



ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE) PROGRAM MANUAL

City Policies and Procedures

City of Hastings, Engineering Department

Acknowledgment

The City of Hastings would like to thank the City of Bainbridge Island for generously sharing their *Illicit Discharge Detection and Elimination Program Manual*, April 2010, which became the base document from which this template was created.

Illicit Discharge Detection and Elimination Program Manual

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Section 1 – Introduction

1.1 Background

The City of Hastings, Nebraska has made a strong commitment to protect and manage Nebraska's natural resources. Within the Public Works Department's Water Resources Program, the Surface and Stormwater Management (SSWM) program seeks to minimize the negative effects of development and pollution, while maximizing environmental protection and conservation. Protecting and preserving the quality of the City's surface water is a key focus area of the SSWM program.

According to the US EPA's 2000 National Water Quality Inventory, 39 percent of assessed river and stream miles, 46 percent of assessed lake acres, and 51 percent of assessed estuarine square miles do not meet water quality standards. The top causes of impairment include siltation, nutrients, bacteria, metals (primarily mercury), and oxygen-depleting substances. Polluted stormwater runoff, including runoff from urban/suburban areas and construction sites is a leading source of this impairment. To address this problem, EPA established the National Pollutant Discharge Elimination System (NPDES) program as part of the Clean Water Act to regulate stormwater discharges.

In the State of Nebraska, EPA has delegated the NPDES program administration to the Department of Environmental Quality (NDEQ). NDEQ issued a Phase II Municipal Stormwater Permit to the Hastings in 2005. The Phase II Permit requires the City to have a stormwater management program (SWMP) with five major conditions. One of those conditions requires "The SWMP shall include an ongoing program to detect and remove illicit connections, discharges as defined in 40 CFR 122.26(b)(2), and improper disposal, including any spills..., into the municipal separate storm sewers owned or operated by the Permittee." (Permit Condition S5.C.3). The overarching program goal is to prevent, locate, and correct illicit discharges.

The City's IDDE program is managed by the City's Engineering Department. Maintenance staff and construction site inspectors also play an important role identifying illicit discharge problems and responding to clean-up requests. However, all Public Works, Planning and Community Development, Parks, Police, and Fire staff will play a role in locating, identifying and reporting potential illicit discharges.

1.2 Summary of the IDDE Program

The Phase II Permit requires the permittees to develop an IDDE program encompassing the elements listed below. Each element is addressed in the sections of this IDDE Program Manual as noted below.

- Develop a municipal storm sewer system map (Section 2);
- Adopt an ordinance to prohibit non-stormwater, illegal discharges, and/or dumping into the storm sewer system (Section 3);
- Implement an on-going program to detect and address non-stormwater discharges, spills, illicit connections, and illegal dumping (Section 4, 5, 6);
- Educate employees, businesses, and the general public about illicit discharge concerns (Section 7);
- Adopt and implement procedures for program evaluation and assessment (Section 8);
- Maintain records of all IDDE program activities (Section 8); and
- Provide IDDE training for municipal staff (Section 9).

This manual is intended to assist City staff in implementing the IDDE program. It is to be used as a guidance document for staff in their day-to-day activities related to IDDE. This document can also be used as a training tool to ensure that staff is following the same procedures in responding to illicit discharge concerns.

1.3 Definitions

- Illicit Discharge: Any discharge into a municipal separate storm sewer system (MS4) or permitted storm drain that is not entirely stormwater. This can include wastewater, runoff with pollutants, or other non-stormwater flows.
- Allowable Discharge: A permitted non-stormwater discharge that is exempt from IDDE enforcement, as defined in the MS4 NPDES permit.
(Examples include firefighting water, certain car washes, and discharges from facilities under other NPDES permits)
- Direct Entry: A source connected directly to the MS4 via a pipe or drain.
- Indirect Entry: A source that reaches the MS4 through storm drain inlets, cracks, or other indirect means.
- Potential Illicit Discharge: A flow that may be illicit but has not yet been confirmed through investigation.
- Stormwater: Rainwater or snowmelt that flows to waterways without treatment.
- Pollutant: Any contaminant in a discharge that can harm water quality, such as oil, grease, sediment, pathogens, or chemicals.
- Source Tracing: The process of identifying the origin of an illicit discharge.
- Removal/Cleanup: Actions taken to stop and eliminate an illicit discharge.
- Enforcement: Actions taken to address violations of IDDE ordinances or permits.

Section 2 – Storm Sewer System Map

2.1 Overview

The first major component of the City's illicit discharge program is the mapping of the municipal stormwater drainage system. Maintaining an accurate map of the stormwater drainage system will make it easier for the city to track and locate the source of suspected illicit discharges. The NPDES Phase II Permit outlines minimum information that should be included in the City's municipal storm sewer system map:

- Location of all known municipal storm sewer outfalls, receiving waters, and structural BMPs owned, operated, or maintained by the city,
- Tributary conveyances (type, material, size) leading to outfalls that are 24-inches or larger (or have an equivalent cross-sectional area),
- Drainage areas and land use for the drainage basins contributing to outfalls that are 24-inches or larger (or have an equivalent cross-sectional area),
- Locations of new connections to the City's stormwater drainage system, and
- Drainage areas within the city that do not discharge to surface water (closed depressions).

The Engineering Department requires the map be prepared in GIS format and the map must be made available upon request.

2.2 Mapping Procedures

City staff located drainage features and recorded the locations and feature attributes using GPS receivers. The data was then downloaded and imported into the City's GIS map. Sketches of the drainage infrastructure are completed in the field. These sketches are used to verify or clarify the electronic mapping information downloaded from the GPS receiver.

Inspectors began at a downstream outfall location and then traced the tributary drainage system upstream. Facility mapping was limited to public right-of-way areas. After the public drainage system was fully mapped, the city used as-built drawings from recent developments and required existing systems to be mapped to capture private drainage infrastructure.

Section 3 – IDDE Ordinance

3.1 What is an Illicit Discharge?

An illicit discharge is defined by the Engineering Department as "...any direct or indirect non-stormwater discharge to the city's storm drain system, except as expressly allowed by this

chapter.” Examples of illicit discharges include (but are not limited to) the following:

- Disposal of vehicle maintenance fluids into a storm drain;
- Hosing or washing loading areas in the vicinity of storm drain inlets;
- Leaking dumpsters flowing into a storm drain inlet;
- Old and damaged sanitary sewer line leaking fluids into a cracked or damaged storm sewer line.
- Pouring paints or stains into a storm drain;
- Allowing washwater with soaps or detergents into a storm drain inlet;
- Washing silt, sediment, concrete, cement or gravel into a storm drain; and
- A measurable flow during dry weather that contains pollutants or pathogens.

3.2 What is an Illicit Connection?

An illicit connection is defined by the Engineering Department as “Any man-made conveyance that is connected to a municipal separate storm sewer without a permit, excluding roof drains and other similar type connections.” Examples of illicit connections include (but are not limited to) the following:

- Sanitary sewer piping that is connected directly from a building to the stormwater system;
- A basement or shop floor drain that is connected to the stormwater system; or
- A cross connection between the municipal sanitary sewer and the stormwater system.

3.3 City IDDE Ordinance

In April 2010, the City adopted Ordinance 4251-4/2010, which adds a new chapter (42) to the City of Hastings Municipal Code to address IDDE. A copy of the full ordinance and code chapter, including definitions and a listing of discharges specifically or conditionally allowed, is included in Appendix B.

Specific text in Municipal Code 42-107 and 42-108 is shown below:

42-107. Discharge prohibitions.

No person shall discharge or cause to be discharged into the municipal storm drainage system or watercourses any materials including, but not limited to, pollutants or waters containing any pollutants that cause or contribute to a violation of applicable water quality standards. The commencement, conduct or continuance of any illegal discharge to the storm drainage system is prohibited except as described as follows:

- (1) The following discharges are exempt from discharge prohibitions established by this ordinance:
water line flushing or other potable water sources; landscape irrigation or lawn watering; diverted stream flows; rising ground water; ground water infiltration to storm drains; uncontaminated pumped ground water; foundation or footing drains (not including active groundwater dewatering systems); crawl space pumps; air conditioning

condensation; springs; non-commercial washing of vehicles; natural riparian habitat or wet-land flows; swimming pools (if de-chlorinated - typically less than one PPM chlorine); firefighting activities; and any other water source not containing Pollutants.

(2) Discharges determined by the city to be necessary to protect public health and safety.

(3) Dye testing if the city is notified in writing prior to the time of the test.

(4) Any non-storm water discharge permitted under an National Pollutant Discharge Elimination System permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the Federal Environmental Protection Agency, provided that the discharger is in full compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drainage system. (Ord. No. 4251-4/2010)

42-108. Connection prohibitions.

The construction, use, maintenance or continued existence of illicit connections to the storm drainage system is prohibited.

(1) This prohibition expressly includes, without limitation, illicit connections made in the past regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

(2) A person is considered to be in violation of this ordinance if the person connects a line conveying sewage or pollutants to the Municipal Separate Storm Sewer System or allows such a connection to continue. (Ord. No. 4251-4/2010)

Section 4 – Illicit Discharge Detection Procedures

4.1 Purpose

Illicit discharges and connections are identified through citizen reporting, interdepartmental or interagency referral, or other routine MS4 inspection activities. The City relies on local citizens, field staff, and inspections to detect potential problem areas quickly, so that they can be addressed before they cause significant water quality degradation.

A water quality incident/spill/trouble call Hotline number (402-461-2330) is available to report concerns. This convenience encourages residents to participate in the reporting process and helps the City to receive timely information about problems like illegal dumping, spills, or strong odors. The City's related MS4 maintenance activities provide opportunities to document and identify potential problems that may not be obvious to the general public.

4.2 Incident Reporting

Via phone: [402-462-2339](tel:402-462-2339)

Via email: stormwater@cityofhastings.org

Via website: <https://nebraskah2o.org/>

4.2.1 Contact Information

The City has established a “hotline” to handle water quality incident reports. Citizens, field personnel, and outside agencies that suspect of an illicit discharge, an illicit connection, or an illegal dumping action can call 402-461-2330 to report the incident.

During normal business hours (Monday thru Friday 8:00am to 5:00pm) citizens, other City departments or outside agencies reporting incidents that have occurred within the city limits can call the City's *Environmental Engineering Assistant* at 402-461-2339.

After hours, emergency water quality incidents should be reported through the police department or emergency management committee. Residents that encounter a non-emergency incident are encouraged to report the problem the next business day.

(If after hours messages are left on the City's Public Works voicemail, staff follow-up with the caller during the next business day).

4.2.2 Problem Documentation

When water quality incident reports are received, the staff person receiving the information should complete an Incident Report Form or other form and submit it to the appropriate personnel for follow up. Once recorded, incident information is referred to the appropriate City department and/or staff person for follow-up.

In most cases, IDDE problems should be referred to the Environmental Engineering Assistant for further investigation. Staff will either follow the investigation procedures in Section 5 to identify the source of the problem or, if the source is known, the corrective action procedures outlined in Section 6 will apply.

4.3 Outfall Inspection Procedures

The city will conduct an Outfall Reconnaissance Inventory (ORI) to visually inspect outfalls from the City's stormwater drainage system to identify areas of obvious pollution or non-stormwater discharges. Outfall inspections can locate potential problem areas without the need for in-depth laboratory analysis. Potential problem discharges can be identified by outfalls that are flowing during dry weather (potential illicit connection) or outfalls that have high turbidity, strong odors, or unusual colors.

If inspection staff encounters a transitory discharge, such as a liquid or oil spill, during inspection activities, the problem should be immediately referred to the appropriate agency or response contractor for clean-up. Staff should also complete an Inspection Form.

4.3.1 Prioritization Schedule

The city estimates that the storm drainage infrastructure includes approximately 31 outfalls that discharge to Thirty-two Mile Creek, Lake Hastings, West Fork of the Big Blue, Heartwell Park, or other receiving waters. Detailed mapping of the City's stormwater system is in progress. Detailed maps will be included in this manual as they are developed.

The Phase II Permit requires the city prioritize receiving waters for visual inspection to identify the area's most likely to include illicit discharges. Receiving water priorities have been set based on drainage area characteristics.

4.3.2 Responsibility

Inspections are the responsibility of the Environmental Engineering Assistant and City Building Inspector. Inspections may be conducted by City staff or by outside consultants hired by the city. In either case, all field reports will be reviewed by the City's Engineer or Environmental Officer.

4.3.3 Timing

Timing is important when scheduling ORI field days. The preferred conditions for outfall inspections include:

- Dry season – preferably in summer or early fall
- No run-off producing rainfall within previous 48 hours
- Low vegetation (avoid late spring when access may be hindered by heavy vegetation)

The preferred conditions allow detection of flows when there should be none and prevent the dilution of pollutants.

4.3.4 Equipment

Prior to conducting field work, individuals should assemble all necessary equipment (see Table 4-1) and review records from prior inspections in the same area to become familiar with the outfall locations and any potential inspection challenges.

Table 4-1 Field Equipment for Outfall Inspections	
Outfall Inspection Report Forms	Spray paint or other marker
Safety Gear – vest, hard hat, cones	Flash light or headlamp
Field Notebook/Pencils	Tool box
Cell phone w/ charged battery	First Aid Kit
Map or Aerial Photo of Inspection Area	Clear sample bottles
Digital camera w/ charged battery	Watch with second hand

After long periods of heavy rain, inspectors should allow 3-4 days of an antecedent dry period before starting or resuming inspections, so that rainfall runoff has a chance to clear the storm drainage system.

4.3.5 Activities

During ORI field days, inspectors should visually inspect each outfall and the immediate surrounding area, photograph the current conditions, and complete an Outfall Inspection Report form or other form.

Potential problems are indicated by outfalls that are flowing in dry weather and/or foul odors or discolored water in or around the outfall pipe. If an outfall with significant flow is encountered, inspectors should attempt to first determine the source of the flow. If groundwater has been ruled out as the source of the flow, then a flowing outfall may indicate a potential illicit discharge concern.

When illicit discharge problems are identified, inspectors will photograph the problem area and conduct a quick visual inspection of the surrounding area to identify any obvious pollution sources. For obvious illicit discharges, inspectors should consider collecting samples of the discharge, if possible, and begin filling out the Incident Response form to investigate the source of the pollutants as described in Section 5. These simple actions can give valuable direction to the upcoming IDDE inspection. Inspectors should file all outfall report forms, and update the record keeping database as appropriate. Additional record keeping information is included in Section 8.

During field inspections, inspectors should also note whether the outfalls have maintenance issues, such as trash around the outfall or damaged infrastructure that should be brought to the attention of the responsible department. Observed spills or environmental hazards should be immediately reported and documented using the proper forms.

4.5 Follow-up Actions

When potential problem areas are identified, inspectors should report the observations to the Environmental Engineering Assistant. A case log will be opened and the investigation procedures outlined in Section 5 will be initiated. The Environmental Engineering Assistant will also determine if other City departments or outside agencies need to be involved.

Section 5 – Investigation Procedures

5.1 Purpose

Potential illicit discharge problems can be revealed through outfall inspections or reports from staff, tenants, or the public as described in Section 4. When a complaint is reported, the Phase II Permit requires that a follow-up investigation be initiated within seven (7) days, on average. The follow-up investigation could include a site visit to look at the problem area, review of mapping information, review of past complaints or investigations at the location, or other data collection and review. Once a problem has been verified (either through a routine outfall inspection or follow-up to a called-in complaint) the City will begin an official illicit discharge investigation, following the procedures outlined in this section.

When an illegal dumping or illicit discharge problem is directly observed by a member of the City staff, it is generally not necessary to follow these investigation procedures. In those scenarios, the source of the problem discharge is already known. Problems revealed through direct observation are referred directly to the corrective action information in Section 6. In the event that a reported problem does not have a defined source, the procedures in this section should be followed to trace the source of the illicit discharge.

5.2 Source Investigation Priority Levels

Table 5-1 outlines the priority levels to assist City staff in determining the appropriate response time for initiating a source investigation after a problem is identified in the field. Priority levels are based on the suspected pollutant source(s) of a reported problem. According to the Phase II Permit, illicit discharge investigations should begin within seven days of identifying a problem. In most cases, the City strives to respond faster than the required timeline.

Table 5-1 Source Investigation Priority Levels		
Priority Level	Suspected Pollutants	Response Time (Workdays)
1	• Alkalis • Automotive products • Bases • Cleaning products • Degreaser or solvent • Herbicide • Metals • Painting products • Pesticide • Petroleum	<1

	• Drain cleaner • Fertilizer • Flammable/explosive materials	• Process Wastewater • Sewage • Unknown chemicals	
2	• Ammonia • Construction runoff (silt, sediment, gravel)	• Detergents • Food waste (fats, oils, grease) • Soap	1-2
3	• Car washing • Pressure washing waste • Spa or pool water	• Steam cleaning waste • Yard waste	2-3
4	• Animal carcasses • Bacteria • Construction materials • Debris	• Foam • Rust • Trash • Other	<3

Priority levels were determined based on the potential public health and/or water quality threat posed by a given pollutant. The response time indicates a target time frame for opening a case log and initiating a source investigation as described in Section 5.3. Contact Emergency Services (911) or City Public Works Department immediately if the discharge poses a severe threat to human health or the environment.

5.3 Tracing the Source

This section outlines the basic tools that can be used to trace the source of a suspected illicit discharge. Source tracing begins when a suspected problem area is identified through the ORI, field assessment/testing, or a complaint call. When the source of the non-stormwater discharge is not known, one of two primary methods can be used to locate the source of an illicit discharge:

- Method A – Storm Drain Network Investigations
- Method B – Drainage Area Investigations

The method used will depend on the type of information collected or reported, level of understanding of the drainage network, and existing knowledge of operations and activities on the surrounding properties. All source tracing investigations should be documented and recorded on the Incident Response report form or other form.

5.3.1 Open a Case Log

When problems are identified, a case log should be opened, and assigned a case number, creation date, case description and the primary staff contact/investigator. The work order is

created listing the property name, person responsible, and tracking all information related to the observed or suspected problem. The investigator assigned to the case shall keep an accurate log of labor, materials and costs associated with the investigation for invoicing the responsible party. The case log should be opened prior to completing any additional field work unless the nature of the discharge necessitates immediate response. The file should include copies of the following, if applicable:

- Water Quality Incident Report Form;
- Copy of Outfall Inspection Report;
- Incident Response field forms;
- Photographs;
- Additional field notes;
- Lab testing results;
- Compliance letters sent and responses received;
- Correspondence (mail, email, telephone logs);
- Proof of corrected problems (contract and invoice or clean field investigation report).

Any field investigations, photographs, corrective actions, or other activities associated with the suspected problem area should be documented in the case log. This becomes the City's official record of the IDDE investigation. Additional record keeping information is included in Section 8.

5.3.2 Method A – Storm Drain Network Investigations

The source of some illicit connections or discharges can be located by systematically isolating the area from which the polluted discharge originates. This method involves progressive investigation at manholes in the storm drain network to narrow down the location where the illegal discharge is entering the drainage system. This method is best used to identify constant or frequent discharge sources such as an illicit connection from a sewer system or sink drain into the storm drainage network. One-time illegal discharges (such as a surface spill or intentional dumping into the storm drain system) should be investigated using Method B described later in this section.

Inspectors should work progressively upstream from the outfall and inspect manholes until indicators reveal the discharge is no longer present. Manhole observations can be time-consuming, but they are generally 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 test one manhole at the downstream end of each branch. This can help to reduce the area that must be investigated.

Storm drain network investigations include the following steps:

1. Consult the drainage system map (if available) and identify the major branches. If a drainage system map is not available or major branches cannot be identified, then manhole observations and probe readings must be done at each successive upstream manhole to map the drainage system and isolate the location of the polluted discharge entry. In such a case, inspectors should also use the GPS unit to

- locate each observed manhole and add the location readings to the City's drainage system map.
2. Starting from the outfall, observe and take probe readings at the next upstream manhole or junction to see if there is evidence of polluted discharge. As with the outfall inspections, inspectors are looking for the presence of flow during dry weather, foul odors, colors or stained deposits, oily sheen, floatable materials, and/or unusual probe readings.
 3. Repeat observations and probe readings at each upstream manhole 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.
 4. Work downstream from the "clean" manhole or junction to isolate the location where the polluted discharge is entering the storm drain system.
 5. If discharge is evident from private property initiate private property site entry procedures.
 6. Document all findings on the Incident Response Report Form and record all information in the database case log.

Figure 5-1 shows the observation steps to isolate the location where an illicit discharge is entering the storm drainage network.

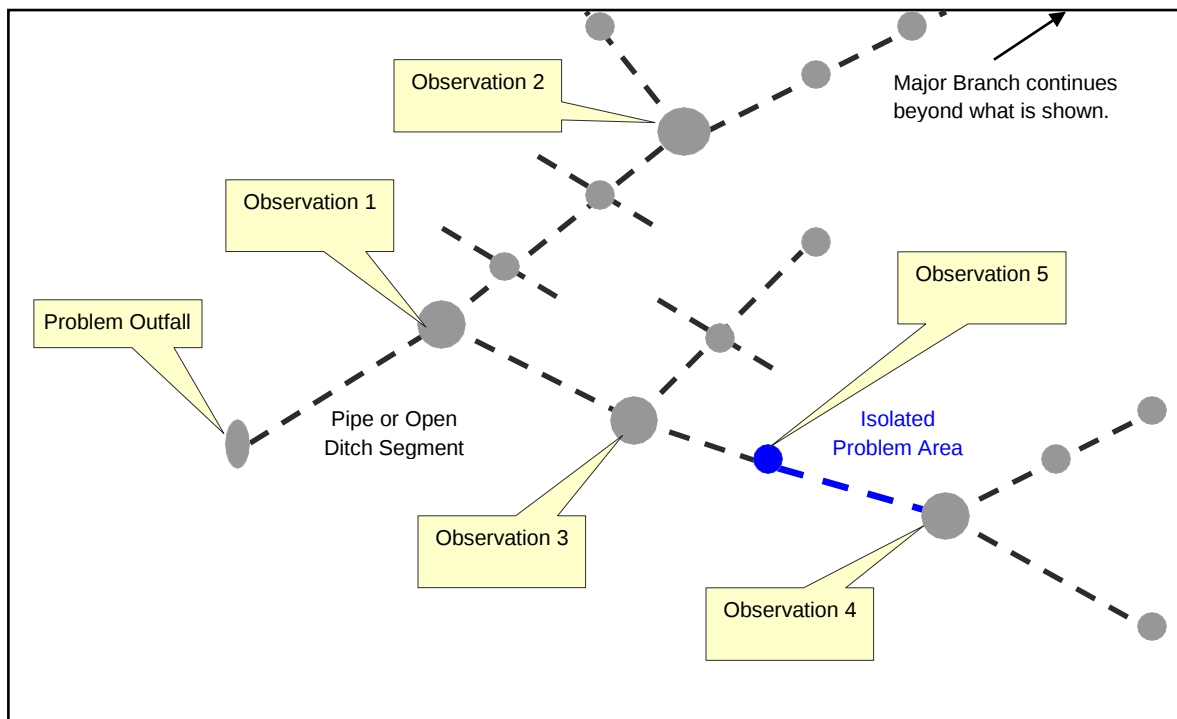


Figure 5-1. Storm Drain Network Observation Steps

When visual inspections are not enough to isolate the source of the illegal discharge, a number of additional field tests can be performed. These include:

- Dye testing
- Video/Camera Testing
- Smoke testing

The Center for Watershed Protection's *Illicit Discharge Detection and Elimination: A Guidance Manual* provides instructions for employing these testing techniques. The relevant pages from that manual are included in Appendix E.

Confirmed illicit discharge sources should be referred to the follow-up actions and corrective action procedures described at the end of this section and in Section 6.

5.3.3 Method B – Drainage Area Investigations

The source of some illegal discharges can be determined through a survey or analysis of the drainage area of the problem outfall. Drainage area investigations are particularly useful when the discharge observed at the outfall has a distinct or unique characteristic that can allow inspectors to quickly determine the type of activity or non-point source that is generating the discharge. However, drainage area investigations are generally not helpful in tracing sewage discharges, since they are not related to a specific land use.

Drainage area investigations should begin with a discussion between the inspectors, engineers, and other knowledgeable City staff to identify the type of site most likely to produce the observed discharge. Table 5-2 shows some of the activities or land uses most likely associated with specific discharge problems.

Table 5-2 Common Discharges and Potential Sources	
Observed Discharge	Potential Causes
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 grey-water discharge
Clogged Grease	Restaurant sink drain connection to stormwater system
Sewage	Failing or leaking septic systems

Staff should make a list of likely discharge sources and consult City land use and drainage system maps to identify areas of likely pollutions sources near the storm drain network. Inspectors should then conduct a windshield survey of the drainage area to confirm and identify potential sources of the discharge. Once potential discharge sites are identified, City staff should conduct individual site inspections to locate the specific source of the illegal discharge. In some cases, dye testing (See Appendix E) may be needed to confirm that a suspected activity is draining into the storm drain network.

All drainage area investigations should be documented on the Incident Response Report Form and recorded with the database case log.

5.3.4 Equipment

Prior to conducting field work, crews should assemble all required equipment (see Table 5-3) and review the outfall inspection records or water quality incident reports from the area to become familiar with the background information and potential pollution sources.

Table 5-3 Field Equipment for Source Investigations	
Field Test Kit	Machete/Clippers
Safety Gear –vest, hard hat, cones	Flashlight or headlamp
Field Notebook/Pencils	Spray paint or another marker
Incident Response Forms	Pick or CB grate/cover remover
Map or Aerial Photo of Area	First Aid Kit
Cell phone w/ charged battery & Digital Camera w/ charged battery	Toolbox – hammer, tape measure, duct tape, zip ties

5.3.5 Analytical Sampling (if needed)

If illicit discharge sources cannot be identified based on a storm drain network investigation and/or drainage area investigation, the investigator may request that water samples be collected from potential problem discharges and sent to the lab for analytical testing. The results of lab tests may isolate the source or type of illegal discharge. Lab tests may also be important for documentation if an enforcement action must be taken against a tenant or property operator. Table 5-4 shows the recommended water quality testing parameters.

Table 5-4 Water Quality Test Parameters and Uses		
Water Quality Test	Field or Lab Test	Use of Water Quality Test
Conductivity	Field	Used as an indicator of dissolved solids.
pH	Field	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).
Temperature	Field	Sanitary wastewater and industrial cooling water can substantially influence outfall discharge temperatures.
Ammonia	Lab	High levels can be an indicator of the presence of sanitary wastewater
Surfactants	Lab	Indicate the presence of detergent (e.g. laundry, car washing)
Total Chlorine or Fluoride	Field	Used to indicate inflow from potable water sources. Not a good indicator of sanitary wastewater because chlorine will not exist in a “free” state in water for long (it will combine with organic compounds).
Potassium	Lab	High levels may indicate the presence of sanitary wastewater.
Bacteria	Lab	Sanitary wastewater or septic systems.

Results of any analytical testing should be recorded on the Incident Response Report Form and reported to the Environmental Engineering Assistant. Testing results may lead to another round

of field investigations using either Method A or B. All data shall be recorded in the database case log.

5.4 Follow-Up Actions

Once the source of an illicit discharge has been identified, the investigator should initiate private property site entry procedures (if needed), notify the property owner or operator of the problem, and provide the appropriate educational materials and/or a copy of the IDDE ordinance. This is an important first step in the corrective action process. The investigator completes the Incident Response report form or other form and enter all information in the database case log to document the findings. The Code Enforcement Officer or Environmental Engineering Assistant can then begin working through the corrective action steps outlined in Section 6.

Section 6 – Corrective Action

6.1 Purpose

The city will respond to identified illicit discharges, illicit connections, or illegal dumping activities using progressive enforcement actions. Corrective actions will focus first on education to promote voluntary compliance and escalate to increasingly severe enforcement actions if voluntary compliance is not obtained.

6.2 Voluntary Compliance

The preferred approach to addressing 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 an educational brochure describing illicit discharge violations and a copy of the applicable City code. Field staff should also remind property owners of their obligation to report discharges to the proper agencies.

6.2.1 Operational Problems

Property owners are responsible for correcting operational problems that are leading to illegal discharges to the storm drainage system. This could include moving washing activities indoor or undercover, 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.

6.2.2 Structural Problems

Most illicit connection problems will 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.

6.3 Enforcement Actions

When voluntary compliance does not produce the desired result, the city is required to pursue follow-up enforcement action.

All enforcement actions will be the responsibility of the City Building Inspector or Environmental Engineering Assistant. Table 6-1 and Figure 6-1 outline the detailed enforcement steps. More serious violations or continued non-compliance may warrant a more aggressive, enforcement-oriented approach.

<i>Table 6-1 Illicit Discharge Enforcement Steps</i>		
<i>Enforcement Step</i>	<i>Details</i>	<i>Responsibility</i>
<i>Step 1 – Initial Actions</i>	<i>• Provide educational materials (i.e. brochure and copy of BIMC 15.22)</i> <i>• Encourage voluntary compliance</i> <i>• Provide summary letter* setting expected compliance date</i> <i>• Additional staff support or technical assistance</i> <i>• Request evidence of corrected problem (if applicable)</i> <i>• Site visit to verify compliance</i>	<i>Building Inspector</i> <i>or</i> <i>Environmental Engineering Assistant</i>
<i>Step 2 – Follow-up Actions</i>	<i>• Send “notice of violation” letter” to property owner regarding unresolved issues</i> <i>• Set second compliance date (determined on individual incident basis)</i> <i>• Site visit to verify compliance</i>	<i>Building Inspector</i> <i>or</i> <i>Environmental</i>

<i>Table 6-1</i> <i>Illicit Discharge Enforcement Steps</i>		
<i>Enforcement Step</i>	<i>Details</i>	<i>Responsibility</i>
		<i>Engineering Assistant</i>
<i>Step 3 – Final Actions</i>	• <i>Send second “notice of violation” letter* indicating that unresolved issues will be referred to prosecutor</i> • <i>City may correct problems and send bill to property owner</i> • <i>Levy fines following BIMC 1.26 or outline community service requirements</i>	<i>Building Inspector</i> <i>or</i> <i>Environmental Engineering Assistant</i>

** Keep copies of all letters within the case log database*

6.3.1 Enforcement Timeline

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 Phase II 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 that occurred in correcting IDDE problems.*

6.3.2 Potential Fines

Any person violating any provision of this ordinance shall, upon conviction, be guilty of an infraction. Each day shall constitute a separate offense and be punishable by a fine of \$100.00. Criminal fines shall be in addition to any civil remedies available under Hastings Municipal Code (42-124).

6.3.3 Record Keeping

Effective enforcement procedures require comprehensive record keeping and documentation to demonstrate 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 log. Section 8 discusses illicit discharge record keeping in greater detail.

Section 7 – Public Education

The NPDES Phase II Permit requires the city to conduct outreach activities to educate the public and business community about water quality protection. Outreach activities focus on reducing pollutants at the source by educating the public and businesses about their ultimate impact on the natural environment. Many members of the community are apt to modify behaviors once they understand the potential negative consequences.

To date, the city has conducted outreach activities aimed at educating residents about Preventing Stormwater Pollution, Used Oil Collection, Protecting drinking water, Household Hazardous Waste, Water Conservation, Lawn Care, Rain Barrels, and Rain Gardens. These programs have been well received by the public.

The city intends to expand the education efforts and direct more focus to the construction industry with illicit discharge detection and elimination as the focus.

Over the long term, the education program will include two major components. The first will be a business education program focused on informing business owners and their employees of their responsibilities related to water quality protection. The second, longer term, component is the development of a business recognition program aimed at promoting those businesses that are taking active steps to protect water quality (including reducing potential for illicit discharges).

The city's public education will include prioritization of target businesses, suggested outreach strategies, schedule of activities, and sample outreach materials. The materials will also include a conceptual description of the business recognition program that can be used as a framework for developing the program when funding and staff are available.

Section 8 – Record Keeping

The NPDES Phase II Permit requires the city to keep records of all stormwater program activities. Thorough record keeping is particularly important for a successful IDDE program. Records of past problems can help focus an investigation in the right direction or identify repeat offenders. Thorough record keeping is also critical to the enforcement process. Examples of the different types of information to be retained are included below:

- **Citizen Complaints** – retain Incident Report Forms
- **Outfall Inspections** – maintain Outfall Inspection Forms, catalog and organize photographs, enter open case logs for suspected problem areas.
- **Investigations** – retain Incident Response forms, photographs, conversation records, and lab testing results.
- **Corrective Action** – in addition to the information collected during the investigation process, retain copies of compliance letters, correspondence with property owners, and proof of corrected problems (contract and invoice for completed work or clean field investigation report).

8.1 Data Sources

Investigations – Illicit discharge investigation records utilize a compliant tracking system developed using Microsoft Excel. A case log is created for each individual compliant call. The system tracks actions completed by the Investigator including: education opportunities, technical assistance, communications, sample collected and enforcement.

Enforcement – The City's Enforcement Response Plan will be the guiding document in determining severity of violation/s and notifications, and range of actions.

8.2 Long Term Record Storage

The NPDES permit requires that all IDDE program records be retained for a minimum of five (5) years. However, long-term record storage will be helpful in building a library of data that describes pollutant problems in the city. To facilitate this process, the city will maintain the two most recent inspection reports for each receiving water/outfall location. Case log files (including analytical sampling results) will be kept for at least ten (10) years, or longer as data storage availability allows. The city is currently using the Company Drive for this type of storage and will be archiving older records to laser fiche, time and staff permitting.

Section 9 – Staff Training

The city has developed a comprehensive training schedule to meet the requirements of the NPDES Phase II Permit. Two primary trainings have been identified related to IDDE:

- Training for all staff that are routinely in the field to educate them on what constitutes an illicit discharge problem and how to report suspected problems.
- Training for illicit discharge responders on proper identification, investigation, clean-up, disposal, and reporting techniques for illicit discharges.

These training courses are generally conducted by Central Community College, Felsburg Holt & Ullevig, and City Staff using materials developed for the IDDE program. The city has developed presentations and handouts that are used for conducting overview training for all field staff. The city has met the permit requirement of having all field staff trained, and the city will schedule follow-up training as needed to keep the information fresh or introduce new information acquired during implementation of the IDDE program. These follow-up trainings will typically occur annually.

Training for illicit discharge responders will primarily include distribution and review of this procedure's manual as well as a refresher course on the City's spill response procedures. Follow-up trainings for illicit discharge responders may take the form of debriefings following significant IDDE incidents. Debriefings allow staff to review the actions taken and identify what worked well and what should be modified for future responses.

Section 10 – References

Illicit Discharge Detection and Elimination Program Manual, City of Bainbridge Island, April 2010.

Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments, Center for Watershed protection and Robert Pitt (University of Alabama), October 2004.

Illicit discharge Detection and Elimination Manual: A Handbook for Municipalities, New England Interstate Water Pollution Control Commission, January 2003.

Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems: A User's Guide, Robert Pitt, et al, EOA publication 600/R-92/238, January 1993.

Appendix A – Outfall Mapping Field Guide

Refer to *Illicit Discharge Detection and Elimination (IDDE): A Guidance Manual for Program Development and Technical Assistance*.

Appendix B – IDDE Ordinance

See City of Hastings City Code Chapter 42.

Appendix C – IDDE Reporting Forms

See Engineering Department's NOI/IDDE Inspection Workbook.

Appendix D – Receiving Water Map

See Adams County, Nebraska GIS website.

Appendix E – IDDE Investigation Resources

Developed by the Center for Watershed Protection and Dr. Robert Pitt, University of Alabama under an EPA grant, the manual *Illicit Discharge Detection and Elimination (IDDE): A Guidance Manual for Program Development and Technical Assistance* is intended to provide support and guidance to stormwater Phase II communities developing IDDE programs. This comprehensive manual discusses all aspects of an IDDE Program including:

- ☐ Components of an effective IDDE program
- ☐ Auditing existing programs
- ☐ Identifying and preventing illicit discharges
- ☐ Field screening using the Outfall Reconnaissance Inventory (ORI)
- ☐ Techniques to track and fix illicit discharges

An electronic copy of the guide, along with many of the tools, supporting resources, and examples of other IDDE manuals is available at

https://www3.epa.gov/npdes/pubs/idde_manualwithappendices.pdf

Electronic Resources Associated with the Manual

- ☐ Outfall Reconnaissance Inventory (ORI) Form
- ☐ ORI Database (15.4MB) – Use to record and manage ORI data (Note: Please download to your personal desktop, do not open and work from file)
- ☐ Hotspot Site Investigation Form
- ☐ Chemical Mass Balance Model (CMBM) Setup Executable file for sophisticated technique used to differentiate among flow types at outfalls with blended flows
- ☐ CMBM Sample Input File Hotline Tracking Form

IDDE Supporting Material

- ☐ Methods for Detection of Inappropriate Discharges to Storm Drainage Systems: Background Literature and Summary of Findings
- ☐ Source Verification of Inappropriate Discharges to Storm Drainage Systems
- ☐ Quantification of Escherichia Coli and Enterococci levels in Wet Weather and Dry Weather Flows
- ☐ Inappropriate Discharge Detection and Elimination: What Phase I Communities Are Doing to Address the Problem

Appendix F – Standard Operating Procedures for IDDE Program

Appendix G – IDDE Education and Outreach Program

<http://water.epa.gov/learn/>

Training Opportunities

Water professionals, public officials and interested citizens can take these online courses on understanding and implementing our water protection programs.

AQUATOX

Learn about AQUATOX, a program that models how nutrients and pollutants affect freshwater ecosystems, by viewing slides from the last AQUATOX training session.

<https://www.epa.gov/hydrowq/aquatox>

BASINS

BASINS is a multi-purpose environmental analysis system that integrates a geographical information system (GIS), national watershed data, and state-of-the-art environmental assessment and modeling tools into one convenient package.

Clean Water Act Section 404 Regulatory Training

This four-day course introduces the Clean Water Act Section 404 regulatory program and training in the application of the 404(b)(1) guidelines for review of proposed discharges of fill material into waters of the United States.

Drinking Water Academy

The Drinking Water Academy provides information and online training modules to ensure that water professionals, public officials, and involved citizens have the knowledge and skills necessary to protect our drinking water supply.

Drinking Water Operator Certification

Operator certification helps protect human health and the environment by establishing minimum professional standards for the operation and maintenance of public water systems. A compilation of training materials, tools and guidance to help operators become and remain certified is available.

Long Term 2 Enhanced Surface Water Treatment Rule Training

If you are implementing the Long Term 2 Enhanced Surface Water Treatment Rule (LT2) you may use

our on-line module or request a Webcast for training. New Webcasts and other training opportunities will be posted.

NPDES Training Courses and Workshops

The National Pollution Discharge Elimination System (NPDES) permitting program offers training courses, workshops, and webcasts to explain the regulatory framework and technical considerations of the NPDES permit program.

<https://www.epa.gov/npdes/npdes-training>

Water Quality Standards Academy

To support water quality standards development, we offer the Water Quality Standards Academy (WQSA), which presents classroom-based and online courses, along with occasional webcasts.

Tribal Training

This site contains a consolidated, centralized listing of training courses offered by EPA that will help Indian tribes develop and implement water quality programs consistent with the Clean Water Act. It will enable Indian tribes to obtain, in one central place, a list of relevant training courses consistent with the goals established for individual reservations.

Watershed Academy

The Watershed Academy is a focal point in EPA's Office of Water for providing training and information on implementing watershed approaches.

Wastewater Operator Training

The Clean Water Act authorizes funding for the Wastewater Treatment Plant Operator On-Site Assistance Training Program. The program addresses non-compliance at small publicly-owned wastewater treatment plants and ensures enough trained personnel are available to operate and maintain existing and future treatment works.

Water Science and Technology For Students and Educators

Educational resources for water professionals and concerned citizens.

[Drinking Water Academy](#)

The Drinking Water Academy provides information and online training modules to ensure that water professionals, public officials, and involved citizens have the knowledge and skills necessary to protect our drinking water supply.

[NPS Outreach Toolbox](#)

The Nonpoint Source Outreach Toolbox helps state and local agencies and other organizations interested in educating the public on nonpoint source pollution or stormwater runoff. The Toolbox contains a variety of resources to help develop an effective and targeted outreach campaign.

<https://www.epa.gov/npdes/stormwater-smart-outreach-tools>

[Water Quality Standards Academy](#)

To support water quality standards development, we offer the Water Quality Standards Academy (WQSA), which presents classroom-based and online courses, along with occasional satellite broadcasts.

[Watershed Academy](#)

The Watershed Academy provides training and information on implementing watershed approaches to addressing today's water resource challenges.

Elementary School

Resources for teachers and kids in grades K–5.

[Your Amazing Environment](#)

Play games, watch videos and learn about the environment around you.

<https://www.epa.gov/students/games-quizzes-and-videos-about-environment>

[Drinking Water Kids K–3](#)

Student activities and interactive games for kids K–3.

https://www3.epa.gov/safewater/kids/kids_k-3.html.

[Water Sense for Kids](#)

Provides learning resources and activities designed for students in grades 3–5 to help children understand how important it is and how easy it is to save water.

<https://www.epa.gov/watersense>

[Polluted Runoff](#)

Articles and Activities for Middle School Students to learn about Nonpoint Source Pollution.

<https://www.epa.gov/nps/articles-and-activities-middle-school-students-learn-about-nonpoint-source-pollution>

[Who Needs Clean Water crossword puzzle \(PDF\)](#)

For both kids and teachers.

Middle School

Resources for teachers and kids in grades 6–8.

[Drinking Water Kids 4–8](#)

Student activities and interactive games for kids 4–8.

[Ideas for Science Fair Projects About Surface Water Quality](#)

Bring attention to surface water quality problems by exploring some of these science fair project ideas.

[What's Up With Our Nation's Waters?](#)

This booklet presents the EPA's National Water Quality Report in an easy-to-read style and includes projects for school or fun, a water quiz, and a glossary and resources for more information.

[Drinking Water Kids 9–12](#)

Student activities and interactive games for kids 9–12.

All Ages

Resources for everyone.

[Drinking Water Kids Games and Activities](#)

Student and teacher activities and interactive games for kids K–12.

[Wetlands Education](#)

K–12 education materials on wetland resources.

[Who Needs Clean Water?](#)

Teachers' Guide

Appendix H – Record of Document Changes

Illicit Discharge Detection & Elimination (IDDE)		
DATE	INDIVIDUAL	CHANGES MADE
2015-06-01	DB	Initial
2017-11-28	DB	Review
2018-12-21	DB	Review
2019-01-14	DB	Review/added record of changes
2020-01-31	DB	Review/fixed broken links
2023-05-01	TO/BH	Review/fixed broken links
2026-07-01	BH	Review