



State of Oregon  
Department of  
Environmental  
Quality

Water Quality  
Underground Injection  
Control

811 SW 6<sup>th</sup> Avenue  
Portland, OR 97204

# Storm Water Plan Example for Underground Injection Control (UIC) Systems

As a condition of Rule Authorization (in lieu of permit) every owner/operator of an injection system is required to have a storm water injection management plan under (OAR 340-044-18(3)(b)). The plan must include a complete description of the site's ongoing activities, along with drainage maps that show the location of the facility and injection system discharge points. The plan must also discuss control measures or Best Management Practices which will eliminate polluted storm water or treat it prior to discharge. The plan should use at least a 24-hour 2-year storm event for the design of the system. Maps of various storm events can be found at <http://www.wrcc.dri.edu/pcpnfreq.html>.

## Basic Elements

Sites which qualify as small municipalities, small commercial/industrial sites with no hazardous materials, or small parking lots are expected to have a short plan which includes:

- System assessment (e.g., a site description), a narrative which identifies the likely types of pollutants and the potential for storm water run-on and run-off at the site. It would include a map with general location and a site-specific map (showing cross streets and including data on the discharge structures, buildings, pavement, parking, water features, storage areas, existing structural controls, injection systems, and arrows for drainage flows), and note areas served by the injection system;
- System controls would include storm water Best Management Practices (e.g., containment, oil/grease, waste chemicals and material disposal, sediment control, debris control, diversion of storm water from areas with the potential for hazardous material exposure, covering activities, housekeeping and pre-treatment);

- Spill prevention and response procedures (federal/state/insurance carrier requirements);
- A preventive maintenance plan and record keeping;
- Employee education; and
- Effectiveness evaluation – ways to measure and address the effectiveness of the storm water management plan as needed or at least every five years.

Owner/operators should document these activities and maintain records in a central location, readily available for inquiries by authorities. Keep complete and accurate records for system assessment, system controls, spill prevention/response procedures including spill incident and cleanup records, maintenance inspections and remedial actions, training records, current plans, public outreach communications, correspondence with authorities, and other pertinent documents.

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## Detailed Plans

Large municipalities, industrial/commercial facilities with reportable quantities of hazardous substances, and large parking lots are expected to develop more detailed plans similar to those outlined in the DEQ guidance document for preparation of the NPDES Storm Water Pollution Control Plan and as found in the Rule Authorized Storm Water Injection Requirements. DEQ guidance for storm water pollution control plans includes:

*Guidance Document for Preparation of the NPDES Storm Water Pollution Control Plan (DEQ, August 1997)*, at <http://www.deq.state.or.us/wq/wqpermit/SWGuidance.pdf>, and

*Recommended Best Management Practices for Storm Water Discharges (DEQ, August 1997)* at <http://www.deq.state.or.us/wq/wqpermit/StormWaterBMPs.pdf>.

Guidance for industrial storm water management specifically developed for the Oregon's Northwest Region is: *Best Management Practices for Storm Water Discharges from Industrial Sites, DEQ Northwest Region (rev. January 2001)* at [http://www.cleanrivers-pdx.org/business\\_svc/industrial\\_stormwater.htm](http://www.cleanrivers-pdx.org/business_svc/industrial_stormwater.htm).

Facilities with other existing spill plans developed (e.g., Spill Prevention Control and Countermeasure) can amend them to address injection systems. These plans must also address monitoring, sampling, sampling analysis, corrective measures if reference levels are exceeded, and record keeping. As part of the storm water plan public education, municipalities are responsible for informing the public about this program through site plan review, and referring the site to DEQ for registration review prior to construction.

For reference and more detailed guidance, see Oregon Administrative Rules, Chapter 340, Division 108, which outlines reportable quantities and the notification procedures required by state and federal law.

*Attached is a draft example of a UIC storm water injection management plan for a small site for public use.*

## UIC STORM WATER MANAGEMENT PLAN EXAMPLE

This Storm Water Injection Management Plan is written for (facility) located at (address), in (city), OR (zip) (tax lot: (tax lot number)). The site encompasses approximately (acreage) acres (sq ft).

The purpose of the plan is to prevent impacts of polluted storm water on the local groundwater and public water supplies. The State of Oregon has determined that all groundwater has the potential to be a drinking water source and is protected.

The Department of Environmental Quality (DEQ) manages a program for protecting groundwater called Underground Injection Control (UIC). This program is delegated to DEQ from the Environmental Protection Agency under the Safe Drinking Water Act. Rule-Authorized Storm Water injection requirements require small parking lots (with less than 1000 trips per day for industrial/commercial use) to prepare and implement a storm water injection management plan. The plan is to include: a facility/site map, system assessment, system controls, spill prevention and response, maintenance, employee and public education, and evaluation of effectiveness of the storm water injection management plan (SWIMP).

### SYSTEM ASSESSMENT

At this site a combination of control measures has been selected to achieve the goal of protecting groundwater. These measures include use of landscape depressions, a bioswale, inlet and a single drywell located on the north side of the facility upstream of the bioswale.

The storm water system has been configured to minimize the potential of both accidental and illicit spills of contaminants that could impact groundwater.

- There is also a contained covered maintenance service area at this facility that discharges to onsite treatment systems, which in turn discharges into the City's of Bend's sanitary sewer system.
- The drywell drains impervious surfaces including: the roadside entry and exit as well as small parking area, but does not include the contained and covered maintenance service area.

### SYSTEM CONTROLS (Best Management Plan for source control and treatment)

The storm water system is comprised of two pathways to capture storm water from the parking areas:

- Surface water draining from the parking surface will either:
  - 1) pass from the parking surface into designated landscaped depressions, which will absorb the water through evaporation and infiltration; or
  - 2) the remaining storm water will pass through a bioswale located along the north property line prior to discharge via a drywell.
- The bioswale will be regularly irrigated with an automatic sprinkler system during dry seasons to maintain healthy plant life and provide filtration of pollutants. Dead plants will be removed and replaced as needed. Vegetation should be trimmed back periodically and the trimmings removed as determined by monitoring so that the pollutants that have been taken into the vegetation are not released back to the bioswale at levels that would preclude new capture of pollutants.
- Use of pesticides and fertilizers will be minimized to protect groundwater and applied in minimal rates (follow manufacturer's specifications). Mulch and other debris should be kept clear of the bioswales and infiltration depressions so the systems will function to provide treatment of the storm water.
- At the inlet to the bioswale a ditch inlet will collect storm water for discharge to a sediment trap and an oil water separator if necessary.
- This inlet will be labeled to indicate that no materials shall be dumped into this system.
- Once through the bioswales, inlet, sediment trap, and oil water separator the treated storm water will enter a drywell (dimensions). The drywell rim will be raised above the pavement slightly to avoid indirect drainage directly into the drywell. Access to the drywell will be provided via a standard manhole lid for cleaning and maintenance purposes.

This system, which additionally includes both detention and retention in conjunction with landscaping, has been used successfully in this region. The drywell is added to this system as precautionary measure to minimize the flooding potential during these peak storms events.

## **SPILL PREVENTION AND RESPONSE**

- Spill prevention is an important factor in the successful operation of a storm water injection management system. All employees will be trained to this plan so that they are certain of the location of materials, who to notify in case of a spill, and how to initially contain the spill of hazardous materials. Employees shall never dispose waste materials into the storm water collection/treatment system. Employees will be observant of other potential contamination occurrences. All employees will review the following page regarding detailed spill response steps.
- This data will be posted in an accessible area.



## ***WHAT TO DO IN CASE OF A SPILL***

- 1. The spill kit is located in the equipment room.**
- 2. Get the spill kit (and spill kit instructions when provided).**
  - ❖ If possible, determine visually what type of fluids have been spilled
  - ❖ Put on gloves and glasses or any other necessary Personal Protective Equipment (PPE).
  - ❖ Get the absorbent material provided in the kit and drain block cover.
  - ❖ Place the absorbent materials in the path of the spill.
  - ❖ Remove any debris from the vicinity of the inlet located in the landscape strip (bioswale) located on the north side of the parking lot.
  - ❖ Unroll the drainblocker, place it snugly over the inlet
  - ❖ Verify that the cover has full contact with the rim of the inlet
  - ❖ Use snakes, pillow, or pigs to completely contain the area
- 3. Notify the following personnel immediately:**
  - ❖ Owner 541-xxxxxxx
  - ❖ City of XXX Spill Response Team- 911 and indicate the need for contacting the hazmat team
  - ❖ Department of Environmental Quality- 541-388-6146

**Owner: Mr. xxxx**  
**Business address:**  
XXXXXX  
Bend, Oregon 97701  
XXXXX County

**Owner: Mr. xxxx**  
**Home address:**  
XXXXX  
Bend, Oregon 97701  
**Phone number: 541-xxx-xxxx**

**NOTE: Only dry cleanup methods will be employed to clean up spills (i.e., no use of water to wash spilled materials from pavement will be conducted).**

## **MAINTENANCE PLAN**

Maintenance of storm water system components is the key to a successful storm water plan. Most storm water systems fail in the first few years due to lack of adequate maintenance. The owner must insure that the treatment systems efficiently perform their function of removing petroleum hydrocarbons, sediments, metals, bacteria and

nutrients from storm water runoff. The following guidelines will be used for general maintenance of the storm water system:

1. Dry sweeping of the parking lot and dumpster area to reduce accumulation of sediments and debris in the depressions and bioswales will be conducted regularly. Treatment areas clogged with sediment will fail.
2. Quarterly visual inspection of the detention areas, swale, inlet, and drywell for debris, discoloration, dead vegetation, obstructions, smell or ponding of stagnant water (of concern for mosquito breeding).
3. The bioswale and detention area vegetation will be maintained. Grasses will be trimmed no shorter than 3 inches from the ground surface.
4. Visual inspection of the entire storm water system after major storms for evidence of system problems.
5. Annual inspection of the spill kit to ensure all supplies are available and have not deteriorated or expired.
6. Annual inspection of the drainblocker/cover to ensure it's in the proper location and is in good working condition. (Check for cracks)
7. Biannual or quarterly cleaning of the ditch inlet and drywell. Sediments need to be removed along with any oils before the deposits reach one foot in depth and before the inlet/outlet is obstructed. Debris disposal needs to be done in accordance with applicable state law, and records of debris disposal will need to be kept on file for review by regulating agencies.
8. Attached are the manufacturer's inspection and maintenance instructions and a maintenance log. The log is to be kept available for inspection by the city/county and DEQ upon request.

### MAINTENANCE INSPECTION REQUIREMENTS/CHECKLIST

- ❖ Quarterly inspection of the drywell, inlet, and bioswales system (including sediment trap and oil water separator).
- ❖ Annual inspection of the spill kit to ensure all supplies are available and have not deteriorated or expired.
- ❖ Annual inspection of the drainblocker/cover to ensure it's in the proper published location and is in good working condition. (Check for cracks, other.)
- ❖ Quarterly cleaning of the inlet and system.
- ❖ Materials removed from the inlet/ oil water separator will be disposed of in accordance with state law.

Month _____ Year _____ <i>Initial &amp; date</i>	Drywell, inlet, drainage system (quarterly)	Cleaning of the inlet and system (quarterly)	Spill kit (monthly)	Drainblocker/cover (monthly)	Document if materials are removed from ditch inlet (approved method)
<b>JANUARY</b>					
<b>FEBRUARY</b>					
<b>MARCH</b>					
<b>APRIL</b>					
<b>MAY</b>					
<b>JUNE</b>					
<b>JULY</b>					
<b>AUGUST</b>					
<b>SEPTEMBER</b>					
<b>OCTOBER</b>					
<b>NOVEMBER</b>					
<b>DECEMBER</b>					

Employees will be trained upon hiring and thereafter annually or when any new requirements are published, or when there are any changes to the system or equipment. Employee training will include:

- Reading this Storm Water Injection Management Plan (SWIMP);
- Familiarity of all contents and locations for materials indicated in the SWIMP;
- Spill response and Personal Protective Equipment (PPE);
- Documentation requirements.

Public education includes posted signage and personal observed inspection. Hands-on training may occur if owner or employees see public not following the rules. Signage to include wording such as (but not limited to): "Never dump waste materials into the detention areas, ditch inlet, or drywell."

**EMPLOYEE TRAINING RECORD**

All employees should complete the following training with a supervisor:

- Read the Storm Water Injection Management Plan (SWIMP);
- Become familiar with all contents and locations for materials indicated in the SWIMP;
- Spill response, spill kit contents and location, cover/drainblocker use, maintenance and location;
- Personal Protective Equipment (PPE) necessary when using the spill kit;
- Documentation requirements;
- Required periodic, monthly and quarterly inspections and maintenance.

	EMPLOYEE NAME (Print)	Employee Signature	Job Title	Date
1.				
2.				
3.				
4.				
5.				
6.				

**EVALUATION OF EFFECTIVENESS OF STORM WATER INJECTION MANAGEMENT PLAN**

The SWIMP is to be evaluated every five years or immediately after any documented spill incidents; this will allow for any necessary changes, additions or improvements to be incorporated. Any data collected during the year, or other reports, will be used for making improvements. Updated copies of the plan should be sent to DEQ.

For additional program information please contact:

Oregon Department of Environmental Quality (DEQ)	U.S. Environmental Protection Agency (EPA)
Toll-free in Oregon at 1-800-452-4011 Barbara Priest, Oregon DEQ UIC Program Coordinator (503-229-5945 or toll-free 800-452-4011). Email: priest.barbara@deq.state.or.us <a href="http://www.deq.state.or.us/wq/groundwa/uichome.htm">http://www.deq.state.or.us/wq/groundwa/uichome.htm</a>  Ollie Fick, DEQ Eastern Region, UIC Specialist (541) 388-6146 x 325 Email: Fick.ollie@deq.state.or.us	Kirk Robinson, EPA UIC Specialist Groundwater Protection Unit (OW-137) 1200 Sixth Avenue Seattle, Washington 98101  1-800-424-4EPA <a href="http://www.epa.gov/ogwdw/uic.html">http://www.epa.gov/ogwdw/uic.html</a> <a href="http://epainotes1.rtpnc.epa.gov:7777/r10/water.nsf/webpage/Underground+Injection+Control+Program">http://epainotes1.rtpnc.epa.gov:7777/r10/water.nsf/webpage/Underground+Injection+Control+Program</a> (EPA Region 10 UIC page)

**Accessibility Information**

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