



# **Illicit Discharge Detection and Elimination Program Manual**

**February 2015**

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City of Kenmore  
Public Works



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## **FOREWORD**

The City of Kenmore Illicit Discharge Detection and Elimination Program Manual was developed to comply with requirements of the Federal Clean Water Act-National Pollutant Discharge Elimination System Program and the Western Washington Phase II Municipal Stormwater Permit issued by the Washington State Department of Ecology. The intent of this manual is to describe the policies and procedures in place to reduce illicit discharges into the City's municipal separate storm sewer system (MS4). This manual is intended to be a supplement to the City's Stormwater Management Plan and the City's Surface Water Master Plan.

### **ACKNOWLEDGEMENTS**

#### **City of Kenmore, Public Works**

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### **VERSIONS**

2015 IDDE Manual – 2/5/2015

IDDE Manual Version 1.1 – 3/12/2012

IDDE Manual Version 1.0 – 6/22/201

## ACRONYMS AND DEFINITIONS

### OVERVIEW

Since the passage of the federal Clean Water Act (CWA), requirements for cities and counties to control the quality of stormwater runoff have become more stringent. In particular, Kenmore was issued Western Washington Phase II Municipal Stormwater Permits (Permit) from the Washington State Department of Ecology (Ecology) in 2007, 2012 and 2013. The Permit requires that the City implement an Illicit Discharge Detection and Elimination (IDDE) program. This document is intended to describe how the City is compliant with CWA and Permit requirements and supplements the City's Stormwater Management Program and Surface Water Master Plan.

### DOCUMENT STRUCTURE

Section 1 describes the City's municipal storm sewer system mapping program.

Section 2 describes the City's IDDE and water quality ordinances and codes.

Section 3 describes the City's program to inspect, identify and respond to IDDE issues.

Section 4 describes the City's IDDE outreach, education and training efforts.

Section 5 describes City's IDDE program tracking responsibilities.

## ACRONYMS AND DEFINITIONS

### ACRONYMS AND DEFINITIONS

**AKART** means “All Known and Reasonable Technologies”

**BMP** means Best Management Practice.

**Best Management Practice** means a schedule of activities, prohibitions of practices, physical structures, maintenance procedures and other management practices undertaken to reduce or prevent increases in runoff quantity and pollution.

**CESCL** means Certified Erosion and Sediment Control Lead.

**Certified Erosion and Sediment Control Lead** means an individual who has satisfied the requirements set forth in Ecology’s Stormwater Management Manual for Western Washington (Volume II, Chapter 4, BMP C160) for the designation of certified erosion and sediment control lead.

**Ecology** means the Washington State Department of Ecology.

**ESC** means Erosion and Sediment Control.

**Facility** means drainage facilities, including either flow control or water quality facilities.

**Flow Control Facility** means a drainage facility designed to mitigate the impacts of increased surface and storm water runoff generated by site development in accordance with the drainage requirements in KMC Chapter 13.35. Flow control facilities are designed either, to hold water for a considerable length of time and then release it by evaporation, plant transpiration, or infiltration into the ground, or to hold runoff for a short period of time and then release it to the conveyance system.

**IDDE** means Illicit Discharge Detection and Elimination

**Illicit Connection** means any infrastructure connection to the MS4 that is not intended, permitted or used for collecting and conveying stormwater or non-stormwater discharges allowed as specified in this permit (S5.C.3 and S6.D.3). Examples include sanitary sewer connections, floor drains, channels, pipelines, conduits, inlets, or outlets that are connected directly to the MS4.

**Illicit Discharge** means any discharge to a MS4 that is not composed entirely of stormwater or of non-stormwater discharges allowed as specified in this permit (S5.C.3 and S6.D.3).

**Maintenance** (also Operations and Maintenance) means those usual activities taken to prevent a decline, lapse, or cessation in the use of currently serviceable structures, facilities, equipment, or systems if there is no expansion of the structure, facilities, equipment, or system and there are no significant hydrologic impacts. Maintenance includes the repair or replacement of non-functional facilities and the replacement of existing structures with different types of structures, if the repair or replacement is required to meet current engineering standards or is required by one or more environmental permits and the functioning characteristics of the original facility or structure are not changed.

## ACRONYMS AND DEFINITIONS

**MS4** means Municipal Separate Storm Sewer System

**Municipal Separate Storm Sewer System** means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

- (i) Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to state law) having jurisdiction over disposal of wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of Washington State.
- (ii) Designed or used for collecting or conveying stormwater.
- (iii) Which is not a combined sewer;
- (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.; and
- (v) Which is defined as “large” or “medium” or “small” or otherwise designated by Ecology pursuant to 40 CFR 122.26.

**NPDES** means National Pollutant Discharge Elimination System.

**National Pollutant Discharge Elimination System** means the national program for issuing, modifying, revoking, and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of the Federal Clean Water Act, for the discharge of pollutants to surface waters of the state from point sources. These permits are referred to as NPDES permits and, in Washington State, are administered by the Washington State Department of Ecology.

**OMPPM** means Operations and Maintenance Policies and Procedures Manual.

**O&M** means Operations and Maintenance. See Maintenance.

**RRMPG** means Regional Road Maintenance Endangered Species Act Program Guidelines.

**Regional Road Maintenance Endangered Species Act Program Guidelines** means the manual developed by the Regional Road Maintenance Technical Working Group that provides a consistent, Regional Program that can be used by any agency wishing to limit, reduce or eliminate the prohibition on take of threatened species under the 4(d) Rule (NMFS), special 4(d) rule and/or Section 7 take exemption (USFWS).

**SPPM** means the Stormwater Pollution Prevention Manual.

**Stormwater Pollution Prevention Manual** means the manual referenced in KMC 13.45, Water Quality, including supporting documentation referenced or incorporated in the manual, describing best management practices and procedures for eliminating or reducing surface, storm and ground water contamination from existing facilities and existing and new activities not covered by the SWDM.

**SWDM** means Surface Water Design Manual (King County).

## ACRONYMS AND DEFINITIONS

**SMMWW** means Stormwater Management Manual for Western Washington (Ecology).

**Water Quality Facility** means a drainage facility designed to reduce pollutants once they are already contained in surface and storm water runoff. Water quality (WQ) facilities are a structural component of best management practices (BMPs). When used singly or in combination, WQ facilities reduce the potential for contamination of both surface and ground waters.

**WQ** means water quality.

## SECTION 1 – MS4 MAP

The City maintains a map of the MS4 in Geographical Information System (GIS) software provided by Environmental Systems Research Institute, Inc (ESRI) called ArcGIS. ArcGIS is industry standard software that is widely used by public and private entities. The City's Permit requires mapping of the municipal separate storm sewer system (MS4), including;

- Known MS4 outfalls and known MS4 discharge points
- Tributary conveyances to MS4 outfalls and discharge points with  $\geq 24$ " nominal diameter
- Receiving waters, other than ground waters
- Stormwater treatment and flow control BMPs/facilities owned or operated by the City
- All connections authorized after February 16, 2007
- Geographical areas served by the MS4 that do not discharge stormwater to surface waters

The City has met or exceeded Ecology's requirements in regards to MS4 mapping. In addition to the requirements set forth by Ecology, the City has also mapped:

- Tributary conveyances to MS4 outfalls and discharge points with  $< 24$ " nominal diameter
- Privately owned and operated treatment and flow control BMPs/facilities
- Many privately owned and operated conveyances

**Surface water maps are available on the City's website at [www.kenmorewa.gov](http://www.kenmorewa.gov).**



## SECTION 2 – WATER QUALITY ORDINANCE

The United States defines an Illicit Discharge as any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities (40 CFR 122.26(b)(2)).

Revised Code of Washington State (RCW) Chapter 90.48.080 states: It shall be unlawful for any person to throw, drain, run, or otherwise discharge into any of the waters of this state, or to cause, permit or suffer to be thrown, run, drained, allowed to seep or otherwise discharged into such waters any organic or inorganic matter that shall cause or tend to cause pollution of such waters according to the determination of the department, as provided for in this chapter.

The City of Kenmore adopted much of King County's water quality code upon incorporation in 1998, which prohibited the discharge of contaminants into surface, storm, and ground water or the Puget Sound (Chapter 13.45 Kenmore Municipal Code (KMC)). On November 2, 2009 the City of Kenmore Council passed Ordinance 09-0299, which updated Chapter 13.45 KMC to standards set forth in the City's Permit. The remainder of this section summarizes Chapter 13.45 KMC. The full text of Chapter 13.45 KMC can be found in Appendix A or on the City's webpage.

### 2.1 Prohibited Discharges

Chapter 13.45.030(A) KMC prohibits the discharge of any contaminants into surface and storm water, ground water or the Puget Sound. Contaminants include, but are not limited to, the following:

- a. Trash or debris;
- b. Construction materials;
- c. Petroleum products (oil, gasoline, grease, fuel oil, heating oil, etc...);
- d. Antifreeze and other automotive products;
- e. Metals in either particulate or dissolved form;
- f. Flammable or explosive materials;
- g. Radioactive materials;
- h. Batteries;
- i. Acids, alkalis, or bases;
- j. Paints, stains, resins, lacquers, or varnishes;
- k. Degreasers and solvents;
- l. Drain cleaners;
- m. Pesticides, herbicides, or fertilizers;
- n. Steam cleaning wastes;
- o. Soaps, detergents, or ammonia;
- p. Swimming pool backwash;
- q. Chlorine, bromine, and other disinfectants;

## SECTION 2 – WATER QUALITY ORDINANCE

- r. Heated water;
- s. Domestic animal wastes;
- t. Sewage;
- u. Recreational vehicle waste;
- v. Animal carcasses;
- w. Food wastes;
- x. Bark and other fibrous materials;
- y. Collected lawn clippings, leaves, or branches;
- z. Silt, sediment, or gravel;
- aa. Dyes (except as stated in 13.45.030(D)(1));
- bb. Chemicals not normally found in uncontaminated water;
- cc. Any hazardous material or waste not listed above.

### 2.2 Allowable Discharges with the application of BMPs

Certain discharges are allowed with the application of appropriate Best Management Practices (BMPs). These discharges could apply to certain business and residential activities that have the potential to contribute contaminants to surface and storm water, ground water or Puget Sound.

To prevent a prohibited discharge, BMPs from the Stormwater Pollution Prevention Manual (SPPM), or supplemental BMPs as determined by the City Manager, shall be applied to the activity.

Common activities identified in the SPPM that might result in prohibited discharges include, but are not limited to, the following:

1. Potable water line flushing;
2. Dust control with water;
3. Automobile and boat washing;
4. Pavement and building washing;
5. Swimming pool and hot tub maintenance;
6. Vehicle and equipment repair and maintenance;
7. Building repair and maintenance;
8. Landscaping activities and vegetation management;
9. Hazardous waste handling;
10. Solid and food waste handling; and
11. Application of pesticides or other chemicals (other than landscaping maintenance).

### 2.3 Allowable Discharges

The following discharges are not considered prohibited discharges unless the City Manager determines that the type of discharge, whether singly or in combination with other discharges, is causing significant contamination of surface and storm water, ground water or Puget Sound:

## SECTION 2 – WATER QUALITY ORDINANCE

1. Spring Water;
2. Diverted stream flows;
3. Uncontaminated water from crawl space pumps, foundation drains, or footing drains;
4. Pumped ground water flows that are uncontaminated;
5. Materials placed as part of an approved habitat restoration or bank stabilization project;
6. Natural uncontaminated surface water or ground water;
7. Flows from riparian habitats and wetlands;
8. Collected rainwater that is uncontaminated;
9. Uncontaminated ground water that seeps into or otherwise enters storm water conveyance systems;
10. Air conditioning condensation;
11. Irrigation water from agricultural sources that is commingled with storm water runoff; and
12. Other types of discharges as determined by the City Manager.

### 2.4 Prohibited Discharges Exceptions

Exceptions are provided for prohibited discharges including:

Dye testing is allowable but requires verbal notification to the City Manager at least one day prior to the date of test;

1. A person is not in violation for a prohibited discharge if:
  - a. That person has properly designed, constructed, implemented and is properly maintaining BMPs and is using the most current methodology that can be reasonably required for preventing, controlling or abating the pollutants associated with a discharge (known as AKART or all known and reasonable technologies), but contaminants continue to enter surface and storm water or ground water; or
  - b. That person can demonstrate that there are no additional contaminants being discharged above the background conditions of the water entering the site.
2. A person who has properly designed, constructed, implemented and maintained BMPs is still liable for any prohibited discharges through illicit connections, dumping, spills or other discharges not addressed by said BMPs.
3. Emergency response activities

### 2.5 Stormwater Pollution Prevention Manual

The City adopted the Kenmore Stormwater Prevention Manual to provide BMPs for commercial, multi-family and residential properties covering a broad spectrum of activities that have the potential to create prohibited discharges. The Stormwater Pollution Prevention Manual is available on the City's webpage at [www.kenmorewa.gov](http://www.kenmorewa.gov).

## SECTION 2 – WATER QUALITY ORDINANCE

### **2.6 Enforcement**

The City prefers to address nonhazardous illicit discharge violations by first providing public education, warnings, technical assistance and requiring the implementation of BMPs, and when necessary, AKART, as the primary methods of gaining compliance with Chapter 13.45 KMC. If the illicit discharge poses a hazard to public health, safety, or welfare, endangers any property, adversely affects the safety and operation of City Right-of-Way, utilities and/or property owned by the City, or the violation is the result of a flagrant act then the City may immediately take action or impose penalties.

## SECTION 3 – IDDE PROCEDURES

### 3.1 – 2007-2013

#### **OUTFALL RECONNAISSANCE INVENTORY**

Past efforts to proactively search for and manage illicit discharges and connections included the Outfall Reconnaissance Inventory (ORI), which were required by the City's 2007 Permit. The ORI visually inspected known outfalls from the City's MS4 in an effort to identify areas of obvious pollution or non-stormwater discharges. Outfall inspections located potential problem areas without the need for in-depth laboratory analysis. Potential problem discharges could be identified by outfalls that were flowing during dry weather (potential illicit connection) or outfalls that had high turbidity, strong odors, unusual colors or those that triggered indicator parameters such as high Fluoride, ammonia/potassium ratios, surfactants or fecal coliform levels. The City utilized the Illicit Discharge Detection and Elimination: A Guidance Manual (Center for Watershed Protection, October 2004) when conducting ORIs.

In summer 2010 the City conducted an ORI on the main channel of Swamp Creek, Muck Creek, Little Swamp Creek and five tributaries to Swamp Creek. The Permit required the City to place water bodies with a Total Maximum Daily Load (TMDL) as a top priority. Currently, Swamp Creek is the only water body with a TMDL in Kenmore. A copy of the 2010 Swamp Creek ORI Summary can be found in Appendix B.

In summer 2011 the City conducted an ORI on Lake Washington and Sammamish River. Most of the City's non-residential properties drain into these two water bodies, therefore, they were placed as the second and third highest priority for conducting an ORI. A copy of the 2011 Sammamish River and Lake Washington ORI Summary can be found in Appendix C.

In summer 2013 the City conducted an ORI on Tributary 0057. Tributary 0057 flows into the Sammamish River from the south. A copy of the 2012 Tributary 0057 ORI Summary can be found in Appendix D

Regionally, ORIs did not prove to be effective at discovering illicit discharges and connections. Kenmore discovered no illicit discharges or connections during the Swamp Creek, Muck Creek, Little Swamp Creek, Lake Washington, Sammamish River or Tributary 0057 ORIs. However, the ORIs did provide Kenmore with valuable information in regards to unknown outfall and drainage system locations, which were added to the City's surface water GIS.

## 3.2 – 2014 – Present

### FIELD SCREENING

Ecology departed from the OCI program with the issuance of the 2013 Permit and shifted to a new strategy – field screening. Field screening includes checking MS4 components for water quality issues, illicit discharges and illicit connections using methodology consistent with *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Discharge Detection and Technical Assessments* (Center for Watershed Protection, October 2004). Field screening is primarily conducted during routine maintenance inspections each year, but can also be applied in response to citizen complaints. Ecology mandates that Kenmore must screen at least 40% of the MS4 no later than December 31, 2017 and then average 12% each year thereafter, but Kenmore has already exceeded this requirement by including field screening during routine inspections already conducted annually.

Field screening is conducted by City staff, consultants or contractors who are appropriately trained to identify water quality issues, illicit discharges and illicit connections. When issues are discovered, they are input into the City's surface water asset management system (Cityworks) and routed to appropriate staff for response and tracking.

Field screening consists of:

- Inspection
- Discharge Source Tracing
- Follow-up

### INSPECTION

Similar to the ORI, dry weather offers an advantage for field screening because it allows the inspector to notice unusual flows that might indicate an IDDE issue. Most field screening occurs during annual maintenance inspections in summer months, which is ideal for field screening.

Inspectors visually inspect each MS4 component (e.g. catch basins, pipes, ditches) and the immediate surrounding area. An IDDE issue may be occurring if the inspector notices the presence of key indicators, which include; flowing water in dry weather, foul odors, discolored water, stains and suds.

When illicit discharge problems are identified, the inspector will photograph the problem area and begin the Discharge Source Tracing process described below. Inspectors should also report IDDE issues to the Surface Water Program Manager within 24 hours of the initial observation or sooner if possible.

### DISCHARGE SOURCE TRACING

The source of illicit connections or discharges can be located by conducting windshield surveys and then, if needed, systematically isolating the area from which the polluted discharge originates. Discharge source tracing is ideal to identify constant or frequent discharge sources or a discharge that is happening

SECTION 3 – IDDE PROCEDURES

at that moment, but may not identify more infrequent discharges unless those discharges leave a strong IDDE indicator for the inspector to notice.

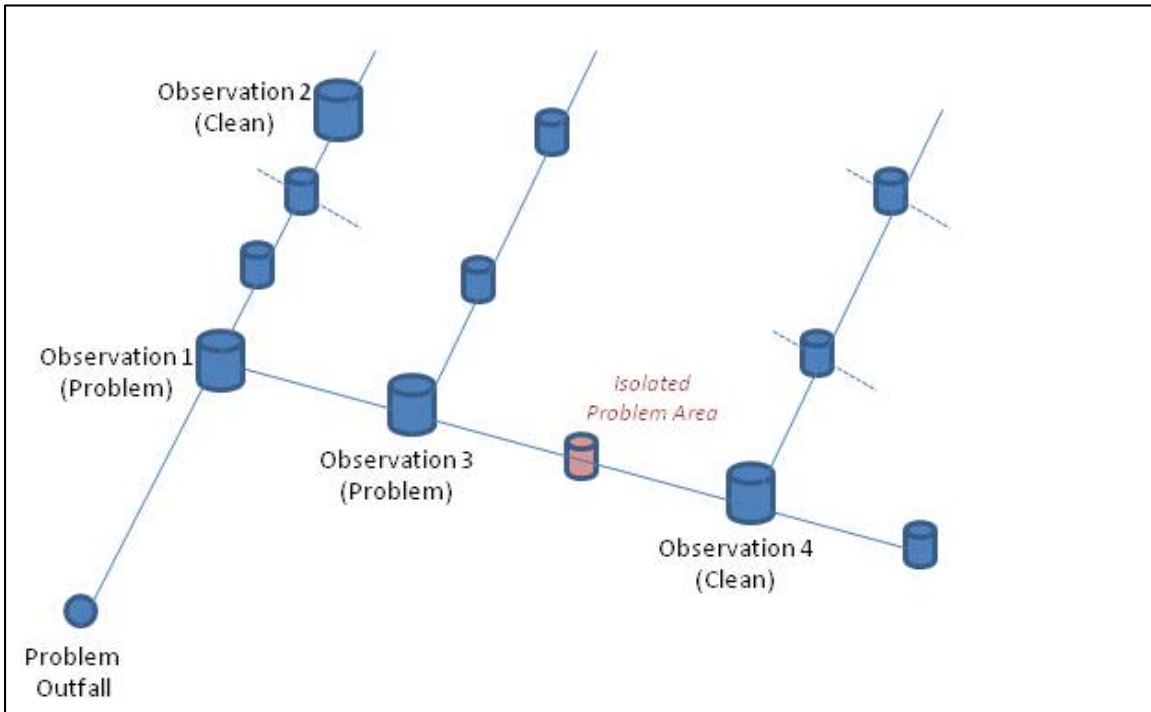
The inspector should initially conduct a quick windshield survey to see if the discharge source can easily and quickly be located. The following table lists potential causes for several types of observed indicators. For instance, observing thick algae growth could indicate to the inspector that they should look for nearby landscaping activity or heavy sediment could point to nearby construction activity.

<b>Table 3.2.1</b>	
Windshield Survey - Common Discharges and Potential Sources	
<b>Observed Discharge</b>	<b>Potential Causes</b>
Clogging Sediment	Construction activity without proper erosion and sediment controls Roadway sanding operations Outdoor work areas or material storage areas
Thick Algae Growth	Fertilizer leak or spill Landscaping operations Hydroseeding following construction Failing or leaking septic system
Oil	Refueling operations Vehicle or machinery maintenance activities
Sudsy Discharge	Power washing of buildings Vehicle or equipment washing operations Mobile cleaning crew dumping Laundry or Cleaner Household greywater discharge
Clogged Grease	Restaurant sink drain connection to stormwater system
Sewage	Failing or leaking septic systems

If a windshield survey is unsuccessful, then a progressive investigation of the upstream MS4 to narrow down the location of the illicit discharge is required. A thorough investigation of the MS4 may still be required, even if the windshield survey is successful, to determine the scope of cleanup needed. The inspector works progressively upstream from the initial observation point and inspects the MS4 until the illicit discharge is no longer present. MS4 observations can be time-consuming, but they are a necessary step before conducting other tests. In particularly large storm drain systems, it may be helpful to first identify major branches of the system and inspect one spot at the downstream end of each branch. This can help to reduce the area that must be investigated. The following figure shows how this step of the discharge source tracing process works.

SECTION 3 – IDDE PROCEDURES

Figure 3.2.1 shows the observation steps to isolate the location where an illicit discharge is entering the storm drainage network.



If visual inspections are not successful in isolating the source of the illicit discharge, a number of additional options are available, including dye testing, smoke testing, video inspection and analytical testing. Analytical testing will determine what the illicit discharge is made and aid in finding the source. The following water quality parameters are recommended for testing, if needed (Table 3.2.2):

Water Quality Test	Use of Water Quality Test	Sewage	Washwater	Tap Water	Industrial or Commercial Liquid Wastes
Temperature	Sanitary wastewater and industrial cooling water can substantially influence outfall discharge temperatures.	⊙	N/A	N/A	⊙
pH	Extreme pH values (high or low) may indicate commercial or industrial flows. Not useful in determining the presence of sanitary wastewater (tends to have a neutral pH like uncontaminated base flows)	○	⊙	○	⊙
Conductivity	Used as an indicator of dissolved solids. Used to distinguish between seawater and stormwater.	⊙	⊙	○	⊙

Continued on next page



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Water Quality Test	Use of Water Quality Test	Sewage	Washwater	Tap Water	Industrial or Commercial Liquid Wastes
Turbidity		⊙	⊙	○	⊙
Ammonia	High levels can be an indicator of the presence of sanitary wastewater.	●	⊙	○	⊙
Fluoride	Indicates presence of potable water.	○	○	●	⊙
Potassium	High levels may indicate the presence of sanitary sewer.	⊙	○	○	●
Surfactants	Indicates the presence of detergent (e.g. laundry, car washing)	●	●	○	⊙
Fecal Coliform	Indicates presence of bacteria found in sanitary sewer or septic systems.	⊙	○	○	○

Source: *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments* (Center for Watershed Protection, October 2004)

- Can almost always (>80% of samples) distinguish this discharge from clean flow types (e.g. tap water or natural water). For tap water, can distinguish from natural water.
- ⊙ Can sometimes (>50% of samples) distinguish this discharge from clean flow types depending on regional characteristics, or can be helpful in combination with another parameter.
- Poor indicator. Cannot reliably detect illicit discharges, or cannot detect tap water.
- N/A Data are not available to assess the utility of this parameter for this purpose

Results from analytical testing should be recorded in Cityworks and reported to the Surface Water Program Manager. Testing results may lead to another round of discharge source tracing.

In summary, Discharge Source Tracing includes the following steps:

- Consult the drainage system map (if available) and identify the major branches.
- Windshield survey to quickly determine potential source, or if needed proceed to next step.
- Starting from the initial observation point, observe the next upstream catch basin or junction to see if there is evidence of polluted discharge. Inspectors are looking for the presence of flow during dry weather, foul odors, colors or stained deposits, oily sheens, floatable materials, etc...
- Repeat observations at each upstream catch basin or junction until a junction is found with no evidence of discharge; the discharge source is likely located between the junction with no evidence of discharge and the next downstream junction.
- Work downstream from the “clean” catch basin or junction to isolate the location where the polluted discharge is entering the storm drain system.
- If the discharge source can’t be located, then consider dye testing, smoke testing, video inspections and/or analytical testing.
- Once the discharge source is located proceed to Follow-up Actions described below.
- Document all information in Cityworks.

**FOLLOW-UP ACTIONS**

The City responds to identified illicit discharges, illicit connections or illegal dumping activities with an escalating level of enforcement response. Corrective actions will initially focus on education to promote voluntary compliance and then escalate to increasingly severe enforcement actions if voluntary compliance is not obtained. Surface Water staff and the Code Enforcement Officer should use judgment

## SECTION 3 – IDDE PROCEDURES

in exercising the right mix of education, technical assistance and enforcement to correct identified problems. The City may immediately levy fines if the violation is found to be willful, intentional or egregious.

In the event the violation constitutes an immediate danger to public health or safety, the City is authorized to enter upon the subject property and take any and all measures necessary to abate the violation and/or restore the property. Any expense related to such remediation shall be fully reimbursed by the property owner and/or responsible party to the City.

### Voluntary Compliance

The preferred approach to address illicit discharge problems is to pursue voluntary compliance through property owner or responsible party education. Often, business operators and property owners are not aware of the existence of illicit connections or activities on their properties that may constitute an illegal discharge. In these cases, providing the responsible party with information about the connection or operation, the environmental consequences and suggestions on how to remedy the problem may be enough to secure voluntary compliance.

Education begins during the site investigation when the operation or connection is first confirmed. Property owners and operators should be notified that the problems must be corrected in a timely manner and that the City will be conducting a follow-up site visit to verify compliance. Field staff should also provide the property operator with Stormwater Pollution Prevention Manual BMP documents (if applicable).

### Operational Problems

Property owners are responsible for correcting operational problems that are leading to illicit discharges to the storm drainage system. This could include moving washing activities indoor or under cover, covering material storage areas, locating an appropriate discharge location for liquid wastes or other operational modifications. Through site visits and education, the City can provide technical assistance to aid property owners in identifying the required modifications.

### Structural Problems

Illicit connection problems may require a structural modification to correct the problem. Structural repairs can be used to redirect discharges such as sewage, industrial and commercial cross-connections. Such cross-connections must be re-routed to an approved sanitary sewer system. Correcting structural problems is the responsibility of the property owner, though the City may provide technical assistance throughout the process.

### Enforcement Actions

When voluntary compliance does not produce the desired results, the City is required to pursue follow-up enforcement action. Enforcement actions are the responsibility of the Surface Water Program Manager and Code Enforcement Officer. Table 3.3 outlines the detailed enforcement steps. More

SECTION 3 – IDDE PROCEDURES

serious violations or continued non-compliance may warrant a more aggressive, enforcement oriented approach.

Table 3.3.3 City of Kenmore IDDE Enforcement Steps		
Preliminary Actions		Open IDDE Case ↓
		Investigation ↓
		Confirm Problem Determine Responsible Party ↓
		Egregious or Hazardous Issue ↓ Step 3
Step 1 Initial Actions	← Flagrant Act and/or Poses Danger to Public Skip to Step 3	Alert Owner to Problem Distribute Educational Material ↓
		Encourage Voluntary Compliance ↓
		Send Summary Letter and Provide Technical Support ↓
		Follow-up Site Visit to Verify Compliance ↓
		→ Problem Corrected ↓ Close Case
Step 2 Follow-up Actions	←	Problem Persists ↓
		Send Notice of Violation Letter with Compliance Date ↓
		Follow-up Site Visit to Verify Compliance ↓
		→ Problem Corrected ↓ Close Case
Step 3 Final Actions		Problem Persists ↓
		Send Second Notice of Violation Letter ↓
		City Corrects Structural Problems at Owner Expense ↓
		Assess fines and/or Civil Penalties ↓
		Refer Unresolved Problems to City Manager and City Attorney
		→ Close Case

## SECTION 3 – IDDE PROCEDURES

### Enforcement Timelines

The timeline of corrective action procedures is highly dependent on the nature of the violation and the responsiveness and cooperation from the person(s) responsible. The urgency of addressing identified problems will be based on the nature of the pollutant in question and potential impacts to downstream waters. Compliance dates should be included in all violation notices.

The Permit requires identified problems to be corrected and illicit connections removed within 180 days of identifying the source. If property owners are not addressing problems in a timely manner, the City may step in and perform the repairs necessary to remove an illicit connection, eliminate an illicit discharge and/or clean-up a dumping incident. Property owners will also be responsible for reimbursing the City for any costs occurred in correcting IDDE problems.

### Fines and Civil Penalties

Illicit Discharge violations are subject to fines and penalties under Chapters 1.15, 1.20 and 13.45 KMC and other enforcement provisions adopted by rule.

Fines and penalties include;

- An amount reasonably determined to be equivalent to the economic gain as a result of the violation (Chapter 13.45 KMC), and
- An amount, up to \$25,000, that is reasonably based upon the gravity and nature of the violation (Chapter 13.45 KMC), and
- Reimbursement of all costs incurred by the City in response to the violation (Chapters 13.45 & 1.20 KMC), and
- Responsible person(s) is guilty of a misdemeanor (Chapter 1.15 KMC), and
- Monetary fines of \$250.00 per day that violation occurs up to \$5,000 (Chapter 1.15 KMC), and
- Imprisonment up to one year (Chapter 1.15 KMC).

### Record Keeping

Effective enforcement procedures require comprehensive recordkeeping and documentation to show that all program steps have been followed. Throughout the problem investigation and corrective action activities, all information related to the incident or property in question should be documented in the case file. Section 5 discusses illicit discharge record keeping in greater detail.

## SECTION 4 – EDUCATION

The City's IDDE education program informs public employees, businesses and the general public of hazards associated with illegal discharges and improper disposal of waste.

### 4.1 Employee Education/Training

Staff responsible for identification, investigation, termination, cleanup and reporting of illicit discharges, including spills and illicit connections are trained to conduct these activities. Additionally, field staff that as part of their normal job responsibilities might come into contact with or otherwise observe an illicit discharge or illicit connection to the MS4 are trained on the identification of an illicit discharge/connection and on the proper procedures for reporting and responding to the illicit discharge/connection. Follow-up training to all field staff is provided as needed.

### 4.2 General Public Education

The City has implemented many programs aimed at educating the general public on how stormwater drainage systems operate and the hazards associated with polluting runoff. Educational demonstrations and material are presented at community events by City staff. IDDE education and outreach is provided to Kenmore residents via newsletters, online media and public advertisements. The City also partners with regional stormwater outreach and education groups to produce materials and media such as the *Puget Sound Starts Here* campaign.

### 4.3 Business Education

The City has adopted the Kenmore Stormwater Pollution Prevention Manual (SPPM). The SPPM identifies Best Management Practices (BMPs) for commercial, multi-family and residential properties for activities that have the potential to contaminate surface, storm or groundwater. SPPM materials are often utilized when assisting property and business owners.

The City has worked with non-profit organizations that met in-person with Kenmore business owners to educate them on stormwater issues, including IDDE. Businesses also received spill response kits as part of these outreach efforts. The City continues to support and promote this kind of business education.

The City conducts Water Quality Audits for commercial and multi-family properties as needed or in response to inspection findings. Water Quality Audits provide assistance to property owners and assures that BMPs are correctly chosen and implemented. Water quality audits can often achieve compliance with water quality regulations without the need for civil penalties and fines.

## SECTION 5 – TRACKING

### **SECTION 5 – TRACKING**

The City tracks IDDE issues, including illicit discharges, connections, spills and water quality violations using Cityworks (asset management and tracking software system). Cityworks can manage service requests, inspections and work orders associated with IDDE. The City also occasionally conducts public surveys to assess the Public's knowledge regarding many stormwater issues, including IDDE.

IDDE issues are tracked and reported, annually, to Ecology as part of the City's Western Washington Phase II Municipal Stormwater Permit.

**APPENDIX A – CHAPTER 13.45 KENMORE MUNICIPAL CODE**

**Chapter 13.45****WATER QUALITY**

## Sections:

- 13.45.010 Purpose.
- 13.45.020 Definitions.
- 13.45.030 Discharges into city waters.
- 13.45.040 Stormwater Pollution Prevention Manual.
- 13.45.050 Administration.
- 13.45.060 Enforcement.
- 13.45.070 Hazards.
- 13.45.080 Criminal penalty.
- 13.45.090 Civil penalties for water quality.
- 13.45.100 Construction – Intent.
- 13.45.110 Severability.
- 13.45.120 Penalty.

**13.45.010 Purpose.**

A. The purpose of this chapter is to protect the city's surface and ground water quality by providing minimum requirements for reducing and controlling the discharge of contaminants. The city council recognizes that water quality degradation can result either directly from one discharge or through the collective impact of many small discharges. Therefore, this chapter prohibits the discharge of contaminants into surface and stormwater and groundwater, and outlines preventive measures to restrict contaminants from entering such waters. These measures include the implementation of best management practices (BMPs) by the residents of the city of Kenmore.

B. The city council finds this chapter is necessary to protect the health, safety and welfare of the residents of the city of Kenmore and the integrity of the city's resources for the benefit of all by: minimizing or eliminating water quality degradation; preserving and enhancing the suitability of waters for recreation, fishing, and other beneficial uses; and preserving and enhancing the aesthetic quality and biotic integrity of the water. The city council recognizes that implementation of this chapter is required under the federal Clean Water Act, 33 U.S.C. 1251 et seq. In meeting the intent of the Clean Water Act the city council also recognizes the importance of maintaining economic viability while providing necessary environmental protection and believes this chapter helps achieve both goals. [Ord. 09-0299 § 1; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.005).]

**13.45.020 Definitions.**

The following definitions shall apply in the interpretation and enforcement of this chapter:

A. "AKART" is an acronym for "all known, available, and reasonable methods of prevention, control, and treatment." "AKART" represents the most current methodology that can be reasonably required for preventing, controlling, or abating the pollutants associated with a discharge. "AKART" applies to both point and nonpoint sources of pollution.

B. "Best management practices" or "BMPs" means the best available and reasonable physical, structural, managerial, or behavioral activities, that, when used singly or in combination, eliminate or reduce the contamination of both surface and ground waters.

C. "Chapter" means this chapter and any administrative rules and regulations adopted to implement this chapter.

D. "City manager" means the Kenmore city manager or his or her designee, other department directors specified in enforcement procedures established pursuant to this chapter, or any duly authorized representatives of such directors.

E. "Clean Water Act" means 33 U.S.C. 1251 et seq., as amended.

F. "County" means the municipality of King County.

G. "Discharge" means throw, drain, release, dump, spill, empty, emit, or pour forth any matter or to cause or allow matter to flow, run, or seep from land or be thrown, drained, released, dumped, spilled, emptied, emitted or poured into water.

H. "Drainage facility" means the system that collects, conveys, and stores surface and stormwater runoff. Drainage facilities shall include but not be limited to all surface and stormwater conveyance and containment facilities including streams, pipelines, channels, ditches, swamps, lakes, wetlands, closed depressions, infiltration facilities, retention/detention facilities, erosion/sedimentation control facilities and other drainage structures and appurtenances, both natural and artificial.

I. "Farm management plan" means a comprehensive site-specific plan developed by the farm owner in cooperation with the city of Kenmore taking into consideration the landowner's objectives while protecting water quality and related natural resources.



J. "Forest practices" means any activity conducted on or directly pertaining to forest land and relating to growing, harvesting, or processing timber, as defined in Chapter 222-16 WAC.

K. "Ground water" means all waters that exist beneath the land surface or beneath the bed of any stream, lake, or reservoir, or other body of surface water, whatever may be the geological formation or structure in which such water stands or flows, percolates or otherwise moves.

L. "National Pollutant Discharge Elimination System" or "NPDES" means the national program for controlling pollutants from point source discharges directly into waters of the United States under the Clean Water Act.

M. "National Pollutant Discharge Elimination System permit" means an authorization, license, or equivalent control document issued by the Environmental Protection Agency or the Washington State Department of Ecology to implement the requirements of the NPDES program.

N. "Person" means an individual, and his or her agent or assign, municipality, political subdivision, government agency, partnership, corporation, business, or any other entity.

O. "Source control BMP" means a BMP intended to prevent contaminants from entering surface and stormwater and/or ground water including the modification of processes to eliminate the production or use of contaminants. "Source control BMPs" can be either structural or nonstructural. Structural source control BMPs involve the construction of a physical structure on site, or other type of physical modification to a site. An example of a structural source control BMP is building a covered storage area. A nonstructural source control BMP involves the modification or addition of managerial or behavioral practices. An example of a nonstructural source control BMP is using less toxic alternatives to current products or sweeping parking lots.

P. "State waste discharge permit" means an authorization, license, or equivalent control document issued by the Washington State Department of Ecology in accordance with Chapter 173-216 WAC.

Q. "Stormwater Pollution Prevention Manual" means the manual (and supporting documentation referenced or incorporated in the manual) describing best management practices and procedures for existing facilities and existing and new activities not covered by the Surface Water Design Manual.

R. "Surface and stormwater" means water originating from rainfall and other precipitation that is found on ground surfaces and in drainage facilities, rivers, streams, springs, seeps, ponds, lakes and wetlands as well as shallow groundwater.

S. "Treatment BMP" means a BMP intended to remove contaminants once they are already contained in stormwater. Examples of treatment BMPs include: oil/water separators, biofiltration swales, and wet ponds. [Ord. 09-0299 § 2; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.015).]

### 13.45.030 Discharges into city waters.

#### A. Prohibited Discharges.

1. It is unlawful for any person to discharge any contaminants into surface and stormwater, ground water, or the Puget Sound. Contaminants include, but are not limited to, the following:

- a. Trash or debris;
- b. Construction materials;
- c. Petroleum products including but not limited to oil, gasoline, grease, fuel oil, and heating oil;
- d. Antifreeze and other automotive products;
- e. Metals in either particulate or dissolved form;
- f. Flammable or explosive materials;
- g. Radioactive material;
- h. Batteries;
- i. Acids, alkalis, or bases;
- j. Paints, stains, resins, lacquers, or varnishes;
- k. Degreasers and solvents;
- l. Drain cleaners;
- m. Pesticides, herbicides, or fertilizers;
- n. Steam cleaning wastes;
- o. Soaps, detergents, or ammonia;
- p. Swimming pool backwash;
- q. Chlorine, bromine, and other disinfectants;
- r. Heated water;
- s. Domestic animal wastes;
- t. Sewage;
- u. Recreational vehicle waste;
- v. Animal carcasses;
- w. Food wastes;
- x. Bark and other fibrous materials;
- y. Collected lawn clippings, leaves, or branches;
- z. Silt, sediment, or gravel;
- aa. Dyes (except as stated in subsection (D)(1) of this section);

bb. Chemicals, not normally found in uncontaminated water;

cc. Any hazardous material or waste not listed above.

2. Illicit Connections. Any connection, identified by the city manager, that could convey anything not composed entirely of surface and stormwater directly to surface and stormwater or ground water is considered an illicit connection and is prohibited, with the following exceptions:

a. Connections conveying allowable discharges;

b. Connections conveying discharges pursuant to an NPDES permit (other than an NPDES stormwater permit) or a state waste discharge permit; and

c. Connections conveying effluent from on-site sewage disposal systems to subsurface soils.

B. Allowable Discharges with the Application of BMPs. This section applies to certain business and residential activities that have the potential to contribute pollutants to stormwater runoff or directly to receiving waters. To prevent a prohibited discharge, BMPs from the Stormwater Pollution Prevention Manual, or supplemental BMPs as determined necessary by the city manager, shall be applied to the activities identified in the Stormwater Pollution Prevention Manual. Examples of common activities identified in the Stormwater Pollution Prevention Manual that might result in prohibited discharges include, but are not limited to, the following:

1. Potable water line flushing;
2. Dust control with water;
3. Automobile and boat washing;
4. Pavement and building washing;
5. Swimming pool and hot tub maintenance;
6. Vehicle and equipment repair and maintenance;
7. Building repair and maintenance;
8. Landscaping activities and vegetation management;
9. Hazardous waste handling;
10. Solid and food waste handling; and
11. Application of pesticides or other chemicals (other than landscaping maintenance).

C. The following types of discharges shall not be considered prohibited discharges for the purpose of this chapter unless the city manager determines that the type of discharge, whether singly or

in combination with other discharges, is causing significant contamination of surface and stormwater or ground water:

1. Spring water;
2. Diverted stream flows;
3. Uncontaminated water from crawl space pumps, foundation drains, or footing drains;
4. Pumped ground water flows that are uncontaminated;
5. Materials placed as part of an approved habitat restoration or bank stabilization project;
6. Natural uncontaminated surface water or ground water;
7. Flows from riparian habitats and wetlands;
8. Collected rainwater that is uncontaminated;
9. Uncontaminated ground water that seeps into or otherwise enters stormwater conveyance systems;
10. Air conditioning condensation;
11. Irrigation water from agricultural sources that is commingled with stormwater runoff; and
12. Other types of discharges as determined by the city manager.

D. Exceptions.

1. Dye testing is allowable but requires verbal notification to the city manager at least one day prior to the date of test. The city of Kenmore health department is exempt from this requirement.

2. A person does not violate subsection A of this section if:

a. That person has properly designed, constructed, implemented and is properly maintaining BMPs, and is carrying out AKART as required by this chapter, but contaminants continue to enter surface and stormwater or groundwater; or

b. That person can demonstrate that there are no additional contaminants being discharged from the site above the background conditions of the water entering the site.

3. A person who, under subsection (D)(2) of this section, is not in violation of subsection A of this section, Prohibited Discharges, is still liable for any prohibited discharges through illicit connections, dumping, spills, or other discharges not addressed by BMPs satisfying subsection (D)(2) of this section that allow contaminants to enter surface and stormwater or ground water.

4. Emergency response activities or other actions that must be undertaken immediately or within a time too short to allow full compliance

with this chapter in order to avoid an imminent threat to public health or safety shall be exempt from this section. The city manager may specify actions that qualify for this exception in city procedures. A person undertaking emergency response activities shall take steps to ensure that the discharges resulting from such activities are minimized to the greatest extent possible. In addition, this person shall evaluate BMPs and the site plan, where applicable, to restrict recurrence. [Ord. 09-0299 § 3; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.025).]

### **13.45.040 Stormwater Pollution Prevention Manual.**

A. Adoption. The Kenmore Stormwater Pollution Prevention Manual is adopted for use in the city of Kenmore. Future versions of said manual shall be adopted only if approved by the Kenmore city council. The manual is available in electronic form from the city of Kenmore.

B. Compliance with this chapter shall be achieved through the use of best management practices described in the Kenmore Stormwater Pollution Prevention Manual. In applying the Stormwater Pollution Prevention Manual, the city manager shall first require the implementation of source control BMPs. If these are not sufficient to prevent contaminants from entering surface and stormwater or ground water, the city manager may require implementation of treatment BMPs, as set forth in AKART. The city manager will provide, upon reasonable request, available technical assistance materials and information, and information on outside financial assistance options to persons required to comply with this chapter.

C. In applying the Stormwater Pollution Prevention Manual to prohibited discharges from normal single-family residential activities, the city manager shall use public education and warnings as the primary method of gaining compliance with this chapter and shall not use citations, notice and orders, assessment of civil penalties and fines, or other compliance actions as authorized in Chapter 1.20 KMC unless the city manager determines:

1. The discharge from a normal single-family residential activity, whether singly or in combination with other discharges, is causing a significant contribution of contaminants to surface and stormwater or ground water; or

2. The discharge from a normal single-family residential activity poses a hazard to the public health, safety or welfare, endangers any property or

adversely affects the safety and operation of city right-of-way, utilities or other city-owned or maintained property.

D. Persons implementing BMPs through another federal, state, or local program will not be required to implement the BMPs prescribed in the Stormwater Pollution Prevention Manual, unless the city manager determines the alternative BMPs are ineffective at reducing the discharge of contaminants. If the other program requires the development of a stormwater pollution prevention plan or other best management practices plan, the person shall make their plan available to the city of Kenmore upon request. Persons who qualify for exemptions include, but are not limited to, persons:

1. Required to obtain a general or individual NPDES permit from the Washington State Department of Ecology;

2. Implementing and maintaining, as scheduled, a city-approved farm management plan;

3. Implementing BMPs in compliance with Chapter 18.70 KMC;

4. Implementing BMPs in compliance with the management program of the city's municipal NPDES permit;

5. Engaged in forest practices, with the exception of forest practices occurring on lands platted after January 1, 1960, or on lands being converted to another use, or when regulatory authority is otherwise provided to local government by RCW 76.09.240; or

6. Identified by the city manager as being exempt from this section. [Ord. 09-0299 § 4; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.035).]

### **13.45.050 Administration.**

The city manager is authorized to implement the provisions of this chapter. The city manager is authorized to promulgate and adopt administrative rules and regulations for the purpose of implementing and enforcing the provisions of this chapter. The city manager will coordinate the implementation and enforcement of this chapter with other departments of city of Kenmore government. [Ord. 09-0299 § 5; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.045).]

### **13.45.060 Enforcement.**

A. The city manager is authorized to carry out enforcement actions pursuant to the enforcement and penalty provisions of this chapter, and Chap-

ters 1.15 and 1.20 KMC and other enforcement provisions adopted by rule.

B. The city manager shall use public education, warnings, technical assistance and the implementation of BMPs and, when necessary, AKART, as the primary methods of gaining compliance with this chapter, unless the city manager determines a violation is a result of a flagrant act that should be addressed through immediate penalties or poses a hazard as defined in KMC 13.45.070, Hazards.

C. The city manager, in consultation with other departments of the city of Kenmore government, shall develop and implement additional enforcement procedures. These procedures shall indicate how the city will investigate and respond to reports or instances of noncompliance with this chapter and shall identify by title the official(s) responsible for implementing the enforcement procedures.

D. The city manager is authorized to make such inspections and take such actions as may be required to enforce the provisions of this chapter.

1. The city manager may observe BMPs or examine or sample surface and stormwater or ground water as often as may be necessary to determine compliance with this chapter. Whenever an inspection of a property is made, the findings shall be recorded and a copy of the inspection findings shall be furnished to the owner or the person in charge of the property after the conclusion of the investigation and completion of the inspection findings. The person in violation of this chapter shall be responsible for all costs and expenses related to the city's sampling, examination, analysis, application of BMPs authorized herein and/or abatement of the violation.

2. When the city manager has made a determination under subsection (D)(1) of this section that any person is violating this chapter, the city manager may require the violator to sample and analyze any discharge, surface and stormwater, ground water, and/or sediment, in accordance with sampling and analytical procedures or requirements determined by the city manager. If the violator is required to complete this sampling and analysis, a copy of the analysis shall be provided to the city manager. The person in violation of this chapter shall be responsible for all costs and expenses related to the sampling, examination, analysis, application of BMPs required by the city manager and/or abatement of the violation.

E. In addition to any other penalty or method of enforcement, the city may bring actions for injunctive or other relief to enforce this chapter. [Ord. 09-0299 § 6; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.050).]

#### **13.45.070 Hazards.**

A. Whenever the city manager determines that any violation of this chapter poses a hazard to public health, safety, or welfare, endangers any property, or adversely affects the safety and operation of city right-of-way, utilities, and/or other property owned or maintained by the city, the person holding title to the subject property, and/or other person or agent in control of said property, upon receipt of notice in writing from the city manager, shall within the period specified therein address the cause of the hazardous situation in conformance with the requirements of this chapter.

B. Notwithstanding any other provisions of this chapter, whenever it appears to the city manager that conditions covered by this chapter exist requiring immediate action to protect the public health and/or safety, the city manager is authorized to enter at all times in or upon any such property, public or private, for the purpose of inspecting and investigating such emergency conditions. The city manager, without prior notice, may order the immediate discontinuance of any activity leading to the emergency condition. Failure to comply with such order shall constitute a misdemeanor. [Ord. 09-0299 § 7; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.060).]

#### **13.45.080 Criminal penalty.**

Any willful violation of an order issued pursuant to KMC 13.45.060 or 13.45.070 for which a criminal penalty is not prescribed by state law is a misdemeanor. [Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.070).]

#### **13.45.090 Civil penalties for water quality.**

The enforcement provisions for water quality are intended to encourage compliance with this chapter. To achieve this, violators will be required to take corrective action and comply with the requirements of this chapter, and may be required to pay a civil penalty for the redress of ecological, recreational, and economic values lost or damaged due to their unlawful action.

A. The provisions in this section are in addition to and not in lieu of any other penalty, sanction or right of action provided by law.

B. Any person in violation of this chapter may be subject to civil penalties assessed as follows:

1. An amount reasonably determined by the city manager to be equivalent to the economic benefit the violator derives from the violation as measured by the greater of the resulting increase in market value of the property or business value received by the violator, or savings of construction or retrofitting costs realized by the violator performing any act in violation of this chapter; and

2. An amount, not to exceed \$25,000, that is reasonably based upon the nature and gravity of the violation and the cost to the city of enforcing this chapter against the violator.

C. Any person who, through an act of commission or omission, aids or abets in a violation shall be considered to have committed the violation for the purposes of the civil penalty.

D. Each violator is jointly and severally liable for a violation of this chapter. The city manager may take enforcement action, in whole or in part, against any violator. The decisions whether to take enforcement action, what type of action to take, and which person to take action against, are all entirely within the city manager's discretion. Factors to be used in taking such enforcement actions shall be:

1. Awareness of the violation;
2. Ability to correct the violation;
3. Cooperation with government agencies;
4. Degree of impact or potential threat to

water or sediment quality, human health, or the environment.

E. In the event more than one person is determined to have violated the provisions of this chapter, all applicable civil penalties may be imposed against each person, and recoverable damages, costs, and expenses may be allocated among the persons on any equitable basis. Factors that may be considered in determining an equitable allocation include:

1. Awareness of the violation;
2. Ability to correct the violation;
3. Ability to pay damages, costs, and

expenses;

4. Cooperation with government agencies;
5. Degree of impact or potential threat to

water or sediment quality, human health, or the environment.

F. The city manager may engage in mitigation discussions with the violator. The city manager may reduce the penalties based upon one or more of the following mitigating factors:

1. The person responded to city attempts to contact the person and cooperated with efforts to correct the violation;

2. The person showed due diligence and/or substantial progress in correcting the violation; or

3. An unknown person was the primary cause of the violation.

Payment of a monetary penalty pursuant to this chapter does not relieve the person of the duty to correct the violation.

G. All civil penalties recovered during the enforcement of this chapter under Chapter 1.20 KMC shall be deposited into a fund of the city and shall be used for the protection of surface and stormwater or ground water as set forth in this chapter, through education or enhanced implementation. [Ord. 09-0299 § 8; Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.080).]

### **13.45.100 Construction – Intent.**

A. This chapter is enacted as an exercise of the city's power to protect and preserve the public health, safety and welfare. Its provision shall be exempted from the rule of strict construction and shall be liberally construed to give full effect to the objectives and purposes for which it was enacted. This chapter is not enacted to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by the terms of this chapter.

B. The primary obligation of compliance with this chapter is placed upon the person holding title to the property. Nothing contained in this chapter is intended to be or shall be construed to create or form a basis for liability for the city, the department, its officers, employees or agents for any injury or damage resulting from the failure of the person holding title to the property to comply with the provisions of this chapter, or by reason or in consequence of any act or omission in connection with the implementation or enforcement of this chapter by the city, department, its officers, employees or agents. [Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.090).]

### **13.45.110 Severability.**

If any provision of this chapter or its application to any person or property is held invalid, the remainder of the chapter or the application of the provision to other persons or property shall not be affected. [Ord. 01-0124 § 1; Ord. 98-0016 §§ 2, 3 (KCC 9.12.110).]

**13.45.120 Penalty.**

Except as provided in KMC 13.45.090(B)(1) and (2) for civil penalties, any person violating any of the provisions of this chapter may be subject to the general penalty and enforcement provisions in this chapter and Chapters 1.15 and 1.20 KMC. [Ord. 09-0299 § 9; Ord. 01-0124 § 1; Ord. 98-0016 § 5.]

**APPENDIX B – 2010 OUTFALL RECONNAISSANCE INVENTORY (ORI)**



## **2010 Outfall Reconnaissance Inventory Summary**

**Swamp Creek, Little Swamp Creek, Muck Creek, and Associated  
Tributaries**

**September 2010**

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City of Kenmore  
Engineering Department





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## INTRODUCTION

The City of Kenmore (City) was issued a Western Washington Phase II Municipal Stormwater Permit (Permit) on January 17, 2007. The Permit contains requirements to develop a Stormwater Management Program (SWMP). One of the requirements outlined in the SWMP was to develop an Illicit Discharge Detection and Elimination (IDDE) program. As part of the IDDE program, receiving waters were prioritized for visual inspection and screened for illicit connections. Three receiving waters were required to be completed prior to February 15, 2011. One receiving water will be required to be completed prior to February 15, 2012 and then one each year thereafter.

In 2010, the City visually inspected the Swamp Creek basin, which included 8 receiving water bodies (See Fig 1):

- Swamp Creek (Type 1<sup>a</sup>)
- Little Swamp Creek (Type 2<sup>a</sup>)
- Muck Creek (Type 2<sup>a</sup>)
- Swamp Creek Tributary 01 (Unclassified<sup>a</sup>)
- Swamp Creek Tributary 02 (Type 3<sup>a</sup>)
- Swamp Creek Tributary 03 (Type 2<sup>a</sup>)
- Swamp Creek Tributary 04 (Type 2<sup>a</sup>)
- Swamp Creek Tributary 05 (Unclassified<sup>a</sup>)

<sup>a</sup>Stream classification types are described in Kenmore Municipal Code, Chapter 18.55.400.

## METHOD

### Outfall Reconnaissance Inventory (ORI)

The City structured the ORI as described in the “Illicit Discharge and Elimination – A Guidance Manual for Program Development and Technical Assessments” (the Manual) by the Center for Watershed Protection and Robert Pitt released in October, 2004.

Initial mapping of the Municipal Separate Storm Sewer System (MS4) was conducted during the summer of 2010 before walking the streams in fall. Potential outfall locations were identified and mapped in the geographical information system (GIS) and provided to ORI staff. Additional outfalls discovered during the stream walks were mapped and input into the City’s GIS. ‘Outfall’ is defined in the Permit as a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the State and does not include open conveyances connecting two municipal separate sewer systems, or pipes, tunnels, or other conveyances which connect segments of the same stream or other waters of the State and are used to convey waters of the State. In reality, an outfall is not always a well defined point on the ground. Efforts were made to accurately capture each outfall, as defined, but in some cases a judgment call was required to decide where an outfall would be placed. For instance, if a stream flowed through a series of catch basins while crossing a road, an outfall was identified where the last catch basin discharged back into the ‘natural’ stream channel.

Receiving waters were walked by at least two staff members, one walking each bank of stream when practical. Typically, streams were walked in an upstream direction to minimize disturbance to potential in-stream sample areas.

If flow was present at an outfall, an ORI worksheet was completed, a picture was taken and water was collected to test for the illicit discharge indicators identified in table 1 below. Pictures of each flowing outfall can be found in Appendix A.

**Table 1 – Illicit Discharge Indicators**

Indicator	Instrument	Method	Accuracy	Range
Temperature	YSI 63	Thermistor Sensor	±0.1°C	
pH	YSI 63	Combination Sensor with Gel Reference	±0.1 unit within 10°C of calibration ±0.2 unit within 20°C of calibration	0-14
Conductivity	YSI 63	Four Electrode Cell Sensor	±0.5% full scale and 0.1 uS/cm resolution	0 to 499.0 us/cm
Salinity	YSI 63	ASTM document <i>Standard Methods of Test for Electrical Conductivity of Water and Industrial Wastewater</i> , ASTM Designation D1125-82, and <i>OIML Recommendation Number 56</i>	±0.1 ppt	
Turbidity	LaMotte 2020e Turbidity Meter	USEPA Method 180.1	±2% NTU ±3% NTU	0-100 NTU >100 NTU

*Table 1 continued on next page*

Indicator	Instrument	Method	Accuracy	Range
Ammonia Nitrogen	LaMotte Smart2 Colorimeter	Nesslerization		0.00-4.00 ppm
Fluoride	LaMotte Smart2 Colorimeter	SPADNS		0.00-2.00 ppm
Potassium	LaMotte Smart2 Colorimeter	Tetraphenylboron		0.0-10.0 ppm
Surfactants	LaMotte Smart2 Colorimeter	Ion Pair Extraction-Bromophenol Blue Indicator		0.5-8.0 ppm as Linear Alkyl Sulfonates (LAS)
Fecal Coliform	AMTEST Labs	SM9222D		

## RESULTS

A total of 61 outfalls were identified in the Swamp Creek Basin ORI (See Fig 1). Eleven outfalls had flowing water and were tested for illicit discharge indicators and are labeled in Figure 1 (SCOF001 – SCOF012).

**Figure 1 - Map of Swamp Creek Basin Outfalls**

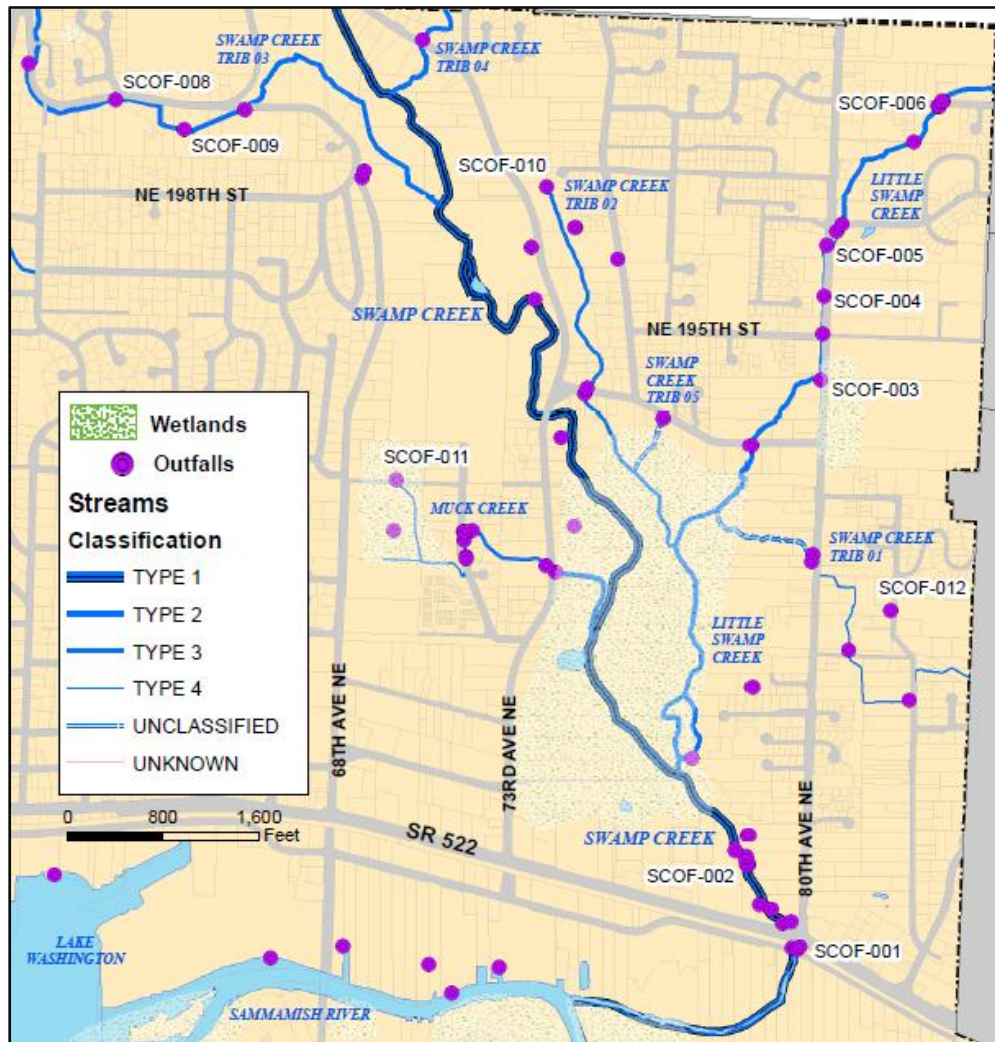


Table 2 summarizes the concentrations found for each illicit discharge indicator sampled.

**Table 2 – Outfall Illicit Discharge Indicator Results**

	SCOF-001	SCOF-002	SCOF-003	SCOF-004	SCOF-005	SCOF-006	SCOF-008	SCOF-009	SCOF-010	SCOF-011	SCOF012
Temp (°C)	16.7	15.2	13.6	15.0	15.7	15.2	15.8	15.3	15.5	15.0	15.0
pH	7.19	6.75	7.88	7.43	7.59	7.46	7.17	7.91	7.2	8.23	7.71
Conductivity (uS/cm)	248.4	224.5	166.1	185.3	34.1	109.6	180.6	62.3	274	178.1	221.4
Salinity (ppt)	-	-	0.1	0.1	0.0	0.1	0.1	0.0	0.2	0.1	0.1
Turbidity (NTU)	-	-	2.63	3.47	0.22	1.76	0.64	0.86	13.6	1.7	9.47
Ammonia (ppm)	0.10	.37	0.17	0.17	0.11	0.19	0.14	0.11	0.67	0.13	0.17
Fluoride (ppm)	0.04	0.01	0.79	0.19	0.56	0.66	0.05	0.14	0.23	0.05	0.04
Potassium (ppm)	5.0	2.0	1.9	2.1	2.1	1.8	2.6	1.7	5.7	2.3	6.0
Surfactant (ppm)	1.2	2.2	2.8	1.9	1.6	2.4	1.0	1.1	1.0	1.5	1.7
Fecal Coliform (FCU/100mL)	10	6	35	20	5	40	<2	8	-	-	-

Table 3 summarizes the concentrations found for each illicit discharge indicator sampled in the main channel of Swamp Creek. Fecal Coliform samples were not collected in Swamp Creek. Swamp Creek samples were not collected the same day as outfall samples.

**Table 3 – Swamp Creek Illicit Discharge Indicator Results**

	Swamp Creek 204 <sup>TH</sup> AVE NE	Swamp Creek 73 <sup>RD</sup> AVE NE	Swamp Creek NE BOTHELL WAY
Temp (°C)	12.2	12.5	12.2
pH	8.07	8.06	7.6
Conductivity (uS/cm)	148.7	155.7	152.7
Salinity (ppt)	0.1	0.1	0.1
Turbidity (NTU)	0.83	0.97	1.54
Ammonia (ppm)	0.17	0.18	0.25
Fluoride (ppm)	0.22	0.23	0.27
Potassium (ppm)	1.6	1.9	1.8
Surfactant (ppm)	2.5	1.6	1.4
Fecal Coliform (FCU/100mL)	Not Collected	Not Collected	Not Collected

## CONCLUSION

Only surfactants and fluoride exceeded the benchmark concentration (BC) suggested in the Manual (Table 4). Surfactants surpassed the BC (>0.25 mg/L) in every sample. Fluoride surpassed the BC (>0.25 mg/L) in three samples. Surfactants also exceeded the BC in all three Swamp Creek samples. Fluoride exceeded the BC in one of three Swamp Creek samples, which seems unlikely. Upstream reconnaissance did not reveal any obvious source for the observed concentrations of surfactant and fluoride.

Surfactant concentration results suggest that surfactant concentrations are exceeding the BC basin wide. Surfactant concentrations in Swamp Creek entering the City were at 2.5 ppm and decreased to 1.4 ppm before reaching Lake Washington. Elevated surfactant levels observed at the outfall were not accompanied with any visual cues that could be used to track potential sources upstream.

In general, fluoride testing seemed unreliable. Multiple readings of the same sample resulted in readings that were  $\pm 75\%$  at times.

It is interesting to note that visual inspection, without sampling, would have only triggered further investigation at one outfall due to the presence of suds and discoloration. However, that outfall had the lowest measured surfactant concentration and slightly elevated turbidity (but still well below the BC).

Additional samples should be collected during the next ORI and tested at a qualified lab to compare the measurements of the field equipment to the lab results. Surfactant and fluoride results seemed questionable.




**Table 4 – Indicator Benchmark Concentrations**

	Swamp Creek Basin Outfalls ORI Range	Washington State WQ Standard 173-201A WAC	Manual Benchmark Concentration
<b>Temp (°C)</b>	15.0 – 16.7	ND	ND
<b>pH</b>	6.75 – 7.91	6.5 – 8.5	≤ 5
<b>Conductivity (uS/cm)</b>	34.1 – 248.4	ND	≥ 2,000
<b>Salinity (ppt)</b>	0.0 – 0.1	ND	ND
<b>Turbidity (NTU)</b>	0.22 – 3.47	5 NTU over background (when ≤50 NTU)	≥ 1,000
<b>Ammonia (ppm)</b>	0.096 – 0.372	ND	≥50 mg/L*
<b>Fluoride (ppm)</b>	0.01 – 0.79	ND	> 0.25 mg/L
<b>Potassium (ppm)</b>	1.7 – 5.0	ND	≥ 20 mg/L*
<b>Surfactant (ppm)</b>	1.0 – 2.8	ND	> 0.25 mg/L*
<b>Fecal Coliform (FCU/100mL)</b>	<2 - 40	50	ND

\* mg/L and ppm are roughly equivalent (it is equivalent with pure water)

ND – Not Determined

**APPENDIX A - PHOTOS**

			<p><b>SCOF-001</b>          GIS # C0855          09/03/2010          07:45</p> <p>24" CMP</p> <p>Drains SR 522 from 80<sup>TH</sup>          AVE NE to 83<sup>RD</sup> PL NE.</p>
			<p><b>SCOF-002</b>          GIS # C1584          09/03/2010          13:26</p> <p>12" CMP</p> <p>Drains residential area          along 80<sup>TH</sup> AVE NE.</p>





**SCOF-003**  
GIS # C0869  
09/09/2010  
13:00

36" CMP

Drains the east side of  
80<sup>TH</sup> AVE NE from NE  
192<sup>ND</sup> ST to NE 198<sup>TH</sup> ST.



**SCOF-004**  
GIS # C0829  
09/09/2010  
13:25

12" CMP into 36" CMP

Drains NE 196<sup>TH</sup> ST  
residential Cul-de-sac at  
78<sup>TH</sup> AVE NE.



**SCOF-005**

GIS # C0866  
09/09/2010  
14:00

18" CMP

Drains west side of 80<sup>TH</sup>  
AVE NE from NE 198<sup>TH</sup> ST  
to the north border of  
Kenmore at NE 205<sup>TH</sup> ST.



**SCOF-006**

GIS # C1562  
09/09/2010  
14:30

Vegetated Ditch

Drains the south side of  
NE 203<sup>RD</sup> ST from  
approximately the 8200  
block east to the Kenmore  
border.



SCOF-008  
C1593  
09/10/2010  
11:30

**SCOF-008**  
GIS # C1593  
09/10/2010  
11:30

12" RCP

Drains the north side of  
NE 202<sup>ND</sup> ST between 63<sup>RD</sup>  
AVE NE and 62<sup>ND</sup> AVE NE.



SCOF-009  
C0868  
09/10/2010  
12:05

**SCOF-009**  
GIS # C0868  
09/10/2010  
12:05

Vegetated Ditch

Drains NE 198<sup>TH</sup> ST  
between 62<sup>ND</sup> AVE NE and  
65<sup>TH</sup> AVE NE.



**SCOF-010**  
GIS # C1615  
10/1/2010  
11:00

24" CPEP

Drains private area between  
73<sup>RD</sup> AVE NE and 75<sup>TH</sup> AVE NE  
north of NE 200<sup>TH</sup> ST.



**SCOF-011**  
GIS # C1610  
10/1/2010  
11:18

30" CMP

Drains between 68<sup>TH</sup> AVE NE  
and 65<sup>TH</sup> AVE NE from NE 190<sup>TH</sup>  
ST to NE 196<sup>TH</sup> ST.



**SCOF-012**

GIS # C1605

10/1/2010

11:57

18" CMP

Drains the east side of 82<sup>ND</sup>  
AVE NE from NE 185<sup>TH</sup> ST to NE  
187<sup>TH</sup> ST.

**APPENDIX C - 2011 OUTFALL RECONNAISSANCE INVENTORY (ORI)**



## **2011 Outfall Reconnaissance Inventory Summary**

**Sammamish River  
Lake Washington**

**August 2011**

**Prepared by:**  
Richard Sawyer

**Field Staff:**  
Richard Sawyer  
Art Simpson

City of Kenmore  
Engineering Department



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## **INTRODUCTION**

The City of Kenmore (City) was issued a Western Washington Phase II Municipal Stormwater Permit (Permit) on January 17, 2007. The Permit contains requirements to develop a Stormwater Management Program (SWMP). One of the requirements outlined in the SWMP was to develop an Illicit Discharge Detection and Elimination (IDDE) program. As part of the IDDE program, receiving waters were prioritized for visual inspection and screened for illicit connections. Three receiving waters were required to be completed prior to February 15, 2011. One receiving water will be required to be completed prior to February 15, 2012 and then one each year thereafter.

In 2011, the City visually inspected outfalls along Sammamish River and Lake Washington.

## METHOD

### Outfall Reconnaissance Inventory (ORI)

The City structured the ORI as described in the “Illicit Discharge and Elimination – A Guidance Manual for Program Development and Technical Assessments” (the Manual) by the Center for Watershed Protection and Robert Pitt released in October, 2004.

Initial mapping of the Municipal Separate Storm Sewer System (MS4) was conducted during the summer of 2010. Potential outfall locations were identified and mapped in the geographical information system (GIS) and provided to ORI staff. Additional outfalls discovered during the ORI were mapped and input into the City’s GIS. ‘Outfall’ is defined in the Permit as a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the State and does not include open conveyances connecting two municipal separate sewer systems, or pipes, tunnels, or other conveyances which connect segments of the same stream or other waters of the State and are used to convey waters of the State. In reality, an outfall is not always a well defined point on the ground. Efforts were made to accurately capture each outfall, as defined, but in some cases a judgment call was required to decide where an outfall would be placed. For instance, if a stream flowed through a series of catch basins while crossing a road, an outfall was identified where the last catch basin discharged back into the ‘natural’ stream channel.

Access to outfalls along Sammamish River and Lake Washington was achieved by using a kayak and inspecting them along the shoreline. Many of the outfalls were remote and inaccessible from land so this method proved to be very successful.

If flow was present at an outfall, an ORI worksheet was completed, a picture was taken and water was collected to test for the illicit discharge indicators identified in table 1 below. Pictures of each flowing outfall can be found in Appendix A.

**Table 1 – Illicit Discharge Indicators**

Indicator	Instrument	Method	Accuracy	Range
Temperature	YSI 63	Thermistor Sensor	±0.1°C	
pH	YSI 63	Combination Sensor with Gel Reference	±0.1 unit within 10°C of calibration ±0.2 unit within 20°C of calibration	0-14
Conductivity	YSI 63	Four Electrode Cell Sensor	±0.5% full scale and 0.1 uS/cm resolution	0 to 499.0 us/cm
Salinity	YSI 63	ASTM document <i>Standard Methods of Test for Electrical Conductivity of Water and Industrial Wastewater</i> , ASTM Designation D1125-82, and <i>OIML Recommendation Number 56</i>	±0.1 ppt	
Turbidity	LaMotte 2020e Turbidity Meter	USEPA Method 180.1	±2% NTU ±3% NTU	0-100 NTU >100 NTU

*Table 1 continued on next page*

Indicator	Instrument	Method	Accuracy	Range
Ammonia Nitrogen	LaMotte Smart2 Colorimeter	Nesslerization		0.00-4.00 ppm
Fluoride	LaMotte Smart2 Colorimeter	SPADNS		0.00-2.00 ppm
Potassium	LaMotte Smart2 Colorimeter	Tetraphenylboron		0.0-10.0 ppm
Surfactants	LaMotte Smart2 Colorimeter	Ion Pair Extraction-Bromophenol Blue Indicator		0.5-8.0 ppm as Linear Alkyl Sulfonates (LAS)
Fecal Coliform	AMTEST Labs	SM9222D		

## RESULTS

A total of 31 outfalls were identified in the Sammamish River ORI (Figure 1). Six outfalls had flowing water and were tested for illicit discharge indicators and are labeled in Figure 1.

**Figure 1 - Map of Sammamish River Outfalls**

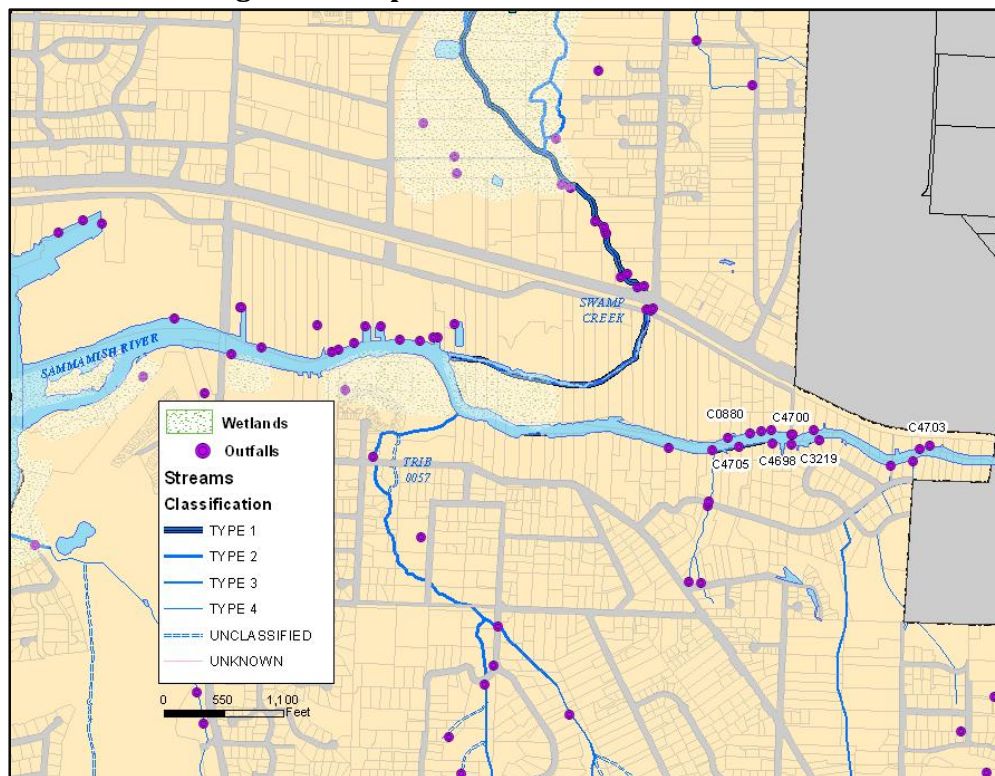


Table 2 summarizes the concentrations found for each illicit discharge indicator sampled. Duplicate samples were collected at two outfalls (C0880 and C4703) and sent to AMTEST, INC. for comparison to samples analyzed in the field. Ammonia and surfactant concentrations tested higher in the field than in the lab. Four stations had flows too low to use the YSI probe.

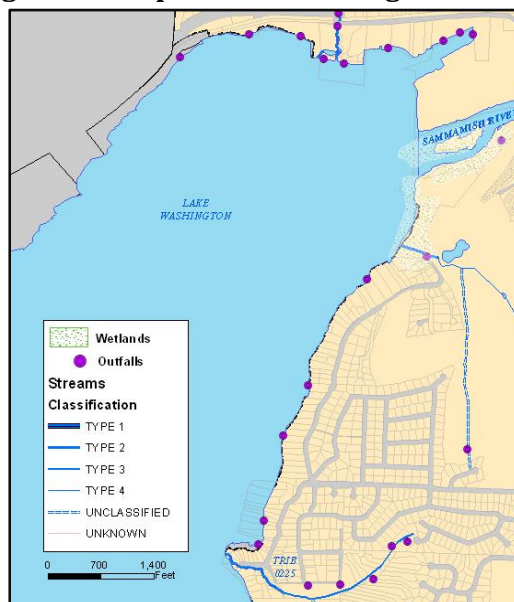
**Table 2 – Outfall Illicit Discharge Indicator Results (Sammamish River)**

	C0880	C0880 DUPLICATE	C4703	C4703 DUPLICATE	C4698	C4700	C3219	C4705
Temp (°C)	19.0	-	15.6	-	-	-	-	-
pH	7.70	-	7.45	-	-	-	-	-
Conductivity (uS/cm)	179.8	-	132.1	-	-	-	-	-
Salinity (ppt)	0.1	-	0.1	-	-	-	-	-
Turbidity (NTU)	1.19	-	0.0	-	1.23	0.42	1.98	6.22
Ammonia (ppm)	0.19	0.026	0.17	0.008	0.14	0.17	0.20	1.61
Fluoride (ppm)	0.06	<0.02	0	<0.02	0.0	0.03	0.0	0.0
Potassium (ppm)	2.2	2.4	1.9	2.1	2.6	2.7	2.3	3.6
Surfactant (ppm)	1.9	<0.25	1.1	<0.25	1.5	1.5	1.7	1.3

*Duplicate samples were analyzed in the lab at AMTEST, INC.*

A total of thirteen outfalls were identified in the Lake Washington ORI (Figure 2). Five of the outfalls were not observed during the field screening. The presumed outfall location may have been incorrect or they may have not been easily visible. No visible indicators of an illicit discharge or connection were observed in the presumed areas of these outfalls. Three outfalls had a small discharge, but flows were too small to collect a sample or conditions didn't allow it. No visible indicators of an illicit discharge or connection were observed at these locations.

**Figure 2 – Map of Lake Washington Outfalls**



## CONCLUSION

No illicit discharges or connections were discovered during the Sammamish River or Lake Washington ORI. AMTEST, INC. analyses indicated that field instrumentation provided higher than actual concentrations for both ammonia and surfactants.

Table 3 shows indicator benchmark concentrations that would indicate a potential illicit discharge or connection.

**Table 3 – Indicator Benchmark Concentrations**





	Swamp Creek Basin Outfalls ORI Range	Washington State WQ Standard 173-201A WAC (Not Stormwater)	Manual Benchmark Concentration
<b>Temp (°C)</b>	15.6 – 19.0	ND	ND
<b>pH</b>	7.45 – 7.70	6.5 – 8.5	≤ 5
<b>Conductivity (uS/cm)</b>	132.1 – 179.8	ND	≥ 2,000
<b>Salinity (ppt)</b>	0.1	ND	ND
<b>Turbidity (NTU)</b>	0.00 – 6.22	5 NTU over background (when ≤50 NTU)	≥ 1,000
<b>Ammonia (ppm)</b>	0.14 – 1.61**	ND	≥50 mg/L*
<b>Fluoride (ppm)</b>	0.00 – 0.06	ND	> 0.25 mg/L
<b>Potassium (ppm)</b>	1.9 – 3.6	ND	≥ 20 mg/L*
<b>Surfactant (ppm)</b>	1.1 – 1.9**	ND	> 0.25 mg/L*

\* mg/L and ppm are roughly equivalent (it is equivalent with pure water)

\*\* Duplicate results suggest much lower concentrations

ND – Not Determined

**APPENDIX A – SAMMAMISH RIVER OUTFALL PHOTOS**

		<p><b>C0880</b>          GIS # C0880          08/29/2011          11:08</p> <p>12c" CMP</p> <p>Drains 83<sup>RD</sup> CT NE from NE 175<sup>TH</sup> ST.</p>
	<p><b>C4703</b>          GIS # C4703          08/29/2011          11:57</p> <p>18" HDPE</p> <p>Drains from NE Bothell Way in Bothell.</p>	
	<p><b>C4698 &amp; C4700</b>          GIS # C0869          08/29/2011          11:35</p> <p>8" CPEP</p> <p>Drains private property at 84<sup>TH</sup> AVE NE &amp; NE 175<sup>TH</sup> ST.</p>	

		<p><b>C3219</b>  GIS # C0829  08/29/2011  12:27</p> <p>42" PVC</p> <p>Drains 84<sup>TH</sup> AVE NE from Simonds RD NE to the river.</p>
		<p><b>C4705</b>  GIS # C0866  08/29/2011  12:35</p> <p>8" PVC</p> <p>Drains private property at 8216 NE 169<sup>TH</sup> ST.</p>



**APPENDIX D – 2012 OUTFALL RECONNAISSANCE INVENTORY (ORI)**



## **2012 Outfall Reconnaissance Inventory Summary**

**Tributary 0057**

**August 2012**

**Prepared by:**  
Richard Sawyer

**Field Staff:**  
Richard Sawyer  
Art Simpson

City of Kenmore  
Engineering Department



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## **INTRODUCTION**

The City of Kenmore (City) was issued a Western Washington Phase II Municipal Stormwater Permit (Permit) on January 17, 2007. The Permit contains requirements to develop a Stormwater Management Program (SWMP). One of the requirements outlined in the SWMP was to develop an Illicit Discharge Detection and Elimination (IDDE) program. As part of the IDDE program, receiving waters were prioritized for visual inspection and screened for illicit connections. Three receiving waters were required to be completed prior to February 15, 2011. One receiving water was required to be completed prior to February 15, 2012 and then one each year thereafter.

In 2010, the City visually inspected the main channel of Swamp Creek and several tributaries to Swamp Creek. In 2011, the City visually inspected Sammamish River and Lake Washington shoreline. In 2012 (this report), the City visually inspected outfalls along Tributary 0057.

## **METHOD**

### **Outfall Reconnaissance Inventory (ORI)**

The City structured the ORI as described in the “Illicit Discharge and Elimination – A Guidance Manual for Program Development and Technical Assessments” (the Manual) by the Center for Watershed Protection and Robert Pitt released in October, 2004.

Initial mapping of the Municipal Separate Storm Sewer System (MS4) was conducted during the summer of 2010. Potential outfall locations were identified and mapped in the geographical information system (GIS) and provided to ORI staff. Additional outfalls discovered during the ORI were mapped and input into the City’s GIS. ‘Outfall’ is defined in the Permit as a point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the State and does not include open conveyances connecting two municipal separate sewer systems, or pipes, tunnels, or other conveyances which connect segments of the same stream or other waters of the State and are used to convey waters of the State. In reality, an outfall is not always a well defined point on the ground. Efforts were made to accurately capture each outfall, as defined, but in some cases a judgment call was required to decide where an outfall would be placed. For instance, if a stream flowed through a series of catch basins while crossing a road, an outfall was identified where the last catch basin discharged back into the natural stream channel.

Two City staff members walked sections of Tributary 0057 in August 2012. Typically, the stream was walked in an upstream direction to minimize disturbance to potential in-stream sample areas.

If flow was present at an outfall, an ORI worksheet was completed, a picture was taken and water was collected to test for the illicit discharge indicators identified in Table 1 below. Pictures of each flowing outfall can be found in Appendix A.

**Table 1 – Illicit Discharge Indicators**

Indicator	Instrument	Method	Accuracy	Range
Temperature	YSI 63	Thermistor Sensor	±0.1°C	
pH	YSI 63	Combination Sensor with Gel Reference	±0.1 unit within 10°C of calibration ±0.2 unit within 20°C of calibration	0-14
Conductivity	YSI 63	Four Electrode Cell Sensor	±0.5% full scale and 0.1 uS/cm resolution	0 to 499.0 us/cm
Salinity	YSI 63	ASTM document <i>Standard Methods of Test for Electrical Conductivity of Water and Industrial Wastewater</i> , ASTM Designation D1125-82, and <i>OIML Recommendation Number 56</i>	±0.1 ppt	-
Turbidity	Eye	Visual Indicator	-	-
Ammonia Nitrogen	AMTEST Labs	EPA 350.1	Refer to published EPA Analytical Methods	Refer to published EPA Analytical Methods
Fluoride	AMTEST Labs	EPA 300.0	Refer to published EPA Analytical Methods	Refer to published EPA Analytical Methods
Potassium	AMTEST Labs	EPA 200.7	Refer to published EPA Analytical Methods	Refer to published EPA Analytical Methods
Surfactants	AMTEST Labs	SM 5540C	Refer to published EPA Analytical Methods	Refer to published EPA Analytical Methods
Fecal Coliform	AMTEST Labs	SM9222D	Refer to published EPA Analytical Methods	Refer to published EPA Analytical Methods

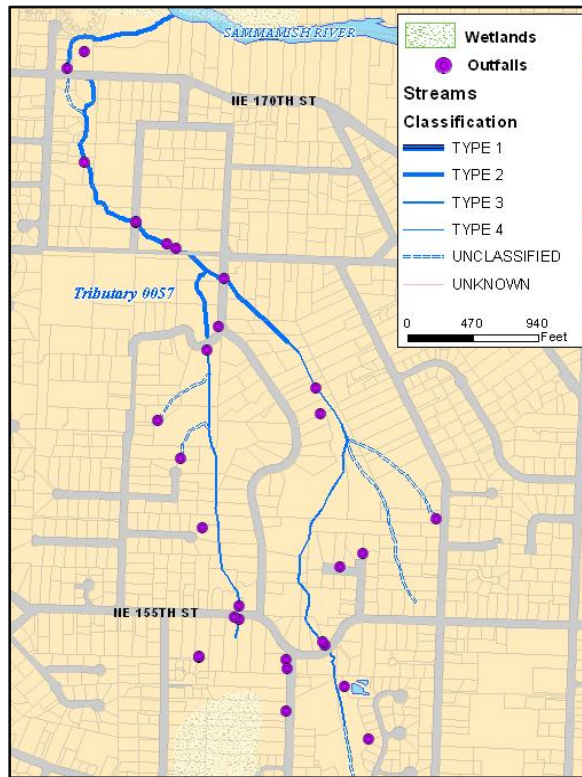
## RESULTS

A total of 30 outfalls were identified in the Tributary 0057 ORI (Figure 1). One outfall had flowing water and was tested for illicit discharge indicators. Two additional samples were collected from the main stream channel and analyzed to determine background levels. Samples were analyzed at AmTest, Inc. in Kirkland, WA.

**Table 2 – Outfall Illicit Discharge Indicator Results (Tributary 0057)**

	Temp (°C)	pH	Conductivity (uS/cm)	Salinity (ppt)	Turbidity (NTU)	Ammonia (ppm)	Fluoride (ppm)	Potassium (ppm)	Surfactant (ppm)
<b>CB0718 (Stream)</b>	-	-	-	-	CLEAR	0.01	<0.2	2.2	<0.025
<b>C2937 (Stream)</b>	14.5	7.98	93.4	0.1	CLEAR	0.01	<0.2	2.3	<0.025
<b>C3245 (Outfall)</b>	19.1	7.97	0	0	CLEAR	0.01	<0.2	2	<0.025

**Figure 1 - Map of Tributary 0057 Outfalls**



## CONCLUSION

No illicit discharges or connections were discovered during the Tributary 0057 ORI.

Table 3 shows indicator benchmark concentrations that would indicate a potential illicit discharge or connection.

**Table 3 - Indicator Benchmark Concentrations**

	Tributary 0057 ORI Range (Only one value)	Washington State WQ Standard 173-201A WAC (Not Stormwater)	Manual Benchmark Concentration
<b>Temp (°C)</b>	19.1	ND	ND
<b>pH</b>	7.98	6.5 – 8.5	≤ 5
<b>Conductivity (uS/cm)</b>	0	ND	≥ 2,000
<b>Salinity (ppt)</b>	0	ND	ND
<b>Turbidity (NTU)</b>	CLEAR	5 NTU over background (when ≤50 NTU)	≥ 1,000
<b>Ammonia (ppm)</b>	0.01	ND	≥50 mg/L*
<b>Fluoride (ppm)</b>	<0.2	ND	> 0.25 mg/L
<b>Potassium (ppm)</b>	2	ND	≥ 20 mg/L*
<b>Surfactant (ppm)</b>	<0.025	ND	> 0.25 mg/L*

\* mg/L and ppm are roughly equivalent (it is equivalent with pure water)

ND – Not Determined

## APPENDIX A – TRIBUTARY 0057 OUTFALL PHOTOS

	<p><b>CB0718</b>          GIS # CB0718          08/23/2012</p> <p>60" Type 2 Catch Basin (No pipe outlet with open top)</p> <p>Energy dissipater outlet for stream overflow on north side of NE 170<sup>TH</sup> ST.</p>
	<p><b>C2937</b>          GIS # C2937          08/23/2012</p> <p>24" Concrete</p> <p>Drains portion of Tributary 0057 under 76<sup>TH</sup> AVE NE.</p>
	<p><b>C3245</b>          GIS # C3245          08/23/2012</p> <p>12" CMP</p> <p>Drains from 81<sup>ST</sup> AVE NE.</p>