Illicit Discharge Detection and Elimination (IDDE) Plan

DERRY, NH

Permit Year 2

Updated December 2019

Template Prepared By:
Manchester/Nashua Stormwater Coalition
& Seacoast Stormwater Coalition

EPA NPDES Permit Number NHR041005

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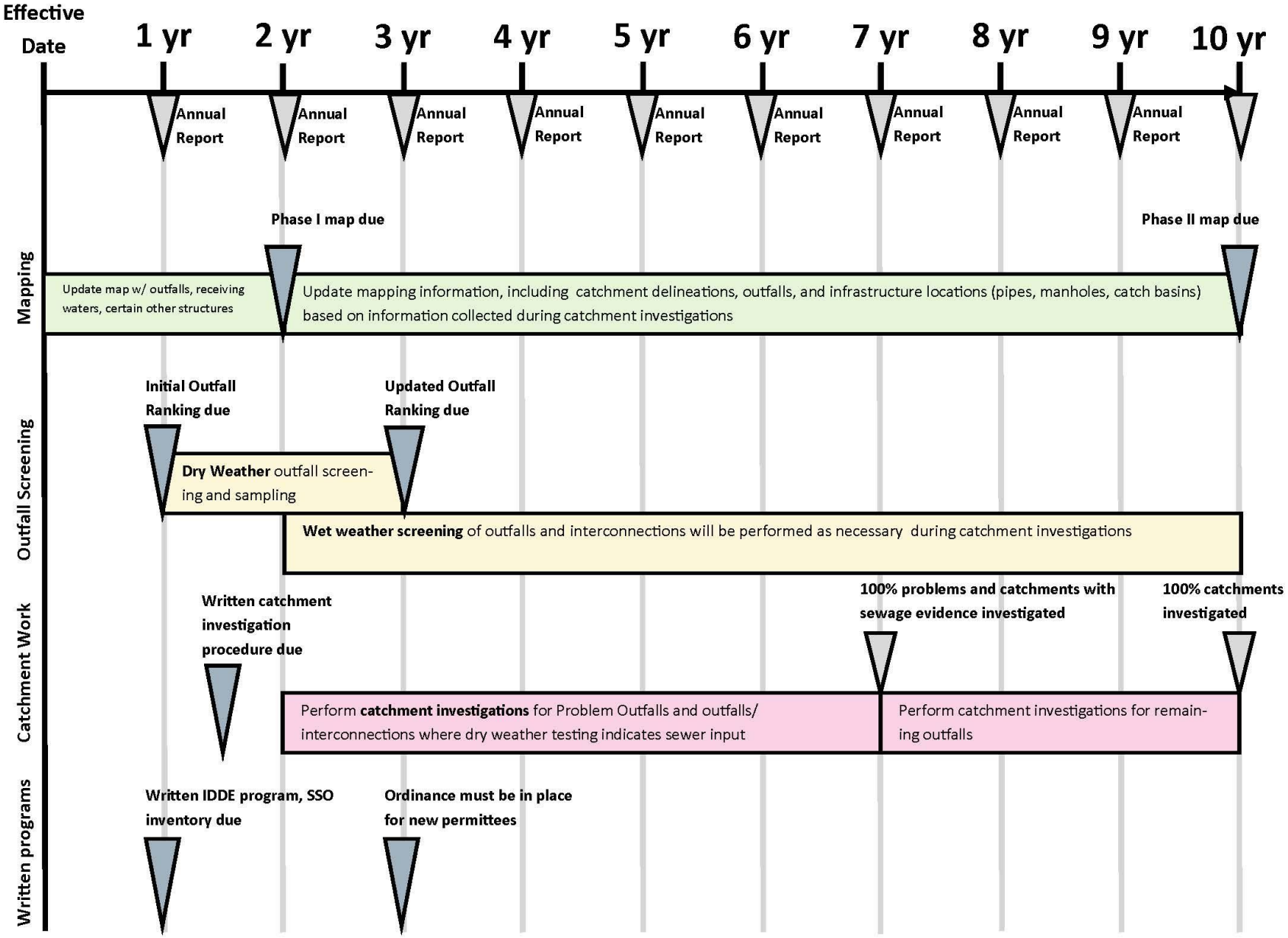
Effective Date
1 yr
2 yr
3 yr
4 yr
5 yr
6 yr
7 yr
8 yr
9 yr
10 yr
Annual Report
Mapping
Phase I map due
Phase II map due
Update map w/ outfalls, receiving waters, certain other structures
Update mapping information, including catchment delineations, outfalls, and infrastructure locations (pipes, manholes, catch basins) based on information collected during catchment investigations
Outfall Screening
Initial Outfall Ranking due
Updated Outfall Ranking due
Dry Weather outfall screening and sampling
Wet weather screening of outfalls and interconnections will be performed as necessary during catchment investigations
Catchment Work
Written catchment investigation procedure due
100% problems and catchments with sewage evidence investigated
100% catchments investigated
Perform catchment investigations for Problem Outfalls and outfalls/ interconnections where dry weather testing indicates sewer input
Perform catchment investigations for remaining outfalls
Written programs
Written IDDE program, SSO inventory due
Ordinance must be in place for new permittees

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1 IDDE Program Implementation Timeline

1.1 MS4 Program

This Illicit Discharge Detection and Elimination (IDDE) Plan has been developed by the Town of Derry (the Town) to address the requirements of the United States Environmental Protection Agency's (USEPA's) 2017 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in New Hampshire, hereafter referred to as the "2017 New Hampshire MS4 Permit" or "MS4 Permit."

The 2017 New Hampshire MS4 Permit requires that each permittee, or regulated community, address six Minimum Control Measures. These measures include the following:

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination Program
4. Construction Site Stormwater Runoff Control
5. Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management); and
6. Good Housekeeping and Pollution Prevention for Permittee-Owned Operations.

Under Minimum Control Measure 3, the permittee is required to implement an IDDE program to systematically find and eliminate sources of "illicit" non-stormwater discharges to its municipal separate storm sewer system and implement procedures to prevent such discharges. The IDDE program must also be recorded in a written (hardcopy or electronic) document. This IDDE Plan has been prepared to address this requirement.

1.2 Illicit Discharges

An "illicit discharge" is any discharge to a drainage system that is not composed entirely of stormwater, except for discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the MS4), discharges resulting from fire-fighting activities, and allowable discharges as described in Section 1.3 below and further allowed under the MS4 and the Town's Stormwater Ordinance.

Illicit discharges may take a variety of forms. Illicit discharges may enter the drainage system through direct or indirect connections. Direct connections may be relatively obvious, such as cross-connections of sewer services to the storm drain system. Indirect illicit discharges may be more difficult to detect or address, such as failing septic systems that

discharge untreated sewage to a ditch within the MS4, or a sump pump that discharges contaminated water on an intermittent basis.

Some illicit discharges are intentional, such as dumping used oil (or other pollutant) into catch basins, a resident or contractor illegally tapping a new sewer lateral into a storm drain pipe to avoid the costs of a sewer connection fee and service, and illegal dumping of yard wastes into surface waters.

Some illicit discharges are related to the unsuitability of original infrastructure to the modern regulatory environment. Examples of illicit discharges in this category include connected floor drains in old buildings, as well as sanitary sewer overflows that enter the drainage system. Sump pumps legally connected to the storm drain system may be used inappropriately, such as for the disposal of floor washwater or old household products, in many cases due to a lack of understanding on the part of the homeowner.

Elimination of some discharges may require substantial costs and efforts, such as funding and designing a project to reconnect sanitary sewer laterals. Others, such as improving self-policing of dog waste management, can be accomplished by outreach in conjunction with the minimal additional cost of dog waste bins and the municipal commitment to disposal of collected materials on a regular basis.

Regardless of the intention, when not addressed, illicit discharges can contribute high levels of pollutants, such as heavy metals, toxics, oil, grease, solvents, nutrients, and pathogens to surface waters.

1.3 Allowable Non-Stormwater Discharges

The following categories of non-storm water discharges are allowed under the MS4 Permit unless the permittee, USEPA identifies any category or individual discharge of non-stormwater discharge as a significant contributor of pollutants to the MS4:

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20))
- Uncontaminated pumped groundwater
- Discharge from potable water sources
- Foundation drains
- Air conditioning condensation
- Irrigation water, springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual resident car washing
- De-chlorinated swimming pool discharges
- Street wash waters
- Residential building wash waters without detergents

If these discharges are identified as significant contributors of pollutants to the MS4, they must be considered an "illicit discharge" and addressed in the IDDE Plan (i.e., control these sources so they are no longer significant contributors of pollutants, and/or eliminate them entirely).

Figure 1-1. IDDE Investigation Procedure Framework

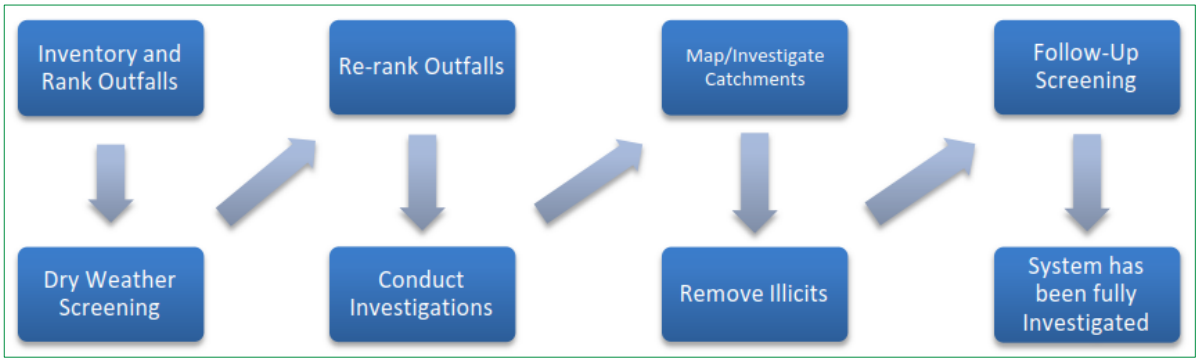


Table 1-1. IDDE Program Implementation Timeline

IDDE Program Requirement	*Completion Date from Effective Date of Permit*					
	1 Year	*1.5 Years*	*2 Years*	*3 Years*	*7 Years*	*10 Years*
Written IDDE Program Plan	X					
SSO Inventory	X					
Initial Outfall Ranking	X					
Written Catchment Investigation Procedure		X				
Phase I Mapping			X			
Phase II Mapping						X
IDDE Regulatory Mechanism or By-law (if not already in place)				X		
Dry Weather Outfall Screening				X		
Follow-up Ranking of Outfalls and Interconnections				X		
Catchment Investigations – Problem Outfalls					X	
Catchment Investigations – all Problem, High and Low Priority Outfalls						X

Effective date of the permit is July 1, 2018

2 Authority and Statement of IDDE Responsibilities

2.1 Legal Authority

The Town of Derry has adopted a STORMWATER MANAGEMENT ORDINANCE (11/18/2008) with adequate legal authority to:

- Prohibit illicit discharges
- Investigate suspected illicit discharges
- Eliminate illicit discharges, including discharges from properties not owned by or controlled by the MS4 that discharge into the MS4 system
- Implement appropriate enforcement procedures and actions.

A copy of the ordinance is included in Appendix A. The Town will review its current Stormwater Management Ordinance and related stormwater and land use regulations and policies for consistency with the 2017 MS4 Permit.

2.2 Statement of Responsibilities

The Derry Public Works Department is the lead department responsible for implementing the IDDE program pursuant to the provisions of the Stormwater Ordinance. Other departments with responsibility for aspects of the program include:

- Environmental Division – Responsible for outfall reconnaissance inventory, dry and wet weather investigation and sampling, and illicit discharge investigations.
- Highway Department – Reporting of illicit discharges identified during routine work and assist with investigations.
- Sewer Department – Assist with investigations, provide a vac truck, camera truck, or jetting truck to clean pipes as needed.
- Engineering Department – Assist with investigation, providing maps of private/commercial businesses
- Code Enforcement Officer – Enforcement of code violations and illegal discharges.

3 Stormwater System Mapping

A current copy of the existing storm system map is provided in **Appendix B**.

The MS4 Permit requires the storm system map to be updated in two phases as outlined below. The Town is responsible for updating the stormwater system mapping pursuant to the 2017 MS4 Permit. The Town will report on the progress towards completion of the storm system map in each annual report. Updates to the stormwater mapping will be included in **Appendix B**.

3.1 Phase I Mapping

Phase I mapping must be completed within two (2) years of the effective date of the permit (July 1, 2020) and include the information per Part 2.3.4.5.a of the MS4 Permit.

- Outfalls and receiving waters (previously required by the MS4-2003 permit)
- Open channel conveyances (swales, ditches, etc.)
- Interconnections with other MS4s and other storm sewer systems
- Municipally owned stormwater treatment structures
- Water bodies identified by name and indication of all use impairments as identified on the most recent EPA approved New Hampshire Integrated List of Waters report
- Initial catchment delineations. Topographic contours and drainage system information may be used to produce initial catchment delineations.

3.2 Phase II Mapping

Phase II mapping must be completed within ten (10) years of the effective date of the permit (July 1, 2028) and include the information per Part 2.3.4.5.b of the MS4 Permit.

- Outfall spatial location (latitude and longitude with a minimum accuracy of +/-30 feet)
- Pipes
- Manholes
- Catch basins
- Refined catchment delineations. Catchment delineations must be updated to reflect information collected during catchment investigations.
- Municipal Sanitary Sewer system (if available)
- Municipal combined sewer system (if applicable).

4 Sanitary Sewer Overflows (SSOs)

The Town of Derry (the Town) has had two (2) Sanitary Sewer Overflows (SSOs) in the five (5) years prior to the effective date of the permit. Neither of the overflows entered the MS4 nor were they under the direct control of the Town of Derry.

Discharges of wastewater from any point sources, including sanitary sewer overflows (SSO's) shall be reported in accordance with Part II, Section D.1.e. of the General Requirements of the Publicly Owned Treatment Works General Permit.

The MS4 Permit requires municipalities to prohibit illicit discharges, including sanitary sewer overflows (SSOs), to the separate storm sewer system. SSOs are discharges of untreated sanitary wastewater from a municipal sanitary sewer that can contaminate surface waters, cause serious water quality problems and property damage, and threaten public health. SSOs can be caused by blockages, line breaks, sewer defects that allow stormwater and groundwater to overload the system, power failures, improper sewer design, and vandalism.

The Town has completed an inventory of SSOs that have discharged to the MS4 within the five (5) years prior to the effective date of the 2017 MS4 Permit, based on review of available documentation pertaining to SSOs (**Appendix B**). The inventory includes all SSOs that occurred during wet or dry weather resulting from inadequate conveyance capacities, where interconnectivity of the storm and sanitary sewer infrastructure allows for transfer of flow between systems, or by other causes not directly under the control of the Town of Derry.

The inventory in **Appendix B** will be updated by the Town when new SSOs are detected. The SSO inventory will be redundantly reported in the annual report, including the status of mitigation and corrective measures to address each identified SSO.

5 Assessment and Priority Ranking of Outfalls

The MS4 Permit requires an assessment and priority ranking of outfalls in terms of their potential to have illicit discharges related public health significance. The ranking helps determine the priority order for performing IDDE investigations and meeting permit milestones.

5.1 Outfall Catchment Delineations

The catchments for each of the MS4 outfalls will be delineated to define contributing areas for investigation of potential sources of illicit discharges. Initial catchment delineations will be completed as part of the Phase I mapping, and refined catchment delineations will be completed as part of the Phase II mapping to reflect information collected during catchment investigations

5.2 Outfall and Interconnection Inventory and Initial Ranking

The Town will complete an initial outfall and interconnection inventory and priority ranking to assess illicit discharge potential based on existing information. The initial inventory and ranking will be completed within one (1) year from the effective date of the permit. An updated inventory and ranking will be provided in each annual report thereafter. The inventory will be updated annually to include data collected in connection with dry weather screening and other relevant inspections.

Outfalls and interconnections will be classified into one of the following categories:

1. **Excluded outfalls**:
    - Outfalls/interconnections with no potential for illicit discharges including roadway drainage in undeveloped areas with no dwellings and no sanitary sewers; drainage for athletic fields, parks or undeveloped green space and associated parking without services; cross-country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments) through undeveloped land.

2. **Problem Outfalls**: Outfalls/interconnections with known or suspected contributions of illicit discharges based on existing information shall be designated as Problem Outfalls. This shall include any outfalls/interconnections where previous screening indicates likely sewer input. Problem Outfalls need not be screened pursuant to Dry Weather Outfall and Interconnection Screening and Sampling. Likely sewer input indicators are any of the following:

    - Olfactory or visual evidence of sewage,
    - Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water, or

- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine.

3. **High Priority Outfalls**: Outfalls/interconnections that have not been classified as Problem Outfalls and that are:

    - Discharging to an area of concern to public health due to proximity of public beaches, recreational areas, drinking water supplies or shellfish beds
    - Determined by the permittee as high priority based on the characteristics listed in **Appendix C**.

4. **Low Priority Outfalls**: Outfalls/interconnections determined by the permittee as low priority based on the characteristics listed below or other available information.

Outfalls will be ranked into the above priority categories (except for excluded outfalls, which may be excluded from the IDDE program) based on the following characteristics of the defined initial catchment areas, where information is available. To prioritize initial mapping and outfall assessment work the permittee is using location-specific characteristics of water body impairments to focus initial work as included in **Appendix B** For the initial outfall ranking and catchment investigations this approach will target the worst areas first.

- **Previous screening results** – previous screening/sampling results indicate likely sewer input (see criteria above for Problem Outfalls).

- **Past discharge complaints and reports.**

- **Poor receiving water quality** – the following guidelines are recommended to identify waters as having a high illicit discharge potential:
    - Exceeding water quality standards for bacteria
    - Ammonia levels above 0.5 mg/l
    - Surfactants levels greater than or equal to 0.25 mg/l

- **Density of generating sites** – Generating sites are those places, including institutional, municipal, commercial, or industrial sites, with a potential to generate pollutants that could contribute to illicit discharges. Examples of these sites include, but are not limited to, car dealers; car washes; gas stations; garden centers; and industrial manufacturing areas.

- **Age of development and infrastructure** – Industrial areas greater than 40 years old and areas where the sanitary sewer system is more than 40 years old will probably have a high illicit discharge potential. Developments 20 years or younger will probably have a low illicit discharge potential.

- **Sewer conversion** – Contributing catchment areas that were once serviced by septic systems but have been converted to sewer connections may have a high illicit discharge potential.

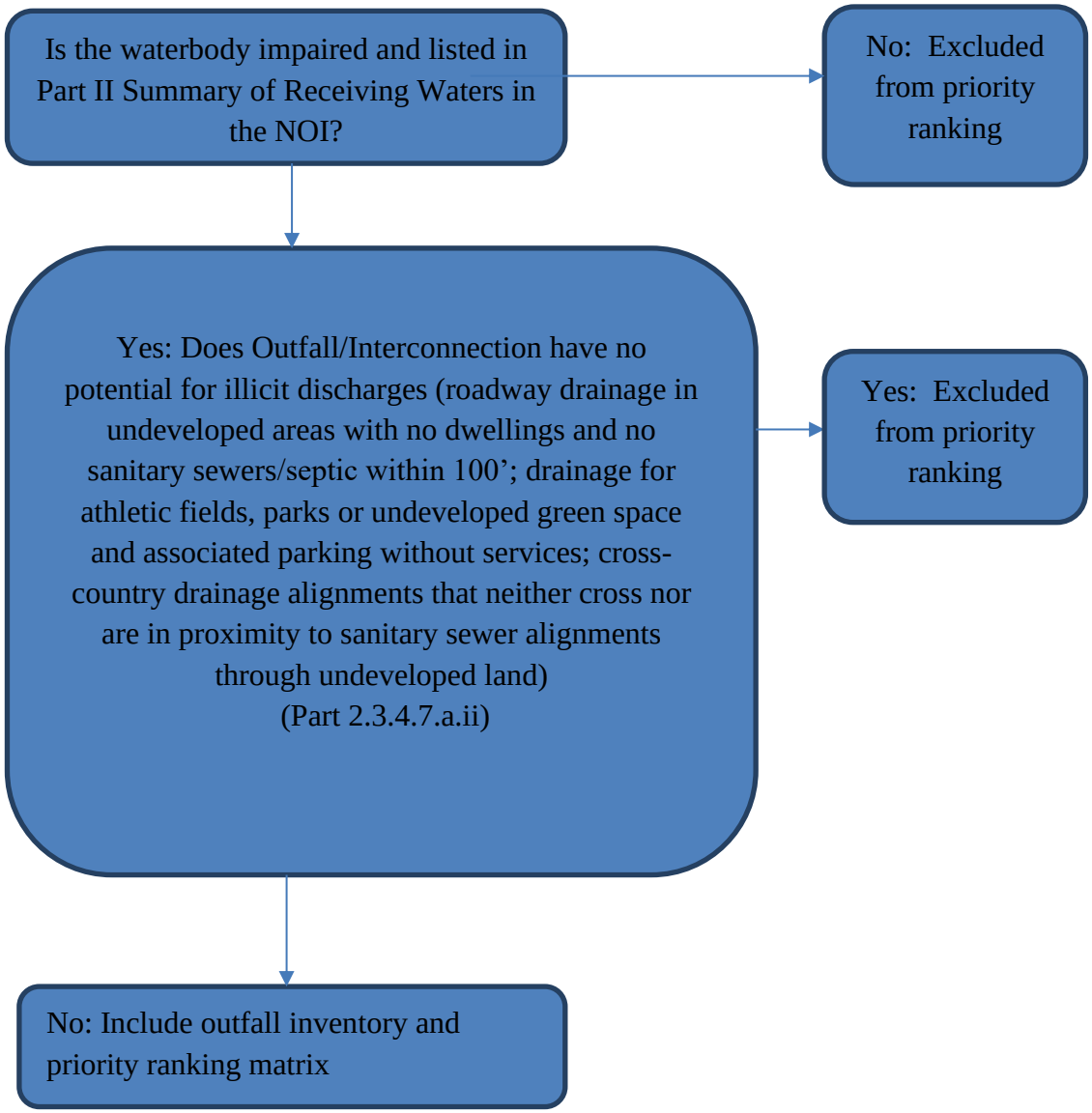
- **Historic combined sewer systems** – Contributing areas that were once serviced by a combined sewer system but have been separated may have a high illicit discharge potential.

- **Surrounding density of aging septic systems** – Septic systems thirty years or older in residential land use areas are prone to have failures and may have a high illicit discharge potential.

- **Culverted streams** – Any river or stream that is culverted for distances greater than a simple roadway crossing may have a high illicit discharge potential.

- **Water quality limited waterbodies** that receive a discharge from the MS4 or waters with approved TMDLs applicable to the permittee, where illicit discharges have the potential to contain the pollutant identified as the cause of the water quality impairment.

The following is an initial outfall prioritization flowchart, see Appendix C for an outfall inventory and priority ranking matrix:



6 Dry Weather Outfall Screening and Sampling

Dry weather flow is a common indicator of potential illicit connections. The MS4 Permit requires all outfalls/interconnections (excluding Problem and Excluded Outfalls) to be inspected for the presence of dry weather flow. The Town is responsible for conducting dry weather outfall screening, starting with High Priority outfalls, followed by Low Priority outfalls, based on the initial priority rankings described in the previous section by the end of Year 3.

Dry weather outfall Screening and Sampling shall be completed in accordance with Part 2.3.4.7.b of the MS4 Permit. Plans and procedures for such screening and sampling shall be incorporated into this plan.

6.1 Dry Weather Screening/Sampling Procedure

6.1.1 General Procedure

The dry weather outfall inspection and sampling procedure consists of the following general steps:

1. Identify outfall(s) to be screened/sampled based on initial outfall inventory and priority ranking
2. Acquire the necessary staff, mapping, and field equipment (see **Table 6-1** for list of potential field equipment)
3. Conduct the outfall inspection during dry weather:
    a. Mark and photograph the outfall
    b. Record the inspection information and outfall characteristics (using paper forms or digital form using a tablet or similar device) (see form in **Appendix D**)
    c. Look for and record visual/olfactory evidence of pollutants in flowing outfalls including odor, color, turbidity, and floatable matter (suds, bubbles, excrement, toilet paper or sanitary products). Also observe outfalls for deposits and stains, vegetation, and damage to outfall structures.
4. If flow is observed, sample and test the flow following the procedures described in the following sections.
5. If no flow is observed, but evidence of illicit flow exists (illicit discharges are often intermittent or transitory), revisit the outfall during dry weather within one week of the initial observation, if practicable, to perform a second dry weather screening and sample any observed flow. Other techniques can be used to detect intermittent or transitory flows including conducting inspections during evenings or weekends and using optical brighteners.

6. Input results from screening and sampling into spreadsheet/database. Include pertinent information in the outfall/interconnection inventory and priority ranking.
7. Include all screening data in the annual report.

6.1.2 Field Equipment

Table 6-1. Field Equipment – Dry Weather Outfall Screening and Sampling

Equipment	Use/Notes
Tablet	For completing e-forms in field, taking photos, and GPS location
Clipboard	For organization of field sheets and writing surface
Field Sheets	Field sheets for both dry weather inspection and Dry weather sampling should be available with extras
Chain of Custody Forms	To ensure proper handling of all samples
Pens/Pencils/Permanent Markers	For proper labeling
Nitrile Gloves	To protect the sampler as well as the sample from contamination
Flashlight/headlamp w/batteries	For looking in outfalls or manholes, helpful in early mornings as well
Cooler with Ice	For transporting samples to the laboratory
Digital Camera	For documenting field conditions at time of inspection
Personal Protective Equipment (PPE)	Reflective vest, Safety glasses and boots at a minimum
GPS Receiver	For taking spatial location data
Water Quality Sonde	If needed, for sampling conductivity, temperature, pH
Water Quality Meter	Hand-held meter, if available, for testing for various water quality parameters such as ammonia, surfactants and chlorine
Test Kits	Have extra kits on hand to sample more outfalls than are anticipated to be screened in a single day
Label Tape	For labeling sample containers
Sample Containers	Make sure all sample containers are clean. Keep extra sample containers on hand at all times. Make sure there are proper sample containers for what is being sampled for (i.e., bacteria sampling requires sterile containers).
Pry Bar or Pick	For opening catch basins and manholes when necessary
Sandbags	For damming low flows in order to take samples
Small Mallet or Hammer	Helping to free stuck manhole and catch basin covers
Utility Knife	Multiple uses
Measuring Tape	Measuring distances and depth of flow
Safety Cones	Safety
Hand Sanitizer	Disinfectant/decontaminant
Zip Ties/Duct Tape	For making field repairs
Rubber Boots/Waders	For accessing shallow streams/areas
Sampling Pole/Dipper/Sampling Cage	For accessing hard to reach outfalls and manholes

6.1.3 Sample Collection and Analysis

If flow is present during a dry weather outfall inspection, a sample will be collected and analyzed for the required permit parameters[1]. The general procedure for collection of outfall samples is as follows:

1. Fill out all sample information on sample bottles and field sheets (see **Appendix D** for Sample Labels and Field Sheets)
2. Put on protective gloves (nitrile/latex/other) before sampling
3. Collect sample with dipper or directly in sample containers. If possible, collect water from the flow directly in the sample bottle. Be careful not to disturb sediments.
4. If using a dipper or other device, triple rinse the device with distilled water and then in water to be sampled (not for bacteria sampling)
5. Use test strips, test kits, and field meters (rinse similar to dipper) for most parameters (see **Table 6-1**)
6. Place laboratory samples on ice for analysis of bacteria and pollutants of concern
7. Fill out chain-of-custody form (**Appendix D**) for laboratory samples
8. Deliver samples to the contract laboratory the same day, if possible, especially if any parameters have short holding times (bacteria).
9. Dispose of used test strips and test kit ampules properly
10. Decontaminate all testing personnel and equipment

In the event that an outfall is submerged, either partially or completely, or inaccessible, field staff will proceed to the first accessible upstream manhole or structure for the observation and sampling and report the location with the screening results. Field staff will continue to the next upstream structure until there is no longer an influence from the receiving water on the visual inspection or sampling.

Field test kits or field instrumentation are permitted for all parameters except indicator bacteria and any pollutants of concern. Field kits need to have appropriate detection limits and ranges.

6.2 Follow-up Ranking of Outfalls and Interconnections

The Town will update and re-prioritize the initial outfall and interconnection rankings based on information gathered during dry weather screening. The rankings will be updated periodically as dry weather screening information becomes available but will be completed within three (3) years of the effective date of the permit (July 1, 2021).

Outfalls/interconnections where relevant information was found indicating sewer input to the MS4 or sampling results indicating sewer input are highly likely to contain illicit discharges from sanitary sources.
Such outfalls/interconnections will be ranked at the top of the High Priority Outfalls category for investigation. Other outfalls and interconnections may be re-ranked based on any new information from the dry weather screening

7 Catchment Investigations

Once stormwater outfalls with evidence of illicit discharges have been identified, various methods can be used to investigate the source of the potential discharge within the outfall catchment area. Common catchment investigation techniques include, but are not limited to:

- Review of maps, historic plans, and records
- Manhole inspection
- Dry and wet weather sampling
- Video inspection
- Smoke testing
- Dye testing.

This section outlines a systematic procedure to investigate outfall catchments and identify the source(s) of potential illicit discharges. Information and data collected as part of the catchment investigations will be reported in each annual report.

7.1 Map and Record Review

The Town of Derry will review relevant mapping and historic plans and records to identify areas within the catchment with higher potential for illicit connections. The following information will be reviewed:

- Plans related to the construction of the drainage network
- Prior work on the storm drains
- Health Department or other municipal data on septic system failures or required upgrades
- Records related to septic system breakouts, SSOs, and sanitary sewer surcharges

Once stormwater outfalls with evidence of illicit discharges have been identified, various methods can be used to trace the source of the potential discharge within the outfall catchment area. Catchment investigation techniques include but are not limited to review of maps, historic plans, and records; manhole observation; dry and wet weather sampling; video inspection; smoke testing; and dye testing.

Catchment Investigations shall be completed in accordance with Part 2.3.4.8 of the MS4 Permit. A written catchment investigation procedure shall be developed and incorporated into this plan within 18 months of the permit effective date. Investigations of catchments associated with Problem Outfalls shall begin no later than two (2) years from the permit effective date and shall be completed within seven (7) years.

7.2 System Vulnerability Factors

Based on the Map and Records review, the Town of Derry will identify any of the following System Vulnerability Factors (SVFs). SVFs indicate a risk of sanitary or septic system inputs to the MS4 under wet weather conditions.

The Town of Derry SVF inventory (Table 7-1) will be updated based on this information.

- History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages.
- Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs.
- Inadequate sanitary sewer level of service (LOS) resulting in regular surcharging, customer back-ups, or frequent customer complaints.
- Common or twin-invert manholes serving storm and sanitary sewer alignments.
- Common trench construction serving both storm and sanitary sewer alignments.
- Crossings of storm and sanitary sewer alignments.
- Sanitary sewer alignments known or suspected to have been constructed with an underdrain system.
- Areas formerly served by combined sewer systems.
- Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between storm drain and sanitary sewer infrastructure, or other vulnerability factors identified through Inflow/Infiltration Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations.
- Areas formerly served by combined sewer systems.
- Any storm drain infrastructure greater than 40 years old in medium and densely developed areas.
- Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance).
- History of multiple health department actions addressing widespread septic system failures (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance).

Table 7-1. System Vulnerability by Outfall Priority Ranking

Stream/Waterbody Name	Assessment Unit	Outfalls discharging directly to AU	High Priority Outfalls										Low Priority	Problem Outfalls	Excluded Outfalls
			Discharge to Area of Concern (beaches, Rec area, DW supplies)	Past Discharge Complaints	Poor Receiving Water Quality	Density of Generating Sites	Age of Development/ Infrastructure	Areas of sewer conversion	Historic CSO	Surrounding density of aging septic systems	Culverted Streams longer than road crossing	Water Quality Limited/ TMDLs			
Beaver Lake Watershed															
Salmon/Hassett/Harris/Hate Brooks	NHRIV700061203-05	5								X					
Jenny Dickey Brook	NHRIV700061203-32	1	X					X							
Salmon Brook	NHRIV700061203-07	2											X		
Unnamed Brook	NHRIV700061203-44	1								X					
Beaver Lake, Derry, W/Cwf	NHLAK700061203-02-01	15	X					X				X			
Catobrook North	NHRIV700061203-08	5	X					X		X					
Catobrook South	NHRIV700061203-29	9	X					X		X					
Hood Pond Watershed															
Beaver Brook (aka Upper Shields)	NHRIV700061203-10	1											X		
Rainbow Lake, (w/Karen-Gena Beach)	NHLAK700061203-05	1	X				X			X					
Beaver Brook (Lower Shields)	NHRIV700061203-11	11		X		X				X		X			
Hoods Pond	NHLAK700061203-03-01	3	X		X							X			
Unnamed Brook (Trib to Hoods Pond)	NHRIV700061203-45	7		X		X	X				X				
Beaver Brook Watershed															
Beaver Brook (aka Beaver Meadows)	NHLAK700061203-08	5					X			X					
Unnamed Brook (Tributary to Beaver Meadows)	NHRIV700061203-38	2								X					
Beaver Brk (2/W Running Brk +Tribs)	NHRIV700061203-09	46			X	X	X					X			
Beaver Brk w/Horns Brk	NHRIV700061203-16	12					X					X			
Unnamed Brook To Branch Beaver Brook	NHRIV700061203-12	2											X		
Salmon/Cold Brooks	NHRIV700061203-04	4								X					
Redfield Estates Pond	NHLAK700061203-09	1								X					
Island Pond Watershed (and Taylor Reservoir)															
Unnamed Brook	NHRIV700061101-08	2								X					
Taylor Brook	NHRIV700061101-05	2								X					
Island Pond, Derry, W/Cwf	NHLAK700061101-01-01	4	X				X			X		X			
Unnamed Brook to Ballard Pond	NHRIV700061101-03	3								X					
Drew, Cunningham, Leavitt, & Unnamed Brooks	NHRIV700061101-01	10											X		

**Estimated number of outfalls based on previous mapping which includes privately-owned outfalls and those owned by the State of NH*

Problem Outfalls	Outfall/interconnections with known or suspected contributions of illicit discharges based on exisiting info
High Priority Outfalls	Outfalls/interconnections not classified as Problems, but a) discharge to an area of concern to public health due to proximity to public beaches, recreational areas, or drinking water supplies; b) determined as high priority based on characteristics (past discharge complaints, poor receiving water quality
Low Priority Outfalls	Outfalls/interconnections determined by characterisitics (or lack of)
Excluded Outfalls	Outfalls/Interconnections with no potential of ID: drainage in undeveloped areas w/no dwellings and no sewers, athletic field drainage, parks and green space and associated parking

7.3 Dry Weather Catchment Investigation (Manhole Inspections)

The Town of Derry will implement a dry weather storm drain network investigation that involves systematically and progressively observing, sampling and evaluating key junction manholes in the MS4 to determine the approximate location of suspected illicit discharges.

The Town of Derry will be responsible for implementing the dry weather manhole inspection program and making updates as necessary. Infrastructure information will be incorporated into the storm system map, and catchment delineations will be refined based on the field investigation, where necessary. The SVF inventory will also be updated based on information obtained during the field investigations, where necessary.

Several important terms related to the dry weather manhole inspection program are defined by the MS4 Permit as follows:

- **Junction Manhole** is a manhole or structure with two or more inlets accepting flow from two or more MS4 alignments. Manholes with inlets solely from private storm drains, individual catch basins, or both are not considered junction manholes for these purposes.

- **Key Junction Manholes** are those junction manholes that can represent one or more junction manholes without compromising adequate implementation of the illicit discharge program. Adequate implementation of the illicit discharge program would not be compromised if the exclusion of a particular junction manhole as a key junction manhole would not affect the permittee's ability to determine the possible presence of an upstream illicit discharge. A permittee may exclude a junction manhole located upstream from another located in the immediate vicinity or that is serving a drainage alignment with no potential for illicit connections.

For all catchments identified for investigation, during dry weather, field crews will systematically inspect **key junction manholes** for evidence of illicit discharges and confirm or identify potential system vulnerability factors. This program involves progressive inspection and sampling at manholes in the storm drain network to isolate and eliminate illicit discharges.

The manhole inspection methodology will be conducted in one of two ways (or a combination of both):

- By working progressively up from the outfall and inspecting key junction manholes along the way, or
- By working progressively down from the upper parts of the catchment toward the outfall

and inspecting key junction manholes along the way.

For most catchments, manhole inspections will proceed from the outfall moving up into the system. However, the decision to move up or down the system depends on the nature of the drainage system and the surrounding land use and the availability of information on the catchment and drainage system. Moving up the system can begin immediately when an illicit discharge is detected at an outfall, and only a map of the storm drain system is required. Moving down the system requires more advance preparation and reliable drainage system information on the upstream segments of the storm drain system but may be more efficient if the sources of illicit discharges are believed to be located in the upstream portions of the catchment area. Once a manhole inspection methodology has been selected, investigations will continue systematically through the catchment.

Inspection of key junction manholes will proceed as follows:

1. Manholes will be opened and inspected for visual and olfactory evidence of illicit connections. A sample Drain Manhole Inspection Log form is provided in Appendix D.

2. If flow is observed, a sample will be collected and analyzed at a minimum for ammonia, chlorine, and surfactants. Field kits can be used for these analyses, provided they meet the minimum threshold indicator concentrations as outlined on Page 38 of the Permit (Section 2.3.4.7.b.iii.4.b). Sampling and analysis will be in accordance with procedures outlined in **Section 6**. Additional indicator sampling may assist in determining potential sources.

3. Where sampling results or visual or olfactory evidence indicate potential illicit discharges, the area draining to the junction manhole will be flagged for further upstream manhole investigation and/or isolation and confirmation of sources.

4. Subsequent key junction manhole inspections will proceed until the location of suspected illicit discharges can be isolated to a pipe segment between two manholes.

5. If no evidence of an illicit discharge is found, catchment investigations will be considered complete upon completion of key junction manhole sampling.

7.4 Wet Weather Catchment Investigation (Outfall Sampling)

Where a minimum of one (1) System Vulnerability Factor (SVF) is identified based on previous information or the catchment investigation, a wet weather investigation must also be conducted at the associated outfall. The Town of Derry will be responsible for implementing the wet weather outfall sampling program and making updates as necessary.

Outfalls will be inspected and sampled under wet weather conditions, to the extent necessary, to determine whether wet weather-induced high flows in sanitary sewers or high groundwater in areas served by septic systems result in discharges of sanitary flow to the MS4.

Wet weather outfall sampling will proceed as follows:

At least one wet weather sample will be collected at the outfall for the same parameters required during dry weather screening (refer to Table 7-2 , Required Analytical Methods, Threshold/Detection Limits, Hold Times, and Preservatives).

1. Wet weather sampling will occur during or after a storm event of sufficient depth or intensity to produce a stormwater discharge at the outfall.
    a. To the extent feasible, sampling should occur during the spring (March through June) when groundwater levels are relatively high.
    b. There is no specific rainfall amount that will trigger sampling, although minimum storm event intensities that are likely to trigger sanitary sewer interconnections are preferred.
    c. Sampling during the initial period of discharge (“first flush”) will be avoided.

2. If wet weather outfall sampling indicates a potential illicit discharge, then additional wet weather source sampling will be performed, as warranted, or source isolation and confirmation procedures will be followed as described in **Section 7.5 below** Source Isolation and Confirmation

3. If wet weather outfall sampling does not identify evidence of illicit discharges, and no evidence of an illicit discharge is found during dry weather manhole inspections, catchment investigations will be considered complete.

7.5 Source Isolation and Confirmation

Once the source of an illicit discharge is approximated between two manholes, more detailed investigation techniques will be used to isolate and confirm the source of the illicit discharge. The following methods may be used in isolating and confirming the source of illicit discharges:

- Sandbagging
- Smoke Testing
- Dye Testing
- CCTV/Video Inspections
- Optical Brightener Monitoring
- IDDE Canines.

These methods are described in the sections below. Instructions and Standard Operating Procedures (SOPs) for these and other IDDE methods are provided in **Appendix G**.

Public notification is an important aspect of a detailed source investigation program. Prior to smoke testing, dye testing, or TV inspections, the Town of Derry will notify property owners in the affected area. Smoke testing notification will include door hanger notifications, email, website posting, e-newsletter, and reverse 911 for single family homes, businesses and building lobbies for multi-family dwellings.

7.5.1 Sandbagging

This technique can be particularly useful when attempting to isolate intermittent illicit discharges or those with very little perceptible flow. The technique involves placing sandbags or similar barriers (e.g., caulking, weirs/plates, or other temporary barriers) within outlets to manholes to form a temporary dam that collects any intermittent flows that may occur. Sandbags are typically left in place for 48 hours and should only be installed when dry weather is forecast. If flow has collected behind the sandbags/barriers after 48 hours, it can be assessed using visual observations or by sampling. If no flow collects behind the sandbag, the upstream pipe network can be ruled out as a source of the intermittent discharge. Finding appropriate durations of dry weather and the need for multiple trips to each manhole makes this method both time-consuming and somewhat limiting.

7.5.2 Smoke Testing

Smoke testing involves injecting non-toxic smoke into drain lines and noting the emergence of smoke from sanitary sewer vents in illegally connected buildings or from cracks and leaks in the system itself. Typically, a smoke bomb or smoke generator is used to inject the smoke into the system at a catch basin or manhole and air is then forced through the system. Test personnel are place in areas where there are suspected illegal connections or cracks/leaks, noting any escape of smoke (indicating an illicit connection or damaged storm drain infrastructure). It is important when using this technique to make proper notifications to area residents and business owners as well as local police and fire departments.

If the initial test of the storm drain system is unsuccessful then a more thorough smoke-test of the sanitary sewer lines can also be performed. Unlike storm drain smoke tests, buildings that do not emit smoke during sanitary sewer smoke tests may have problem connections and may also have sewer gas venting inside, which is hazardous.

It should be noted that smoke may cause minor irritation of respiratory passages. Residents with respiratory conditions may need to be monitored or evacuated from the area of testing altogether to ensure safety during testing.

7.5.3 Dye Testing

Dye testing involves flushing non-toxic dye into plumbing fixtures such as toilets, showers, and sinks and observing nearby storm drains and sewer manholes as well as stormwater outfalls for the presence of the dye. Like smoke testing, it is important to inform nearby residents and business owners. Police, fire, and local public health staff should also be notified prior to testing in preparation of responding to citizen phone calls concerning the dye and their presence in local surface waters.

A team of two or more people is needed to perform dye testing (ideally, all with two-way radios). One person is inside the building, while the others are stationed at the appropriate storm sewer and sanitary sewer manholes (which should be opened) and/or outfalls. The person inside the building adds dye into a plumbing fixture (i.e., toilet or sink) and runs a enough water to move the dye through the plumbing system. The person inside the building then radios to the outside crew that the dye has been dropped, and the outside crew watches for the dye in the storm sewer and sanitary sewer, recording the presence or absence of the dye.

The test can be relatively quick (about 30 minutes per test), effective (results are usually definitive), and inexpensive. Dye testing is best used when the likely source of an illicit discharge has been narrowed down to a few specific houses or businesses.

7.5.4 CCTV/Video Inspection

Another method of source isolation involves the use of mobile video cameras that are guided remotely through stormwater drain lines to observe possible illicit discharges. IDDE program staff can review the videos and note any visible illicit discharges. While this tool is both effective and usually definitive, it can be costly and time consuming when compared to other source isolation techniques.

7.5.5 Optical Brightener Monitoring

Optical brighteners are fluorescent dyes that are used in detergents and paper products to enhance their appearance. The presence of optical brighteners in surface waters or dry weather discharges suggests there is a possible illicit discharge or insufficient removal through adsorption in nearby septic systems or wastewater treatment. Optical brightener monitoring can be done in two ways. The most common, and least expensive, methodology involves placing a cotton pad in a wire cage and securing it in a pipe, manhole, catch basin, or inlet to capture intermittent dry weather flows. The pad is retrieved later and placed under UV light to determine the presence/absence of brighteners during the monitoring period. A second methodology uses handheld fluorometers to detect optical brighteners in water sample collected from outfalls or ambient surface waters. Use of a fluorometer, while more quantitative, is typically more costly, and is not as effective at isolating intermittent discharges as other source isolation techniques.

7.5.6 IDDE Canines

Dogs specifically trained to smell human related sewage are becoming a cost-effective way to isolate and identify sources of illicit discharges. While not widespread at the moment, the use of IDDE canines is growing as is their accuracy. The use of IDDE canines is not recommended as a standalone practice for source identification; rather it is recommended as a tool to supplement other conventional methods, such as dye testing, in order to fully verify sources of illicit discharges.

7.6 Illicit Discharge Removal

When the specific source of an illicit discharge is identified, the Town of Derry will exercise its authority as necessary to require its removal. The annual report will include the status of IDDE investigation and removal activities including the following information for each confirmed source:

- The location of the discharge and its source(s)
- A description of the discharge
- The method of discovery
- Date of discovery
- Date of elimination, mitigation or enforcement action
- Estimate of the volume of flow removed.

7.6.1 Confirmatory Outfall Screening

Within one (1) year of removal of all identified illicit discharges and SSO sources within a catchment area, confirmatory outfall or interconnection screening will be conducted. The confirmatory screening will be conducted in dry weather unless System Vulnerability Factors have been identified, in which case both dry weather and wet weather confirmatory screening will be conducted. If confirmatory screening indicates evidence of additional illicit discharges, the catchment will be scheduled for additional investigation. Confirmatory screening is not required in catchments where no illicit discharges or System Vulnerability Factors have been identified and no previous screening indicated suspicious flows.

7.7 Follow-up Screening

Upon completion of all catchment investigations and illicit discharge removal and confirmation (if necessary), each outfall or interconnection will be scheduled for follow-up screening within five (5) years, or sooner based on the catchment's illicit discharge priority. Ongoing screening will consist of dry weather screening and sampling consistent with the procedures described in **Section 7** of this document. Ongoing wet weather screening and sampling will also be conducted at outfalls where wet weather screening was required due to System Vulnerability Factors and will be conducted in accordance with the procedures described in **Section 8.1**. All sampling results will be reported in the annual report.

7.8 Illicit Discharge Detection and Elimination Training

Town of Derry will implement a training program, as outlined in Section 8 and **Appendix F** of the IDDE Program Plan, to employees involved in IDDE program about the program, including how to recognize illicit discharges and SSOs. The permittee shall report on the frequency and type of employee training in the annual report.

7.9 Illicit Discharge Removal

When the specific source of an illicit discharge is identified, the Town will exercise its authority as necessary to require its removal. The annual report will include the status of IDDE investigation and removal activities including the following information for each confirmed source:

- The location of the discharge and its source(s)
- A description of the discharge
- The method of discovery
- Date of discovery
- Date of elimination, mitigation or enforcement action OR planned corrective measures and a schedule for completing the illicit discharge removal
- Estimate of the volume of flow removed.

8 Training

Annual IDDE training will be made available to employees involved in the IDDE program. This training will at a minimum include information on how to identify illicit discharges and SSOs and may also include additional training specific to the functions of specific personnel and their function within the framework of the IDDE program. Training records will be maintained in the Public Works office at the Derry Municipal Center. The frequency and type of training will be included in the annual report.

9 Progress Reporting

The progress and success of the IDDE program will be evaluated on an annual basis. The evaluation will be documented in the annual report and will include the following indicators of program progress:

- Number of SSOs and illicit discharges identified and removed
- Number and percent of total outfall catchments served by the MS4 evaluated using the catchment investigation procedure
- Number of dry weather outfall inspections/screenings
- Number of wet weather outfall inspections/sampling events
- All dry weather and wet weather screening and sampling results
- Estimate of the volume of sewage removed, as applicable
- Number of employees trained annually.

The success of the IDDE program will be measured by the IDDE activities completed within the required permit timelines.

Appendix A

Legal Authority (IDDE Bylaw or Ordinance)

TOWN OF DERRY

Certificate

The Derry Town Council, after a duly noticed public hearing held on November 18, 2008, approved, by a vote of 5-1-0, the attached Storm Water Ordinance.

Effective Date: December 18, 2008

Richard Metts, Chair
Derry Town Council

Denise E. Neale, Town Clerk
Clerk to Town Council

Received and Recorded November 25, 2008

Storm Water Ordinance

Section 1. Purpose

The purpose of this ordinance is to:

A. Protect, maintain, and enhance the environment of the Town of Derry, New Hampshire and the public health, safety and the general welfare of the citizens of the town, by

   1. Controlling discharges of pollutants to the town's storm water system and maintaining and improving the quality of the receiving waters into which the stormwater outfalls flow, including, without limitation, lakes, rivers, streams, ponds, wetlands, and groundwater of the town, and

   2. Establishing minimum requirements and procedures to control the adverse affects of increased post-development stormwater runoff, decreased groundwater recharge, and non-point source pollution associated with new development and redevelopment.

B. Enable the Town of Derry to comply with requirements of the Town's Municipal Separate Storm Sewer System (MS4) General Permit issued by USEPA under the National Pollution Discharge Elimination System (NPDES) program and applicable regulations, including 40 CFR §122.26 for stormwater discharges.

C. Allow the Town of Derry to exercise the powers granted by the State of New Hampshire through RSA 149-I and other applicable statutes to:

   1. Exercise general regulation over the planning, location, construction, and operation and maintenance of stormwater facilities in the municipality, whether or not owned and operated by the municipality;

   2. Adopt any rules and regulations deemed necessary to accomplish the purposes of this statute, including the adoption of a system of fees for services and permits;

   3. Establish standards to regulate the quantity of stormwater discharged and to regulate stormwater contaminants as may be necessary to protect water quality;

   4. Review and approve plans for stormwater management in proposed subdivisions or commercial developments;

   5. Issue permits or approvals for storm water discharges, or for the construction, alteration, extension, or repair of stormwater facilities;

6. Suspend or revoke permits when it is determined that the permittee has violated any applicable ordinance or condition of the permit;

7. Regulate and prohibit discharges into stormwater facilities of sanitary, industrial, or commercial sewage or waters that have otherwise been contaminated; and

8. Expend funds to remediate or mitigate the detrimental effects of contaminated land or other sources of storm water contamination, whether public or private.

Section 2. Definitions

For the purpose of this ordinance, the following definitions shall apply unless the context clearly indicates or requires a different meaning. Words used in the singular shall include the plural, and the plural shall include the singular; words used in the present tense shall include the future tense. The word "shall" is mandatory and not discretionary. The word "may" is permissive. Words not defined in this section shall be construed to have the meaning given by common and ordinary use as defined in the latest edition of Webster's Third New International Dictionary.

1. ***Accidental Discharge*** - A discharge prohibited by these Regulations, which occurs by chance, and without planning or thought prior to occurrence.

2. ***Best Management Practices or BMPs*** – A proven or accepted physical, structural, vegetative, and/or managerial practices that, when used singly or in combination, prevent or reduce erosion, sediment, peak storm discharge, and pollution of water, that have been approved by the Town of Derry, and that have been incorporated by reference into the Storm Water Regulations as if fully set out therein. (See Section 4 of the Stormwater Regulations for recommended Best Management Practices manuals).

3. ***Channel*** - A natural or artificial watercourse with a definite bed and banks that conducts flowing water continuously or periodically.

4. ***Construction Activity*** - Activities subject to the EPA Phase II Storm Water Program and the NPDES General Construction Permits. These include construction projects resulting in land disturbance. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

5. ***Contaminant*** - Any physical, chemical, biological, or radiological substance or matter in water.

6. ***Department of Public Works (DPW)*** - The Town of Derry Department of Publics Works and associated divisions including, but not limited to, Code Enforcement.

7. ***Director of Public Works*** - The chief administrator of DPW who is authorized to assign DPW staff to oversee the implementation and enforcement of the Storm Water Regulations and the Town of Derry's Storm Water Ordinance.

8. ***Discharge*** - To dispose, deposit, spill, pour, inject, seep, dump, leak or place by any means, or that which is disposed, deposited, spilled, poured, injected, seeped, dumped, leaked, or placed by any means including any direct or indirect entry of any solid or liquid matter into the municipal separate storm sewer system.

9. ***Illicit Discharge*** - Any discharge to the Municipal Storm Sewer System (MS4) that is not composed entirely of storm water and not specifically permitted through an existing NPDES discharge permit.

10. ***Industrial Activity*** - Activities subject to NPDES Industrial Permits as defined in 40 CFR, Section 122.26 (b)(14).

11. ***Land Disturbing Activity*** - Any activity on property that results in a change in the existing soil cover (both vegetative and non-vegetative) and/or the existing soil topography. Land-disturbing activities include, but are not limited to, development, re-development, demolition, construction, reconstruction, clearing, grading, filling, and excavation.

12. ***Maintenance*** - Any activity that is necessary to keep a stormwater facility in good working order so as to function as designed. Maintenance shall include complete reconstruction of a stormwater facility if reconstruction is needed in order to restore the facility to its original operational design parameters. Maintenance shall also include the correction of any problem on the site property that may directly impair the functions of the stormwater facility.

13. ***Maintenance Agreement*** - A document duly executed and recorded in the Registry of Deeds that acts as a property deed restriction, and which provides for long-term maintenance of storm water management practices.

14. ***Municipal Separate Storm Sewer System (MS4)*** - The conveyances owned or operated by the municipality for the collection and transportation of stormwater, including the roads and streets and their drainage systems, catch basins, curbs, gutters, ditches, man-made channels, pump stations, and storm drains.

15. ***National Pollutant Discharge Elimination System Permit (NPDES permit)*** - A permit issued pursuant to 33 USC § 1342(b) that authorizes the discharge of pollutants to waters of the United States, whether the permit is applicable on an individual, group, or general area-wide basis.

16. ***Non-Storm Water Discharge*** - Any discharge to the storm drain system that is not composed entirely of storm water.

17. ***Notice of Intent (NOI)*** – Application to apply for coverage under the EPA's General Permit for Construction Activities.

18. ***Person*** - Any and all persons, natural or artificial, including any individual, firm or association and any municipal or private corporation organized or existing under the laws of this or any other state or country.

19. ***Pollutant*** - Anything which causes or contributes to pollution. Pollutants may include, but are not limited to: paints, varnishes, and solvents; petroleum hydrocarbons; automotive fluids; cooking grease; detergents (biodegradable or otherwise); degreasers; cleaning chemicals; non-hazardous liquid and solid wastes and yard wastes; refuse, rubbish, garbage, litter, or other discarded or abandoned objects and accumulations, so that same may cause or contribute to pollution; sediment; floatables; pesticides, herbicides, and fertilizers; liquid and solid wastes; sewage, fecal coliform and pathogens; dissolved and particulate metals; animal wastes; wastes and residues that result from constructing a building or structure; concrete and cement; and noxious or offensive matter of any kind.

20. ***Pollution*** - The contamination or other alteration of any water's physical, chemical or biological properties by the addition of any constituent and includes but is not limited to, a change in temperature, taste, color, turbidity, or odor of such waters, or the discharge of any liquid, gaseous, solid, radioactive, or other substance into any such waters as will or is likely to create a nuisance or render such waters harmful, detrimental or injurious to the public health, safety, welfare, or environment, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life.

21. ***Premises*** - Any building, lot, parcel of land, or portion of land whether improved or unimproved including sidewalks and parking strips

22. ***Recharge*** – The amount of water from precipitation that infiltrates into the ground and is not evaporated or transpired.

23. ***Runoff*** - That portion of the precipitation on a drainage area that is discharged from the area into the municipal separate storm water system.

24. ***Sediment*** - Solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.

25. ***Stabilization/Stabilized*** - Providing adequate measures, vegetative and/or structural, that will prevent erosion from occurring or reducing the soil erosion rate such that it approaches that of undisturbed soils. Soils which are disturbed will be considered stabilized and protected when covered with a healthy, mature growth of grass or a good covering of straw mulch (2 tons/acre). Mulch is only a temporary measure; ultimately, the site needs vegetation.

26. ***Storm Water*** - Storm water runoff, snow melt runoff, surface runoff, street wash waters related to street cleaning or maintenance, infiltration and drainage.

27. ***Storm Water Management*** - The programs to maintain quality and quantity of storm water runoff to pre-development levels.

28. ***Storm Water Management Facilities*** - The drainage structures, conduits, ditches, storm sewers, and all device appurtenances by means of which storm water is collected, transported, pumped, treated or disposed.

29. ***Storm Water Management Plan*** - The set of drawings and other documents that comprise all the information and specifications for the programs, drainage systems, structures, BMPs, concepts and techniques intended to maintain or restore quality and quantity of storm water runoff to pre-development levels.

30. ***Storm Water Pollution Prevention Plan (SWPPP)*** - A plan that clearly describes appropriate control measures that include a description of all pollution control measures (i.e., BMPs) that will be implemented as part of the construction activity to control pollutants in stormwater discharges and describes the interim and permanent stabilization practices for the site.

31. ***Storm Water Runoff*** - Flow on the surface of the ground, resulting from precipitation and drainage consisting entirely of water from any form of natural precipitation that is not absorbed or evaporated, and resulting from such precipitation.

32. ***Stream*** - Areas of flowing water occurring for sufficient time to develop and maintain defined channels but may not flow during dry portions of the year. Includes but is not limited to all perennial and intermittent streams located on U.S. Geological Survey Maps.

33. ***Structural BMPs*** - Devices that are constructed to provide control of storm water runoff.

34. ***Structural Stormwater Control*** - A structural storm water management facility or device that controls storm water runoff and changes the characteristics of that runoff including, but not limited to, the quantity and quality, the period of release or the velocity of flow.

35. ***Surface water*** - Waters upon the surface of the earth in bounds created naturally or artificially including, but not limited to, streams, other watercourses, lakes and reservoirs.

Section 3 Administration

The Director of the Department of Public Works (or his/her designee) shall administer the provisions of this ordinance. The Town Council may promulgate and amend such regulations as may be necessary and convenient to effectuate the purposes and enforce the requirements of this ordinance.

Section 4 Prohibited Discharges

A. Violation of Water Quality Standard - No person shall introduce or cause to be introduced into the MS4 any discharge that causes or contributes to causing the Town to violate a state surface water quality standard, the Town's Phase II MS4 NPDES permit, or any state-issued discharge permit for discharges from its MS4.

B. Introduction of Prohibited Substances - The following discharges are specifically prohibited and are not meant to be all inclusive:.

No person shall dump, spill, leak, pump, pour, emit, empty, discharge, leach, dispose, or otherwise introduce or cause, allow, or permit to be introduced any of the following substances into the MS4.

1. Any new or used motor oil, antifreeze, or other motor vehicle fluid;
2. Any industrial wastes;
3. Any hazardous waste, including hazardous household waste;
4. Any domestic sewage or septic tank waste, grease trap waste, or grit trap waste;
5. Any garbage, rubbish or yard waste;
6. Any wastewater from
    a. a commercial carwash facility;
    b. any vehicle washing, cleaning or maintenance at any new or used automobile, or other vehicle dealership, rental agency, body shop, repair shop, or maintenance facility; or
    c. from any washing, cleaning or maintenance of any business or commercial or public service vehicle, including truck, bus, or heavy equipment, by a business or public entity that operates more than two such vehicles;
7. Any wastewater from the washing, cleaning, de-icing, or other maintenance of aircraft;

8. Any wastewater from a commercial mobile power washer or from the washing or other cleaning of a building exterior that contains any harmful quantities of soap, detergent, degreaser, solvent, or any other harmful cleaning substance;
9. Any wastewater from any floor, rug or carpet cleaning;
10. Any wastewater from the wash down or other cleaning of pavement that contains any harmful quantity of soap, detergent, solvent, degreaser, emulsifier, dispersant, or any other harmful cleaning substance; or any wastewater from the wash down or other cleaning of any pavement where any spill, leak, or other release of oil, motor fuel, or other petroleum or hazardous substance has occurred, unless all harmful quantities of such released material have been previously removed;
11. Any effluent from a cooling tower, condenser, compressor, emissions scrubber, emissions filter, or the blowdown from a boiler;
12. Any ready-mixed concrete, mortar, ceramic, or asphalt base material or hydro-mulch material, or from the cleaning of commercial vehicles or equipment containing, or used in transporting or applying, such material;
13. Any runoff or wash down water from any animal pen, kennel, or fowl or livestock containment area;
14. Any water from a swimming pool, fountain or spa containing any harmful quantity of chlorine, muriatic acid or other chemical used in the treatment or disinfection of the swimming pool water or in the pool cleaning;
15. Any water from a water curtain in a spray room used for painting vehicles or equipment;
16. Any contaminated runoff from an auto salvage yard;
17. Any substance or material that will damage, block, or clog the MS4;
18. Any release from a petroleum storage tank, or any leachate or runoff from soil contaminated by a leaking petroleum storage tank, or any discharge of pumped, confined, or treated waste water from the remediation of any such petroleum storage tank release, unless it complies with state and federal standards and does not contain any harmful quantity of any pollutant;
19. Any pet waste from a commercial enterprise or livestock waste.

C. Introduction of Earth-type Materials - No person shall introduce or cause to be introduced into the MS4 any harmful quantity of sediment, silt, earth, soil, or other material associated with cleaning, grading, excavation or other construction activities, (or associated with landfilling or other placement or disposal of soil, rock, or other earth materials) in excess of what could be retained on site or captured by employing sediment and erosion control measures to the maximum extent practicable (under the prevailing circumstances).

D. Introduction of Sewage and Grey Water No person shall connect a line conveying domestic sanitary or industrial sewage to the MS4; this includes grey water discharge such as washing machine discharge, sink drains, etc. or allow such a connection to continue.

E. Service Station Pavement Wash Water No person shall cause or allow any pavement wash water from a service station to be discharged into the MS4 unless such wash water has passed through a properly functioning and maintained, grease, oil, and sand interceptor before discharge into the MS4.

F. Pesticide and Herbicide Use No person shall use or cause to be used any pesticide or herbicide contrary to any directions for use on any labeling required by state or federal statute or regulation. Any use of any pesticide, herbicide, or fertilizer in any manner that the person knows, or reasonably should know, is likely to cause, or does cause, a harmful quantity of the pesticide, herbicide, or fertilizer to enter the MS4 or waters of the United States shall be prohibited.

G. Disposal of Pesticide and Herbicide No person shall dispose of, discard, store, or transport a pesticide, herbicide, or fertilizer, or a pesticide, herbicide, or a fertilizer container, in a manner that the person knows, or reasonably should know, is likely to cause, or does cause, a harmful quantity of the pesticide, herbicide, or fertilizer to enter the MS4 or waters of the United States.

H. Storage of Trash, Toxic Substances and Hazardous Wastes No person shall allow trash and debris to stand on property or collect on property nor allow the storage of toxic or hazardous substances on property so as to allow exposure to precipitation and stormwater runoff, which can affect stormwater discharge to the MS4 or the groundwater.

I. Litter of Urban Ponds, Lakes, Streams or River Banks Any residential, commercial or industrial property boundary, located within 150 feet of any pond, lake, stream or river bank, shall assure that trash, debris, materials, containers, grass clippings, leaf and yard waste, wood chips, material used for cover or any such other material, does not litter this buffer area by means natural (wind or storm movement of material), by the careless discard of such material, or by any other means that displaces these objects from the owner's property boundary to anywhere within this 150 foot buffer zone area.

J. Allowable Discharges: - Notwithstanding any provisions to the contrary, the following types of discharges into the storm drain system are exempt from the prohibitions set herein:

1. Watering of lawns, landscaping and gardens;
2. Washing of personal motor vehicles by residents;
3. Draining of water from swimming pools or spas, after chlorine content of such water according to a test kit, shows a zero reading of chlorine;
4. Flushing of water lines or other discharges from potable water sources;
5. Flows from fire fighting activities;
6. Managed minimal amounts of air conditioning condensation;
7. Uncontaminated pumped groundwater;

8. Discharges from rising groundwaters, springs, and flows from riparian habitats and wetlands;
9. Non-contact cooling water discharged in accordance with a valid NPDES permit.

Section 5. General Permitting and Approval Procedures

A. Construction General Permit – No land owner or land operator shall begin any site work of any building(s), grading or other land development or any land disturbance activities as outlined in 1 – 4 below without first obtaining an EPA Construction General Permit from EPA and submitting a Notice of Intent (NOI) to EPA Region I, receiving acknowledgement, having an approved Storm Water Pollution Prevention Plan (SWPPP) and meeting the requirements of this ordinance.

1. Land disturbing activity disturbing one (1) or more acres of land;
2. Land disturbing activity of less than one (1) acre of land, if such activity is part of a larger common plan of development that affects one (1) or more acres of land.
3. Land disturbing activity of less than one (1) acre of land, if in the discretion of the Town of Derry's Director of Public Works such activity poses a unique threat to water, or public health or safety;
4. The creation and use of borrow pits (the excavation of soils from one area to be used in another area) that would meet any of the criteria of 1, 2, or 3 above.

EPA's general permit contains eligibility restrictions, as well as permit conditions and requirements. Applicant(s) may have to take certain actions to be eligible for coverage under this permit. In such cases, the applicant must continue to satisfy those eligibility provisions to maintain permit authorization. If the applicant does not meet the requirements that are pre-condition to eligibility, then the resulting discharges constitute unpermitted discharges. By contrast, if the applicant does not comply with the requirements of the general permit, the applicant may be in violation of the general permit.

B. Industrial General Permit – Any facility covered under the NPDES Multi-Sector General Permit for stormwater discharges associated with industrial activities at the facility, must apply for coverage with EPA through submittal of an NOI to EPA Region I, receive acknowledgement of coverage or continuation of coverage if it is a renewal of existing coverage, and have an SWPPP for the facility.

All operators of landfills, hazardous waste treatment, disposal, and recovery facilities and industrial facilities are subject to Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) 42, USC (S) 11023, and industrial facilities that the Town determines are contributing a pollutant load to the Municipal Separate Storm Sewer System, which are sources

of storm water discharges associated with industrial activity shall comply with Best Management Practices outlined in the Town's Storm Water Regulations.

Section 6. Town Application and Approval Requirements

A. Any land owner or land operator who intends to obtain coverage for storm water discharge associated with land disturbing activities described in Section 5A above or associated with industrial activity under the NPDES Multi Sector General Permit for Storm Water Discharges Associated with Industrial Activity ("the Industrial General Permit") as described in Section 5B above shall, in addition to the federal permit requirements:

1. submit a signed copy of its NOI to the Director of Public Works for review and approval at least five (5) days prior to the commencement of the land disturbing activity on the property and/or industrial activity at the facility, or if such activity is already underway upon the effective date of the Storm Water Regulations, the NOI shall be submitted within thirty (30) days, and
2. submit to the Department of Public Works for review and approval a copy the SWPPP prepared and implemented in accordance with the requirements of the EPA Construction or Industrial General Permit or any individual or group NPDES permit issued for storm water discharges from the facility The SWPPP shall be prepared to meet the requirements of 40 CFR 122.26.

B Application Procedure The following application procedure will apply for any construction project that meets the criteria of 5A above, whether a new development or redevelopment as outlined within these Regulations:

1. Applications for land disturbance activity permits must be filed with the Town of Derry's Planning Department and/or Building Department as required by the Town of Derry land Development Control Regulations or Zoning Ordinance, on any regular business day.
2. A copy of this permit application shall be forwarded to the Department of Public Works for review.
3. Permit applications shall include two copies of the Storm Water Pollution Prevention Plan, two copies of the maintenance agreement, and any required review fees.
4. Within 30 business days of the receipt of the Storm Water Pollution Prevention Plan and maintenance agreement as required by these Regulations, the Department of Public Works shall inform the applicant whether the application, plan and maintenance agreement are approved or disapproved.
5. If the storm water pollution prevention plan or maintenance agreement are disapproved, the applicant may revise the storm water pollution prevention plan or agreement. If additional information is submitted, the Department

of Public Works shall have 30 business days from the date the additional information is received to inform the applicant that the plan and maintenance agreement are either approved or disapproved.

Section 7 Stormwater Control Regulations

Any land owner or land operator subject to the General EPA permitting requirements described in Sections 5A and/or 5B above or whose land disturbance or industrial activity is otherwise determined by the Director of Public Works to have the potential to

a. degrade the quality of the receiving waters into which the stormwater outfalls flow, including, without limitation, lakes, rivers, streams, ponds, wetlands, and groundwater of the Town or

b. significantly increase post-development stormwater runoff or decrease groundwater recharge, or result in any non-point source pollution or

c. introduce or cause to be introduced into the MS4 any discharge that causes or contributes to causing the Town to violate a state surface water quality standard, the Town's Phase II MS4 NPDES permit, or any state-issued discharge permit for discharges from its MS4.

shall be required to comply with the Best Management practices of the Derry Stormwater Control regulations dated 10/31/2008 or latest revision thereto and to submit to the Director of Public Works for review and approval a SWPPP including any information so required by the Director to determine compliance with such regulations.

Section 8 Access and Inspection of Properties and Facilities

A. The representative of the Department of Public Works shall be permitted to enter and inspect properties and facilities at reasonable times as often as may be necessary to determine compliance with this ordinance

B. If a property or facility has security measures in force which require property identification and clearance before entry into its premises, the owner or operator shall make the necessary arrangements to allow access to representatives of the Department of Public Works.

C. The owner or operator shall allow the representative of the Department of Public works ready access to all parts of the premises for the purposes of inspection, sampling, photography, videotaping, examination and copying of any records that are required under the conditions of a National Pollutions Discharge Elimination System Permit to discharge storm water.

D. The Department of Public Works shall have the right to set up on any property or facility such devices as are necessary in the opinion of the Department of Public Works to conduct monitoring and/or sampling of flow discharges.

E. The Department of Public Works may require the owner or operator to install monitoring equipment and perform monitoring as necessary, and make the monitoring data available to the Department of Public Works. This sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the owner or operator at his/her own expense. All devices used to measure flow and quality shall be calibrated to ensure accuracy.

F. Any temporary or permanent obstruction to safe and easy access to the property or facility to be inspected and/or sampled shall be promptly removed by the owner or operator at the written or oral request of the Department of Public Works and shall not be replaced. The costs of clearing such access shall be borne by the owner or operator.

G. Unreasonable delays in allowing the Department of Public Works access to a facility shall be a violation of this ordinance. A delay shall be considered unreasonable if the delay a) exceeds 1 week (7 days), or b) any length of time if it is determined that the delay allowed the continuation of a discharge to the MS4 that is specifically prohibited by this ordinance

H. If the Department of Public Works has been refused access to any part of the premises from which stormwater is discharged, and the Department of Public Works is able to demonstrate probable cause to believe that there may be a violation of this ordinance, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program designated to verify compliance with this ordinance or any order issued hereunder, or to protect the overall public health, safety, environment and welfare of the community, then the Department of Public Works may seek issuance of a search warrant from any court of competent jurisdiction.

Section 9. Notification of Accidental Discharges and Spills

Notwithstanding other requirements of law, as soon as any person responsible for a facility, activity or operation, or responsible for emergency response for a facility, activity or operation has information of any known or suspected release of pollutants or non-storm water discharges from that facility or operation which are resulting or may result in illicit discharges or pollutants discharging into storm water, the Town of Derry's Separate Storm Sewer System, State Waters, or Waters of the U.S., said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release so as to minimize the effects of the discharge.

Any person identified above that is required to respond as described in the previous paragraph, or is otherwise required to provide notification to the State in accordance with RSA 146-A:5 (NH Oil Spillage in Public Waters) or RSA 147-A:11 (NH Hazardous Waste Management Act), shall also provide notification to the Town of Derry Department of Public Works.

Section 10. Violations, Enforcement and Penalties

A. It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of the Town's Storm Water Ordinance or these Regulations. Any person who has violated or continues to violate these provisions may be subject to the enforcement actions outlined in this section or may be restrained by injunction or otherwise abated in a manner provided by law. In the event the violation constitutes an immediate danger to public health or public safety, the Department of Public Works is authorized to enter upon the subject private property, without giving prior notice, to take any and all measures necessary to abate the violation and/or restore the property. The Department of Public Works is authorized to seek costs of the abatement as outlined in Section 10.F.

B. Whenever the Department of Public Works finds that a violation of this ordinance has occurred, the Public Works Director or designee may order compliance by written notice of violation. The notice of violation shall contain:
   1) The name and address of the alleged violator;
   2) The address when available or a description of the building, structure or land upon which the violation is occurring, or has occurred;
   3) A statement specifying the nature of the violation;
   4) A description of the remedial measures necessary to restore compliance with this ordinance and a time schedule for the completion of such remedial action;
   5) A statement of the penalty or penalties that shall or may be assessed against the person to whom the notice of violation is directed; and,
   6) A statement that the determination of violation may be appealed to the Administrator by filing a written notice of appeal within five (5) days of service of notice of violation.

C. Such notice may require without limitation:
   1) The performance of monitoring, analyses, and reporting;
   2) The elimination of illicit discharges and illegal connections;
   3) That violating discharges, practices, or operations shall cease and desist;
   4) The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;
   5) Payment of costs to cover administrative and abatement costs; and,
   6) The implementation of pollution prevention practices.

D. Appeal of Notice of Violation - Any person receiving a Notice of Violation may appeal the determination of the Department of Public Works. The appeal must be received by end of the business day at the office of the Administrator within five (5) calendar days from the date of the Notice of Violation. Filing an appeal does not relieve the owner from full compliance with remedial actions outlined in the Notice of Violation. Hearing on the appeal from the Department of Public

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Works shall take place within 30 days from the date of receipt of the notice of appeal. The decision of the Administrator shall be final.

E. Enforcement Measures After Appeal - If the violation has not been corrected pursuant to the requirements set forth in the Notice of Violation, then representatives of the Department of Public Works may enter upon the subject private property and are authorized to take any and all measures necessary to abate the violation and/or restore the property. It shall be unlawful for any person, owner, agent or person in possession of any premises to refuse to allow the government agency or designated contractor to enter upon the premises for the purposes set forth above.

F. Costs of Abatement of the Violation - Within ten (10) days after abatement of the violation, the owner of the property will be notified of the cost of abatement, including administrative costs. The property owner may file a written protest objecting to the assessment or to the amount of the assessment within fifteen (15) days of such notice. If the amount due is not paid within thirty (30) days after receipt of the notice, or if an appeal is taken, within five (5) days after a decision on said appeal, the charges shall become a special assessment against the property and shall constitute a lien on the property for the amount of the assessment. Any person violating any of the provisions of this article shall become liable to the Town of Derry by reason of such violation.

G. Civil Penalties -In the event the alleged violator fails to take the remedial measures set forth in the notice of violation or otherwise fails to cure the violations described therein within five (5) days, or such greater period as the Department of Public Works shall deem appropriate, after the Director of Public Works or designee has taken one or more of the actions described above, the Public Works Director may impose a penalty not to exceed $1,000 (depending on the severity of the violation) for each day the violation remains unremedied after receipt of the notice of violation.

H. Criminal Penalties - For any wanton or malicious violations of the Storm Water Ordinance or the Rules & Regulations adopted pursuant to the authority stated in this ordinance, the Director of Public Works may issue a citation to the alleged violator requiring such person to appear in court to answer charges for such violation. Upon conviction, such person shall be shall be guilty of a misdemeanor if a natural person, or guilty of a felony if any other person and may be punished by a fine not to exceed $1,000 for each day the violation has occurred, or imprisonment or both. Each act of violation and each day upon which any violation shall occur shall constitute a separate offense.

I. Remedies Not Exclusive - The remedies listed in these Regulations are not exclusive of any other remedies available under any applicable Federal, State or local law and the Town of Derry may seek cumulative remedies.

The Town of Derry may recover attorney's fees, court costs, and other expenses associated with enforcement of this ordinance, including sampling and monitoring expenses.

Section 11. Severability Clause.

Should any Chapter or provision of this ordinance be declared by a court of competent jurisdiction to be unconstitutional or invalid, such decision shall not affect the validity of this Chapter as a whole, or any part thereof other than the part so declared to be invalid.

Section 12. Ordinance in Force.

This ordinance shall be in full force and effect from and after its passage, approval, recording and publications as provided by law.

This ordinance and its amendments have been duly Enacted and Ordained this 18th day of November 2008 by the Town Council of the Town of Derry in Rockingham County, State of New Hampshire, at a duly noticed and duly held session of the said Derry Town Council.

Derry Town Council

Richard Metts, Chairperson

Kevin Coyle

Janet Fairbanks

Brian Chirichiello

Brent Carney

Brad Benson

Neil Wetherbee

Received and recorded December 2, 2008 by Denise E Neale
Denise Neale, Town Clerk

Effective Date 12/18/08

Appendix B

List of Impaired Waters
Storm System Mapping
& SSO Inventory

Table B-1 - List of Impaired Waters in Derry, NH

Waterbody segment that receives flow from the MS4		# of outfalls into receiving water segment*	Chloride	Chlorophyll-a	Dissolved Oxygen/ DO Saturation	Nitrogen	Oil & Grease/ PAH	Phosphorus	Solids/ TSS/ Turbidity	E. coli	Enterococcus	Other pollutant(s) causing impairments
Beaver Brook (w/'West Running Brook and tributaries)	NHRIV700061203-09	46	X							X		
Beaver Brook (aka upper and lower Shields Brooks)	NHRIV700061203-11	11	X									
Beaver Brook (w/Horns Brook)	NHRIV700061203-16	12	X									Iron
Hoods Pond	NHLAK700061203-03-01	3		X				X		X		
Beaver Lake, Derry, W/Cwf (Galliens Beach)	NHLAK700061203-02-01	15		X				X		X		
Rainbow Lake, Derry	NHLAK700061203-05	1			X							
Taylor Brook	NHRIV700061101-05	2								X		
Island Pond, Derry, W/Cwf	NHLAK700061101-01-01	4		X				X				Cyanobacteria hepatotoxic microcystins

*Estimated number of outfalls discharging directly to AU. Includes privately owned outfalls.

Table B-2 - SSO Inventory Derry, New Hampshire (rev 6/30/19)

SSO Location[1]	Discharge Statement[2]	Date[3]	Time Start[3]	Time End[3]	Estimated Volume[4]	Description[5]	Mitigation Completed[6]	Mitigation Planned[7]
SSOs occurring during the five (5) years prior to the effective date of the permit.								
Rebecca Lane Residences (1L, 1R, 2L, 2R)	Sewer backup into basements of 4 condexes. No discharge to the MS4 or surface water.	6/12/12	Unk	Unk	Unk	Sanitary sewer backed up into basement due to grease blockage just downstream of the property. One owner suspected of running catering business out of home.	6/12/2012: Blockage was cleared, and the affected properties mitigated. Actuator valve installed to close and prevent backups in case of future blockage.	Continue with routine cleaning and inspection on triannual basis as part of the Town's Utility Asset Management Program.
SMH 11-8 Cross-country easement near corner of Fordway and Transfer Lane.	Area of discharge is naturally bermed so no discharge entered the MS4 or surface water.	3/19/14	12:00	13:30	2000 gals	Sanitary sewer manhole was surcharging due to a grease blockage. Sewer manhole was last cleaned in 2013 and no problems identified.	3/19/14: Blockage was cleared, wastewater from around manhole was pumped into the manhole, and lime was applied to area. 9/20/2016: Follow-up inspection showed no recurring grease build-up.	Continue with routine cleaning and inspection scheduled in 2019 as part of the Town's Utility Asset Management Program.
SSOs occurring during the Year 1 Reporting Period May 1, 2018 through June 30, 2019.								
SMH 12-71 Cross-country easement on Shila Drive.	No discharge entered the MS4 or surface water	5/18/19	Unk	Unk	50 gals	Sanitary sewer manhole was slowly surcharging and overflowing onto a grassy area. Blockage traced downstream to SMH 12-6A in lawn area of new apartment complex. It is suspected the site contractor had graded the property and dislocated the SMH frame and cover from the structure causing gravel and boulders to fall into the structure and constricting flow.	Blockage was released and lime applied to ground surface where the discharge flowed. This area of the collection system was last cleaned in 2016 as part of routine 3-year maintenance.	Town pursuing cost-recovery from contractor. Continue with routine cleaning and inspection scheduled in 2019 as part of the Town's Utility Asset Management Program.
SSOs occurring during the Year 2 Reporting Period May 1, 2019 through June 30, 2020.								
Cross-country easement off Transfer Lane	Treated effluent line discharged to an adjacent wooded marsh area.	12/19/19	Unk	9:00	500,000 gal	Primary treated effluent line which discharges under NPDES permit, failed to corrosion. The ductile iron pipe is suspected to have corroded due to corrosive soils.	12/19/19 - Effluent discharge line was shut down and repaired. EPA and NHDES were notified. Line was placed back in service	Budgeting and design being worked on to replace ductile iron pipe with HDPE pipe to eliminate corrosion issues. Subject to funding.

[1] Location (approximate street crossing/address and receiving water, if any)

[2] A clear statement of whether the discharge entered a surface water directly or entered the MS4

[3] Date(s) and time(s) of each known SSO occurrence (i.e., beginning and end of any known discharge)

[4] Estimated volume(s) of the occurrence

[5] Description of the occurrence indicating known or suspected cause(s)

[6] Mitigation and corrective measures completed with dates implemented

[7] Mitigation and corrective measures planned with implementation schedules

Table B-3: Land Uses, Generating Sites and Activities in Derry That Could Produce Indirect Discharges

Land Use	Generating Site	Activity that Produces Discharge
Residential	• Apartments • Multi-family • Single Family (Detached)	• Car Washing • Driveway Cleaning • Equipment Washdowns • Dumping/Spills (leaf litter, RV/boat holding tank effluent, pet waste) • Lawn/Landscape Watering • Septic System Maintenance • Swimming Pool Discharges
Commercial	• Campgrounds/RV parks • Restaurants • Car Washes • Commercial Laundry/Dry Cleaning • Gas Stations/Auto Repair Shops • Nurseries and Garden Centers • Oil Change Shops • Swimming Pools • Car Dealers/Rental Car Companies • Laboratory	• Building Maintenance (power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Outdoor Fluid Storage • Washdown of greasy equipment and grease traps • Vehicle Fueling • Vehicle Maintenance/Repair • Vehicle Washing
Industrial	• Auto recyclers • Beverages and brewing • Construction vehicle washouts • Food processing • Garbage truck washouts • Boat building, repair, storage • Metal plating operations • Paper and wood products • Petroleum storage • Printing	• All commercial activities • Industrial process water or rinse water • Loading and un-loading area washdowns • Outdoor material storage (fluids)
Institutional	• Cemeteries • Churches • Corporate Campuses • Hospitals • Schools and Universities	• Building Maintenance (e.g., power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Parking Lot Maintenance (power washing) • Vehicle Washing
Municipal	• Transfer Station/Landfills • Maintenance Depots • Municipal Fleet Storage Areas • Public Works Yards • Streets and Highways	• Building Maintenance (power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Outdoor Fluid Storage • Parking Lot Maintenance (power washing) • Road Maintenance • Spill Prevention/Response • Vehicle Fueling • Vehicle Maintenance/Repair • Vehicle Washing

Appendix C

Outfall Inventory and
Priority Ranking Matrix

Table 4 - OUTFALL PRIORITY RANKING

Stream/Waterbody Name	Assessment Unit	Outfalls discharging directly to AU*	High Priority Outfalls										Low Priority	Problem Outfalls	Excluded Outfalls
			Discharge to Area of Concern (beaches, Rec area, DW supplies)	Past Discharge Complaints	Poor Receiving Water Quality	Density of Generating Sites	Age of Development/	Areas of sewer conversion	Historic CSO	Surrounding density of aging septic systems	Culverted Streams longer than road	Water Quality Limited/ TMDLs			
Beaver Lake Watershed															
Salmon/Hassett/Harris/Hate Brooks	NHRIV700061203-05	5								X					
Jenny Dickey Brook	NHRIV700061203-32	1	X					X							
Salmon Brook	NHRIV700061203-07	2											X		
Unnamed Brook	NHRIV700061203-44	1								X					
Beaver Lake, Derry, W/Cwf (Galliens Beach)	NHLAK700061203-02-01	15	X					X				X			
Catobrook North	NHRIV700061203-08	5	X					X		X					
Catobrook South	NHRIV700061203-29	9	X					X		X					
Hood Pond Watershed															
Beaver Brook (aka Upper Shields)	NHRIV700061203-10	1											X		
Rainbow Lake, (w/Karen-Gena Beach)	NHLAK700061203-05	1	X				X			X					
Beaver Brook (Lower Shields)	NHRIV700061203-11	11		X		X				X		X			
Hoods Pond	NHLAK700061203-03-01	4	X		X							X			
Unnamed Brook (Trib to Hoods Pond)	NHRIV700061203-45	7		X		X	X				X				
Beaver Brook Watershed															
Beaver Brook (aka Beaver Meadows)	NHLAK700061203-08	5					X			X					
Unnamed Brook (Tributary to Beaver Meadows)	NHRIV700061203-38	2								X					
Beaver Brk (2/W Running Brk +Tribs)	NHRIV700061203-09	46			X	X	X					X			
Beaver Brk w/Horns Brk	NHRIV700061203-16	12					X					X			
Unnamed Brook To Branch Beaver Brook	NHRIV700061203-12	2											X		
Salmon/Cold Brooks	NHRIV700061203-04	4								X					
Redfield Estates Pond	NHLAK700061203-09	1								X					
Island Pond Watershed (and Taylor Reservoir)															
Unnamed Brook	NHRIV700061101-08	2								X					
Taylor Brook	NHRIV700061101-05	2								X					
Island Pond, Derry, W/Cwf	NHLAK700061101-01-01	4	X				X			X		X			
Unnamed Brook to Ballard Pond	NHRIV700061101-03	3								X					
Drew, Cunningham, Leavitt, & Unnamed Brooks	NHRIV700061101-01	10											X		

**Estimated number of outfalls based on previous mapping which includes privately-owned outfalls and those owned by the State of NH*

Problem Outfalls	Outfall/interconnections with known or suspected contributions of illicit discharges based on existing info
High Priority Outfalls	Outfalls/interconnections not classified as Problems, but a) discharge to an area of concern to public health due to proximity to public beaches, recreational areas, or drinking water supplies; b) determined as high priority based on characteristics (past discharge complaints, poor receiving water quality
Low Priority Outfalls	Outfalls/interconnections determined by characteristics (or lack of)
Excluded Outfalls	Outfalls/Interconnections with no potential of ID: drainage in undeveloped areas w/no dwellings and no sewers, athletic field drainage, parks and green space and associated parking

Appendix D

Field Forms,
Sample Bottle Labels, and
Chain of Custody Forms

OUTFALL RECONNAISSANCE INVENTORY/ SAMPLE COLLECTION FIELD SHEET

Section 1: Background Data

Subwatershed:		Outfall ID:	
Today's date:		Time (Military):	
Investigators:		Form completed by:	
Temperature (°F):	Rainfall (in.): Last 24 hours: Last 48 hours:		
Latitutde:	Longitude:	GPS Unit:	GPS LMK #:
Camera:		Photo #s:	

Land Use in Drainage Area (Check all that apply):

☐ Industrial ☐ Open Space

☐ Ultra-Urban Residential ☐ Institutional

☐ Suburban Residential Other: _____

☐ Commercial Known Industries: _____

Notes (e.g.., origin of outfall, if known):

Section 2: Outfall Description

LOCATION	MATERIAL	SHAPE		DIMENSIONS (IN.)	SUBMERGED
☐ **Closed Pipe**	☐ RCP ☐ CMP ☐ PVC ☐ HDPE ☐ Steel ☐ Other: _____	☐ Circular ☐ Eliptical ☐ Box ☐ Other: _____	☐ Single ☐ Double ☐ Triple ☐ Other: _____	Diameter/Dimensions: _____	In Water: ☐ No ☐ Partially ☐ Fully With Sediment: ☐ No ☐ Partially ☐ Fully
☐ **Open drainage**	☐ Concrete ☐ Earthen ☐ rip-rap ☐ Other: _____	☐ Trapezoid ☐ Parabolic ☐ Other: _____		Depth: _____ Top Width: _____ Bottom Width: _____	
☐ **In-Stream**	**(applicable when collecting samples)**				
Flow Present?	☐ Yes ☐ No *If No, Skip to Section 5*				
Flow Description (If present)	☐ Trickle ☐ Moderate ☐ Substantial				

Section 3: Quantitative Characterization

FIELD DATA FOR FLOWING OUTFALLS				
PARAMETER		**RESULT**	**UNIT**	**EQUIPMENT**
☐Flow #1	Volume		Liter	Bottle
	Time to fill		Sec	
☐Flow #2	Flow depth		In	Tape measure
	Flow width	____' ____"	Ft, In	Tape measure
	Measured length	____' ____"	Ft, In	Tape measure
	Time of travel		S	Stop watch
Temperature			°F	Thermometer
pH			pH Units	Test strip/Probe
Ammonia			mg/L	Test strip

Outfall Reconnaissance Inventory Field Sheet

Section 4: Physical Indicators for Flowing Outfalls Only

Are Any Physical Indicators Present in the flow? ☐ Yes ☐ No *(If No, Skip to Section 5)*

INDICATOR	CHECK if Present	DESCRIPTION	RELATIVE SEVERITY INDEX (1-3)		
Odor	☐	☐ Sewage ☐ Rancid/sour ☐ Petroleum/gas ☐ Sulfide ☐ Other:	☐ 1 – Faint	☐ 2 – Easily detected	☐ 3 – Noticeable from a distance
Color	☐	☐ Clear ☐ Brown ☐ Gray ☐ Yellow ☐ Green ☐ Orange ☐ Red ☐ Other:	☐ 1 – Faint colors in sample bottle	☐ 2 – Clearly visible in sample bottle	☐ 3 – Clearly visible in outfall flow
Turbidity	☐	See severity	☐ 1 – Slight cloudiness	☐ 2 – Cloudy	☐ 3 – Opaque
Floatables -Does Not Include Trash!!	☐	☐ Sewage (Toilet Paper, etc.) ☐ Suds ☐ Petroleum (oil sheen) ☐ Other:	☐ 1 – Few/slight; origin not obvious	☐ 2 – Some; indications of origin (e.g., possible suds or oil sheen)	☐ 3 - Some; origin clear (e.g., obvious oil sheen, suds, or floating sanitary materials)

Section 5: Physical Indicators for Both Flowing and Non-Flowing Outfalls

Are physical indicators that are not related to flow present? ☐ Yes ☐ No *(If No, Skip to Section 6)*

INDICATOR	CHECK if Present	DESCRIPTION	COMMENTS
Outfall Damage	☐	☐ Spalling, Cracking or Chipping ☐ Peeling Paint ☐ Corrosion	
Deposits/Stains	☐	☐ Oily ☐ Flow Line ☐ Paint ☐ Other:	
Abnormal Vegetation	☐	☐ Excessive ☐ Inhibited	
Poor pool quality	☐	☐ Odors ☐ Colors ☐ Floatables ☐ Oil Sheen ☐ Suds ☐ Excessive Algae ☐ Other:	
Pipe benthic growth	☐	☐ Brown ☐ Orange ☐ Green ☐ Other:	

Section 6: Overall Outfall Characterization

☐ Unlikely ☐ Potential (presence of two or more indicators) ☐ Suspect (one or more indicators with a severity of 3) ☐ Obvious

Section 7: Data Collection

1.	Sample for the lab?	☐ Yes	☐ No	
2.	If yes, collected from:	☐ Flow	☐ Pool	
3.	Intermittent flow trap set?	☐ Yes	☐ No	If Yes, type: ☐ OBM ☐ Caulk dam

Section 8: Any Non-Illicit Discharge Concerns (e.g., trash or needed infrastructure repairs)?

Illicit Discharge Hotline Incident Tracking Sheet

Incident ID:

Responder Information	
Call taken by:	Call date:
Call time:	Precipitation (inches) in past 24-48 hrs:
Reporter Information	
Incident time:	Incident date:

Caller contact information (*optional*):

Incident Location *(complete one or more below)*

Latitude and longitude:

Stream address or outfall #:

Closest street address:

Nearby landmark:

Primary Location Description	**Secondary Location Description:**		
☐ Stream corridor *(In or adjacent to stream)*	☐ Outfall	☐ In-stream flow	☐ Along banks
☐ Upland area *(Land not adjacent to stream)*	☐ Near storm drain	☐ Near other water source (storm water pond, wetland, etc.):	

Narrative description of location:

Upland Problem Indicator Description

☐ Dumping	☐ Oil/solvents/chemicals	☐ Sewage
☐ Wash water, suds, etc.	☐ Other: _____	

Stream Corridor Problem Indicator Description

Odor	☐ None	☐ Sewage	☐ Rancid/Sour	☐ Petroleum (gas)
	☐ Sulfide (rotten eggs); natural gas	☐ Other: Describe in "Narrative" section		
Appearance	☐ "Normal"	☐ Oil sheen	☐ Cloudy	☐ Suds
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None:	☐ Sewage (toilet paper, etc)	☐ Algae	☐ Dead fish
	☐ Other: Describe in "Narrative" section			

Narrative description of problem indicators:

Suspected Violator (name, personal or vehicle description, license plate #, etc.):

Investigation Notes	
Initial investigation date:	Investigators:
☐ No investigation made	Reason:
☐ Referred to different department/agency:	Department/Agency:
☐ Investigated: No action necessary	
☐ Investigated: Requires action	Description of actions:
Hours between call and investigation:	Hours to close incident:
Date case closed:	
Notes:	

Page _____ of _____

Chain-of-Custody Record

For Lab Use Only

Bold Fields Required. Please Circle Requested Analysis.

				VOC				SVOC					TCLP	Metals		Inorganics									Micro		Other				
Sample I.D.	**Sampling Date / Time** *If Composite, Indicate Both Start & Finish Date / Time	**Matrix (see below)**	**Grab/*Composite**	524.2 524.2 BTEX	524.2 MTBE only 8260B 624	VTICs 1, 4 Dioxane	8021B BTEX	HALOS 8015B GRO	MAVPH 8270D 625 ABN	SVTICs EDB A BN	DBCP PAH TPH8100	L1 L2 8015B DRO	MAEPH PEST 608	PCB 608 PEST 8081A	PCB 8082 Oil & Grease 1664	TPH 1664 TCLP 1311 VOC	ABN Metals Pest Herb Dissolved Metals (list below)	Total Metals (list below)	TS TSS	TDS Spec. Con. Br Cl	F SO_4 NO_2 NO_3	NO_3-NO_2 BOD CBOD	T. Alk. TKN NH_3	T. Phos. O. Phos. pH	T. Res. Chlorine COD	Phenols TOC DOC Total Cyanide	Total Sulfide Reactive Cyanide	Reactive Sulfide Flashpoint	Ignitability Total Coliform E. Coli Fecal Coliform	Enterococci Heterotrophic Plate Count				# of Containers	**Notes** MeOH Vial #
Matrix: A-Air; S-Soil; GW-Ground Water; SW-Surface Water; DW-Drinking Water; WW-Waste water																																	
Preservative: H-HCL; N-HNO_3; S-H_2SO_4; Na-NaOH; M-MEOH																																	

Project Manager: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Ext.: _____

Fax: _____

E-Mail: _____

Site Name: _____

Project #: _____

State: NH MA ME VT Other: _____

Regulatory Program: NPDES: RGP POTW Stormwater or GWP, Oil Fund, Brownfield or Other: _____

Quote #: _____ PO #: _____

Date Needed: _____

QA/QC Reporting Level

A B C

OR

Presumptive Certainty

Reporting Options

Prelims: Yes or No

If Yes: Fax or PDF

Electronic Options

No Fax E-Mail PDF Equis

Temp. _____ °C

ICE? Yes No

Sampler(s): _____

Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

Metals: 8 RCRA 13 PP Fe, Mn Pb, Cu

Other Metals: _____

Samples Field Filtered? ❑ Yes ❑ No

Notes: (ie: Special Detection Limits, Billing Info, If Different)

Site History: _____

Suspected Contamination: _____

Field Readings: _____

Eastern Analytical, Inc.
professional laboratory and drilling services
25 Chenell Drive | Concord, NH 03301 | 603.228.0525 | 1.800.287.0525 | E-Mail: customerservice@easternanalytical.com | www.easternanalytical.com

(WHITE: Original GREEN: Project Manager)

Eastern Analytical, Inc.

professional laboratory and drilling services

SHORT HOLD TIME PARAMETERS

Determination	Matrix	Maximum Holding Time
Bacterial Tests		
Coliform, Total / E. Coli / Fecal	WW, SW	8 Hours
Coliform, Total / E. Coli (P/A)	DW, GW*	30 Hours
Enterococci	DW, GW*	30 Hours
Enterococci	WW, SW	8 Hours
Heterotrophic Plate Count	DW, GW*, SW, WW	8 Hours
Inorganic Tests		
Biochemical Oxygen Demand (BOD)	WW	48 hours
Carbonaceous Biochemical Oxygen Demand (CBOD)	WW	48 hours
Chlorine, Total Residual	WW, DW	Analyze Immediately
Chlorophyll-a **	SW	24 Hours Filtration Required
Color	GW, SW, WW, DW	24 hours
Ferrous Iron	GW, SW, WW, DW	24 hours
Hydrogen Ion (pH)	GW, SW, WW, DW	Analyze Immediately
Nitrate (NO_3)	GW, SW, WW, DW	48 hours
Nitrite (NO_2)	GW, SW, WW, DW	48 hours
Odor	WW, DW	24 hours
Orthophosphate	GW, SW, WW, DW	Filter within 15 minutes, 48 Hours
Oxidation Reduction Potential (Probe)	GW, SW, WW, DW	Analyze Immediately
Oxygen, Dissolved (Probe)	GW, SW, WW, DW	Analyze Immediately
Residue, Settleable (SS) | Settleable Solids	GW, SW, WW, DW	48 hours
Sulfite	WW	Analyze Immediately
Temperature	GW, SW, WW	Analyze Immediately
Turbidity	GW, SW, WW, DW	48 hours
Metals		
Chromium VI – Method 7196 **	GW, WW, DW	24 hours
Subcontract Parameters ** | Advanced Notice Needed for all Subcontracted Parameters | Unable to Receive on Fridays		
Asbestos**	DW	48 hours
Formaldehyde **	WW	3 days until extraction; 3 days after extraction
Salmonella **	S	8 hours
Surfactants (MBAS) | Foaming Agents **	WW	48 hours
Volatile Organics by EPA TO-15, modified **	A	72 hours (Tedlar Bag)
WET Toxicity, Acute & Chronic **	WW	36 hours, **lab must receive same day sample is collected.**

DW (Drinking Water), **GW** (Ground Water), **SW** (Surface Water), **WW** (Wastewater), **S** (Solid) and **A** (Air)

** GW wells located around and/or near septage lagoons will default to the WW hold time requirements.*

***Please contact EAI in advance to schedule sample arrival especially when subcontracted parameters are needed.*

25 Chenell Drive | Concord, NH 03301 | 800.287.0525 | customerservice@easternanalytical.com | www.easternanalytical.com

Appendix E

Water Quality Analysis Instructions,
User's Manuals and
Standard Operating Procedures

Instrument Manuals (Hard Copies maintained at office. Links to online manuals provided here to save space.)

- Lamotte 2020we/wi Turbidimeter Manual
  http://www.lamotte.com/images/pdf/instructions/1970-MN.pdf
- YSI Pro2030 DO Meter Manual
  https://www.ysi.com/File%20Library/Documents/Manuals/605056-YSI-Pro2030-User-Manual-RevC.pdf
- Oakton pH 11 & pH 110 Manual
  http://www.4oakton.com/Assets/Manual_pdfs/pH11_110r2.pdf

Standard Operating Procedures being developed and revised. Hardcopies maintained at office.

Appendix F

IDDE Employee Training Record

Illicit Discharge Detection and Elimination (IDDE)
Employee Training Record

Derry, NH

Date	Type of Training	Participants
	All training records are maintained at the Department of Public Works office located at the Derry Municipal Center, 14 Manning Street.	

Appendix G

Source Isolation and Confirmation Methods:
Instructions, Manuals, and SOPs

Dry Weather Outfall Inspection Form

Location Information

Date: _____ **Inspector:** _____

Time: _____

Outfall ID: _____

Outfall Location: _____

Receiving Waterbody: _____

Photo Taken: Yes No **Photo ID:** _____

Weather: Clear Cloudy **Approximate Temp:** _____ **Wind Present:** Yes No

Precipitation in the past 3 days: No Yes _____ inches

Pipe Flow: None Trickle Steady 1/4 pipe flow or more

Seepage Flow: None Trickle Steady 1/4 pipe flow or more

Color (if flow is present): _____

Inspection Information *Select all that are applicable*

Obvious Debris/Pollution:		**Odor:**		**Water Clarity:**	
None	0	None/Natural	0	Clear	0
Foam	3	Musty	5	Cloudy	5
Staining	5	Sewage/septic	10		
Floating Green Scum	8	Petroleum	10	Opaque	10
Oil / Film	9				
Vegetative Mat/or Gray Mat	9				
Sewage Solids	10				
TOTAL		**TOTAL**		**TOTAL**	

GRAND TOTAL SCORE = _____

Additional Information

Sediment Condition: Open 1/4 Full 1/2 Full 3/4 Full Plugged

Structure Condition: Excellent Good Fair Poor

Trash/litter present: Yes No **Yard waste observed:** Yes No

General Comments:

Potential Sources / Actions Taken:

Sample collected? Yes No

By whom? _____

Parameters:	**Results:**

Follow up required: Yes No

NOTE: Sketch site map/note on back.

NOTE: This information is to accompany the Dry Weather Outfall Inspection Form.

Odor – Most strong odors, especially gasoline, oils, and solvents are likely associated with high responses on the toxicity screening test.

Stale sanitary wastewater: sewage
Detergent, perfume: Laundromat or household laundry
Sulfur ("rotten eggs"): industries that discharge sulfide compounds or organics (meat packers, canneries, dairies)
Oil and gas: facilities associated with vehicle maintenance or petroleum product storage (gas stations) or petroleum refineries
Rancid-sour: food preparation facilities (restaurants, hotels)

Color – Important indicator of inappropriate industrial sources. Dark colors, such as brown, gray, or black are the most common.

Yellow: chemical plants, textile, and tanning plants
Brown: meat packers, printing plants, metal works, stone and concrete, fertilizers, and petroleum refining facilities [note: can be from natural organic acids if a wetland is upstream]
Green: chemical plants, textile facilities
Red: meat packers [note: can be from organic acids if a wetland is upstream]
Gray: dairies

Turbidity – The cloudy appearance of water caused by the presence of suspended or colloidal matter. In dry weather, high turbidity is often a characteristic of undiluted industrial discharges.

Cloudy: sanitary wastewater, concrete or stone operations, fertilizer facilities, automotive dealers
Opaque: food processors, lumber mills, metal operations, pigment plants

Floatable matter – a contaminated flow may contain floating solids or liquids directly related to industrial or sanitary wastewater pollution. Floatables of industrial origin may include animal fats, spoiled food, oils, solvents, sawdust, foams, packing materials, or fuel.

Oil sheen: petroleum refiners or storage facilities and vehicle service facilities. [note: there is a type of bacteria that looks like an oil sheen. If you take a stick and swirl around the sheen, it will break up into blocky pieces if it is the bacteria. A true oil sheen will quickly re-form and not look blocky.]
Toilet paper bits, fecal bits, food particles: sanitary wastewater
Soap suds: if white or a clear sheen, laundry discharge (check odor) [note: can also occur from natural surfactants; usually off-white or tan with an earthy-fishy odor.]

Deposits and Stains – Any type of coating near the outfall, usually a dark color. Deposits and stains will often contain fragments of floatable substances.

Lots of sediment: construction site erosion, sand and gravel pits, winter road applications
Oil stain: petroleum storage, vehicle service facilities, petroleum refineries
Rusty: precipitates from iron-rich water (natural or industrial) [note: if slimey and clumpy, it could be iron bacteria]
Grayish-black deposits and hair: leather tanneries
White crystalline powder: nitrogenous fertilizer waste

Vegetation – Vegetation surrounding an outfall may show the effects of industrial pollutants. Decaying organic materials coming from various food product wastes would cause an increase in plant life, while the discharge of chemical dyes and inorganic pigments from textile mills could noticeably decrease vegetation. It is important not to confuse the adverse effects on high storm water flows on vegetation with highly toxic dry-weather intermittent flows.

Excessive growth: food product facilities, fertilizer runoff (lawns, golf courses, and farms)
Inhibited growth: high storm water flows, beverage facilities, printing plants, metal product facilities, drug manufacturing, petroleum facilities, vehicle service facilities, and automobile dealers

Damage to Outfall Structures – Outfall damage can be caused by severely contaminated discharges that are very acidic or basic in nature. Primary metal industries have a strong potential to cause outfall structure damage because their batch dumps are highly acidic. Poor construction, hydraulic scour, and old age can also negatively affect the condition of al outfall structure.

Concrete or spalling (breaking off into chips or layers): industrial flows
Peeling paint: industrial flows
Metal corrosion: industrial flows

This sheet was courtesy of the NHDES (modified from Pitt et al., 1993 Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems: a User's Guide. EPA Office of research and Development, EPA/600/R-92/238).

Storm Drain Outfall Characteristics Form

Location Information

Date: _____ **Inspector:** _____

Time: _____

Outfall ID: _____

Outfall Location: _____

Receiving Waterbody: _____

Photo Taken: Yes No **Photo ID:** _____

Weather Clear Cloudy **Approximate Temp:** _____ **Wind Present:** Yes No

Precipitation in the past 3 days: No Yes _____ inches _____

Dry Weather Inspection Form Used: Yes No - No Discharge No – No Dry Weather No - Other

Pipe Flow: None Trickle Steady 1/4 pipe flow or more

Seepage Flow: None Trickle Steady 1/4 pipe flow or more

Outfall Description *Select all that are applicable, fill in as necessary*

Submerged in water- no partially fully _____

Type:	RCP CMP		Dimension (inches) _____
Open Pipe-	PVC HDPE	Circular	Box
	Steel Other _____	Elliptical	Other _____

Open Drainage-	Concrete	Trapezoidal	Depth (inches)_____
	Earthen	Parabolic	Top width (inches)_____
	Riprap	Other _____	Bottom width (inches)_____
	Other _____		

Additional Information

Sediment Condition: Open ¼ Full ½ Full ¾ Full Plugged

Structure Condition: Excellent Good Fair Poor

Trash/litter present: Yes No

Yard waste observed: Yes No

General Comments: _____

Actions Taken: _____

Follow-up Required: Yes No

N↑

Standard Operating Procedure for:	
A.2 IDDE: Long-Term Inspections	
Purpose of SOP:	To provide supervisor and field crew with a punch list of things to remember during regularly scheduled inspections.

Always:

- Conduct inspections during dry weather periods.
- Check the outfall's dimensions, shape, and component material using the Storm Drain Characteristic Form.
- Characterize and record observations on basic sensory and physical indicators (e.g., odor, color, oil sheen).
- If an illicit discharge is encountered (such as raw sewage, paint, etc.), follow the procedure below.

Whenever Possible:

- Perform inspections of all the outfalls at least once per permit cycle (long term).
- Photograph the outfall with a digital camera (use dry erase board to identify outfall).
- Identify and label the outfall with a unique identifier. For example "SWO-013".
- Carry a letter of authorization with you during inspections that outline who you are and what you are doing.
- If dry weather flow is present at the outfall, and the flow does not appear to be an obvious illicit discharge (e.g., flow is clear, odorless, etc.), attempt to identify the source of the flow (intermittent stream, etc.) then document the discharge for future comparison.
- Collect samples before and after source removal. Contact NHDES for technical assistance.

Never:

- Never put yourself in danger.
- Never enter private property without permission.

Procedures to follow if illicit discharge is detected:

- □ Call dispatch / supervisor.
- □ Document observations using the Dry Weather Outfall Inspection Form.
- □ Visually inspect general area for possible sources.
- □ Take photos.
- □ Estimate flow/collect samples if instructed to do so.

Standard Operating Procedure for:	
A.3 IDDE: Opportunistic Inspections	
Purpose of SOP:	This SOP provides field personnel with a quick checklist of proper procedures to follow if they observe illicit discharges while conducting their regular duties.

Always:

- Call dispatcher, supervisor, or code enforcement if you see evidence of an illicit discharge.
- Assess the general area of the illicit discharge to see if you can identify its source.

Whenever Possible:

- Use the Incident Tracking Sheet to document observations.
- Take photographs of the illicit discharge.
- Carry a Dry Weather Outfall Inspection Form.
- Use the Catch Basin Cleaning Form to document observations during cleaning.

Never:

- Never enter private property without permission.
- Never put yourself in danger.

Standard Operating Procedure for:	
A.4 IDDE: Citizen Call-in Inspections	
Purpose of SOP:	To collect appropriate information from a citizen reporting a potential illicit discharge to increase the chances of identifying and removing its source.

Always:

- Use the Incident Tracking Sheet to collect the appropriate information.
- Promptly investigate reported incidents.
- Document any further action taken.

Whenever Possible:

- Train Dispatch Personnel in the use and importance of the Incident Tracking Sheet.
- Document and review incidents reported by citizens on an annual basis to look for patterns of illicit discharges and to evaluate the call-in inspection program.

Never:

- Never enter private property without permission.
- Never put yourself in danger.

ILLICIT DISCHARGE HOTLINE INCIDENT TRACKING SHEET

Copied with permission from: *Illicit Discharge Detection and Elimination-A Guidance Manual for Program Development and Technical Assessments*, CWP, 2004.

Incident ID:

Responder Information	
Call taken by:	Call date:
Call time:	Precipitation (inches) in past 24-48 hrs:
Reporter Information	
Incident time:	Incident date:
Caller contact information (*optional*):	

Incident Location *(complete one or more below)*

Latitude and longitude: Or other coordinate system
Stream address or outfall #:
Closest street address:
Nearby landmark:

Primary Location Description	**Secondary Location Description:**		
☐ Stream corridor *(In or adjacent to stream)*	☐ Outfall	☐ In-stream flow	☐ Along banks
☐ Upland area *(Land not adjacent to stream)*	☐ Near storm drain	☐ Near other water source (storm water pond, wetland, etc.):	
Narrative description of location:			

Upland Problem Indicator Description

☐ Dumping	☐ Oil/solvents/chemicals	☐ Sewage
☐ Wash water, suds, etc.	☐ Other: _____	

Stream Corridor Problem Indicator Description

Odor	☐ None	☐ Sewage	☐ Rancid/Sour	☐ Petroleum (gas)
	☐ Sulfide (rotten eggs); natural gas	☐ Other: Describe in "Narrative" section		
Appearance	☐ "Normal"	☐ Oil sheen	☐ Cloudy	☐ Suds
	☐ Other: Describe in "Narrative" section			
Floatables	☐ None:	☐ Sewage (toilet paper, etc)	☐ Algae	☐ Dead fish
	☐ Other: Describe in "Narrative" section			
Narrative description of problem indicators:				
Suspected Violator (name, personal or vehicle description, license plate #, address, etc.):				

Standard Operating Procedure for:	
A.6 IDDE: Tracing Illicit Discharges	
Purpose of SOP:	To provide a quick reference list of items to keep in mind during tracing activities to efficiently and systematically identify the source of an illicit discharge.

Always:

- Review / consider information collected when illicit discharge was initially identified (Incident Tracking Sheet or Dry Weather Outfall Inspection Form).
- Survey the general area / surrounding properties to identify potential sources of the illicit discharge as a first step.
- Trace illicit discharges using visual inspections of upstream points as a second step.
- Document tracing results for future reference.

Whenever Possible:

- Use weirs, sandbags, dams, or optical brightener monitoring traps to collect or pool intermittent discharges during dry weather.
- Smoke test or televise the storm drain system to trace high priority, difficult to detect illicit discharges.
- Dye test individual discharge points within suspected buildings.
- If the source cannot be found, add the location to a future inspection program.
- Collect bacterial samples of flowing discharges to confirm/refute illicit discharge.

Never:

- Never enter private property without permission.
- Never put yourself in danger.

Standard Operating Procedure for:	
A.7 IDDE: Removing Illicit Discharges	
Purpose of SOP:	Proper removal of an illicit discharge will ensure it does not recur. Using legal methods for the removal will minimize the municipality's liability. This SOP provides an overview of illicit discharge removal procedures.

Always:

- Determine who is financially responsible; and follow associated procedures on Table 2-9.
- Suspend access to storm drain if threats of death or serious physical harm to humans or the environment are possible.
- If the discharge is from an exempt facility (see Table 2-9) notify the facility operator and the appropriate enforcement authority.
- Repair/correct cause of discharge if municipality is responsible.
- Collect a confirmatory sample after the removal. Seek technical assistance from NHDES, if needed.

Whenever Possible:

- Issue a Notice of Violation for violations of the municipal ordinance.

Never:

- Never repair/correct cause of discharge on private property until directed to do so by the appropriate municipal authority (storm water program manager, etc.)