	Class V Injection Well	AC	8790 NE DYER ST	< 1000	No Sed MH	Remove
3/1/2011	ADW675	10102-6686	Class V Injection Well	AC	2835 SE 174TH AVE	>1000	No Sed MH	Remove
3/1/2011	ADW550	10102-7055	Class V Injection Well	AC	10156 SE DIVISION ST	>1000	No Sed MH	Remove

[1] AC = in service; UC = under construction; unkn = unknown

Appendix B
Category 2 and 3 UIC Status

Table B-1: Category 2 UIC Prioritization and Status

UIC Compliance Category	Previous Non-Compliant Condition	Hansen UIC Node Number	Location [1]	Completed Corrective Action
2	Separation Distance	ADU741	13100 SE RAYMOND ST	UIC abandoned
2	Separation Distance	ADT737	6300 SE 142ND AVE	UIC converted to manhole with discharges directed to surface infiltration facilities
2	Separation Distance	AMR712	6300 SE 142ND AVE	UIC converted to manhole with discharges directed to surface infiltration facilities
2	Separation Distance	ADT686	12210 SE ELLIS ST	UIC shallowed increasing separation distance to 5 feet.
2	Separation Distance	ACK372	5432 SE 118TH AVE	UIC shallowed to increase separation distance to 5 ft
2	Separation Distance	ADU737	12790 SE STEELE ST	UIC converted to manhole with discharges directed to horizontal perf pipe.
2	Separation Distance	ADW268	5201 SE 122ND AVE	UIC abandoned with discharge directed to horizontal perf pipe.
2	Separation Distance	ADS535	2704 SE 18TH AVE	UIC abandoned with discharge directed to surface infiltration facilities
2	Separation Distance	ADV195	11910 SE REEDWAY ST	UIC abandoned with discharge directed to surface infiltration facilities
2	Separation Distance	ADU739	12852 SE RAYMOND ST	UIC abandoned with discharge directed to horizontal perf pipe
2	Separation Distance	AMV633	13605 SE REEDWAY ST	UIC abandoned with discharge directed to horizontal perf pipe
2	Separation Distance	ADU730	5239 SE 112TH AVE	UIC abandoned with discharge directed to existing facilities
2	Separation Distance	ADU751	12204 SE STEELE ST	Corrective actions included with Category 3 UIC activities.
2	Separation Distance	AMX684	13220 SE MALL ST	UIC abandoned with discharge directed to horizontal perf pipe and surface infiltration facility.
2	Separation Distance	ADT695	12410 SE ELLIS ST	UIC shallowed to increase separation distance to 5 feet
2	Separation Distance	ADU742	4739 SE 128TH AVE	UIC converted to manhole with discharges directed to surface infiltration facilities
2	Separation Distance	ADU748	4680 SE 128TH AVE	UIC abandoned with discharge directed to horizontal perf pipe and surface infiltration facility.
2	Separation Distance	ADU747	12728 SE LONG ST	UIC abandoned with discharge directed to horizontal perf pipe and surface infiltration facility.
2	Separation Distance	ACP664	5704 SE 99TH AVE	UIC converted to manhole with discharge directed to horizontal perf pipe and surface infiltration facility.
2	Separation Distance	ADV128	5708 SE 99TH AVE	UIC converted to manhole with discharge directed to horizontal perf pipe and surface infiltration facility.
2	Separation Distance	ANA606	12048 SE RAYMOND ST	UIC converted to manhole with discharges directed to horizontal perf pipe.
2	Separation Distance	AMR769	11605 SE LONG ST	UIC shallowed to increase separation distance to 10 feet with additional discharges to surface infiltration facilities
2	Separation Distance	ADU745	12532 SE LONG ST	UIC converted to manhole with discharges directed to horizontal perf pipe.
2	Separation Distance	AMT956	5120 SE 118TH AVE	UIC converted to manhole with discharge directed to horizontal perf pipe and surface infiltration facility.
2	Separation Distance	ADU746	4680 SE 127TH AVE	UIC abandoned with discharge directed to surface infiltration facilities
2	Separation Distance	ADT427	4118 SE 132ND AVE	UIC shallowed to increase separation distance to 10 feet with additional discharges to surface infiltration facilities
2	Separation Distance	AMP310	13915 SE REEDWAY ST	UIC abandoned with discharge directed to horizontal perf pipe
2	Separation Distance	ACZ265	7891 SE 46TH AVE	UIC shallowed to increase separation distance to 10 feet with installation of additional shallow UIC.
2	Separation Distance	ADT990	9703 SE CLAYBOURNE ST	UIC shallowed to increase separation distance to 10 feet with additional discharges to surface infiltration facilities and horizontal perf pipe.

Notes:

[1] Addresses are not considered precise location information and are subject to change as city staff better describe the physical UIC locations relative to nearby properties.

Table B-2 : Prioritized Category 3 UICs with < 5 feet Vertical Separation Distance

UIC Compliance Category	Non-compliant Condition	Hansen UIC Node Number	Location [1]	Hansen UIC Depth (ft) [2]	Sedimentation Manhole (yes/no)	Predominant Land use	Estimated Traffic Count	Separation Distance (ft)	Distance to Nearest Well (ft) [3]	Within 2 year time of travel (yes/no)	UIC Priority [4]	Target Compliance Date [5]	Anticipated Corrective Action [6]	FY10-11 Project Status	FY11-12 Planned Activities
3	Separation Distance	ADW304	11741 SE FOSTER RD	19	No	IND	25775	2.5	1281	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW303	11501 SE FOSTER RD	19	No	IND	25775	-8.6	1249	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW312	11540 SE FOSTER RD	18	No	COM	25775	-6.6	1292	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANB179	6015 NE 80TH AVE	19.5	No	IND	6658	-7.0	2423	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ACQ013	11716 SE FOSTER RD	20	No	MFR	25775	4.0	1332	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV121	6200 SE 102ND AVE	30	Yes	IND	27607	-3.0	2461	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV974	10900 NE MARX ST	16.3	No	IND	1714	-2.0	1786	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANB185	6245 NE 80TH AVE	0	No	IND	2900	-27.3	1978	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW275	12150 SE HAROLD ST	22	No	COM	11646	-1.2	1160	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	AMR553	8100 SE CRYSTAL SPRINGS BLVD	30	Yes	IND	895	-12.9	1136	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANB182	6135 NE 80TH AVE	19.9	No	IND	2900	-16.0	2178	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ACK563	13600 SE HOLGATE BLVD	30	Yes	SFR	9961	-1.4	867	Yes	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ACK564	13600 SE HOLGATE BLVD	30	Yes	SFR	9961	-2.2	884	Yes	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT682	5803 SE 122ND AVE	27	Yes	IND	11133	-11.0	1615	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV204	5825 SE 122ND AVE	25	Yes	IND	11031	-6.1	1460	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV384	8111 NE HOLMAN ST	14	No	IND	2980	-10.1	2314	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW261	4919 SE 122ND AVE	21	No	MFR	12138	-0.2	756	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW313	5601 SE 122ND AVE	24	No	MFR	11400	-3.6	1181	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU768	13500 SE HOLGATE BLVD	30	Yes	SFR	4568	-10.1	1028	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU769	13600 SE HOLGATE BLVD	30	Yes	SFR	4568	-2.6	901	Yes	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV188	10310 SE ELLIS ST	22	No	SFR	1051	0.3	1322	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW264	5450 SE 114TH PL	0	No	SFR	3642	-5.2	419	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW286	3039 SE TOLMAN ST	30.2	No	SFR	1503	-2.1	3575	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	AMY402	11246 SE HAROLD ST	0	No	SFR	3295	-8.4	928	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANA587	13008 SE HOLGATE BLVD	0	No	SFR	4710	-15.3	894	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANA590	13250 SE HOLGATE BLVD	0	Yes	SFR	4710	-20.8	1024	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ST17A	STATION17, 848 N TOMAHAWK ISLAND DR	11	No	COM	0	-3.08	2882.35	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANA591	13250 SE HOLGATE BLVD	0	Yes	SFR	4710	-20.9	1027	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANA592	13250 SE HOLGATE BLVD	0	Yes	SFR	4710	-21.0	1031	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANA596	13033 SE HOLGATE BLVD	0	No	SFR	4710	-16.1	928	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANA889	11305 SE HAROLD ST	0	No	SFR	3295	-8.0	920	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	AAC311	1445 NE MARINE DR	14.9	No	SFR	11064	-4.0	567	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	AAV769	4022 NE 142ND AVE	0	No	SFR	220	-0.6	809	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ACK562	13600 SE HOLGATE BLVD	30	Yes	SFR	9961	-0.6	849	Yes	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT454	12830 SE HOLGATE BLVD	20.3	Yes	SFR	5035	0.0	1045	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT475	4241 SE 136TH AVE	27	Yes	SFR	10104	-7.6	798	Yes	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT690	12221 SE REEDWAY ST	27	Yes	MFR	11400	-7.0	1308	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT730	14037 SE FOSTER RD	30	Yes	SFR	14500	2.0	780	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV203	5918 SE 122ND AVE	30	Yes	MFR	10908	0.7	1096	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW321	5732 SE 122ND AVE	20	No	MFR	11195	-3.0	1544	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	AMX688	4406 SE 136TH AVE	22.75	Yes	SFR	9961	-3.6	647	Yes	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANA899	1801 NE MARINE DR	10	No	SFR	11064	1.0	1196	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANA900	1839 NE MARINE DR	10.2	No	SFR	11064	1.7	1196	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ACK560	13500 SE HOLGATE BLVD	30	Yes	SFR	4568	-10.4	1031	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT455	4332 SE 130TH AVE	20	Yes	SFR	1606	1.0	1256	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT689	5544 SE 128TH AVE	30	Yes	SFR	1298	-6.3	1431	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT696	12319 SE RAMONA ST	20.2	Yes	MFR	1089	0.0	1292	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU734	5423 SE 121ST AVE	30	Yes	MFR	806	-8.1	981	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU735	5500 SE 121ST AVE	30	Yes	MFR	4885	-8.5	955	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU738	5031 SE 128TH AVE	30	Yes	SFR	1544	-11.4	761	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU755	13000 SE HAROLD ST	29	Yes	SFR	1341	-2.8	1307	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV187	10298 SE ELLIS ST	23.5	Yes	SFR	1051	0.0	1427	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV191	11080 SE HAROLD ST	22.9	Yes	SFR	3791	-2.5	543	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV193	5710 SE 115TH AVE	24	Yes	SFR	521	-0.7	313	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	AMS283	12500 SE HAROLD ST	25	Yes	SFR	1477	-4.7	1007	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	AMY600	13515 SE HOLGATE BLVD	21	Yes	MFR	4568	-1.8	1009	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANA589	13250 SE HOLGATE BLVD	0	Yes	SFR	4710	-20.7	1020	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANB108	11020 NE MARX ST	16	No	IND	1714	1.7	1817	No	Medium	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ACK357	4918 SE 122ND AVE	20	No	MFR	12138	0.6	702	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ACP889	10357 SE ELLIS ST	19	Yes	SFR	279	1.6	1104	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT683	12230 SE RAMONA ST	19.5	Yes	MFR	11133	-3.5	1536	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT716	12140 SE RAMONA ST	28	Yes	POS	11195	-10.9	1482	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU725	4908 SE 122ND AVE	19	No	MFR	12138	1.7	713	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV205	5906 SE 122ND AVE	28	Yes	MFR	11031	-8.4	1442	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW256	4745 SE 122ND AVE	20	No	MFR	12363	3.4	661	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW257	4754 SE 122ND AVE	22	No	MFR	12363	0.8	682	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW258	4857 SE 122ND AVE	21	No	MFR	12261	0.9	790	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction

Table B-2 : Prioritized Category 3 UICs with < 5 feet Vertical Separation Distance

UIC Compliance Category	Non-compliant Condition	Hansen UIC Node Number	Location [1]	Hansen UIC Depth (ft) [2]	Sedimentation Manhole (yes/no)	Predominant Land use	Estimated Traffic Count	Separation Distance (ft)	Distance to Nearest Well (ft) [3]	Within 2 year time of travel (yes/no)	UIC Priority [4]	Target Compliance Date [5]	Anticipated Corrective Action [6]	FY10-11 Project Status	FY11-12 Planned Activities
3	Separation Distance	ADW265	12150 SE RAYMOND ST	16.5	No	MFR	12138	4.1	778	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW266	5000 SE 122ND AVE	20	No	MFR	12138	0.3	691	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW267	5021 SE 122ND AVE	20	No	MFR	11953	0.8	777	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW269	5211 SE 122ND AVE	22	No	MFR	11953	-0.6	870	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW271	5403 SE 122ND AVE	21	No	MFR	11646	0.1	1048	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW272	5404 SE 122ND AVE	17.9	No	MFR	11646	2.9	1019	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW273	5436 SE 122ND AVE	17.5	No	MFR	11646	3.6	1212	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW274	5500 SE 122ND AVE	20.2	No	MFR	11646	0.8	1231	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANW740	6457 NE 66TH AVE	18	No	SFR	439	4.0	1089	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ACP891	10246 SE ELLIS ST	20.4	Yes	SFR	1051	3.0	1478	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU749	12220 SE HOLGATE BLVD	24	Yes	COM	5249	4.1	275	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV146	5980 SE 102ND AVE	22	Yes	SFR	688	2.6	1987	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV154	6034 SE 102ND AVE	26.1	Yes	SFR	894	-0.3	2130	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW230	5440 SE 111TH AVE	19	No	SFR	1848	3.0	639	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW233	5500 SE 104TH AVE	0	No	SFR	4096	-0.5	1045	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANA598	4425 SE 130TH AVE	15.6	No	SFR	4814	1.1	970	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT426	4144 SE 132ND AVE	30	Yes	SFR	2840	-1.5	1399	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT451	4490 SE 125TH AVE	20	Yes	SFR	5249	3.3	487	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT466	4100 SE 133RD AVE	30	Yes	SFR	389	-1.0	1286	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT471	13612 SE CORA ST	21	Yes	SFR	10104	-0.9	771	Yes	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT687	12246 SE ELLIS ST	25	Yes	SFR	224	-3.9	1366	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT688	12532 SE ELLIS ST	30	Yes	SFR	236	-8.0	1326	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT691	12506 SE REEDWAY ST	25	Yes	SFR	187	-3.8	1555	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU731	11134 SE STEELE ST	30.1	Yes	SFR	173	-2.3	1074	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU740	13120 SE RAYMOND ST	26	Yes	SFR	314	1.0	377	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU753	13030 SE MITCHELL ST	30	Yes	SFR	178	-2.3	1010	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU754	13030 SE MITCHELL ST	30	Yes	SFR	178	-2.4	1008	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV189	10398 SE ELLIS ST	20	Yes	SFR	279	0.4	1054	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV190	10402 SE ELLIS ST	21	Yes	SFR	279	-1.0	1003	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV196	12010 SE REEDWAY ST	29.5	Yes	MFR	205	-13.0	962	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV197	5605 SE 120TH AVE	26	Yes	MFR	192	-5.2	680	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV950	8318 SE 78TH AVE	27.5	Yes	SFR	86	-13.0	1849	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW260	12199 SE LIEBE ST	17	No	MFR	12261	4.8	801	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	AMQ114	8801 N VANCOUVER AVE	0	No	IND	9654	4.5	811	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	AMX686	4406 SE 135TH AVE	25.4	Yes	SFR	186	-9.0	1003	Yes	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ACP660	5608 SE 99TH AVE	30	Yes	SFR	557	3.9	2534	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ACP682	5988 SE 102ND AVE	21.8	Yes	SFR	688	2.8	2004	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ACP887	10304 SE ELLIS ST	20.5	Yes	SFR	1051	2.0	1372	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADR048	3734 NE 154TH AVE	30.1	Yes	MFR	247	3.0	734	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT453	12920 SE HOLGATE BLVD	19.6	Yes	SFR	4814	-0.1	1112	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU743	12780 SE SCHILLER ST	15.4	Yes	SFR	1778	0.8	817	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV144	5905 SE 102ND AVE	20.6	Yes	SFR	553	4.0	1961	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV951	8312 SE 75TH PL	30	Yes	SFR	501	2.0	2515	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	AMR622	13515 SE HOLGATE BLVD	21	Yes	MFR	4568	1.8	960	Yes	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	AMR771	4736 SE 115TH AVE	31	Yes	SFR	821	2.5	449	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	AMT874	5712 SE 103RD AVE	21.2	Yes	SFR	1109	0.0	1457	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANA841	9956 SE HAROLD ST	30	No	SFR	3892	4.0	2354	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ACP892	10324 SE ELLIS ST	22	Yes	SFR	142	0.0	1247	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT433	12323 SE HOLGATE BLVD	21.8	Yes	MFR	5249	4.6	230	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV130	5635 SE 102ND AVE	22	Yes	SFR	440	2.3	1734	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV135	5736 SE 102ND AVE	20.7	Yes	SFR	426	2.8	1791	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADW229	5436 SE 109TH AVE	20.5	No	SFR	461	2.5	444	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ANA264	10000 SE WOODSTOCK BLVD	30	Yes	IND	356	2.5	2929	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ACP693	6036 SE 102ND AVE	22	Yes	SFR	894	3.9	2160	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ACP890	10203 SE ELLIS ST	20	Yes	SFR	490	4.8	1646	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT428	13110 SE GLADSTONE CT	30	Yes	SFR	849	0.8	1220	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT463	13236 SE CORA ST	25.5	Yes	SFR	419	-2.0	1543	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT464	13326 SE CORA ST	25.5	Yes	SFR	418	-4.0	1363	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT465	4024 SE 134TH AVE	24.2	Yes	SFR	418	4.8	1114	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT472	13722 SE CORA ST	19	Yes	SFR	413	1.4	551	Yes	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT473	13820 SE GLADSTONE ST	20.9	Yes	SFR	430	4.1	520	Yes	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADT474	13658 SE CORA ST	19.7	Yes	SFR	413	0.6	610	Yes	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU744	12524 SE SCHILLER ST	16	Yes	SFR	416	2.0	513	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADU758	12908 SE MITCHELL ST	21	Yes	SFR	178	3.4	1173	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADV127	5610 SE 102ND AVE	21	Yes	SFR	490	4.1	1720	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	ADQ418	4656 NE 118TH AVE	30.1	Yes	COM	436	3.3	1472	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction
3	Separation Distance	AMV613	5640 SE 137TH AVE	30	Yes	MFR	180	4.6	648	No	Low	May 2015	Increase Separation Distance	Design / Construction	Design / Construction

Table B-2 : Prioritized Category 3 UICs with < 5 feet Vertical Separation Distance

UIC Compliance Category	Non-compliant Condition	Hansen UIC Node Number	Location [1]	Hansen UIC Depth (ft) [2]	Sedimentation Manhole (yes/no)	Predominant Land use	Estimated Traffic Count	Separation Distance (ft)	Distance to Nearest Well (ft) [3]	Within 2 year time of travel (yes/no)	UIC Priority [4]	Target Compliance Date [5]	Anticipated Corrective Action [6]	FY10-11 Project Status	FY11-12 Planned Activities

Notes:

1 Addresses are not considered precise location information and are subject to change as city staff better describe the physical UIC locations relative to nearby properties.

2 UIC depth of 0 indicates depth is not reported in the City UIC database. Depth assumed to be 30 feet for compliance determination.

3 UICs near drinking water wells were scored more conservatively than described in the *UIC Prioritization Procedure (Appendix F of the UIC Management Plan (December 2006)).* UICs within 500 of a drinking water well or within a 2- year time of travel were assigned a high criteria score rather than looking at the potential susceptibility of the drinking water well to impacts from the UIC.

4 UIC priority determined in general accordance the *UIC Prioritization Procedure*. If no value was available (NA) default values were assigned. The prioritization was developed as a means of assessing potential adverse impacts to groundwater that may be associated with individual UICs and categorizing them by priority for attention. UICs are listed in this table in descending order by their numeric prioritization score and non-compliant category.

5 Target Compliance date based on three full CIP funding cycles per the WPCF permit.

6 Corrective action will be determined in accordance with the *Corrective Action Plan* (July 2006). At this time, information is limited to the general response action anticipated for the non-compliant UIC. Once a corrective action is selected, it will be reported in subsequent UICMP Annual Reports.

Acronyms:

NA = Not Available TPD = Trips per Day
SFR = Single Family Residential MFR= Multifamily residential IND = Industrial COM = Commercial POS = Parks and Open Space
GWPD = Groundwater Protectiveness Demonstration NFA = No Further Action

Table B-3: Removals from Category 3 UIC List

UIC Compliance Category	Non-compliant Condition	Hansen UIC Node Number	Location [1]	Updated Hansen UIC Depth (ft)	Sedimentation Manhole (yes/no)	Predominant Land use	Estimated Traffic Count	Separation Distance (ft)	Distance to Nearest Well (ft)	Within 2 year time of travel (yes/no)	Reason Removed from November 2011 Category 3 UIC List
3	Separation Distance	ADP904	8521 NE COLUMBIA BLVD	NA	NA	NA	NA	NA	NA	NA	UIC abandoned
3	Separation Distance	ACP672	5800 SE 102ND AVE	18.2	Yes	SFR	426	6.0	1800	No	Confirmed depth with >5 feet separation distance
3	Separation Distance	ADU732	11945 SE RAYMOND ST	17	Yes	MFR	491	6.0	681	No	Confirmed depth with >5 feet separation distance
3	Separation Distance	ADV125	5600 SE 99TH AVE	28.5	Yes	SFR	557	6.0	2526	No	Confirmed depth with >5 feet separation distance
3	Separation Distance	ADT459	4344 SE 138TH PL	15.2	Yes	SFR	735	7.0	219	Yes	Confirmed depth with >5 feet separation distance
3	Separation Distance	ADV244	3954 SE 136TH AVE	17	No	MFR	10205	15.0	560	Yes	Confirmed depth with >5 feet separation distance
3	Separation Distance	ANB177	8110 NE COLUMBIA BLVD	14.5	No	IND	24196	10.0	2986	No	Confirmed depth with >5 feet separation distance
3	Separation Distance	ANN224	5700 SE 134TH PL	NA	NA	NA	NA	NA	NA	NA	UIC abandoned
3	Separation Distance	ADW248	12024 SE RAYMOND ST	18	No	MFR	0	3.2	1089	No	UIC Identified as Private Facility
3	Separation Distance	ADT458	13136 SE CENTER ST	20.25	Yes	SFR	860	12.0	986	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADT468	13630 SE CENTER ST	18.4	Yes	MFR	898	12.0	455	Yes	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADU756	13000 SE HAROLD ST	19.2	Yes	SFR	1371	12.0	1287	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADU757	5506 SE 130TH AVE	21.2	Yes	SFR	1371	13.0	1334	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADV161	10004 SE HAROLD ST	20.3	Yes	SFR	3892	13.0	2305	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADU722	5208 SE 111TH AVE	16.5	Yes	SFR	2563	13.0	1122	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADU727	4903 SE 114TH AVE	16.5	Yes	SFR	182	16.0	243	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADV137	5828 SE 99TH AVE	20.1	Yes	SFR	557	12.0	2642	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADV158	6210 SE 101ST AVE	16.8	Yes	IND	836	12.0	2600	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADV126	5608 SE 99TH AVE	21.2	Yes	SFR	557	13.0	2535	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADV168	6490 SE 99TH AVE	21	Yes	MFR	557	12.0	3037	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ANA264	10000 SE WOODSTOCK BLVD	15.8	Yes	IND	356	17.0	2929	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ANA271	10000 SE WOODSTOCK CT	18.5	Yes	IND	2082	13.0	3002	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADV955	7916 SE LAMBERT ST	21.1	Yes	SFR	395	13.0	1878	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADV956	8108 SE LAMBERT ST	17.4	Yes	MFR	492	12.0	1535	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADV961	7920 SE 79TH AVE	17.1	Yes	SFR	816	12.0	1774	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADU205	805 S Marion St	20.1	Yes	SFR	631	16.0	2429	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADU027	8434 SE 7TH AVE	19.1	Yes	SFR	780	12.0	1790	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADR045	3737 NE 156TH AVE	21	Yes	MFR	470	13.0	453	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADR046	3808 NE 156TH AVE	15.5	Yes	MFR	13444	13.0	360	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADR047	3838 NE 154TH AVE	16.5	Yes	MFR	13300	12.0	624	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADR053	15420 NE ALTON ST	17	Yes	MFR	247	14.0	609	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	AAJ188	300 NE WINCHELL ST	22.6	Yes	IND	250	12.0	559	No	UIC shallowed creating > 10 feet separation distance
3	Separation Distance	ADN954	300 NE WINCHELL ST	22	Yes	IND	250	12.0	530	No	UIC shallowed creating > 10 feet separation distance

Notes:

[1] Addresses are not considered precise location information and are subject to change as city staff better describe the physical UIC locations relative to nearby properties.

Acronyms:

NA = Not Available TPD = Trips per Day
SFR = Single Family Residential MFR= Multifamily residential IND = Industrial COM = Commercial POS = Parks and Open Space

Table B-4 : New Category 3 UICs

UIC Compliance Category	Non-compliant Condition	Hansen UIC Node Number	Location [1]	Hansen UIC Depth (ft) [2]	Sedimentation Manhole (yes/no)	Predominant Land use	Estimated Traffic Count	2009 Separation Distance (ft)	Distance to Nearest Well (ft) [3]	Within 2 year time of travel (yes/no)	UIC Priority[4]	Target Compliance Date[5]	Anticipated Corrective Action[6]	FY11-12 Planned Activities
3	Separation Distance	APR303	2524 SE 18th Ave	23	Yes	SFR	<1000	2	2635	No	Low	May 2015	Increase Separation Distance	Design / Construction
3	Separation Distance	APS154	8874 SE 9th Ave	31	Yes	SFR	>1000	-5	3171	No	Low	May-15	To be abandoned	To be abandoned
3	Separation Distance	APQ382	11919 SE Pardee St	19	Yes	SFR	<1000	9.5	350	No	Low	May-15	GPWD	GPWD

Notes:

1 Addresses are not considered precise location information and are subject to change as city staff better describe the physical UIC locations relative to nearby properties.

2 UIC depth of 0 indicates depth is not reported in the City UIC database. Depth assumed to be 30 feet for compliance determination.

3 UICs near drinking water wells were scored more conservatively than described in the *UIC Prioritization Procedure (Appendix F of the UIC Management Plan (December 2006)).* UICs within 500 of a drinking water well or within a 2- year time of travel were assigned a high criteria score rather than looking at the potential susceptibility of the drinking water well to impacts from the UIC.

4 UIC priority determined in general accordance the *UIC Prioritization Procedure* . If no value was available (NA) default values were assigned. The prioritization was developed as a means of assessing potential adverse impacts to groundwater that may be associated with individual UICs and categorizing them by priority for attention. UICs are listed in this table in descending order by their numeric prioritization score and non-compliant category.

5 Target Compliance date based on three full CIP funding cycles per the WPCF permit.

6 Corrective action will be determined in accordance with the *Corrective Action Plan* (July 2006). At this time, information is limited to the general response action anticipated for the non-compliant UIC. Once a corrective action is selected, it will be reported in subsequent UICMP Annual Reports.

Acronyms:

NA = Not Available TPD = Trips per Day
SFR = Single Family Residential MFR= Multifamily residential IND = Industrial COM = Commercial POS = Parks and Open Space
GWPD = Groundwater Protectiveness Demonstration NFA = No Further Action

Appendix C
Spills That Have Occurred within Areas Serviced by UICs

Appendix C: Spills That Have Occurred within Areas Serviced by UICs

Date	Release Type	Volume	Spill Location	Did Fluids Reach City-owned UIC? (Y/N)	Closest City-owned UIC Catchbasin
9/14/10	Sewage	5 gal	12415 SE Powell Blvd	N	APN699
10/11/10	Wash water from car washing and engine pressure-washing	20-40 gal	6850 SE 82nd Ave	Y	ACU048
11/15/10	Oil and transmission fluid	minimal	9119 SE Mill St	N	ADS170
12/01/10	Gasoline	minimal	5434 SE 72nd	N	ADU610
12/02/10	Wash water from painting activities	minimal	2844 SE 90th Pl	Y	ADU180
12/02/10	Muddy water from dump truck	minimal	9015 SE Powell Blvd	N	ADU180
12/19/10	Sewage	10 gal	17108 SE Powell Blvd	N	ADQ651
12/29/10	Automotive fluids	minimal	1108 SE Marion	N	ADU213
12/30/10	Motor oil	minimal	2031 N Watts	N	ADN875
01/04/11	Diesel and used motor oil	minimal	37 NE 133rd Ave	Y	ADS046
01/11/11	Wash water from RV-type vehicles	50-100 gal	1818 SE 82nd Ave	Y	ADP107
01/16/11	Oil	minimal	4425 NE 32nd Pl	Y	ADQ651
02/04/11	Paint	minimal	723 SE 136th Ave	N	ADT108
02/15/11	Fuel	minimal	9026 NE 13th to 750 N Columbia (Fed Ex truck route)	N	AMQ114
03/10/11	Wash water from dismantled burned motor home	minimal	13704 SE Cora St	N	ADT747
03/15/11	Hydraulic fluid	minimal	SE 26th and Ankeny	Y	ADV707
04/15/11	Oil	2-3 gal	6320 SE 136th Ave	N	ADT726
04/27/11	Oil	minimal	3120 NE 56th Ave	N	ADT312
05/22/11	Home heating oil	5-10 gal	12950 SE Powell Blvd	N	ADT437
06/01/11	Oil	minimal	1217 NE Mason St	N	ADQ435
06/03/11	Wash water from auto repair activities	minimal	1005 NE 72nd Ave	N	ADR546
06/09/11	Motor oil	unknown	2219 SE 147th Ave	Y	ADS429