MULTNOMAH COUNTY

Illicit Discharge Detection and Elimination Program

July 2012

Multnomah County
Land Use and Transportation Program – Road Services
Department of Community Services

I. INTRODUCTION

Illicit discharge is a non-stormwater discharge into the municipal separate storm sewer system (MS4) that is not exempted by the NPDES MS4 Phase I stormwater permit (Schedule A.4.a.xii), and therefore is illegal. Typically, these illicit discharges pose a risk to stream health because they are contaminated by liquid wastes from industry, sewage, or wash water.

Illicit discharges may be continuous, periodic, seasonal, or incidental depending on the type and source of the discharge. Illicit discharge detection can involve complex detective work where frequently there is no single approach to take but rather a variety of information leading to the source. From visual screening to field monitoring, dye testing, and in-pipe camera work, a combination of techniques are used to successfully detect and ultimately eliminate illicit discharges.

The goal of the County Illicit Discharge Detection and Elimination Program is to detect and eliminate illicit discharges in an effective and efficient manner such that impacts to surface water are avoided or minimized. The program includes stormwater infrastructure mapping, field screening, lab analysis, and documentation for dry weather inspection. The program focuses on investigation of the underground infrastructure where special methods and documentation are needed. This program is based on the Illicit Discharge Detection and Elimination requirements in the NDPES permit and the Stormwater Management Plan Best Management Practice - ILL-5: *Detect and Eliminate Illicit Discharges to the Storm Sewer*.

Illicit discharge detection involves other field activities including regular catch basin inspections that are conducted by the Road Maintenance program as part of the routine catch basin cleaning activity. The County responds to illegal dumping incidents, maintains a program to report illegal dumping and a plan to contain emergency spills. These program elements are described in the Stormwater Management Plan, Road Maintenance and Operations Plan, and the Emergency Response Plan.

Governing Laws and Regulations

Multnomah County maintains stormwater discharge permit coverage under the NPDES MS4 Phase I permit (#103004) renewed in December 2010. This permit contains specific requirements for an Illicit Discharge Detection and Elimination program in Schedule A.4.

Provisions of the Clean Water Act (1987) require National Pollutant Discharge Elimination System (NPDES) permits for stormwater discharges. Section 402(p)(3)(B)(ii) requires that permits for municipal separate storm sewers shall include a requirement to effectively prohibit problematic non-stormwater discharges into storm sewers. Emphasis is placed on the elimination of inappropriate connections to urban storm infrastructure and requires local jurisdictions to identify, locate, and remove non-stormwater discharges into the municipal storm sewer system.

II. DRY WEATHER FIELD SCREENING AND MONITORING

Dry weather field screening is the process of selecting target outfalls, inspecting outfalls for non-stormwater discharges, and confirming illicit discharges through general observation or monitoring results. Sources of illicit discharge are investigated with a variety of field methods including visual screening and lab analysis.

The County's infrastructure is physically connected to the stormwater systems of the surrounding urban jurisdictions (Portland, Fairview, Wood Village, Gresham, and Troutdale) where stormwater originating from pipes under County-owned roadways is discharged through other jurisdictions' outfalls; and conversely, stormwater from other jurisdictions enters the County system. Coordination between other municipal jurisdictions will occur according to the requirements of the NPDES permit, referenced below in response procedures.

Dry weather field screening occurs at County-owned outfalls to area streams. Field screening activities occurs annually, typically during the summer months when groundwater tables are low and interception/infiltration into the pipe infrastructure is reduced. A 72-hour antecedent dry period is required for field screening.

Priority Outfall Sites

The original illicit discharge program identified only one major outfall based on the 36" outfall size referenced in the federal regulations. Since the renewal of the permit in 2010, new areas were added to the NPDES permit area, and the priority outfall sites were expanded to include smaller outfalls discharging to a stream where the potential for cross connection exist.

According to the NDPES permit requirements, priority outfall selection must be based on an equitable consideration of hydrologic conditions, total drainage area of the location, population density of the location, traffic density, age of structures or buildings in the area, history of area, land use types, personnel safety, accessibility, historical complaints, or other appropriate factors.

Eight outfalls with a risk of sewer cross-connections were selected for dry weather flow (Table 1, Figure 1). These outfalls drain urban collector and arterial roadways within the Cities of Fairview, Wood Village, and Troutdale.

General Observations

Visual presence of flow, turbidity, algae, oil sheen, trash, foam/scum, color/stains, and any other relevant observations related to the potential presence of non-stormwater or illicit discharge, such as odor or temperature, are important clues to determine whether dry weather flow is an illicit discharge. Visual indicators and odors typically provide an indication of the type of illicit discharge and often can be quite obvious (e.g., toilet paper or sewer odor). Other times, dry weather flow may be clear without obvious odors. Flow volume or timing (e.g., pulses) may also indicate the sources of discharge. General observations will be documented during the annual outfall visits and during any other visit if suspicious flow is reported.

Table 1. Priority outfall locations

Location
Barr Rd @ Fairview Creek
Halsey St @ Fairview Creek W of 223rd
223rd Ave @ Fairview Creek N of Halsey
Halsey St @ Arata Creek
223rd Ave @ N Fairview Creek
223rd Ave @ S Fairview Creek
Sundial Rd @ Salmon Creek N of Rogers
Historic Col River Hwy @ Beaver Creek (southern-most outfall)

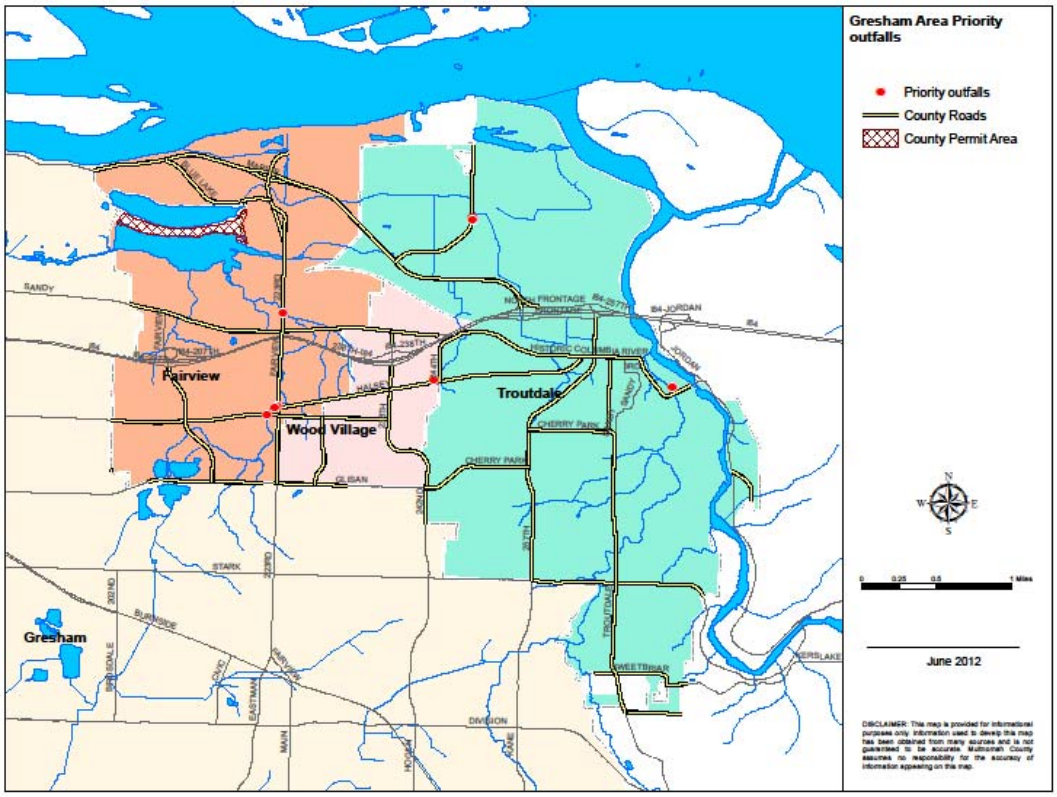

Figure 1. The County priority stormwater outfalls for field screening mapped in the GIS mapping system

Field Screening

Sample analysis in the field is a useful way to narrow the source of dry weather flow if visual clues, odors. or other obvious clues are not present. Testing of water to distinguish between intercepted groundwater, potable water, wash water or industrial water, and sewage should be done with follow up investigation of the physical source of the discharge. A sample will be collected and screened for indicators of illicit discharges when appropriate using field testing kits and equipment. Table 2 below lists the pollutant and pollutant parameter action level, and follow up action.

Table 2. Screening analytes with action levels and follow up actions

Parameter	*Action level*	*Suspected Source and Action*
Ammonia	> 0.5 mg/L	Natural groundwater and potable water have low ammonia concentrations. Presence of ammonia likely indicates sewage or industrial waste. Follow up investigation of pipe infrastructure for the source is needed for positive identification. Sewage odors may also be an indicator, as well as fecal bacteria.
Temperature	> 18°C	Groundwater and potable water are generally below 15°C. Elevated temperature may indicate industrial process water, wash water or wastewater.
Total chlorine	> 0.5 mg/L	Presence of chlorine indicates potable water. Follow up investigation of pipe infrastructure for the source is needed to positive identification. Car washing, building washing, pool discharge, irrigation or other potable water uses may be likely sources.
Turbidity	> 15 NTU	Turbidity may be used to distinguish between process water and clean potable water (i.e., irrigation).
Conductivity	> 100 µS/cm > 500 µS/cm	Conductivity of Portland potable water is very low, and thus may be used to distinguish between groundwater infiltration and potable sources. High conductivity may indicate waste water to distinguish it from groundwater. Follow up investigation of the pipe infrastructure for source is needed for positive identification.

Lab analysis

If general observations and field screening indicate a potential illicit discharge and the source cannot be identified through other investigative methods, a water quality sample may be sent to the City of Portland Water Pollution Control Laboratory for analysis. The types of pollutant parameters will be determined by the area businesses or land uses that may have potential sources of discharge.

Source Investigation

When a potential illicit discharge to the County stormwater system is identified, the pipe system and area draining the source will be inspected to identify the source of the discharge. Follow up investigation to track the source will include one or more of the following:

- Inspection of manholes in the upstream direction of the storm pipe
- Inspection using remote closed circuit television cameras in the storm pipe
- Dye testing particular buildings in question
- Smoke testing stormwater system to trace discharge in an upstream direction

If the suspected illicit discharge originates on private property, the County will coordinate with the municipal jurisdiction to obtain permission for inspection. Review of construction permits with the municipal jurisdiction is also helpful to identify where construction may have impacted the system either by damaging the stormwater system or by accidental cross connection.

Documentation

Outfall screening information is stored in a spreadsheet format and GIS database. The County will retain records of monitoring information for a period of at least three years consistent with permit requirements.

III. RESPONSE PROCEDURES

Once the source of an illicit discharge is identified, an initial evaluation to eliminate the discharge will be completed in five (5) working days. If the elimination of the illicit discharge will take more than 15 working days due to technical, logistical, or other reasonable issues, an action plan will be created to eliminate the discharge in an expeditious manner. The action plan will be completed within 20 working days of determining the source of the illicit discharge. The action plan will include a timeframe for elimination of the illicit discharge as soon as practicable.

If the illicit discharge is identified to be discharging from or to other jurisdiction, the affected jurisdictions will notified within one (1) working day of becoming aware of the discharge.

Enforcement response plan

1. *Notice of violation.* Upon determination by the County Engineer of the source an illicit discharge to the County stormwater system, the County Engineer shall issue a written notice of violation to the discharger within five (5) working days, which outlines the violation and the potential penalty. The notice shall be personally delivered to the discharger's premises or be sent certified or registered mail, return receipt requested.

2. *Discharge elimination timeframe.* The notice shall further request correction of the illicit discharge within a specified time or require written confirmation of the correction or efforts being made to correct the violation by a specified date. If the

elimination of discharge will take longer than 15 working days, the discharger must submit a plan with timeframes to eliminate the illicit discharge in an expeditious manner within 20 working days to the County Engineer.

3. *Penalties.* A civil penalty may be assessed for each violation in the amount up to $500 per day. (Multnomah County Code, Subchapter 27.999)

4. *Coordination with municipal authorities.* Concurrent with the notice of violation to the discharger, the County Engineer will notify the appropriate land use authority and sewer utility of the illicit discharge, and make an initial evaluation of the feasibility to eliminate the discharge. The County will coordinate with the local jurisdictions on inspections and follow up actions.

5. *Reporting to DEQ.* The County will notify DEQ water quality program of potential impacts to water quality from the illicit discharge, including source and type of the discharge, watershed, outfall location, and timeframes for elimination.

V. SPILL PREVENTION AND MITIGATION

Stormwater education is the key to prevent spills, dumping, and other illicit discharges into the County stormwater system. Drain markers, web video, radio, and television ads are part of the larger stormwater program as described in the Stormwater Management Plan. The County relies on the coordinated work of the Regional Coalition of Clean Rivers and Streams, a consortium of NPDES permittees of which the County is a member. Further coordination from smaller municipal jurisdictions is expected to provide adequate business education in their respective jurisdictions to prevent spills and illicit discharges because the County does not have regulatory authority in those land uses adjacent to the right of way in Gresham, Fairview, Troutdale and Wood Village.

The County provides first response for spills from accidents on County roadways. Spill containment with absorbent booms, pads, and granules is installed to prevent material or liquid from entering the stormwater system. Spills are reported immediately to the Oregon Emergency Response plan. Emergency response is also conducted by local law enforcement, fire response, and a spill response contractor. Spills greater than 40 gallons are reported to DEQ. More information is contained in the County Emergency Response Plan and Road Maintenance and Operations Manual.