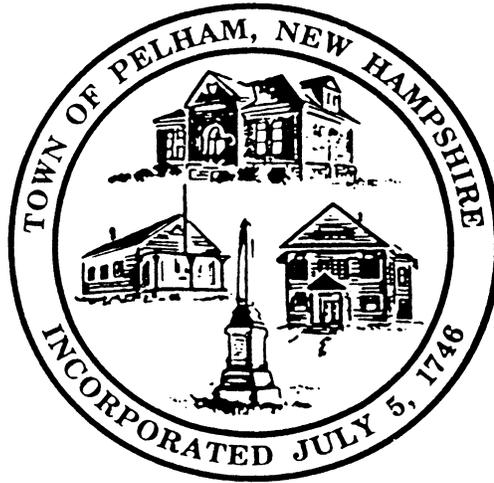


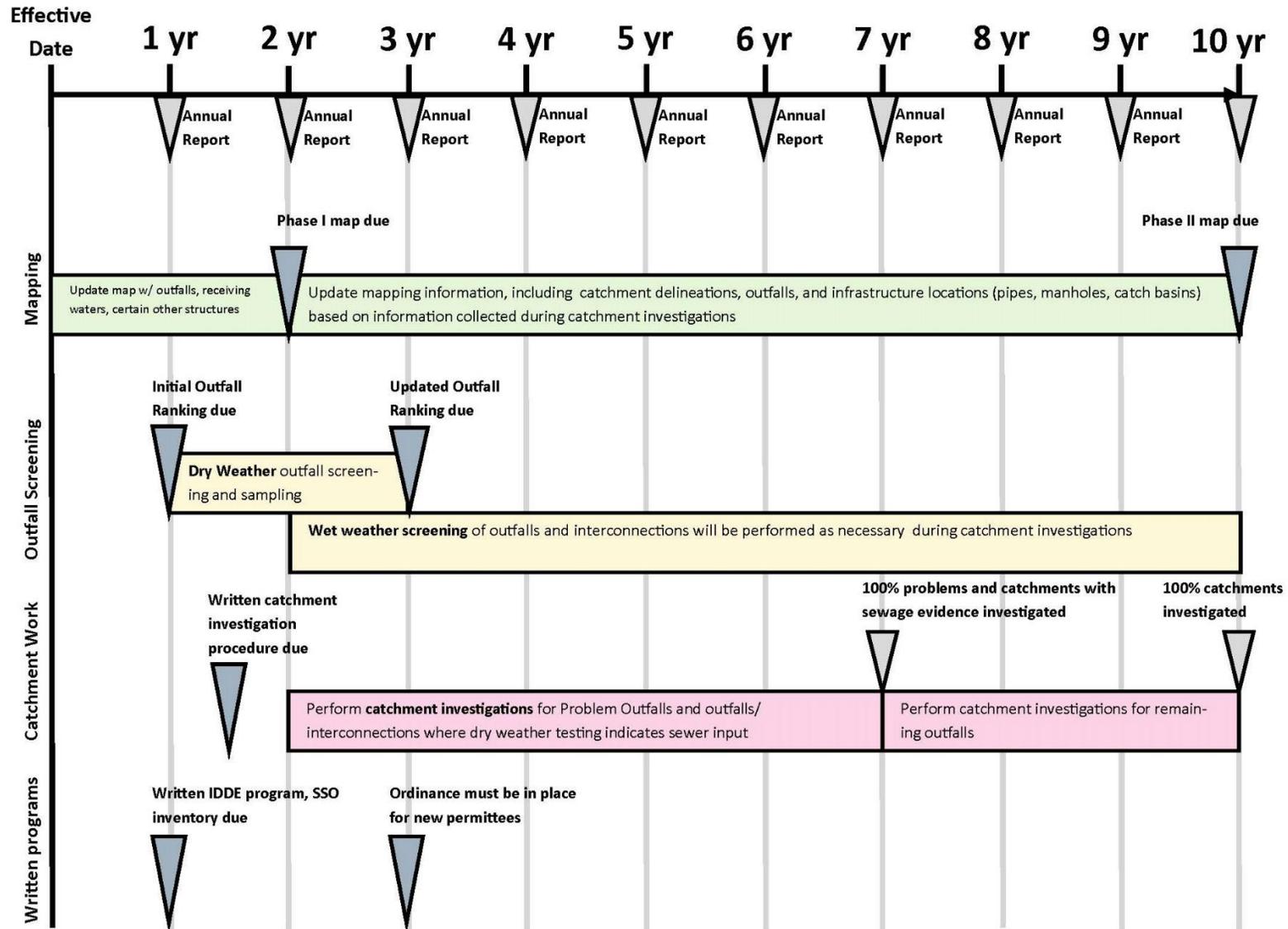
Illicit Discharge Detection and Elimination Program (IDDEP)

Town of Pelham



Permit Year 1

2017 MS4 PERMIT IDDEP SCHEDULE



Source: Nashua-Manchester Stormwater Coalition, 2019

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D1 IDDEP Implementation Timeline

D1.1 MS4 Program

This Illicit Discharge Detection and Elimination Program (IDDEP) has been developed by the Town of Pelham to address the requirements of the U.S. Environmental Protection Agency's (EPA) 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 "Permit" or "MS4 Permit."

The 2017 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 (MCM 3), the permittee is required to implement an IDDEP to systematically find and eliminate sources of non-stormwater discharges to its MS4 and implement procedures to prevent such discharges. The IDDEP must also be recorded in a written (hardcopy or electronic) document. This IDDEP has been prepared to address this requirement.

D1.2 Illicit Discharges

An "illicit discharge" is any discharge to a drainage system that is not composed entirely of stormwater, with the exception of discharges related to a NPDES permit (other than the NPDES permit for discharges from the MS4) and discharges resulting from fire-fighting activities.

Illicit discharges may take a variety of forms and may enter the drainage system through direct or indirect connections. Direct connections may be relatively obvious, such as connections from non-stormwater sources found in a piped 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 into a storm drainage pipe or structure, and illegal dumping of yard wastes into surface waters, including wetlands.

Some illicit discharges are related to the unsuitability of original infrastructure to the modern regulatory environment. An example of illicit discharges in this category include connected floor drains in old buildings. Sump pumps legally connected to the storm drain system may be used

inappropriately, such as for the disposal of floor wash water or old household products, in many cases due to a lack of understanding on the part of the homeowner.

Some illicit discharges are due to obstruction of the municipal storm drain system. A resident or contractor may not obstruct or interfere with the storm drain system without permission of the Pelham Planning Director. Access to the storm drainage system may be suspended to address the threat of an illicit discharge.

Elimination of some discharges may require substantial costs and efforts. 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.

D1.3 Allowable Non-Stormwater Discharges

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

- Natural flows from riparian habitats and wetlands;
- Diverted stream flows;
- Flows from potable water sources;
- Rising groundwater or uncontaminated pumped groundwater;
- Uncontaminated groundwater infiltration;
- Discharge from landscaped irrigation or lawn watering;
- irrigation water, springs;
- Water from foundation and footing drains (not including active groundwater dewatering systems, such as dewatering excavations for foundation or pipelines), basement and crawl space pumps, or HVAC systems;
- Discharges of inconsequential amounts of water during normal street sweeper operations;
- Waterline flushing, culvert or storm drain cleaning;
- Air conditioning condensation;
- Water from residential vehicle washing, house exterior or household item washing;
- Discharge from dechlorinated swimming pool water, hot tubs, skating rinks and other non-commercial recreational water uses;
- Dye testing, provided verbal notification is given to the Pelham Zoning Administrator or their designee(s) and approval is obtained prior to the time of the test;
- Fire-fighting activities;

- Non-stormwater discharges permitted under an NPDES permit, waiver, or waste discharge order administered under the authority of the EPA or the New Hampshire Department of Environmental Services (NHDES), provided that the discharge is in full compliance with the requirements of the permit, waiver, or order and applicable laws and regulations; and
- Discharges for which advanced written approval is received from the Pelham Zoning Administrator or their designee(s), if necessary, to protect public health, safety, welfare or the environment.

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

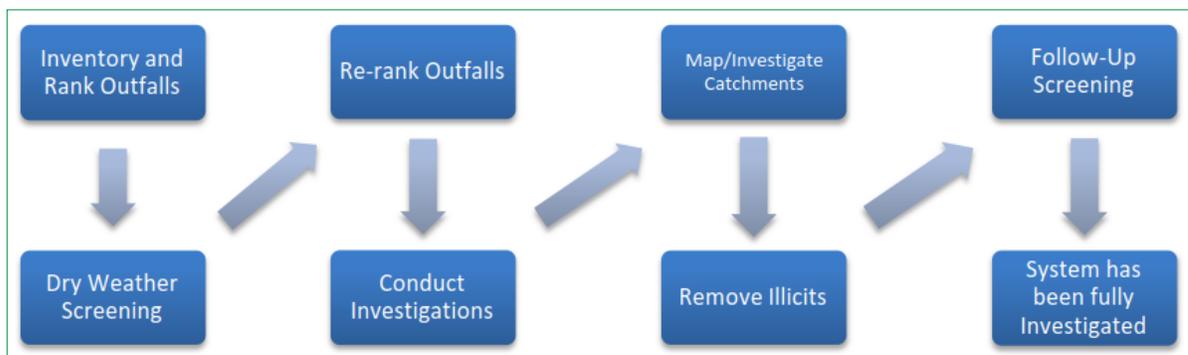


Figure D1-11. IDDEP Investigation Procedure Framework

TABLE D1-1 IDDEP Implementation Timeline						
IDDEP Requirement	Completion Date from Effective Date of Permit					
	1 Year	1.5 Years	2 Years	3 Years	7 Years	10 Years
Written IDDEP Plan	X					
Initial Outfall Ranking	X					
Written Catchment Investigation Procedure		X				
Phase I Mapping			X			
Phase II Mapping						X
IDDEP 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

D2 Authority and Statement of IDDEP Responsibilities

D2.1 Legal Authority

The Town of Pelham has adopted Zoning Ordinance Article VIII-I, *Illicit Discharge and Connection Ordinance*, (March 2010) with adequate legal authority to:

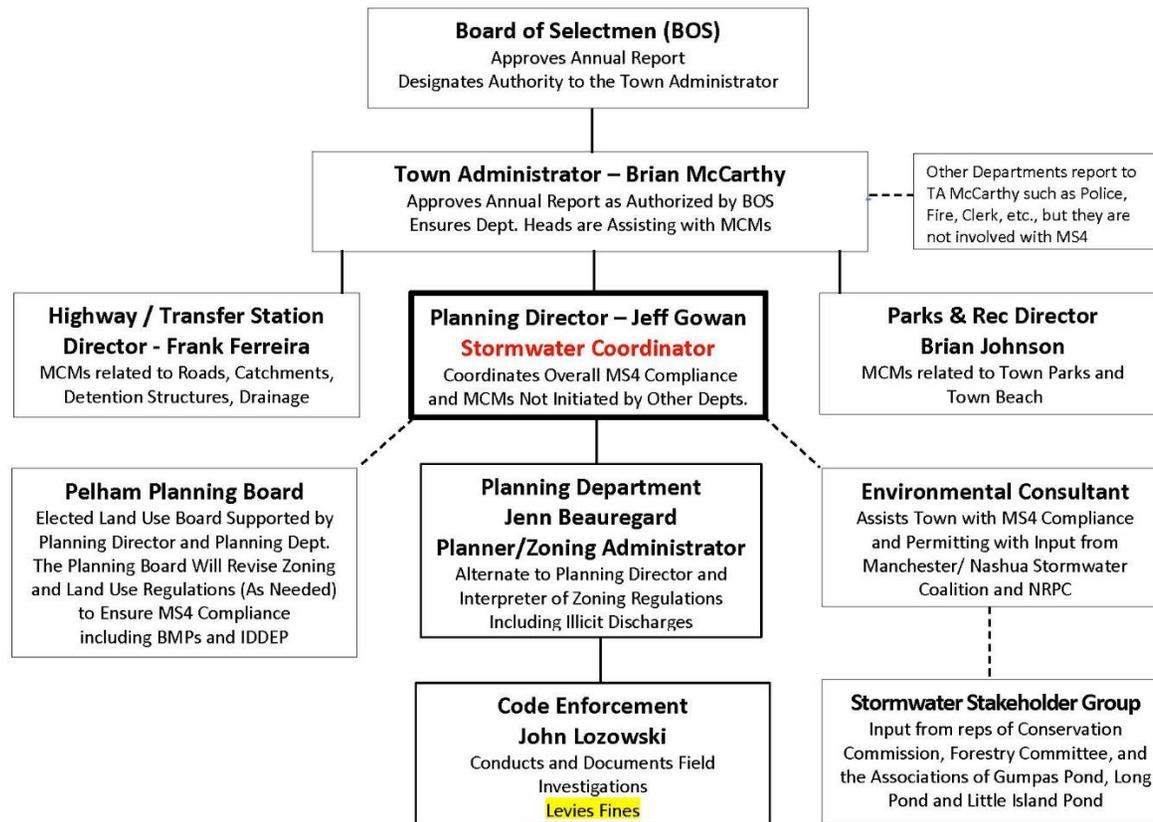
- Prohibit illicit discharges;
- Investigate suspected illicit discharges;
- Eliminate illicit discharges, including discharges from properties not owned by or controlled by the MS4 (Town), that discharge into the MS4 system; and
- Implement appropriate enforcement procedures and actions.

A copy of the Ordinance is included in **Appendix DA**. The Town of Pelham is reviewing its current Zoning Ordinance Article VIII-I and related land use regulations and policies for consistency with the 2017 MS4 Permit.

D2.2 Statement of Responsibilities

The Pelham Planning and Zoning Department is the lead municipal agency responsible for implementing the IDDEP per the provisions of the Zoning Ordinance Article VIII-I. Other agencies or departments with responsibility for aspects of the program include:

**Town of Pelham, NH MS4 Organizational Chart
PERMIT YEAR 1 (2018-2019)**



D3 Stormwater System Mapping

A copy of the Town's current storm system map is provided in **Appendix DB**.

The MS4 Permit requires the storm system map to be updated in two phases as outlined below. The Town's Planning Department in consultation with the Nashua Regional Planning Commission and the Town's environmental consultant, if applicable, assists the Town in updating the stormwater system mapping per the Permit. The Town will report on the progress towards ongoing improvement of the storm system map in each annual report. Updates to the stormwater mapping will be included in subsequent annual issues of this SWMP, IDDEP, and in the annual reporting.

The adoption of a spatial asset management program (system mapping) for the MS4 is an essential component to assist in the prioritization of implementing this IDDEP, and overall resource and capital planning in managing and operating the Town's MS4 infrastructure. In general, this approach requires:

- creating a spatial inventory, assessing physical condition for all assets (i.e. catch basins, outfalls, etc.), and prioritizing IDDEP investigations;
- identifying optimal preventive maintenance, maintenance schedules, and operating strategies;
- identifying resources and capital planning requirements; and
- implementing long-term funding plans to execute the plan.

D3.1 Phase I Mapping

Under the 2003 MS4 Permit the Town was required to map outfalls and receiving waterbodies with the intent that this mapping would form the basis for future improvements, planning, and IDDEP identification and development.

The Town has completed digital mapping of outfalls, and initial catch basin and treatment structures as known and accessible town-wide, both within and outside of the MS4 regulated area. The data collection was achieved by a team using GPS (global positioning system) equipment and online forms. Data collected for each outfall and structure included:

- latitude and longitude location;
- approximate address location;
- outfall type/material;
- outfall size;
- condition of outfall;
- presence of flow;
- headwall type/material;
- watershed;
- additional notes;
- date data collected and
- photos.

Each location was assigned a unique identifier. A total of 418 outfalls, 1763 catch basins, and 20 miscellaneous structures were located and cataloged. **Table D3-1** shows the breakdown of the Town's mapped stormwater points both within and outside of the MS4 regulated areas.

TABLE D3-1 Stormwater Inventory Distribution			
Stormwater Inventory	Within Pelham	MS4 Regulated Area	Percent
Basis of Area (square miles)	26.8	16.2	60%
Outfalls	418	300	72%
Catch Basins	1763	1310	75%
Miscellaneous	20	13	65%

The 2017 MS4 Permit expands on the mapping requirements in two phases. In Phase I additional features are to be added to the mapping within the first two (2) years of the 2017 Permit. The added features include all MS4:

- open channel conveyances (swales, ditches, etc.);
- interconnections with other MS4s;
- municipal-owned stormwater treatment structures (detention ponds, infiltration, oil/water separators, etc.);
- waterbodies identified by impairments per the current 303(d) and 305(b) lists; and
- initial outfall catchment delineations.

D3.2 Phase II Mapping

Mapping must be updated annually as additional and/or improved information becomes available. Phase II mapping is to be completed by Year 10 of the Permit and includes all:

- spatial locations of outfalls, pipes, manholes, catch basins; and
- refined catchment delineations for outfalls.

D4 Sanitary Sewer Overflows (SSOs)

Town of Pelham has no municipally owned sewer and therefore no Sanitary Sewer Overflows (SSOs).

D5 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. The ranking helps determine the priority order for performing IDDEP investigations and meeting permit milestones.

D5.1 Outfall and Interconnection Inventory and Initial Ranking

The 2017 MS4 Permit requires the Town to complete a ranking of all outfalls within the regulated areas (*Part 2.3.4.7*). The required ranking is intended to prioritize outfall screening and investigations for illicit discharges (IDs) and determine milestones for the IDDEP. The Permit provides the following minimum categories and thresholds for ranking and prioritizing outfalls:

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.⁴ Problem Outfalls need not be screened per Part 2.3.4.7.b.

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; and/or
- determined by the permittee as high priority based on the characteristics listed in the table with scores ≥ 11 .

Low Priority Outfalls: Outfalls/interconnections determined by the permittee as low priority based on the characteristics listed the table with scores ≤ 10 .

Excluded outfalls: Outfalls/interconnections with no potential for illicit discharges may be excluded from the IDDEP. This category is limited to 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.

The Town Planning Department, in consultation with the Town's environmental consultant, completed an initial outfall and interconnection inventory and priority ranking to assess illicit discharge potential based on available existing information. An updated inventory and ranking will be provided in each annual report hereafter. The inventory will be updated annually to include data collected in connection with dry weather screening and other relevant inspections and screening and sampling.

Outfalls were ranked into the above categories based on the following characteristics where information was available. To prioritize initial mapping and outfall assessment work the permittee used location-specific characteristics of water body impairments as included in **Appendix DC**. For

the initial outfall ranking and catchment investigations, this approach will target the highest ranked areas first, based upon:

- **Previous screening results.**
- **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; or
 - 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 systems may be more than 40 years old will probably have a higher illicit discharge potential. Developments 20 years or younger will probably have a lower 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 DC** for an outfall inventory and priority ranking matrix:

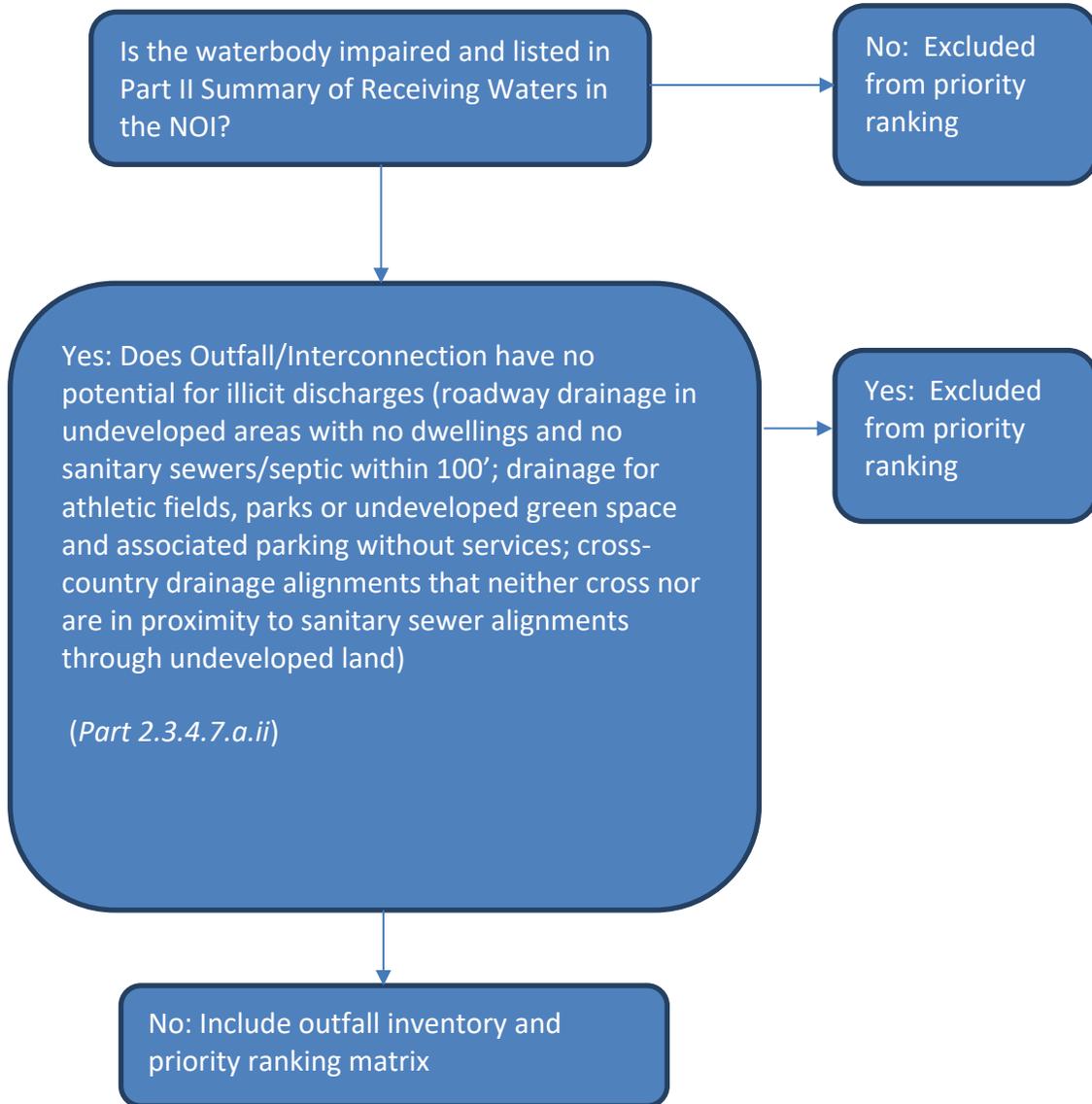


Figure D5-51. IDDEP Investigation Procedure Framework

D5.2 Initial Ranking Methodology (Permit Year 1)

Initial outfall ranking was completed for Year 1 of the Permit (*Part 2.3.4.7.a*). The initial ranking identified 313 outfalls within the Town's regulated MS4 areas in six watersheds (USGS HUC 12¹). Ranking of each outfall was completed as using a matrix approach and Permit required categories as applicable to the Town (sewer related criteria do not apply to the Town). The tabulated ranked data is included in **Appendix DC**.

Outfall scoring was completed for all mapped outfalls within the MS4 regulated area (only). Identification of outfalls in each category was accomplished through GIS spatial analyses of previously mapped outfalls, Nashua Regional Planning Commission (NRPC), and published watershed data sets (NH GRANIT GIS). Weighted scoring was assigned to the categories as described in **Table D5-1**.

In addition to the required Permit categories, this initial ranking assessment compiled publicly available data sets into a geographic information system (GIS) and tabulated the results of spatial overlay analyses between the data sets and the mapped outfall locations within the Town's MS4 regulated area. These additional GIS sub-categories were combined into a single table that matched each resulting outfall with each sub-category, individually scored each outfall for each sub-category, and summed the total score for each outfall into a single category ("GIS Weighted Data"), then added to the full outfall ranking as shown in **Table D5-1**.

For each GIS sub-category, scoring was assigned similar to the Permit categories, and based upon the level of likelihood that the data type has the potential to contribute to water quality-related pollution or is located in or adjacent to an area of human or environmental concern.

The GIS sub-categories included 14 data sets obtained from various sources included the Nashua Regional Planning Commission, NH GRANIT², NHDES OneStop Data Mapper³, and OLIVER (MA GIS)⁴, USGS National Map⁵, and USGS NLCD⁶. The sub-categories used for the additional GIS outfall ranking category and pertinent data on each analysis is shown below in **Table D5-2**.

¹ USGS HUC 12: United States Geological Survey Hydrologic Unit Code, <https://water.usgs.gov/GIS/huc.html>

² <http://www.granit.unh.edu/>

³ <http://nhdesonestop.sr.unh.edu/html5viewer/>

⁴ http://maps.massgis.state.ma.us/map_ol/oliver.php

⁵ <https://viewer.nationalmap.gov/basic/>

⁶ <https://www.mrlc.gov/>

TABLE D5-1 Primary Outfall Ranking Categories, Parameters, and Scoring									
Scoring Criteria:	In Subwatershed with Impairment?	Receiving Water Body Impairment?	Discharging to Area of Concern to Public Health?	Frequency of Past Discharge Complaints	Density of Generating Sites	Age of Development/ Infrastructure	Aging Septic?	Culverted Streams?	Additional Characteristics
Data Sources:	Impaired Waters List, GIS	Impaired Waters List, GIS	GIS, Town Staff	Town Staff	Zoning/Land Use/GIS, Town Staff	Land Use Information, Visual Observation, Town Staff	Land Use, Town Staff	Town Staff	GIS Weighted Data
Specifies:	NHDES impairment categories 4 and 5	outfalls with 250-feet of impaired waterbody for bacteria (TMDL) and phosphorus (water quality limited)	public beaches: within 250-foot buffer (Shoreland Buffer) recreational areas: within 250-foot buffer (Shoreland Buffer) (TBD) drinking water supply: public: 300-foot buffer registered water users: 300-foot buffer private: 150-foot buffer (2x required protection radius)	(TBD)	outfalls located in Town Zoning for Industrial and Business	(TBD)	(TBD)	(TBD)	See Table D5-2
Scoring Applied:	Yes: Category 5 = 5 Category 4 = 3 No = 0	Yes = 10 (impairment listed as high priority in permit) No = 0	Yes = 10 No = 0	Frequent = 3 Occasional = 2 None = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes = 3 No = 0	Yes = 3 No = 0	
# Outfalls:	233	26	77		40				150

TABLE D5-2 Additional Outfall Ranking Category "GIS Weighted Data"					
Dataset used in GIS sub-category for outfall ranking	Dataset levels or areal/point (high - low)	Dataset levels used for MS4 scoring	MS4 sub-category score	Buffer analysis applied	# Outfall results in spatial overlay analyses
Aquifer transmissivity	5 - 1	5, 4, 3	3, 2, 1	within	41
NH National Wetlands Inventory	areal	-	1	100-feet	71
Pelham Prime Wetlands (per NHDES 2012 mapping)	areal	-	3	200-feet	4
NH Priority Areas for Invasive Plant Management	areal	-	1	within	14
NH Wildlife Action Plan Habitat Tiers	1,2,3	1,2	1	within	4
NHDES Registered Aboveground Storage Tanks	point	-	1	500-feet	2
NHDES Registered Hazardous Waste Generators	point	-	3	500-feet	3
NHDES Registered Potential Contamination Sources	point	-	2	500-feet	29
NHDES Registered Remediation Sites	point	-	3	500-feet	1
NHDES Registered Solid Waste Facilities	point	-	3	500-feet	15
NHDES Registered Underground Storage Tanks	point	-	1	500-feet	35
EPA Authorized NPDES Outfalls	point	-	3	500-feet	2
MA Title 5 (septic/sewer) Buffers	areal	-	1	within	20
MA Wetlands	areal	-	1	100-feet	36

Using a total scoring threshold of 10, within the Town's regulated area the initial outfall ranking yielded 110 High Priority Outfalls, and 203 Low Priority Outfalls. This list will provide the basis for developing and scheduling screening and the catchment investigations program.

D5.3 Continuous Ranking, Screening, and Investigations

Following the initial ranking of outfalls within the MS4 (regulated areas), the Town is required to continue to update the ranking annually with collected data from screenings, inspections, and investigations, as well as with improved over all assessment information. Final ranking of outfalls is required to be complete within three (3) years.

Additionally, based on the ranking of each outfall, the Town is required to investigate catchments and upstream infrastructure to determine the source(s) of pollutants identified in outfall screening. Milestones for catchment investigations are outlined in the Permit (relative to the effective date of the Permit):

Within 18-months (December 31, 2019) Written catchment investigation procedures in place that outline how outfalls and their upstream catchment areas will be investigated to determine the source(s) of pollution.

Within two (2) years (June 30, 2020) Begin catchment investigations for Problem Outfalls.

Within seven (7) years (June 30, 2025) Complete catchment investigations for Problem Outfalls.

Within ten (10) years (June 30, 2028) Complete High and Low ranked catchment investigations.

D5.4 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 through Year 2, and refined catchment delineations will be completed as part of the Phase II mapping through Year 10 to reflect information collected during catchment investigations.

D6 Dry Weather Outfall Screening and Sampling

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

Dry weather outfall screening and sampling shall be completed in accordance with *Part 2.3.4.7.b* of the MS4 Permit and as described in SOPs and forms in **Appendices DD and DE**.

D6.1 Dry Weather Screening/Sampling Procedure

The dry weather screening SOP and inspection form is provided in **Appendix DD**. Sampling SOP and form are in **Appendix DE**.

D6.2 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 D6-1** 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 forms in **Appendix DD/DE**); and
 - 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 **Section D6.4** of this IDDEP.
5. If no flow is observed, but evidence of illicit flow exists per above observations (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.

D6.3 Field Equipment

TABLE D6-1 Field Equipment – Dry Weather Outfall Screening and Sampling	
Equipment	Use/Notes
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 promote 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	Handheld 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 pre-cleaned and supplied by a laboratory. 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 require sterile containers).
Pry Bar or Pick	For opening catch basins and manholes when necessary
Sandbags	For damming low flows in order to take samples

TABLE D6-1 Field Equipment – Dry Weather Outfall Screening and Sampling	
Equipment	Use/Notes
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

D6.4 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 as discussed in SOPs. 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 DD** 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 D6-1**).
6. Place laboratory samples on ice for analysis of bacteria and pollutants of concern.
7. Fill out chain-of-custody form (**Appendix DD**) for laboratory samples.
8. Deliver samples to the qualified laboratory approved by Town officials.
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, and there is not an obvious positive flow emanating from the outfall or the flow cannot be sampled distinctly from the receiving water, 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 (phosphorus). Field kits need to have appropriate detection limits and ranges.

D6.5 Follow-up Ranking of Outfalls and Interconnections

The Town of Pelham 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 septage input to the MS4 or sampling results indicating septage 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 catchment investigation. Other outfalls and interconnections may be re-ranked based on any new information from the dry weather screening.

D7 Catchment Investigations

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, aerial photos, historic plans, and records; manhole observation; dry and wet weather sampling; video inspection; smoke testing; and/or 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.

SOPs and forms for IDDEP source investigations is in **Appendix DF**.

D7.1 Illicit Discharge Removal

When the specific source of an illicit discharge is identified, the Town of Pelham will exercise its authority as necessary to require its removal. The annual report will include the status of IDDEP 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; and
- Estimate of the volume of flow removed.

D8 Training

Annual IDDEP training will be made available to employees involved in the IDDEP. This training will at a minimum include information on how to identify illicit discharges and may also include additional training specific to the functions of particular personnel and their function within the framework of the IDDEP. Training records will be maintained in **Appendix DG**. The frequency and type of training will be included in the annual report.

D9 Progress Reporting

The progress and success of the IDDEP 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 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; and
- Number of employees trained annually.

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

Appendix DA

Legal Authority (IDDE Bylaw or Ordinance)

ARTICLE VIII - I ILLICIT DISCHARGE AND CONNECTION ORDINANCE

[Added by ballot March 2010]

307-48-1 Purpose and Intent

The purpose of this ordinance is to provide for the health, safety, and general welfare of the citizens of Pelham through the regulation of non-storm water discharges to the storm drainage system to the maximum extent practicable as required by federal and state law.

The objectives of this ordinance are:

- A. To prevent contamination of surface waters and;
- B. To prevent contamination of groundwater, which serves as the primary source of local drinking water supplies;
- C. To prevent pollutants from entering the Town of Pelham municipal separate storm sewer system (MS 4);
- D. To prohibit illicit connections and unauthorized discharges to the MS4;
- E. To require the removal of such illicit connections;
- F. To comply with state and federal statutes and regulations relating to stormwater discharges;
- G. To establish the legal authority to ensure compliance with the provisions of this ordinance through inspection, monitoring, and enforcement.

307-48-2 Authority

The Authority Having Jurisdiction (AHJ) or their designee(s) shall administer and enforce this ordinance. For the purpose of this ordinance the AHJ shall be the Pelham Zoning Administrator.

307-48-3 Definitions

For the purposes of this regulation, the following shall apply:

- A. **Discharge of Pollutants:** The addition of any pollutant or combination of pollutants from any source, into the municipal storm drain system, or into the waters of the State of New Hampshire, or into the waters of the United States.
- B. **Groundwater:** All water beneath the surface of the ground.
- C. **Illicit Connection:** Any surface or subsurface drain or conveyance, that allows an illegal discharge into the municipal storm drain system, wetlands or surface waters. Illicit connections include conveyances that allow a non-stormwater discharge to the municipal storm drain system, wetlands or surface waters including but not limited to: sewage, processed wastewater or wash water and also any connections from indoor drains, sinks, or toilets, regardless of whether said connection was previously allowed, permitted, or approved prior to the effective date of this ordinance.
- D. **Illicit Discharge:** Any direct or indirect non-stormwater discharge into the municipal storm drain system, wetlands or surface waters not specifically allowed in 307-48-6 of this ordinance.
- E. **Municipal Separate Storm Sewer System (MS4) or Municipal Storm Drainage System:** The system of conveyances designed or used for collecting or conveying stormwater, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or man-made or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned or operated by the Town of Pelham.
- F. **National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit:** A permit issued by United States Environmental Protection Agency or jointly with the State of New

Hampshire that authorizes the discharge of pollutants to waters of the United States.

- G. **Non-Stormwater Discharge:** Any discharge to the municipal storm drain system, wetland or surface water not composed entirely of stormwater.
- H. **Person:** Any individual, partnership, association, firm, company, trust, corporation or other organization, and, any agency, authority, department or political subdivision of the State or the federal government, to the extent permitted by law, and any officer, employee, or agent of such person.
- I. **Pollutant:** Anything that causes or contributes to pollution: Pollutants include, but are not limited to:
 - 1. preservatives including paints, varnishes and other chemical agents, cleaning agents, disinfectants and solvents;
 - 2. oil and other automotive or other vehicular fluids and any fuels irrespective of use;
 - 3. non-hazardous liquids, solid wastes and yard wastes;
 - 4. refuse, rubbish, garbage, litter, or other discarded or abandoned objects, articles, accumulations and floatables;
 - 5. pesticides, herbicides, and fertilizers;
 - 6. toxic or hazardous materials and wastes; sewage, fecal coliform and other pathogens;
 - 7. metals: dissolved, in suspension or in particulate form;
 - 8. animal wastes;
 - 9. rock, sand, salts, soils;
 - 10. construction wastes and residues, including but not limited to sediments, slurries, and rinse out from concrete trucks;
 - 11. noxious or offensive matter of any kind.
- J. **Stormwater:** Any surface flow, runoff or drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.
- K. **Toxic or Hazardous Material or Waste:** Any material, which because of its quantity, concentration, chemical, corrosive, flammable, reactive, toxic, infectious or radioactive characteristics, either separately or in combination with any substance or substances, constitutes a present or potential threat to human health, safety, welfare, or to the environment. Toxic or hazardous materials include any synthetic organic chemical, petroleum product, heavy metal, radioactive or infectious waste, acid and alkali, and any substance defined as Toxic or Hazardous under the State of New Hampshire Hazardous Waste Rules Chapter Env Wm 100.
- L. **Uncontaminated:** Water containing no pollutants.
- M. **Watercourse:** A natural or man-made channel through which water flows including a river, brook or underground stream.
- N. **Waters of the State of New Hampshire:** All waters within the jurisdiction of the State of New Hampshire, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters, and groundwater.
- O. **Wastewater:** any sanitary waste, sludge, or septic tank or cesspool overflow, and water that during manufacturing, cleaning or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct or waste product.

307-48-4 Applicability

This regulation shall apply to all flows entering the storm water and drainage system, wetlands or surface waters on public or private ways within the Town of Pelham.

307-48-5 Prohibited Activities

- 1. Illegal Discharges-No person shall dump, discharge, cause or allow to be dumped or discharged any

pollutant or non-stormwater discharge into the municipal storm drain system, wetlands or surface waters, within the Town of Pelham, or into the waters of the State of New Hampshire or into the waters of the United States.

2. Illicit Connections - No person shall construct, use, allow, maintain or continue any illicit connection to the municipal storm drain system, regardless of whether the connection was permissible under applicable law, regulation or custom at the time of connection.
3. Obstruction of Municipal Storm Drain System-No person shall obstruct or interfere with the normal flow of stormwater into or out of storm drainage systems without prior approval from the Authority Having Jurisdiction or their designee(s).

307-48-6 Allowed Discharges

The following non-stormwater discharges or flows may drain to the municipal storm drainage system or local waterways provided that the Authority Having Jurisdiction or their designee(s) do not deem the source to be a significant contributor of a pollutant:

1. Waterline flushing, culvert or storm drain cleaning;
2. Flows from potable water sources;
3. Springs;
4. Natural flows from riparian habitats and wetlands;
5. Rising groundwater;
6. Uncontaminated groundwater or uncontaminated pumped groundwater;
7. Uncontaminated groundwater discharge from a sump pump;
8. Discharge from landscape irrigation or lawn watering;
9. Water from residential vehicle washing, house exterior or household item washing;
10. Discharge from dechlorinated swimming pool water, hot tubs, skating rinks and other non-commercial recreational water uses;
11. Water from foundation and footing drains (not including active groundwater dewatering systems, such as dewatering excavations for foundation or pipelines), basement and crawl space pumps, or HVAC systems;
12. Discharges of inconsequential amounts of water during normal street sweeper operations;
13. Dye testing, provided verbal notification is given to the Authority Having Jurisdiction or their designee(s) and approval is obtained prior to the time of the test;
14. Non-stormwater discharges permitted under an NPDES permit, waiver, or waste discharge order administered under the authority of the United States Environmental Protection Agency or the New Hampshire Department of Environmental Services, provided that the discharge is in full compliance with the requirements of the permit, waiver, or order and applicable laws and regulations;
15. Discharges for which advanced written approval is received from the Authority Having Jurisdiction or their designee(s), if necessary to protect public health, safety, welfare or the environment.

307-48-7 Suspension of Storm Drainage System Access

1. The Authority Having Jurisdiction (AHJ) or their designee(s) may suspend municipal storm drain system access to any person or property without prior written notice when such suspension is necessary to stop an actual or threatened illegal discharge that presents or may present imminent risk of harm to the public health, safety, welfare or to the environment. If any person fails to comply with an emergency suspension order, the AHJ or their designee(s) may take all reasonable steps necessary to prevent or minimize harm to the public health, safety and welfare or to the environment.
2. Any person discharging to a municipal storm drain system in violation of this regulation may have

access to their municipal storm drain system terminated if such termination would abate or reduce an illicit discharge. The Authority Having Jurisdiction (AHJ) or their designee(s) will notify a violator of the proposed termination of access to the municipal storm drain system in writing. The violator may appeal the administrative decision of the AHJ to the Pelham Zoning Board of Adjustment at a public hearing. An offense is committed if the person reinstates access to the municipal storm drain system from premises terminated pursuant to this ordinance, without prior approval from the AHJ or their designee(s).

307-48-8 Notification of Spills

1. Notwithstanding any other requirements of local, state or federal law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation, has information of any known or suspected release of materials at that facility or operation that results or may result in illegal discharge of pollutants, that person shall take all steps necessary to ensure containment, and cleanup of the release. In the event of a release of oil or hazardous materials, the person shall immediately notify the Authority Having Jurisdiction (AHJ) or their designee(s) and the Pelham Fire Department. At their discretion, the AHJ may notify the New Hampshire Department of Environmental Services. In the event of a release of non-hazardous material, said person shall notify the AHJ or their designee(s). Written confirmation of all telephone, facsimile, email or in person notifications shall be provided to the AHJ or their designee(s) within three business days thereafter.
2. If the discharge of prohibited materials is from a commercial or industrial facility, the facility owner or operator of the facility shall retain on-site a written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

307-48-9 Enforcement

1. The Authority Having Jurisdiction (AHJ) or their designee(s) shall enforce this regulation as well as the terms and conditions of all permits, notices, and orders. The AHJ or their designee(s) may pursue all civil and criminal remedies needed to resolve violations of these standards.
2. Civil Relief - The AHJ or their designee(s) may seek injunctive relief to restrain the person that violates the provisions of this regulation, permit, notice, or order issued hereunder from activities that would create further violations, and to compel the person to abate or remediate the violation.
3. Compliance Orders - The AHJ or their designee may issue a written order to enforce the provisions of this ordinance, which may include:
 - a. Elimination of illicit connections or discharges to the storm drainage system;
 - b. Termination of access to the storm drainage system;
 - c. Performance of monitoring, analyses, and reporting;
 - d. Cessation of unlawful discharges, practices, or operations;
 - e. Remediation of contamination in connection therewith.
4. If the AHJ or their designee(s) determine that abatement or remediation of contamination is required, the order shall set forth a deadline for completion of the abatement or remediation. Said order shall further advise that, should the violator or property owner fail to abate or perform remediation within the specified deadline, the Town may, at its option, undertake such work, and expenses thereof shall be charged to the violator or property owner. Within thirty (30) days after completing all measures necessary to abate the violation or to perform remediation, the violator and the property owner will be notified of the costs incurred by the Town, including administrative costs. The violator or property owner may appeal the administrative decision imposing reimbursement to the Zoning Board of Adjustment within thirty (30) days of receipt of the notification of the costs incurred. If the amount due is not received by the deadline to file an appeal or within thirty (30) days following a decision of the Zoning Board of Adjustment upholding the administrative decision of the AHJ or their designee(s) affirming or reducing the costs, or from a final decision of a court of competent jurisdiction, the costs shall become a special assessment against the property owner and shall constitute a lien on the

owner's property for the amount of said costs.

5. Non-Criminal Disposition-Any person who violates any provision of this regulation, or terms or conditions in any permit or order issued hereunder, shall be subject to fines as determined by a court of competent jurisdiction. Each day of non-compliance shall represent a separate offense.
6. Entry to Perform Duties under this Ordinance - To the extent permitted by state law, or if authorized by the owner or other party in control of the property, the AHJ or their designee(s) may enter upon privately owned property for the purpose of performing their duties under this ordinance and may make or cause to be made such examinations, surveys or sampling as deemed reasonably necessary.
7. Appeals - The decisions or orders of the AHJ or their designee(s) shall be final unless overturned on appeal by the Pelham Zoning Board of Adjustment. Further relief shall be to a court of competent jurisdiction.
8. Remedies Not Exclusive - The remedies listed in this regulation are not exclusive of any other remedies available under any applicable federal, state or local law.

307-48-10 Severability

If any provision, paragraph, sentence, or clause, of this ordinance shall be held invalid for any reason, all other provisions shall continue in full force and effect.

307-49-11 Transitional Provisions

Property owners shall have 90 days from the effective date of the adoption of this ordinance to comply with its provisions.

Appendix DB

List of Impaired Waters,
Storm System Mapping, and
Outfall Inspection Guidance

TABLE DB-1 Town of Pelham Impaired Waters				
NHDES 303(d) LIST IMPAIRMENT ASSESSMENT OUTCOME				
SEVERE: NOT SUPPORTING, SEVERE (5-P and 4A-P)				
TMDL	New Hampshire Statewide TMDL for Bacteria Impaired Waters, September 2010			
Indicator contributing to Impairment	BEAVER BROOK NHRIV700061203-22	BEAVER BROOK - TONYS BROOK NHRIV700061205-01	LONG POND NHLAK700061205-02-01	LONG POND - TOWN BEACH NHLAK700061205-02-02
Benthic-Macroinvertebrate Bioassessments (Streams)	5-P	5-P		
Chlorophyll-a			5-M	
Cyanobacteria hepatotoxic microcystins			5-M	5-P
Dissolved oxygen saturation			5-M	
Escherichia coli	4A-M	4A-P		
Habitat Assessment (Streams)*		4C-P		
Mercury**	4A-M	4A-M	4A-M	4A-M
Oxygen, Dissolved			5-P	
Phosphorus (Total)			5-M	
POOR: NOT SUPPORTING, MARGINAL (5-M and 4A-M)				
Indicator contributing to Impairment	BEAVER BROOK NHRIV700061203-21		FROST BROOK - TO GUMPAS POND NHRIV700061205-05	
Mercury**	4A-M		4A-M	
pH	5-M		5-M	

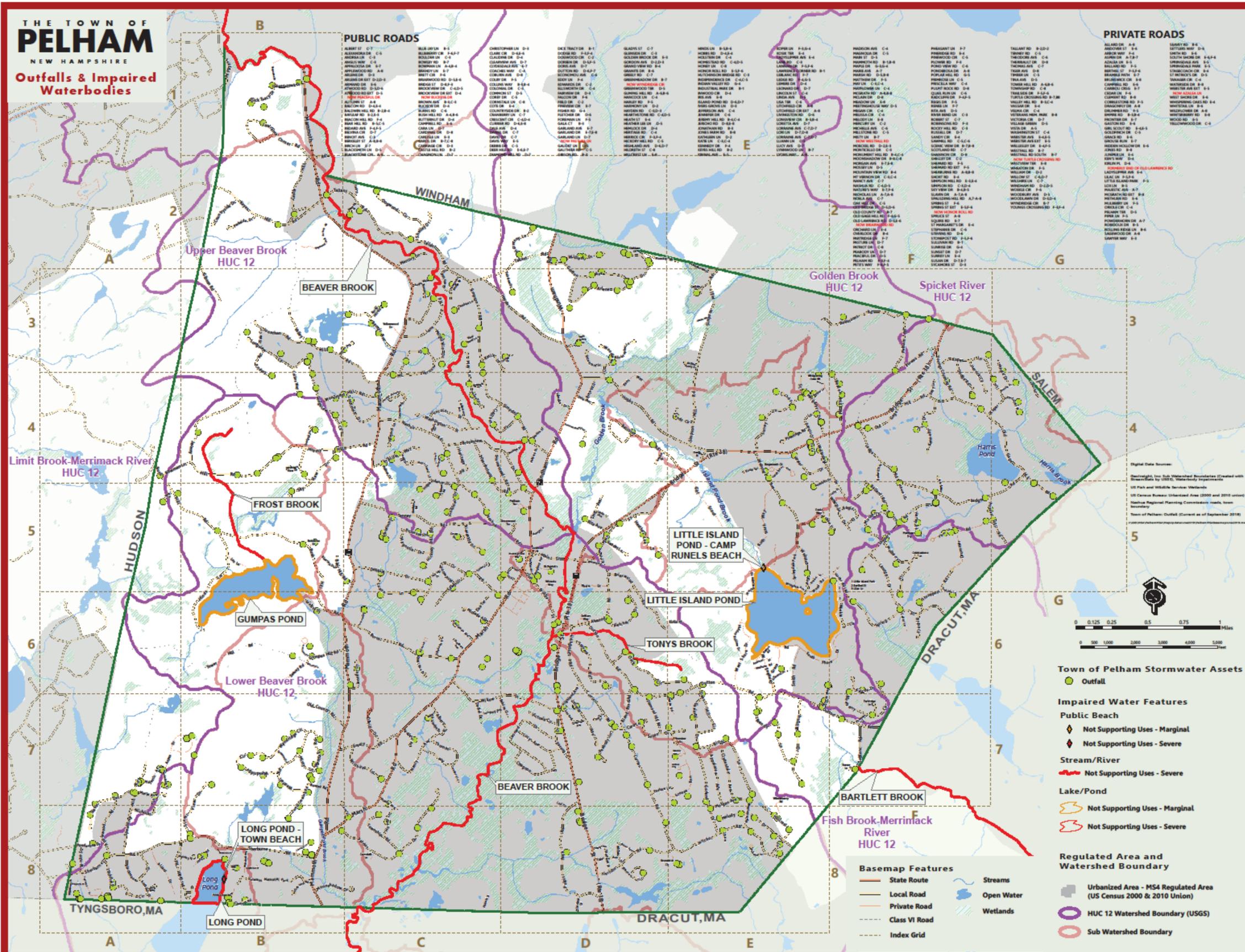
* TMDL not required for this parameter

** Completed TMDL does not apply to NH MS4 General Permit (Part 2.2.1.c)

TABLE DB-2 NHDES Impaired Waters Category Descriptions	
NHDES Category	General Description (This table is intended to give an overview of the NHDES Categories. See <i>Table 3-6</i> in the <i>2014 CALM</i> for more detail)
SEVERE: NOT SUPPORTING, SEVERE	
5-P	There is an impairment per the CALM by a parameter which is a pollutant that requires a TMDL. The impairment is more severe and causes poor water quality as defined in DES sub-category 4A-P above.
4A-P	There is an impairment per the CALM by a parameter which is a pollutant and an EPA-approved TMDL has been completed. However, the impairment is more severe and causes poor water quality conditions.
4C-P	There is a parameter which is not considered a pollutant but is causing impairment per the CALM. The impairment is more severe and causes poor water quality as defined in DES sub-category 4A-P above.
POOR: NOT SUPPORTING, MARGINAL	
5-M	There is an impairment per the CALM by a parameter which is a pollutant that requires a TMDL. The impairment is marginal as defined in DES sub-category 4A-M above.
4A-M	There is an impairment per the CALM by a parameter which is a pollutant and an EPA-approved TMDL has been completed. However, the impairment is relatively slight or marginal.

THE TOWN OF PELHAM NEW HAMPSHIRE

Outfalls & Impaired Waterbodies



PUBLIC ROADS

- ALBERT ST C-7
- ALEXANDER DR C-5
- ANDREWS DR C-4
- ANDREWS DR C-7
- ANDREWS DR C-8
- ANDREWS DR C-9
- ANDREWS DR C-10
- ANDREWS DR C-11
- ANDREWS DR C-12
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- ANDREWS DR C-15
- ANDREWS DR C-16
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- ANDREWS DR C-100

PRIVATE ROADS

- ALLEN DR A-8
- ALLEN DR A-9
- ALLEN DR A-10
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- ALLEN DR A-99
- ALLEN DR A-100

Digital Data Sources:
 Digitized from Sub-Watershed Boundaries (Created with
 Streamlines by USGS, Watershed Segments)
 US Fish and Wildlife Service, Wetlands
 US Census Bureau, Urbanized Area (2000 and 2010 Census)
 National Regional Planning Commission, Town
 Boundary
 Town of Pelham, Outfalls (Current as of September 2018)



- #### Town of Pelham Stormwater Assets
- Outfall
- #### Impaired Water Features
- ◆ Public Beach
 - ◆ Not Supporting Uses - Marginal
 - ◆ Not Supporting Uses - Severe
- #### Stream/River
- ◆ Not Supporting Uses - Severe
- #### Lake/Pond
- ◆ Not Supporting Uses - Marginal
 - ◆ Not Supporting Uses - Severe
- #### Regulated Area and Watershed Boundary
- Urbanized Area - MS4 Regulated Area (US Census 2000 & 2010 Union)
 - HUC 12 Watershed Boundary (USGS)
 - Sub Watershed Boundary

- #### Basemap Features
- State Route
 - Local Road
 - Private Road
 - Class VI Road
 - Index Grid
 - Streams
 - Open Water
 - Wetlands

Standard Operating Procedure for:	
A.1 IDDE: Inspections During Mapping	
Purpose of SOP:	This SOP provides a basic checklist for managers and field crews conducting illicit discharge inspections during mapping.

Always:

- ◆ Characterize the outfall by recording information on the Storm Drain Characteristic Form.
- ◆ Conduct inspections during dry weather periods using the Dry Weather Outfall Inspection Form.
- ◆ Follow procedure below if an illicit discharge is encountered (such as raw sewage, paint, etc.).
- ◆ Conduct inspections with at least two staff per crew.
- ◆ Carry a list of emergency phone numbers.

Dry Weather Discharge
The CWP defines dry weather as a 48 hour period with no runoff-producing rainfall. NEIWPCC defines dry weather as a 48-72 hour period with less than 1/10-inch rainfall.

Whenever Possible:

- ◆ Conduct inspections during low groundwater and leaf off conditions.
- ◆ Photograph the outfall with a digital camera (use dry erase or chalk board to identify outfall).
- ◆ Identify and label the outfall with a unique identifier. For example "SWO-013".
- ◆ If dry weather flow is present at the outfall, and the flow does not appear to be an illicit discharge attempt to identify the source of the flow (intermittent stream etc.), then document the discharge for future comparison.
- ◆ Carry an authorization letter.
- ◆ Collect samples of flowing discharges before and after source removal. (Contact NHDES for technical assistance.)

Equipment list for mapping:
<ol style="list-style-type: none"> 1. Existing paper maps 2. Field sheets 3. Camera (preferably digital) on pole 4. GPS Unit 5. Spray paint (or other marker) 6. Cell phones or hand-held radios 7. Clip boards and pencils 8. First aid kit 9. Flash light or head lamp 10. Surgical gloves 11. Tape measure 12. Temperature probe 13. Waders 14. Watch with a second hand 15. Five 1-liter sample bottles 16. Dry erase board (for photos) 17. Hand sanitizer 18. Sampling pole 19. Mirror (for light) 20. Safety vests

Never:

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

<p>Procedures to follow if illicit discharge is detected:</p> <ul style="list-style-type: none"> □ Call dispatch / supervisor. □ Use the Dry Weather Outfall Inspection Form to document observations. □ Visually inspect general area for possible sources. □ Take photos. □ Estimate flow/collect samples if instructed to do so.

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	<input type="text"/>	TOTAL	<input type="text"/>	TOTAL	<input type="text"/>

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 slimy 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 an 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).

Appendix DC

Outfall Inventory and
Priority Ranking Matrix

PELHAM NH
MS4 OUTFALL RANKING
6/21/2019

IDDEP TABLE C.1 INITIAL OUTFALL RANKING IN MS4 REGULATED AREA (MAY 2019)												
Information Source		Scoring Criteria									Score	Priority Ranking
		In Subwatershed with Impairment? ¹	Receiving Water Body Impairment? ²	Discharging to Area of Concern to Public Health? ³	Frequency of Past Discharge Complaints ⁴	Density of Generating Sites ⁵	Age of Development/Infrastructure ⁶	Aging Septic? ⁷	Culverted Streams? ⁸	Additional Characteristics ⁹		
		Impaired Waters List	Impaired Waters List	Maps	Town Staff	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Land Use, Town Staff	GIS and Storm System Maps	GIS Weighted Data		
Receiving Water Watershed	Outfall ID	Yes:	Yes = 10 (impairment listed as high priority in permit)	Yes = 10	Frequent = 3	High = 3	High = 3	Yes = 3	Yes = 3	See Notes below and Description in SWMP	Score	Priority Ranking
		Category 5 = 5 Category 4 = 3 No = 0										
Beaver Brook above Tony's Brook	OLBB29-16	5	10							10	37	HIGH
Beaver Brook at Windam Townline	OUBB01-06	5	10							9	34	HIGH
Beaver Brook at MA Stateline	OLBB29-17	5	10							13	30	HIGH
Beaver Brook above Golden Brook	OUBB14-04	5	10							5	30	HIGH
Tony's Brook	OLBB29-13	5	10							11	28	HIGH
Beaver Brook above Tony's Brook	OLBB22-01	5								10	27	HIGH
Beaver Brook above Tony's Brook	OLBB29-06	5	10								27	HIGH
Beaver Brook at MA Stateline	OLBB22-14	5								9	26	HIGH
Tony's Brook	OLBB29-09	5	10							1	26	HIGH
Beaver Brook at MA Stateline	OLBB35-11	5								9	26	HIGH
Beaver Brook above Golden Brook	OUBB07-04	5	10							1	26	HIGH
Beaver Brook above Tony's Brook	OLBB22-04	5								8	25	HIGH
Beaver Brook above Tony's Brook	OLBB22-13	5								8	25	HIGH
Beaver Brook above Golden Brook	OUBB07-05	5	10								25	HIGH
Beaver Brook above Tony's Brook	M-17	5								7	24	HIGH
Beaver Brook above Tony's Brook	OLBB22-05	5								7	24	HIGH
Beaver Brook at MA Stateline	OLBB41-04	5								6	24	HIGH
Beaver Brook at MA Stateline	OLBB41-04	5								6	24	HIGH
Beaver Brook at MA Stateline	M-20	5								8	23	HIGH
Beaver Brook above Tony's Brook	OLBB22-06	5								8	23	HIGH
Beaver Brook at MA Stateline	OLBB22-15	5								6	23	HIGH
Beaver Brook above Tony's Brook	OLBB22-16	5								8	23	HIGH
Beaver Brook at MA Stateline	OLBB41-03	5								15	23	HIGH
Beaver Brook at MA Stateline	OLBB41-03	5								15	23	HIGH
Beaver Brook at MA Stateline	OLBB28-16	5								6	21	HIGH
Beaver Brook at MA Stateline	OLBB35-04	5								6	21	HIGH
Beaver Brook at MA Stateline	OLBB35-12	5								6	21	HIGH
Long Pond	OLBB38-02	5								3	20	HIGH
Beaver Brook at MA Stateline	OLBB41-01	5								12	20	HIGH
Beaver Brook above Golden Brook	OUBB15-02	5	10							5	20	HIGH
Beaver Brook at MA Stateline	M-19	5								4	19	HIGH
Beaver Brook at MA Stateline	OLBB28-17	5								4	19	HIGH
Beaver Brook at MA Stateline	OLBB38-10	5								4	19	HIGH
Long Pond	OLBB38-10	5								4	19	HIGH
Beaver Brook above Golden Brook	OUBB07-02	5	10							2	19	HIGH
Long Pond	OLBB39-04	5	10							1	18	HIGH
Beaver Brook above Golden Brook	OUBB21-07	5								3	18	HIGH
Beaver Brook above Golden Brook	OUBB21-08	5								3	18	HIGH
Beaver Brook above Golden Brook	OUBB22-02	5								1	18	HIGH

PELHAM NH
MS4 OUTFALL RANKING
6/21/2019

IDDEP TABLE C.1 INITIAL OUTFALL RANKING IN MS4 REGULATED AREA (MAY 2019)												
Information Source		Scoring Criteria									Score	Priority Ranking
		In Subwatershed with Impairment? ¹	Receiving Water Body Impairment? ²	Discharging to Area of Concern to Public Health? ³	Frequency of Past Discharge Complaints ⁴	Density of Generating Sites ⁵	Age of Development/ Infrastructure ⁶	Aging Septic? ⁷	Culverted Streams? ⁸	Additional Characteristics ⁹		
		Impaired Waters List	Impaired Waters List	Maps	Town Staff	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Land Use, Town Staff	GIS and Storm System Maps	GIS Weighted Data		
Receiving Water Watershed	Outfall ID	Yes:	Yes = 10 (impairment listed as high priority in permit)	Yes = 10	Frequent = 3	High = 3	High = 3	Yes = 3	Yes = 3	See Notes below and Description in SWMP	Score	Priority Ranking
		Category 5 = 5 Category 4 = 3 No = 0										
Beaver Brook above Tony's Brook	OGB16-08	5									17	HIGH
Beaver Brook above Tony's Brook	OGB17-05	5							2		17	HIGH
Beaver Brook at MA Stateline	OLBB29-18	5									17	HIGH
Beaver Brook above Golden Brook	OUBB02-03	5	10						2		17	HIGH
Beaver Brook above Golden Brook	OUBB03-02	5	10						2		17	HIGH
Beaver Brook above Golden Brook	OUBB07-01	5	10						2		17	HIGH
Beaver Brook above Golden Brook	OUBB07-03	5							2		17	HIGH
Beaver Brook above Golden Brook	OUBB14-06	5	10						2		17	HIGH
Beaver Brook above Tony's Brook	CGB04-05	5							1		16	HIGH
Beaver Brook above Tony's Brook	OGB17-04	5							1		16	HIGH
Beaver Brook above Golden Brook	OLBB07-12	5	10						1		16	HIGH
Beaver Brook at MA Stateline	OLBB21-17	5							1		16	HIGH
Beaver Brook at MA Stateline	OLBB28-03	5							11		16	HIGH
Beaver Brook at MA Stateline	OLBB28-12	5							1		16	HIGH
Tony's Brook	OLBB29-07	5	10						1		16	HIGH
Tony's Brook	OLBB29-08	5	10						1		16	HIGH
Tony's Brook	OLBB29-12	5							1		16	HIGH
Beaver Brook at MA Stateline	OLBB35-02	5							1		16	HIGH
Beaver Brook at MA Stateline	OLBB38-11	5							1		16	HIGH
Long Pond	OLBB38-11	5							1		16	HIGH
Gumpas Pond Brook	OLBB39-14								6		16	HIGH
Beaver Brook at MA Stateline	OLBB40-03	5							1		16	HIGH
Beaver Brook above Golden Brook	OUBB03-01	5	10						1		16	HIGH
Beaver Brook above Golden Brook	OUBB13-11	5							1		16	HIGH
Beaver Brook above Golden Brook	OUBB15-01	5							1		16	HIGH
Beaver Brook above Golden Brook	OUBB15-04	5	10						1		16	HIGH
Beaver Brook above Tony's Brook	OGB04-03	5									15	HIGH
Beaver Brook above Tony's Brook	OGB08-02	5									15	HIGH
Beaver Brook above Golden Brook	OLBB07-11	5	10								15	HIGH
Beaver Brook at MA Stateline	OLBB35-05	5									15	HIGH
Beaver Brook at MA Stateline	OLBB35-06	5									15	HIGH
Tony's Brook	OLBB35-08	5									15	HIGH
Beaver Brook at MA Stateline	OLBB36-09	5									15	HIGH
Beaver Brook at MA Stateline	OLBB36-12	5									15	HIGH
Beaver Brook at MA Stateline	OLBB36-15	5									15	HIGH
Tony's Brook	OLBB36-17	5									15	HIGH
Tony's Brook	OLBB36-18	5									15	HIGH
Long Pond	OLBB38-01	5									15	HIGH
Beaver Brook at MA Stateline	OLBB38-09	5									15	HIGH

PELHAM NH
MS4 OUTFALL RANKING
6/21/2019

IDDEP TABLE C.1 INITIAL OUTFALL RANKING IN MS4 REGULATED AREA (MAY 2019)												
Information Source		Scoring Criteria									Score	Priority Ranking
		In Subwatershed with Impairment? ¹	Receiving Water Body Impairment? ²	Discharging to Area of Concern to Public Health? ³	Frequency of Past Discharge Complaints ⁴	Density of Generating Sites ⁵	Age of Development/Infrastructure ⁶	Aging Septic? ⁷	Culverted Streams? ⁸	Additional Characteristics ⁹		
		Impaired Waters List	Impaired Waters List	Maps	Town Staff	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Land Use, Town Staff	GIS and Storm System Maps	GIS Weighted Data		
Receiving Water Watershed	Outfall ID	Yes:	Yes = 10 (impairment listed as high priority in permit)	Yes = 10	Frequent = 3	High = 3	High = 3	Yes = 3	Yes = 3	See Notes below and Description in SWMP	Score	Priority Ranking
		Category 5 = 5 Category 4 = 3 No = 0										
Beaver Brook at MA Stateline	OLBB41-02	5									15	HIGH
Beaver Brook at MA Stateline	OLBB42-03	5									15	HIGH
Beaver Brook at MA Stateline	OLBB42-06	5									15	HIGH
Beaver Brook above Golden Brook	OUBB06-04	5	10								15	HIGH
Beaver Brook above Golden Brook	OUBB06-05	5	10								15	HIGH
Beaver Brook above Golden Brook	OUBB07-17	5									15	HIGH
Beaver Brook above Golden Brook	OUBB13-10	5									15	HIGH
Beaver Brook above Golden Brook	OUBB14-01	5	10								15	HIGH
Beaver Brook above Golden Brook	OUBB14-14	5	10								15	HIGH
Beaver Brook above Tony's Brook	M-11	5								7	14	HIGH
Beaver Brook above Tony's Brook	OLBB22-03	5								7	14	HIGH
Beaver Brook at MA Stateline	OLBB35-07	5								9	14	HIGH
Beaver Brook at MA Stateline	OLBB35-13	5								6	14	HIGH
Bartlett Brook	OFB31-01									1	13	HIGH
Beaver Brook at MA Stateline	OLBB28-14	5								6	11	HIGH
Beaver Brook at MA Stateline	OLBB35-01	5								6	11	HIGH
Beaver Brook at MA Stateline	OLBB35-03	5								6	11	HIGH
Gumpas Pond Brook	OLBB39-18									1	11	HIGH
Harris Pond	OSR24-04									1	11	HIGH
Harris Pond	OSR24-06									1	11	HIGH
Gumpas Pond Brook	M-16										10	HIGH
Bartlett Brook	OFB24-08										10	HIGH
Bartlett Brook	OFB24-12										10	HIGH
Bartlett Brook	OFB24-17										10	HIGH
Little Island Pond Brook	OGB23-01										10	HIGH
Beaver Brook above Tony's Brook	OLBB22-02	5								3	10	HIGH
Gumpas Pond Brook	OLBB28-07										10	HIGH
Beaver Brook at MA Stateline	OLBB28-15	5								5	10	HIGH
Beaver Brook at MA Stateline	OLBB35-14	5								5	10	HIGH
Harris Pond	OSR24-03										10	HIGH
Harris Pond	OSR24-05										10	HIGH
Harris Pond	OSR24-16										10	HIGH
Beaver Brook at MA Stateline	M-09	5								4	9	LOW
Beaver Brook above Tony's Brook	OGB16-09	5								2	9	LOW
Beaver Brook at MA Stateline	OLBB21-15	5								4	9	LOW
Beaver Brook at MA Stateline	OLBB28-18	5								4	9	LOW
Beaver Brook at MA Stateline	OLBB40-01	5								4	9	LOW
Beaver Brook at MA Stateline	OLBB28-08	5								3	8	LOW
Long Pond	OLBB38-06	5								1	8	LOW

PELHAM NH
MS4 OUTFALL RANKING
6/21/2019

IDDEP TABLE C.1 INITIAL OUTFALL RANKING IN MS4 REGULATED AREA (MAY 2019)												
Information Source		Scoring Criteria									Score	Priority Ranking
		In Subwatershed with Impairment? ¹	Receiving Water Body Impairment? ²	Discharging to Area of Concern to Public Health? ³	Frequency of Past Discharge Complaints ⁴	Density of Generating Sites ⁵	Age of Development/Infrastructure ⁶	Aging Septic? ⁷	Culverted Streams? ⁸	Additional Characteristics ⁹		
		Impaired Waters List	Impaired Waters List	Maps	Town Staff	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Land Use, Town Staff	GIS and Storm System Maps	GIS Weighted Data		
Receiving Water Watershed	Outfall ID	Yes:	Yes = 10 (impairment listed as high priority in permit)	Yes = 10	Frequent = 3	High = 3	High = 3	Yes = 3	Yes = 3	See Notes below and Description in SWMP	Score	Priority Ranking
		Category 5 = 5 Category 4 = 3 No = 0										
Long Pond	OLBB39-02	5								3	8	LOW
Long Pond	OLBB39-03	5								3	8	LOW
Beaver Brook above Golden Brook	OUBB03-03	5								3	8	LOW
Beaver Brook above Golden Brook	OUBB14-02	5								3	8	LOW
Beaver Brook above Golden Brook	OUBB14-13	5								3	8	LOW
Beaver Brook above Golden Brook	OUBB14-13	5								3	8	LOW
Beaver Brook above Golden Brook	CUBB14-08	5									7	LOW
Long Pond	M-02	5									7	LOW
Beaver Brook above Tony's Brook	OGB08-16	5								2	7	LOW
Beaver Brook above Tony's Brook	OGB16-06	5									7	LOW
Beaver Brook above Tony's Brook	OGB16-07	5									7	LOW
Beaver Brook at MA Stateline	OLBB21-03	5								2	7	LOW
Beaver Brook above Tony's Brook	OLBB22-11	5									7	LOW
Beaver Brook at MA Stateline	OLBB28-13	5								2	7	LOW
Long Pond	OLBB38-05	5									7	LOW
Long Pond	OLBB39-13	5								2	7	LOW
Beaver Brook at MA Stateline	OLBB40-06	5								2	7	LOW
Beaver Brook above Golden Brook	OUBB07-14	5								2	7	LOW
Beaver Brook above Golden Brook	OUBB14-03	5								2	7	LOW
Beaver Brook above Golden Brook	OUBB14-07	5								2	7	LOW
Beaver Brook above Golden Brook	OUBB14-15	5									7	LOW
Beaver Brook above Golden Brook	OUBB21-11	5									7	LOW
Beaver Brook above Tony's Brook	OGB04-02	5								1	6	LOW
Beaver Brook above Tony's Brook	OGB09-01	5								1	6	LOW
Beaver Brook above Tony's Brook	OGB10-03	5								1	6	LOW
Beaver Brook above Tony's Brook	OGB15-08	5								1	6	LOW
Beaver Brook above Tony's Brook	OGB17-01	5								1	6	LOW
Beaver Brook at MA Stateline	OLBB21-01	5								1	6	LOW
Beaver Brook at MA Stateline	OLBB21-05	5								1	6	LOW
Beaver Brook at MA Stateline	OLBB21-16	5								1	6	LOW
Beaver Brook at MA Stateline	OLBB28-01	5								1	6	LOW
Beaver Brook at MA Stateline	OLBB28-02	5								1	6	LOW
Beaver Brook at MA Stateline	OLBB28-04	5								1	6	LOW
Beaver Brook at MA Stateline	OLBB28-05	5								1	6	LOW
Tony's Brook	OLBB29-10	5								1	6	LOW
Tony's Brook	OLBB29-11	5								1	6	LOW
Beaver Brook at MA Stateline	OLBB34-02	5								1	6	LOW
Beaver Brook at MA Stateline	OLBB40-02	5								1	6	LOW
Beaver Brook at MA Stateline	OLBB40-04	5								1	6	LOW

PELHAM NH
MS4 OUTFALL RANKING
6/21/2019

IDDEP TABLE C.1 INITIAL OUTFALL RANKING IN MS4 REGULATED AREA (MAY 2019)												
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Receiving Water Watershed	Outfall ID	Yes:	Yes = 10 (impairment listed as high priority in permit)	Yes = 10	Frequent = 3	High = 3	High = 3	Yes = 3	Yes = 3	See Notes below and Description in SWMP	Score	Priority Ranking
		Category 5 = 5 Category 4 = 3 No = 0										
Beaver Brook above Golden Brook	OUBB06-07	5								1	6	LOW
Beaver Brook above Golden Brook	OUBB06-08	5								1	6	LOW
Beaver Brook above Golden Brook	OUBB07-13	5								1	6	LOW
Beaver Brook above Golden Brook	OUBB07-16	5								1	6	LOW
Beaver Brook above Golden Brook	OUBB13-09	5								1	6	LOW
Beaver Brook above Golden Brook	OUBB15-03	5								1	6	LOW
Beaver Brook above Golden Brook	OUBB21-13	5								1	6	LOW
Beaver Brook above Golden Brook	OUBB21-14	5								1	6	LOW
Beaver Brook above Golden Brook	OUBB21-14	5								1	6	LOW
Beaver Brook above Golden Brook	OUBB22-03	5								1	6	LOW
Long Pond	M-04	5									5	LOW
Beaver Brook at MA Stateline	M-18	5									5	LOW
Little Island Pond	OFB36-11	3								2	5	LOW
Beaver Brook above Tony's Brook	OGB04-04	5									5	LOW
Beaver Brook above Tony's Brook	OGB04-06	5									5	LOW
Beaver Brook above Tony's Brook	OGB04-07	5									5	LOW
Beaver Brook above Tony's Brook	OGB04-09	5									5	LOW
Beaver Brook above Tony's Brook	OGB04-10	5									5	LOW
Beaver Brook above Tony's Brook	OGB08-08	5									5	LOW
Beaver Brook above Tony's Brook	OGB08-09	5									5	LOW
Beaver Brook above Tony's Brook	OGB08-12	5									5	LOW
Beaver Brook above Tony's Brook	OGB08-13	5									5	LOW
Beaver Brook above Tony's Brook	OGB10-02	5									5	LOW
Beaver Brook above Tony's Brook	OGB10-04	5									5	LOW
Beaver Brook above Tony's Brook	OGB16-10	5									5	LOW
Beaver Brook above Tony's Brook	OGB16-11	5									5	LOW
Beaver Brook above Tony's Brook	OGB17-02	5									5	LOW
Beaver Brook above Tony's Brook	OGB17-03	5									5	LOW
Beaver Brook at MA Stateline	OLBB21-02	5									5	LOW
Beaver Brook at MA Stateline	OLBB21-04	5									5	LOW
Beaver Brook at MA Stateline	OLBB21-06	5									5	LOW
Beaver Brook at MA Stateline	OLBB28-09	5									5	LOW
Beaver Brook at MA Stateline	OLBB28-10	5									5	LOW
Beaver Brook at MA Stateline	OLBB28-11	5									5	LOW
Tony's Brook	OLBB29-01	5									5	LOW
Tony's Brook	OLBB29-02	5									5	LOW
Tony's Brook	OLBB29-03	5									5	LOW
Tony's Brook	OLBB29-05	5									5	LOW
Tony's Brook	OLBB29-14	5									5	LOW

PELHAM NH
MS4 OUTFALL RANKING
6/21/2019

IDDEP TABLE C.1 INITIAL OUTFALL RANKING IN MS4 REGULATED AREA (MAY 2019)												
Information Source		Scoring Criteria									Score	Priority Ranking
		In Subwatershed with Impairment? ¹	Receiving Water Body Impairment? ²	Discharging to Area of Concern to Public Health? ³	Frequency of Past Discharge Complaints ⁴	Density of Generating Sites ⁵	Age of Development/Infrastructure ⁶	Aging Septic? ⁷	Culverted Streams? ⁸	Additional Characteristics ⁹		
		Impaired Waters List	Impaired Waters List	Maps	Town Staff	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Land Use, Town Staff	GIS and Storm System Maps	GIS Weighted Data		
Receiving Water Watershed	Outfall ID	Yes:	Yes = 10 (impairment listed as high priority in permit)	Yes = 10	Frequent = 3	High = 3	High = 3	Yes = 3	Yes = 3	See Notes below and Description in SWMP	Score	Priority Ranking
		Category 5 = 5 Category 4 = 3 No = 0										
Beaver Brook at MA Stateline	OLBB29-15	5									5	LOW
Tony's Brook	OLBB29-19	5									5	LOW
Beaver Brook at MA Stateline	OLBB34-01	5									5	LOW
Beaver Brook at MA Stateline	OLBB34-03	5									5	LOW
Beaver Brook at MA Stateline	OLBB36-10	5									5	LOW
Beaver Brook at MA Stateline	OLBB36-11	5									5	LOW
Tony's Brook	OLBB36-14	5									5	LOW
Tony's Brook	OLBB36-16	5									5	LOW
Beaver Brook at MA Stateline	OLBB36-19	5									5	LOW
Beaver Brook at MA Stateline	OLBB36-20	5									5	LOW
Beaver Brook at MA Stateline	OLBB36-21	5									5	LOW
Beaver Brook at MA Stateline	OLBB36-22	5									5	LOW
Tony's Brook	OLBB36-23	5									5	LOW
Tony's Brook	OLBB36-24	5									5	LOW
Long Pond	OLBB38-04	5									5	LOW
Long Pond	OLBB39-07	5									5	LOW
Long Pond	OLBB39-08	5									5	LOW
Long Pond	OLBB39-09	5									5	LOW
Long Pond	OLBB39-10	5									5	LOW
Long Pond	OLBB39-11	5									5	LOW
Beaver Brook at MA Stateline	OLBB40-05	5									5	LOW
Beaver Brook at MA Stateline	OLBB402-2	5									5	LOW
Beaver Brook at MA Stateline	OLBB42-01	5									5	LOW
Beaver Brook at MA Stateline	OLBB42-02	5									5	LOW
Beaver Brook at MA Stateline	OLBB42-04	5									5	LOW
Beaver Brook at MA Stateline	OLBB42-05	5									5	LOW
Beaver Brook at MA Stateline	OLBB42-07	5									5	LOW
Beaver Brook at MA Stateline	OLBB42-08	5									5	LOW
Beaver Brook at MA Stateline	OLBB42-12	5									5	LOW
Harris Pond	OSR17-08									5	5	LOW
Beaver Brook above Golden Brook	OUBB02-02	5									5	LOW
Beaver Brook above Golden Brook	OUBB06-10	5									5	LOW
Beaver Brook above Golden Brook	OUBB07-15	5									5	LOW
Beaver Brook above Golden Brook	OUBB07-18	5									5	LOW
Beaver Brook above Golden Brook	OUBB08-02	5									5	LOW
Beaver Brook above Golden Brook	OUBB14-09	5									5	LOW
Beaver Brook above Golden Brook	OUBB14-11	5									5	LOW
Beaver Brook above Golden Brook	OUBB14-12	5									5	LOW
Beaver Brook above Golden Brook	OUBB21-09	5									5	LOW

PELHAM NH
MS4 OUTFALL RANKING
6/21/2019

IDDEP TABLE C.1 INITIAL OUTFALL RANKING IN MS4 REGULATED AREA (MAY 2019)												
Information Source		Scoring Criteria									Score	Priority Ranking
		In Subwatershed with Impairment? ¹	Receiving Water Body Impairment? ²	Discharging to Area of Concern to Public Health? ³	Frequency of Past Discharge Complaints ⁴	Density of Generating Sites ⁵	Age of Development/Infrastructure ⁶	Aging Septic? ⁷	Culverted Streams? ⁸	Additional Characteristics ⁹		
		Impaired Waters List	Impaired Waters List	Maps	Town Staff	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Land Use, Town Staff	GIS and Storm System Maps	GIS Weighted Data		
Receiving Water Watershed	Outfall ID	Yes:	Yes = 10 (impairment listed as high priority in permit)	Yes = 10	Frequent = 3	High = 3	High = 3	Yes = 3	Yes = 3	See Notes below and Description in SWMP	Score	Priority Ranking
		Category 5 = 5 Category 4 = 3 No = 0										
Beaver Brook above Golden Brook	OUBB21-10	5									5	LOW
Beaver Brook above Golden Brook	OUBB21-12	5									5	LOW
Beaver Brook above Golden Brook	OUBB21-15	5									5	LOW
Little Island Pond	OFB30-02	3								1	4	LOW
Bartlett Brook	OFB31-04									4	4	LOW
Little Island Pond	OFB36-10	3								1	4	LOW
Little Island Pond	OFB36-12	3								1	4	LOW
Little Island Pond Brook	OGB16-18									4	4	LOW
Little Island Pond	OGB24-07	3								1	4	LOW
Little Island Pond	OFB31-03	3									3	LOW
Little Island Pond	OFB37-01	3									3	LOW
Little Island Pond	OFB37-02	3									3	LOW
Little Island Pond	OGB23-02	3									3	LOW
Little Island Pond	OGB23-03	3									3	LOW
Little Island Pond	OGB23-04	3									3	LOW
Little Island Pond	OGB24-01	3									3	LOW
Harris Pond	OSR17-07									3	3	LOW
Harris Pond	OSR17-09									3	3	LOW
Harris Pond	OSR17-13									3	3	LOW
Harris Pond	OSR17-14									3	3	LOW
Harris Pond	OSR24-01									1	3	LOW
little island Pond Brook	M-12										2	LOW
Harris Pond	OSR18-02									2	2	LOW
Harris Pond	M-14									1	1	LOW
Harris Pond	M-15									1	1	LOW
Bartlett Brook	OFB31-06									1	1	LOW
Little Island Pond Brook	OGB16-02									1	1	LOW
Musquash Brook	OLBMR32-02									1	1	LOW
Musquash Brook	OLBMR32-03									1	1	LOW
Harris Pond	OSR18-04									1	1	LOW
Harris Pond	OSR24-01									1	1	LOW
Harris Pond	OSR24-02									1	1	LOW
Harris Pond	OSR24-02									1	1	LOW
Harris Pond	OSR24-09									1	1	LOW
Harris Pond	OSR24-10									1	1	LOW
Harris Pond	OSR24-11									1	1	LOW
little island Pond Brook	M-13										0	LOW
Bartlett Brook	OFB31-02										0	LOW
Bartlett Brook	OFB31-05										0	LOW

PELHAM NH
MS4 OUTFALL RANKING
6/21/2019

IDDEP TABLE C.1 INITIAL OUTFALL RANKING IN MS4 REGULATED AREA (MAY 2019)																		
Information Source		Scoring Criteria									Score	Priority Ranking						
		In Subwatershed with Impairment? ¹	Receiving Water Body Impairment? ²	Discharging to Area of Concern to Public Health? ³	Frequency of Past Discharge Complaints ⁴	Density of Generating Sites ⁵	Age of Development/Infrastructure ⁶	Aging Septic? ⁷	Culverted Streams? ⁸	Additional Characteristics ⁹								
		Impaired Waters List	Impaired Waters List	Maps	Town Staff	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Land Use, Town Staff	GIS and Storm System Maps	GIS Weighted Data								
Receiving Water Watershed	Outfall ID	Yes:	Yes = 10 (impairment listed as high priority in permit)	Yes = 10	Frequent = 3	High = 3	High = 3	Yes = 3	Yes = 3	See Notes below and Description in SWMP	Score	Priority Ranking						
		Category 5 = 5											No = 0	Occasional = 2	Medium = 2	Medium = 2	No = 0	No = 0
		Category 4 = 3																
		No = 0	No = 0	No = 0	None = 0	Low = 1	Low = 1	No = 0	No = 0									
Bartlett Brook	OFB31-07										0	LOW						
Little Island Pond Brook	OGB16-01										0	LOW						
Little Island Pond Brook	OGB16-01										0	LOW						
Little Island Pond Brook	OGB16-03										0	LOW						
Little Island Pond Brook	OGB16-04										0	LOW						
Little Island Pond Brook	OGB16-05										0	LOW						
Little Island Pond Brook	OGB16-12										0	LOW						
Little Island Pond Brook	OGB16-13										0	LOW						
Little Island Pond Brook	OGB16-14										0	LOW						
Little Island Pond Brook	OGB16-15										0	LOW						
Little Island Pond Brook	OGB16-16										0	LOW						
Little Island Pond Brook	OGB16-17										0	LOW						
Little Island Pond Brook	OGB16-19										0	LOW						
Little Island Pond Brook	OGB16-20										0	LOW						
Little Island Pond Brook	OGB16-21										0	LOW						
Little Island Pond Brook	OGB23-05										0	LOW						
Gumpas Pond Brook	OLBB27-02										0	LOW						
Gumpas Pond Brook	OLBB28-06										0	LOW						
Gumpas Pond Brook	OLBB39-12										0	LOW						
Gumpas Pond Brook	OLBB39-17										0	LOW						
Musquash Brook	OLBMR38-08										0	LOW						
Harris Pond	OSR10-05										0	LOW						
Harris Pond	OSR11-01										0	LOW						
Harris Pond	OSR17-06										0	LOW						
Harris Pond	OSR17-10										0	LOW						
Harris Pond	OSR17-11										0	LOW						
Harris Pond	OSR17-12										0	LOW						
Harris Pond	OSR18-01										0	LOW						
Harris Pond	OSR18-03										0	LOW						
Harris Pond	OSR24-13										0	LOW						
Harris Pond	OSR24-14										0	LOW						
Harris Pond	OSR24-15										0	LOW						
Harris Pond	OSR24-18										0	LOW						
Bartlett Brook	OSR24-19										0	LOW						
Harris Pond	OSR24-19										0	LOW						
Bartlett Brook	OSR24-20										0	LOW						
Bartlett Brook	OSR24-21										0	LOW						
Harris Pond	OSR25-01										0	LOW						
Harris Pond	OSR25-01										0	LOW						

PELHAM NH
MS4 OUTFALL RANKING
6/21/2019

IDDEP TABLE C.1 INITIAL OUTFALL RANKING IN MS4 REGULATED AREA (MAY 2019)																		
Information Source		Scoring Criteria									Score	Priority Ranking						
		In Subwatershed with Impairment? ¹	Receiving Water Body Impairment? ²	Discharging to Area of Concern to Public Health? ³	Frequency of Past Discharge Complaints ⁴	Density of Generating Sites ⁵	Age of Development/Infrastructure ⁶	Aging Septic? ⁷	Culverted Streams? ⁸	Additional Characteristics ⁹								
		Impaired Waters List	Impaired Waters List	Maps	Town Staff	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Land Use, Town Staff	GIS and Storm System Maps	GIS Weighted Data								
Receiving Water Watershed	Outfall ID	Yes:	Yes = 10 (impairment listed as high priority in permit)	Yes = 10	Frequent = 3	High = 3	High = 3	Yes = 3	Yes = 3	See Notes below and Description in SWMP								
		Category 5 = 5											No = 0	None = 0	Medium = 2	Medium = 2	No = 0	No = 0
		Category 4 = 3																
No = 0																		
Harris Pond	OSR25-02											0	LOW					

Appendix DD

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

SOP ID-1: DRY WEATHER OUTFALL INSPECTION

Introduction

Outfalls from an engineered storm drain system can be in the form of pipes or ditches. Under current regulations, it is important to inspect and document water quality from these outfalls under both dry weather and wet weather conditions. SOP ID-2, “*Wet Weather Outfall Inspection*”, covers the objectives of that type of inspection. This SOP discusses the dry weather inspection objectives, and how they differ from wet weather inspection objectives.

During a dry weather period, it is anticipated that no flow or minimal flow from stormwater outfalls will be observed. Therefore, dry weather inspections aim to characterize any/all flow observed during a dry weather period and identify potential source(s) of an illicit discharge through qualitative testing; further described in SOP ID-3, “*Water Quality Screening in the Field*”.

Objectives of Dry Weather Inspections

A dry weather period is a time interval during which less than 0.1-inch of rain is observed across a minimum of 72-hours. Unlike wet weather sampling, dry weather inspections are not intended to capture a “first flush” of stormwater discharge, rather they are intended to identify any/all discharges from a stormwater outfall during a period without recorded rainfall. The objective of inspections during a dry weather period is to characterize observed discharges and facilitate detection of illicit discharges.

Visual Condition Assessment

The attached *Dry Weather Outfall Inspection Survey* is a tool to assist in documenting observations related to the both quantitative and qualitative characteristics of any/all flows conveyed by the structure during a dry period.

For any visual observation discharge from a stormwater outfall, an investigation into the pollution source should occur, but the following are often true:

1. Foam: indicator of upstream vehicle washing activities, or an illicit discharge.
2. Oil sheen: result of a leak or spill.
3. Cloudiness: indicator of suspended solids such as dust, ash, powdered chemicals and ground up materials.
4. Color or odor: indicator of raw materials, chemicals, or sewage.
5. Excessive sediment: indicator of disturbed earth of other unpaved areas lacking adequate erosion control measures.
6. Sanitary waste and optical enhancers (fluorescent dyes added to laundry detergent): indicators of illicit discharge.
7. Orange staining: indicator of high mineral concentrations.

Both bacteria and petroleum can create a sheen on the water surface. The source of the sheen can be differentiated by disturbing it, such as with a pole. A sheen caused by oil will remain intact and move in a swirl pattern; a sheen caused by bacteria will separate and appear “blocky”. Bacterial or naturally occurring sheens are usually silver or relatively dull in color and will break up into a number of small patches of sheen. The cause may be presence of iron, decomposition of organic material, or presence of certain bacteria. Bacterial sheen is not a pollutant but should be noted.

Many of these observations are indicators of an illicit discharge. Examples of illicit discharges include: cross-connections of sewer services to engineered storm drain systems; leaking septic systems; intentional discharge of pollutants to catch basins; connected floor drains; and sump pumps connected to the system. Additional guidelines for illicit discharge investigations are included in SOP ID-4, “*Locating Illicit Discharges*”. 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 flow (e.g. intermittent stream, wetlands drainage, etc.) and document the discharge for future comparison.

Although many of the observations are indicators of illicit discharge it should be noted that several of these indicators may also occur naturally. Orange staining may be the result of naturally occurring iron, and thus unrelated to pollution. Foam can be formed when the physical characteristics of water are altered by the presence of organic materials. Foam is typically found in waters with high organic content such as bog lakes, streams that originate from bog lakes, productive lakes, wetlands, or woody areas. To determine the difference between natural foam and foam cause by pollution, consider the following:

1. Wind direction or turbulence: natural foam occurrences on the beach coincide with onshore winds. Often, foam can be found along a shoreline and/or on open waters during windy days. Natural occurrences in rivers can be found downstream of a turbulent site.
2. Proximity to a potential pollution source: some entities including the textile industry, paper production facilities, oil industries, and firefighting activities work with materials that cause foaming in water. If these materials are released to a water body in large quantities, they can cause foaming. Also, the presence of silt in water, such as from a construction site can cause foam.
3. Feeling: natural foam is typically persistent, light, not slimy to the touch.
4. Presence of decomposing plants or organic material in the water.

Optical enhancers, fluorescent dyes added to laundry detergent, are typically detected through the use of clean, white cotton pads placed within the discharge for several days, dried then viewed under a UV light. If the cotton pad displays fluorescent patches, optical enhancers are present. Optical enhancers are occasionally visible as a bluish-purple haze on the water surface; however, the testing method should be used to confirm the presence of optical enhancers.

The *Dry Weather Outfall Inspection Survey* form includes fields where these and other specific observations can be noted. The inspector shall indicate the presence of a specific water quality indicator or parameter by marking “Yes”. If “Yes” is marked, provide additional details in the comments section. If the indicator in question is not present, mark “No”.

Within the comments section, provide additional information with regard to recorded precipitation totals, more detailed descriptions of observations made during the inspection, additional investigations (source location), and corrective actions taken, if any.

Measuring Water Quality

Based on the results of the *Visual Condition Assessment*, it may be necessary to collect additional data about water quality. Water quality samples can be in the form of screening using field test kits and instrumentation, or by discrete analytical samples processed by a laboratory.

Information on selecting and using field test kits and instrumentation is included in SOP ID-3, "*Water Quality Screening in the Field*." The *Water Quality Screening Form* also provides values for what can be considered an appropriate benchmark for a variety of parameters that can be evaluated in the field.

If the results of screening using field test kits indicate that the outfall's water quality exceeds the benchmarks provided, collection of discrete analytical samples should be considered.

Analytical Sample Collection

Sample collection methods may vary based on specific outfall limitations but shall follow test procedures outlined in 40 CFR 136. A discrete manual or grab sample can classify water at a distinct point in time. These samples are easily collected and used primarily when the water quality of the discharge is expected to be homogeneous, or unchanging, in nature. A flow-weighted composite sample will classify water quality over a measured period of time. These samples are used when the water quality of the discharge is expected to be heterogeneous, or fluctuating, in nature. Grab samples are more common for dry weather outfall inspections due to the time-sensitive nature of the process.

Protocols for collecting a grab sample shall include the following:

1. Do not eat, drink or smoke during sample collection and processing.
2. Do not collect or process samples near a running vehicle.
3. Do not park vehicles in the immediate sample collection area, including both running and non-running vehicles.
4. Always wear clean, powder-free nitrile gloves when handling sample containers and lids.
5. Never touch the inside surface of a sample container or lid, even with gloved hands.
6. Never allow the inner surface of a sample container or lid to be contacted by any material other than the sample water.
7. Collect samples while facing upstream and so as not to disturb water or sediments in the outfall pipe or ditch.
8. Do not overfill sample containers, and do not dump out any liquid in them. Liquids are often added to sample containers intentionally by the analytical laboratory as a preservative or for pH adjustment.
9. Slowly lower the bottle into the water to avoid bottom disturbance and stirring up sediment.
10. Do not allow any object or material to fall into or contact the collected water sample.
11. Do not allow rainwater to drip from rain gear or other surfaces into sample containers.

12. Replace and tighten sample container lids immediately after sample collection.
13. Accurately label the sample with the time and location.
14. Document on the Wet Weather Outfall Inspection Survey that analytical samples were collected, specify parameters, and note the sample time on the Inspection Survey. This creates a reference point for samples.

Analytical Sample Quality Control and Assurance

Upon completion of successful sample collection, the samples must be sent or delivered to a NHDES-approved laboratory for analytical testing. Quality control and assurance are important to ensuring accurate analytical test results.

Sample preservation is required to prevent contaminate degradation between sampling and analysis and should be completed in accordance with 40 CFR 136.3.

Maximum acceptable holding times are also specified for each analytical method in 40 CFR 136.3. Holding time is defined as the period of time between sample collection and extraction for analysis of the sample at the laboratory. Holding time is important because prompt laboratory analysis allows the laboratory to review the data and if analytical problems are found, re-analyze the affected samples within the holding times.

Chain of custody forms are designed to provide sample submittal information and document transfers of sample custody. The forms are typically provided by the laboratory and must be completed by the field sampling personnel for each sample submitted to the lab for analysis. The document must be signed by both the person releasing the sample and the person receiving the sample every time the sample changes hands. The sampling personnel shall keep one copy of the form and send the remaining copies to the laboratory with the samples. Custody seals, which are dated, signed and affixed to the sample container, may be used if the samples are shipped in a cooler via courier or commercial overnight shipping.

Attachments

Dry Weather Outfall Inspection Survey

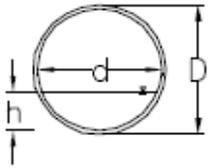
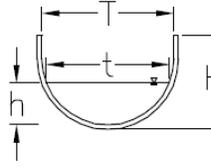
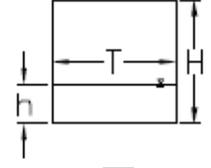
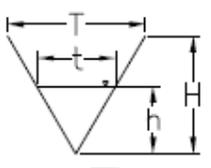
Related Standard Operating Procedures

1. SOP ID-2 Wet Weather Outfall Inspection
2. SOP ID-3 Water Quality Screening in the Field
3. SOP ID-4 Locating Illicit Discharges

Outfall ID: _____ **Town:** _____
Inspector: _____ **Date:** _____
Street Name _____
Last rainfall event _____

*Town of Pelham, New Hampshire
 Highway Department*

SOP ID-1: DRY WEATHER OUTFALL INSPECTION SURVEY

Type of Outfall (check one):		Pipe Outfall <input type="checkbox"/>	Open Swale Outfall <input type="checkbox"/>
Outfall Label:		Stencil <input type="checkbox"/>	Ground Inset <input type="checkbox"/> Sign <input type="checkbox"/> None <input type="checkbox"/> Other _____
Pipe Material:	Concrete <input type="checkbox"/> Corrugated metal <input type="checkbox"/> Clay Tile <input type="checkbox"/> Plastic <input type="checkbox"/> Other: _____ <input type="checkbox"/>	Pipe Condition:	Good <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Crumbling <input type="checkbox"/>
Swale Material:	Paved (asphalt) <input type="checkbox"/> Concrete <input type="checkbox"/> Earthen <input type="checkbox"/> Stone <input type="checkbox"/> Other: _____ <input type="checkbox"/>	Swale Condition:	Good <input type="checkbox"/> Poor <input type="checkbox"/> Fair <input type="checkbox"/> Crumbling <input type="checkbox"/>
Shape of Pipe/Swale (check one)			
 <input type="checkbox"/>	 <input type="checkbox"/>	 <input type="checkbox"/>	 <input type="checkbox"/>
Rounded Pipe/Swale		Rectangular Pipe/Swale	Triangular Swale
Pipe Measurements:		Swale Measurements:	Is there a headwall?
Inner Dia. (in): d= _____		Swale Width (in): T= _____	Yes <input type="checkbox"/> No <input type="checkbox"/>
Outer Dia. (in): D= _____		Flow Width (in): t = _____	Condition:
Pipe Width (in): T= _____		Swale Height (in): H= _____	Good <input type="checkbox"/> Poor <input type="checkbox"/>
Pipe Height (in): H= _____		Flow Height (in): h= _____*	Fair <input type="checkbox"/> Crumbling <input type="checkbox"/>
Flow Width (in): h= _____*		Bottom Width (in): b= _____	
Description of Flow: Heavy <input type="checkbox"/> Moderate <input type="checkbox"/> Trickleing <input type="checkbox"/> Dry <input type="checkbox"/>			
If the outlet is submerged check yes and indicate approximate height of water above the outlet invert. h above invert (in):			Circle All Materials Present:
Odor: Yes <input type="checkbox"/> No <input type="checkbox"/> Optical enhancers suspected? Yes <input type="checkbox"/> No <input type="checkbox"/> Has channelization occurred? Yes <input type="checkbox"/> No <input type="checkbox"/> Has scouring occurred below the outlet? Yes <input type="checkbox"/> No <input type="checkbox"/>			Rip rap Excessive sediment Foam Sanitary Waste Orange Staining
Required Maintenance: Tree Work Ditch Work Structural Corrosion N/A			Sheen: Bacterial Sheen: Petroleum Floatables Algae Excessive Vegetation
Remove Trash/Debris Blocked Pipe Erosion at Structure Other			
Comments:			

SOP ID-2: WET WEATHER OUTFALL INSPECTION

Introduction

Outfalls from an engineered storm drain system can be in the form of pipes or ditches. Under current regulations, it is important to inspect and document water quality from these outfalls under both dry weather and wet weather conditions. SOP ID-1, “*Dry Weather Outfall Inspection*”, covers the objectives of that type of inspection. This SOP discusses wet weather inspection objectives and how they differ from dry weather inspection objectives. The primary difference is that wet weather inspection aims to describe and evaluate the first flush of stormwater discharged from an outfall during a storm, representing the maximum pollutant load managed by receiving water.

Definition of Wet Weather

A storm is considered a representative wet weather event if greater than 0.1 inch of rain falls and occurs at least 72 hours after the previously measurable (greater than 0.1 inch of rainfall) storm event. In some watersheds, based on the amount of impervious surface present, increased discharge from an outfall may not result from 0.1 inch of rain. An understanding of how outfalls respond to different events will develop as the inspection process proceeds over several months, allowing the inspectors to refine an approach for inspections.

Ideally, the evaluation and any samples collected should occur within the first 30 minutes of discharge to reflect the first flush or maximum pollutant load.

Typical practice is to prepare for a wet weather inspection event when weather forecasts show a 40% chance of rain or greater. If the inspector intends to collect analytical samples, coordination with the laboratory for bottle ware and for sample drop-off needs to occur in advance.

Visual Condition Assessment

The attached *Wet Weather Outfall Inspection Survey* form should be used to document observations related to the quality of stormwater conveyed by the structure. Observations such as the following can indicate sources of pollution within the storm drain system:

- oil sheen;
- discoloration; and/or
- trash and debris.

For any visual observation of pollution in a stormwater outfall discharge, an investigation into the pollution source should occur, but the following are often true:

1. Foam: indicator of upstream vehicle washing activities, or an illicit discharge.
2. Oil sheen: result of a leak or spill.

3. Cloudiness: indicator of suspended solids such as dust, ash, powdered chemicals and ground up materials.
4. Color or odor: indicator of raw materials, chemicals, or sewage.
5. Excessive sediment: indicator of disturbed earth of other unpaved areas lacking adequate erosion control measures.
6. Sanitary waste and optical enhancers (fluorescent dyes added to laundry detergent): indicators of illicit discharge.
7. Orange staining: indicator of high mineral concentrations.

Many of these observations are indicators of an illicit discharge. Examples of illicit discharges include: cross-connections of sewer services to engineered storm drain systems; leaking septic systems; intentional discharge of pollutants to catch basins; combined sewer overflows; connected floor drains; and sump pumps connected to the system (under some circumstances). Additional guidelines for illicit discharge investigations are included in SOP ID-4, “*Locating Illicit Discharges*”.

Although many of the observations are indicators of illicit discharge it should be noted that several of these indicators may also occur naturally. Orange staining may be the result of naturally occurring iron, and thus unrelated to pollution. Foam can be formed when the physical characteristics of water are altered by the presence of organic materials. Foam is typically found in waters with high organic content such as bog lakes, streams that originate from bog lakes, productive lakes, wetlands, or woody areas. To determine the difference between natural foam and foam cause by pollution, consider the following:

1. Wind direction or turbulence: natural foam occurrences on the beach coincide with onshore winds. Often, foam can be found along a shoreline and/or on open waters during windy days. Natural occurrences in rivers can be found downstream of a turbulent site.
2. Proximity to a potential pollution source: some entities including the textile industry, paper production facilities, oil industries, and firefighting activities work with materials that cause foaming in water. If these materials are released to a water body in large quantities, they can cause foaming. Also, the presence of silt in water, such as from a construction site can cause foam.
3. Feeling: natural foam is typically persistent, light, not slimy to the touch.
4. Presence of decomposing plants or organic material in the water.

Both bacteria and petroleum can create a sheen on the water surface. The source of the sheen can be differentiated by disturbing it, such as with a pole. A sheen caused by oil will remain intact and move in a swirl pattern; a sheen caused by bacteria will separate and appear “blocky”. Bacterial or naturally occurring sheens are usually silver or relatively dull in color and will break up into a number of small patches of sheen. The cause may be presence of iron, decomposition of organic material or presence of certain bacteria. Bacterial sheen is not a pollutant but should be noted.

Optical enhancers, fluorescent dyes added to laundry detergent, are typically detected through the use of clean, white cotton pads placed within the discharge for several days, dried then viewed under a UV light. If the cotton pad displays fluorescent patches, optical enhancers are present. Optical enhancers are

occasionally visible as a bluish-purple haze on the water surface; however, the testing method should be used to confirm the presence of optical enhancers.

The *Wet Weather Outfall Inspection Survey* form includes fields where these and other specific observations can be noted. The inspector shall indicate the presence of a specific water quality indicator or parameter by marking “Yes”. If “Yes” is marked, provide additional details in the comments section. If the indicator in question is not present mark “No”.

Within the comments section, provide additional information with regard to recorded precipitation totals, or more detailed descriptions of observations made during the inspection and corrective actions taken.

Measuring Water Quality

Based on the results of the Visual Condition Assessment, it may be necessary to collect additional data about water quality. Water quality samples can be in the form of screening using field test kits or by discrete analytical samples processed by a laboratory.

Information on how to use field test kits is included in SOP ID-3, “*Water Quality Screening with Field Test Kits*”, and the *Wet Weather Outfall Inspection Survey* form includes fields to document the results of such screening. The *Inspection Survey* also provides values for what can be considered an appropriate benchmark for a variety of parameters that can be evaluated with field test kits.

If the results of screening using field test kits indicate that the outfall’s water quality exceeds the benchmarks provided, collection of discrete analytical samples should be considered.

Analytical Sample Collection

Sample collection methods may vary based on specific outfall limitations but shall follow test procedures outlined in 40 CFR 136. A discrete manual or grab sample can classify water at a distinct point in time. These samples are easily collected and used primarily when the water quality of the discharge is expected to be homogeneous, or unchanging, in nature. A flow-weighted composite sample will classify water quality over a measured period of time. These samples are used when the water quality of the discharge is expected to be heterogeneous, or fluctuating, in nature. Grab samples are more common for wet weather outfall inspections due to the time-sensitive nature of the process.

Protocols for collecting a grab sample shall include the following:

1. Do not eat, drink or smoke during sample collection and processing.
2. Do not collect or process samples near a running vehicle.
3. Do not park vehicles in the immediate sample collection area, including both running and non-running vehicles.
4. Always wear clean, powder-free nitrile gloves when handling sample containers and lids.
5. Never touch the inside surface of a sample container or lid, even with gloved hands.
6. Never allow the inner surface of a sample container or lid to be contacted by any material other than the sample water.

7. Collect samples while facing upstream and so as not to disturb water or sediments in the outfall pipe or ditch.
8. Do not overfill sample containers, and do not dump out any liquid in them. Liquids are often added to sample containers intentionally by the analytical laboratory as a preservative or for pH adjustment.
9. Slowly lower the bottle into the water to avoid bottom disturbance and stirring up sediment.
10. Do not allow any object or material to fall into or contact the collected water sample.
11. Do not allow rainwater to drip from rain gear or other surfaces into sample containers.
12. Replace and tighten sample container lids immediately after sample collection.
13. Accurately label the sample with the time and location.
14. Document on the Wet Weather Outfall Inspection Survey that analytical samples were collected, specify parameters, and note the sample time on the Inspection Survey. This creates a reference point for samples.

Analytical Sample Quality Control and Assurance

Upon completion of successful sample collection, the samples must be sent or delivered to a NHDES-approved laboratory for analytical testing. Quality control and assurance are important to ensuring accurate analytical test results.

Sample preservation is required to prevent contaminant degradation between sampling and analysis and should be completed in accordance with 40 CFR 136.3.

Maximum acceptable holding times are also specified for each analytical method in 40 CFR 136.3. Holding time is defined as the period of time between sample collection and extraction for analysis of the sample at the laboratory. Holding time is important because prompt laboratory analysis allows the laboratory to review the data and if analytical problems are found, re-analyze the affected samples within the holding times.

Chain of custody forms are designed to provide sample submittal information and document transfers of sample custody. The forms are typically provided by the laboratory and must be completed by the field sampling personnel for each sample submitted to the lab for analysis. The document must be signed by both the person releasing the sample and the person receiving the sample every time the sample changes hands. The sampling personnel shall keep one copy of the form and send the remaining copies to the laboratory with the samples. Custody seals, which are dated, signed and affixed to the sample container, may be used if the samples are shipped in a cooler via courier or commercial overnight shipping.

Attachments

Wet Weather Outfall Inspection Survey

Related Standard Operating Procedures

1. SOP ID-1 Dry Weather Outfall Inspection
2. SOP ID-3 Water Quality Screening in the Field
3. SOP ID-4 Locating Illicit Discharges

Outfall I.D.: _____ **Date:** _____
Inspector: _____
Time of Inspection: _____
Street Name _____
Last rainfall event _____

*Town of Pelham, NH
 Highway Department*

SOP ID-2: WET WEATHER OUTFALL INSPECTION SURVEY

Visual Inspection:	Yes	No	Comments (Include probable source of observed contamination):
Color	<input type="checkbox"/>	<input type="checkbox"/>	
Odor	<input type="checkbox"/>	<input type="checkbox"/>	
Turbidity	<input type="checkbox"/>	<input type="checkbox"/>	
Excessive Sediment	<input type="checkbox"/>	<input type="checkbox"/>	
Sanitary Waste	<input type="checkbox"/>	<input type="checkbox"/>	
Pet Waste	<input type="checkbox"/>	<input type="checkbox"/>	
Floatable Solids	<input type="checkbox"/>	<input type="checkbox"/>	
Oil Sheen	<input type="checkbox"/>	<input type="checkbox"/>	
Bacterial Sheen	<input type="checkbox"/>	<input type="checkbox"/>	
Foam	<input type="checkbox"/>	<input type="checkbox"/>	
Algae	<input type="checkbox"/>	<input type="checkbox"/>	
Orange Staining	<input type="checkbox"/>	<input type="checkbox"/>	
Excessive Vegetation	<input type="checkbox"/>	<input type="checkbox"/>	
Optical Enhancers	<input type="checkbox"/>	<input type="checkbox"/>	
Other _____			

Sample Parameters	Analytical Test Method	Benchmark*	Field Screening Result	Full Analytical?
Ammonia ¹	EPA 350.2/SM4500-NH3C	>50.0 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Specific Conductance ¹	SM 2510B	>2,000		<input type="checkbox"/> Yes <input type="checkbox"/> No
Detergents & Surfactants ²	EPA 425.1/SM5540C	> 0.25 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Fluoride ²	EPA 300.0	>0.25 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
pH ¹	EPA 150.1/SM 4500H	<5		<input type="checkbox"/> Yes <input type="checkbox"/> No
Potassium ¹	EPA 200.7	>20 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No

Comments:

¹ – *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, Center for Watershed Protection and Robert Pitt of University of Alabama, 2004, p. 134, Table 45.

² – *Appendix I – Field Measurements, Benchmarks and Instrumentation*, Draft Massachusetts North Coastal Small MS4 General Permit, 2009.

Appendix DE

Water Quality Analysis Sampling SOP
and Field Form

SOP ID-3: WATER QUALITY SCREENING IN THE FIELD

Introduction

Outfalls from an engineered storm drain system can be in the form of pipes or ditches. Under current regulations, it is important to inspect and document water quality within the MS4 system under both dry weather and wet weather conditions. SOP ID-1, “*Dry Weather Outfall Inspection*” and SOP ID-2, “*Wet Weather Outfall Inspection*”, cover the objectives of these activities and how water quality parameters can be collected during both types of inspections. SOP HW-1, “*Catch Basin Inspection and Cleaning*”, also describes how this operations and maintenance activity can serve as an additional opportunity to collect water quality data.

SOP ID-2 included detailed information on how to collect discrete analytical samples to be processed by a laboratory. In contrast, this SOP addresses screening-level measurements than can be collected at outfalls, catch basins, receiving waters, or other water bodies. The measurements can be collected with field test kits or with portable meters.

Water quality screening data collected in this manner can feed into an illicit discharge detection and elimination investigation, like the process described in SOP ID-4, “*Locating Illicit Discharges*”.

Visual Condition Assessment

SOPs ID-1, -2, and -3 describe a *Visual Condition Assessment* to collect observations related to the quality of stormwater conveyed by an engineered storm drain system. These observations may include such visual evidence and/or potential pollutants as:

- foaming (detergents);
- discoloration;
- evidence of sanitary waste;
- optical enhancers (fluorescent dyes added to laundry detergent); and
- turbidity.

If a *Visual Condition Assessment* indicates the presence of these pollutants, it may be necessary to quantify the extent of each and gather data on other parameters that cannot be visually observed but can be measured using field kits or meters. These parameters include:

- Ammonia;
- Chloride (present in treated drinking water but not groundwater);
- Conductivity;
- Fluoride;
- Hardness;
- pH; and
- Potassium.

Field Kits and Sampling Methods Available

In the 2017 MS4 Permit for New Hampshire, U.S. EPA Region 1 has identified several test kits that are acceptable for use in the field, and other regulatory agencies have also completed similar reviews. The following table shows field test kits and portable meters that can be used for screening parameters.

Table 1
Field Measurements, Test Kits, and Instrumentation

Analyte or Parameter	Instrumentation (Portable meter)	Field Test Kit
Ammonia	CHEMetrics™ V-2000 Colorimeter Hach™ DR/890 Colorimeter Hach™ Pocket Colorimeter™ II	CHEMetrics™ K-1410 CHEMetrics™ K-1510 (series) Hach™ NI-SA Hach™ Ammonia Test Strips
Bacteria	Bacteria field test kits require 24-hour window	
Boron	N/A	Hanna™ HI 38074 Taylor™ K-1541
Chloride	CHEMetrics™ V-2000 Colorimeter Hach™ Pocket Colorimeter™ II LaMotte™ DC1200 Colorimeter	CHEMetrics™ K-2002 through K-2070 Hach™ CDS-DT Hach™ Chloride QuanTab® Test Strips
Color		Hach™ ColorDisc
Conductivity	CHEMetrics™ I-1200	N/A
Detergents (Surfactants)	CHEMetrics™ I-2017	CHEMetrics™ K-9400 and K-9404 Hach™ DE-2
Fluoride	CHEMetrics™ V-2000 Colorimeter Hach™ Pocket Colorimeter™ II	N/A
Hardness	N/A	CHEMetrics™ K-1705 and K-1710 CHEMetrics™ K-4502 through K-4530 Hach™ HA-DT Hach™ Hardness Test Strips
Optical enhancers	Field tests still under development	
pH	CHEMetrics™ I-1000	Hach™ 17J through 17N Hach™ pH Test Strips
Potassium	Horiba™ Cardy C-131	LaMotte™ 3138 KIW
Turbidity	CHEMetrics™ I-1300	N/A

Each field test kit will include instructions specific to that test kit, and most kits are available in configurations that detect different ranges of the parameter. For example, the CHEMetrics™ detergents kit K-9400 shown above detects concentrations of 0 to 3 milligrams per liter (mg/L) while the K-9404 kit detects concentrations of 0 to 1,400 mg/L.

The table below shows values identified by the U.S. EPA and the Center for Watershed Protection as typical screening values for select parameters. These represent the typical concentration (or value) of each parameter expected to be found in stormwater. Screening values that exceed these benchmarks may be indicative of pollution and/or illicit discharges.

Table 2
Benchmark Field Measurements for Select Parameters

Analyte or Parameter	Benchmark
Ammonia	> 50.0 mg/L
Conductivity	> 2,000
Detergents (Surfactants)	> 0.25 mg/L
Fluoride	> 0.25 mg/L
pH	< 5
Potassium	> 20 mg/L

Whether using field test kits or portable meters, if and when water quality screening samples exceed these benchmark concentrations, the inspector should consider collecting analytical samples for laboratory analysis.

Advantages and Disadvantages of Field Testing

Field test kits can be convenient for use as a screening tool, initial purchase costs are low (typically \$0.50 to \$5.00 for the kits included in Table 1), and the costs are far less than full analyses at a laboratory. However, some disadvantages of this screening method include:

- limited shelf life;
- labor cost associated with inspector's time;
- generation of wastes, including glass vials and used reagent;
- steps and processes for each kit can vary widely, resulting in errors;
- trained staff are required in order to effectively utilize kits;
- not all kits are accepted by all regulatory agencies; and
- limited useful detection range.

Portable instrumentation such as the colorimeters shown in Table 1 have the benefit of providing accurate readings, measure to low detection limits, and can be purchased pre-programmed to measure concentrations of most parameters required. Disadvantages of portable instrumentation include:

- high initial purchase cost;
- requirement for ongoing calibration and maintenance;
- individual probes require periodic replacement;
- specific storage requirements to maintain calibration; and
- trained staff are required in order to effectively utilize meters.

Attachments

Water Quality Screening Form

Related Standard Operating Procedures

1. SOP ID-1 Dry Weather Outfall Inspection
2. SOP ID-2 Wet Weather Outfall Inspection
3. SOP ID-4 Locating Illicit Discharges
4. SOP HW-1 Catch Basin Cleaning and Inspection

SOP ID-3 WATER QUALITY SCREENING FORM

Outfall I.D.			
Outfall Location			
Inspector's Name			
Date of Inspection		Date of Last Inspection	
Start Time		End Time	
Type of Inspection:	Regular <input type="checkbox"/>	Pre-Storm Event <input type="checkbox"/>	During Storm Event <input type="checkbox"/> Post-Storm Event <input type="checkbox"/>
Most Recent Storm Event			

FIELD WATER QUALITY SCREENING RESULTS

Sample Parameter	Field Test Kit or Portable Instrument Meter	Benchmark	Field Screening Result	Full Analytical Required?
Ammonia ¹		> 50.0 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Boron ¹		> 0.35 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Chloride ²		230 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Color ¹		> 500 units		<input type="checkbox"/> Yes <input type="checkbox"/> No
Specific Conductance ¹		> 2,000 μ S/cm		<input type="checkbox"/> Yes <input type="checkbox"/> No
Detergents & Surfactants ³		> 0.25 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Fluoride ³		> 0.25 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Hardness ¹		< 10 mg/L or > 2,000 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
pH ¹		< 5		<input type="checkbox"/> Yes <input type="checkbox"/> No
Potassium ¹		> 20 mg/L		<input type="checkbox"/> Yes <input type="checkbox"/> No
Turbidity ¹		> 1,000 NTU		<input type="checkbox"/> Yes <input type="checkbox"/> No

¹ – *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, Center for Watershed Protection and Robert Pitt of University of Alabama, 2004, p. 134, Table 45.

² – *Env-Ws 1703.21 Water Quality Criteria for Toxic Substances*, State of New Hampshire Department Surface Water Quality Regulations.

³ – *Appendix I – Field Measurements, Benchmarks and Instrumentation*, Draft Massachusetts North Coastal Small MS4 General Permit, 2009.

FULL ANALYTICAL TESTING WATER QUALITY RESULTS

Sample Parameter	Analytical Test Method	Sample Collection (Time/Date)	Testing Lab	Analytical Testing Result
Ammonia	EPA 350.2/SM4500-NH3C			
Bacteria	E coli: 1103.1; 1603 Enterococcus: 1106.1; 1600			
Boron	EPA 212.3			
Chloride	EPA 9251			
Color	EPA 110.2			
Specific Conductance	SM 2510B			
Detergents & Surfactants	EPA 425.1/SM5540C			
Fluoride	EPA 300.0			
Hardness	EPA 130.1/SM 2340B			
Optical Enhancers	N/A*			
pH	EPA 150.1/SM 4500H			
Potassium	EPA 200.7			
Turbidity	SM 2130B			

*- There is presently no USEPA Standard Method for analysis of optical enhancers. Typically, sample pads are described as with "Present" or "Not Present" for fluorescing dye when exposed to UV light or a fluorometer.

Appendix DF

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

TABLE DF-1 Intermittent Illicit Discharges

Land Use	Likely Source Locations	Condition or Activity the Produces Discharge
Residential	Apartments Multi-family Single family detached	Driveway cleaning Dumping/spills (e.g., leaf litter and RV/boat holding tank effluent) Equipment/vehicle wash-downs Septic system maintenance Swimming pool discharges
Commercial	Airports Camps Car dealers/rental car companies Car washes Commercial laundry/dry cleaning Gas stations/auto repair shops Golf courses Nurseries and garden centers Oil change shops Restaurants	Building maintenance (power washing) Dumping/spills Landscaping/grounds care Outdoor fluid storage Parking lot maintenance (power washing) Vehicle fueling Vehicle maintenance/repair Vehicle washing Wash-down of greasy equipment and grease traps
Industrial	Auto recyclers Beverages and brewing Construction vehicle washouts Distribution centers Food processing Garbage truck washouts Metal plating operations Paper and wood products Petroleum storage and refining Printing	Industrial process water or rinse water Loading and un-loading area wash-downs Outdoor material storage
Municipal	Landfills Maintenance depots Municipal fleet storage areas Public works yards Streets and highways Schools	Building maintenance (power washing) Dumping/spills Landscaping/grounds care Outdoor fluid storage Parking lot maintenance (power washing) Road maintenance Emergency response Vehicle fueling Vehicle maintenance/repair Vehicle washing Aircraft deicing

SOP ID-4: LOCATING ILLICIT DISCHARGES

Introduction

An “illicit discharge” is any discharge to an engineered storm drain system that is not composed entirely of stormwater unless the discharge is defined as an allowable non-stormwater discharge under the 2017 New Hampshire MS4 Permit. Illicit discharges may enter the engineered storm drain system through direct or indirect connections, such as: cross-connections of sewer services to engineered storm drain systems; leaking septic systems; intentional discharge of pollutants to catch basins; sewer overflows; connected floor drains; and sump pumps connected to the system (under some circumstances). Illicit discharges can contribute high levels of pollutants, such as heavy metals, toxics, oil, grease, solvents, nutrients, and pathogens to receiving streams.

Illicit discharges can be located by several methods, including routine dry weather outfall inspections and catch basin inspections, which are described in detail in SOP ID-1, “*Dry Weather Outfall Inspection*” and SOP HW-1, “*Catch Basin Inspection and Cleaning*”, respectively, as well as from citizen reports.

This SOP has legal authority under the Article VIII-1 of the Pelham Zoning Ordinance, to prohibit the connection of non-stormwater discharges into the storm drain system. The authority or department for addressing illicit discharge reports is identified in the municipality’s legal authority.

Identifying Illicit Discharges

The following are often indicators of an illicit discharge from stormwater outfall:

1. Foam: indicator of upstream vehicle washing activities, or an illicit discharge.
2. Oil sheen: result of a leak or spill.
3. Cloudiness: indicator of suspended solids such as dust, ash, powdered chemicals and ground up materials.
4. Color or odor: indicator of raw materials, chemicals, or sewage.
5. Excessive sediment: indicator of disturbed earth of other unpaved areas lacking adequate erosion control measures.
6. Sanitary waste and optical enhancers (fluorescent dyes added to laundry detergent): indicator of the cross-connection of a sewer service.
7. Orange staining: indicator of high mineral concentrations.

Both bacteria and petroleum can create a sheen on the water surface. The source of the sheen can be differentiated by disturbing it, such as with a pole. A sheen caused by oil will remain intact and move in a swirl pattern; a sheen caused by bacteria will separate and appear “blocky”. Bacterial sheen is not a pollutant but should be noted.

Citizen Call in Reports

Reports by residents and other users of a water body can be effective tools in identifying the presence of illicit discharges. Many communities have set up phone hotlines for this purpose or have provided guidance to local police departments and dispatch centers to manage data reported in this manner. Municipal employees and the general public should receive education to help identify the signs of illicit discharges and should be informed how to report such incidents.

When a call is received about a suspected illicit discharge, the attached *IDDE Incident Tracking Sheet* shall be used to document appropriate information. Subsequent steps for taking action to trace, document, and eliminate the illicit discharge are described in the following sections.

Potential illicit discharges reported by citizens should be reviewed on an annual basis to locate patterns of illicit discharges, identify high-priority catchments, and evaluate the call-in inspection program.

Tracing Illicit Discharges

Whenever an illicit discharge is suspected, regardless of how it was identified, the attached *IDDE Incident Tracking Sheet* should be utilized. The *Incident Tracking Sheet* shall be provided to the appropriate authority (i.e., Planning Department, Board of Health, Highway Department, etc.), which shall promptly investigate the reported incident.

If the presence of an illicit discharge is confirmed by the authority, but its source is unidentified, additional procedures to determine the source of the illicit discharge should be completed.

1. Review and consider information collected when illicit discharge was initially identified, for example, the time of day and the weather conditions for the previous 72 hours. Also consider and review past reports or investigations of similar illicit discharges in the area.
2. Obtain storm drain mapping for the area of the reported illicit discharge. If possible, use a tracking system that can be linked to your system map, such as GIS.
3. Document current conditions at the location of the observed illicit discharge point, including odors, water appearance, estimated flow, presence of floatables, and other pertinent information. Photograph relevant evidence.
4. If there continues to be evidence of the illicit discharge, collect water quality data using the methods described in SOP ID-3, "*Water Quality Screening in the Field*". This may include using field test kits or instrumentation, or collecting analytical samples for full laboratory analysis.
5. Move upstream from the point of observation to identify the source of the discharge, using the system mapping to determine infrastructure, tributary pipes, and drainage areas that contribute. At each point, survey the general area and surrounding properties to identify potential sources of the illicit discharge. Document observations at each point on the *IDDE Incident Tracking Sheet* as well as with photographs.
6. Continue this process until the illicit discharge is no longer observed, which will define the boundaries of the likely source. For example if the illicit discharge is present in catch basin 137 but not the next upstream catch basin, 138, the source of the illicit discharge is between these two structures.

If the source of the illicit discharge could not be determined by this survey, consider using dye testing, smoke testing, or closed-circuit television inspection (CCTV) to locate the illicit discharge.

[Dye Testing](#)

Dye testing is used to confirm a suspected illicit connection to a storm drain system. Prior to testing, permission to access the site should be obtained. Dye is discharged into the suspected fixture, and nearby storm drain structures and sanitary sewer manholes observed for presence of the dye. Each fixture, such as sinks, toilets, and sump pumps, should be tested separately. A third-party contractor may be required to perform this testing activity.

[Smoke Testing](#)

Smoke testing is a useful method of locating the source of illicit discharges when there is no obvious potential source. Smoke testing is an appropriate tracing technique for short sections of pipe and for pipes with small diameters. Smoke added to the storm drain system will emerge in connected locations. A third-party contractor may be required to perform this testing activity.

[Closed Circuit Television Inspection \(CCTV\)](#)

Televised video inspection can be used to locate illicit connections. In CCTV, cameras are used to record the interior of the storm drain pipes. They can be manually pushed with a stiff cable or guided remotely on treads or wheels. A third-party contractor may be required to perform this testing activity.

If the source is located, follow steps for removing the illicit discharge. Document repairs, new connections, and other corrective actions required to accomplish this objective. If the source still cannot be located, add the pipe segment to a future inspection program.

This process is demonstrated visually on the last page of this SOP.

[Removing Illicit Discharges](#)

Proper removal of an illicit discharge will ensure it does not recur. Refer to Table 1 for examples of the notification process.

In any scenario, conduct a follow up inspection to confirm that the illicit discharge has been removed. Suspend access to the storm drain system if an “imminent and substantial danger” exists or if there is a threat of serious physical harm to humans or the environment.

[Attachments](#)

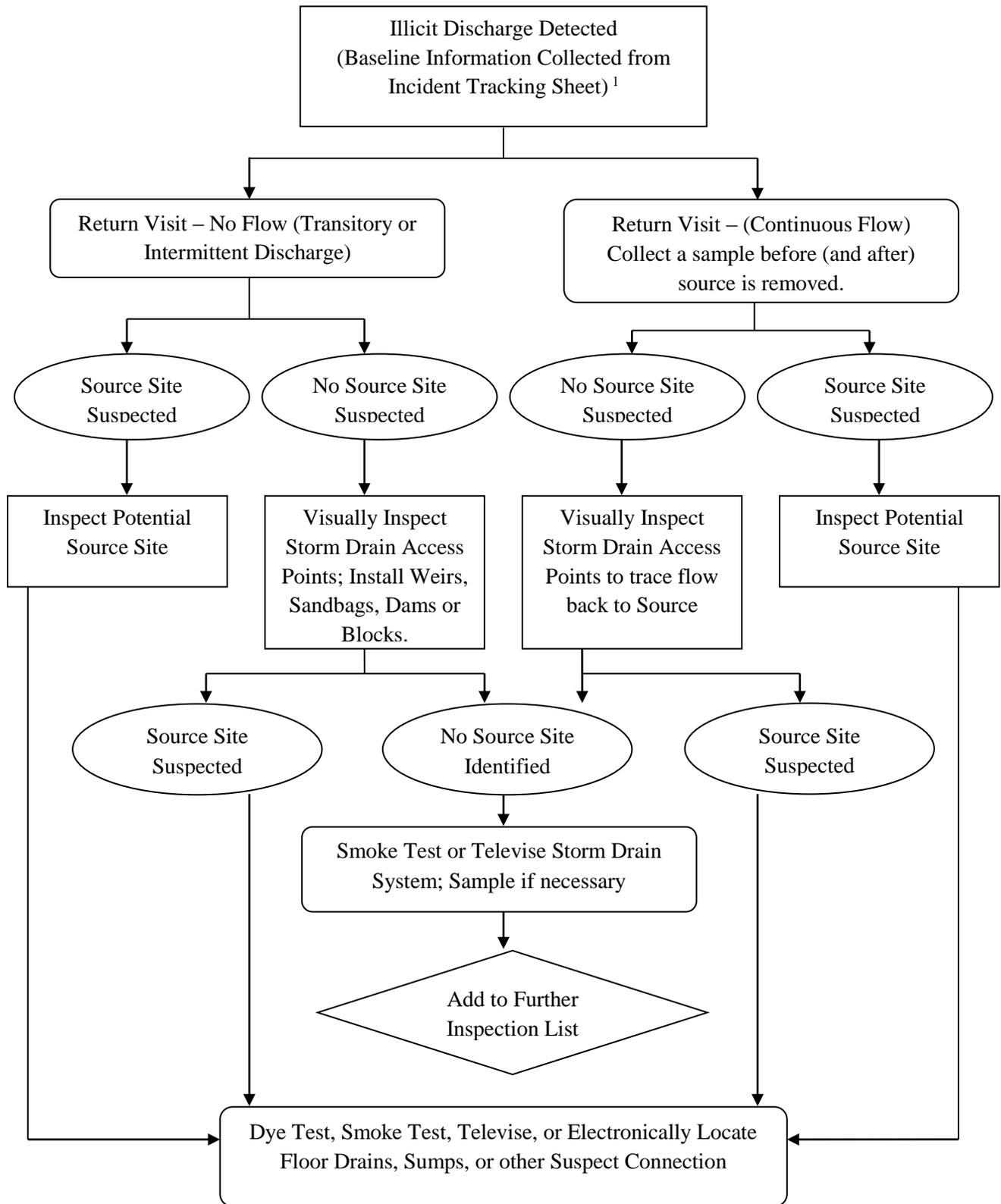
Illicit Discharge Incident Tracking Sheet

[Related Standard Operating Procedures](#)

1. SOP ID-1 Dry Weather Outfall Inspection
2. SOP ID-2 Wet Weather Outfall Inspection
3. SOP ID-3 Using Field Test Kits For Outfall Screening
4. SOP HW-1 Catch Basin Inspection

Table 1
Notification and Removal Procedures for Illicit Discharges
into the Municipal Separate Storm Sewer System

Financially Responsible	Source Identified	Enforcement Authority	Procedure to Follow
Private Property Owner	One-time illicit discharge (e.g. spill, dumping, etc.)	Ordinance enforcement authority (e.g. Code Enforcement Officer)	<ul style="list-style-type: none"> • Contact Owner • Issue Notice of Violation • Issue fine
Private Property Owner	Intermittent or continuous illicit discharge from legal connection	Ordinance enforcement authority (e.g. Code Enforcement Officer)	<ul style="list-style-type: none"> • Contact Owner • Issue Notice of Violation • Determine schedule for removal • Confirm removal
Private Property Owner	Intermittent or continuous illicit discharge from illegal connection or indirect (e.g. infiltration or failed septic)	Plumbing Inspector or ordinance enforcement authority	<ul style="list-style-type: none"> • Notify plumbing inspector
Municipal	Intermittent or continuous illicit discharge from illegal connection or indirect (e.g. failed sewer line)	Ordinance enforcement authority (e.g. Code Enforcement Officer)	<ul style="list-style-type: none"> • Issue work order • Schedule removal • Remove connection • Confirm removal
Exempt 3 rd Party	Any	USEPA	<ul style="list-style-type: none"> • Notify exempt third party and USEPA of illicit discharge



¹ – Guidelines and Standard Operating Procedures: Illicit Discharge Detection and Elimination and Pollution Prevention/Good Housekeeping for Stormwater Phase II Communities in New Hampshire, New Hampshire Estuary Project, 2006, p. 25, Figure 2-1.

SOP ID-4 Illicit Discharge Incident Tracking Sheet

Incident ID:			
Responder Information (for Citizen-Reported issues)			
Call Taken By:		Call Date:	
Call Time:		Precipitation (inches) in past 24-48 hours:	
Observer Information			
Date and Time of Observation:		Observed During Regular Maintenance or Inspections? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Caller Contact Information (optional) or Municipal Employee Information:			
Observation Location: (complete one or more below)			
Latitude and Longitude:			
Stream Address or Outfall #:			
Closest Street Address:			
Nearby Landmark:			
Primary Location Description		Secondary Location Description:	
<input type="checkbox"/> Stream Corridor (In or adjacent to stream)		<input type="checkbox"/> Outfall	<input type="checkbox"/> In-stream Flow <input type="checkbox"/> Along Banks
<input type="checkbox"/> Upland Area (Land not adjacent to stream)		<input type="checkbox"/> Near Storm Drain	<input type="checkbox"/> Near other water source (stormwater pond, wetland, ect.):
Narrative description of location:			
Upland Problem Indicator Description			
<input type="checkbox"/> Dumping	<input type="checkbox"/> Oil/Solvents/Chemicals	<input type="checkbox"/> Sewage	
<input type="checkbox"/> Detergent, suds, etc.	<input type="checkbox"/> Other: _____		
Stream Corridor Problem Indicator Description			
Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid/Sour <input type="checkbox"/> Petroleum (gas)
	<input type="checkbox"/> Sulfide (rotten eggs); natural gas	<input type="checkbox"/> Other: Describe in "Narrative" section	
Appearance	<input type="checkbox"/> "Normal"	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Cloudy <input type="checkbox"/> Foam
	<input type="checkbox"/> Optical enhancers	<input type="checkbox"/> Discolored	
	<input type="checkbox"/> Other: Describe in "Narrative" section		
Floatables	<input type="checkbox"/> None	<input type="checkbox"/> Sewage (toilet paper, etc)	<input type="checkbox"/> Algae <input type="checkbox"/> Trash or debris
	<input type="checkbox"/> Other: Describe in "Narrative" section		
Narrative description of problem indicators:			
Suspected Source (name, personal or vehicle description, license plate #, address, etc.):			

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.

<p>Procedures to follow if illicit discharge is detected:</p> <ul style="list-style-type: none"> □ 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 (<i>optional</i>):				
Incident Location (<i>complete one or more below</i>)				
Latitude and longitude: Or other coordinate system				
Stream address or outfall #:				
Closest street address:				
Nearby landmark:				
Primary Location Description		Secondary Location Description:		
<input type="checkbox"/> Stream corridor (<i>In or adjacent to stream</i>)		<input type="checkbox"/> Outfall	<input type="checkbox"/> In-stream flow	<input type="checkbox"/> Along banks
<input type="checkbox"/> Upland area (<i>Land not adjacent to stream</i>)		<input type="checkbox"/> Near storm drain	<input type="checkbox"/> Near other water source (storm water pond, wetland, etc.):	
Narrative description of location:				
Upland Problem Indicator Description				
<input type="checkbox"/> Dumping		<input type="checkbox"/> Oil/solvents/chemicals	<input type="checkbox"/> Sewage	
<input type="checkbox"/> Wash water, suds, etc.		<input type="checkbox"/> Other: _____		
Stream Corridor Problem Indicator Description				
Odor	<input type="checkbox"/> None	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rancid/Sour	<input type="checkbox"/> Petroleum (gas)
	<input type="checkbox"/> Sulfide (rotten eggs); natural gas	<input type="checkbox"/> Other: Describe in "Narrative" section		
Appearance	<input type="checkbox"/> "Normal"	<input type="checkbox"/> Oil sheen	<input type="checkbox"/> Cloudy	<input type="checkbox"/> Suds
	<input type="checkbox"/> Other: Describe in "Narrative" section			
Floatables	<input type="checkbox"/> None:	<input type="checkbox"/> Sewage (toilet paper, etc)	<input type="checkbox"/> Algae	<input type="checkbox"/> Dead fish
	<input type="checkbox"/> 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.5 IDDE: Septic System Inspections		
Purpose of SOP:	Failed septic systems can adversely impact water quality. This SOP provides a quick reference list to supervisors and field crews that are conducting an initial screening for failures in areas that are identified in the full IDDE program.	

Always:

- ◆ Refer potential septic system failures to the local Health Officer for enforcement.

Whenever Possible:

- ◆ Screen high risk areas (older areas or areas near lakes or impaired waterbodies).
- ◆ Look for indicators of failures, such as wet areas or disagreeable odors near the leach field.
- ◆ Document septic system inspections in a summary report for future reference.
- ◆ Refer troublesome enforcement actions to NHDES.

Never:

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

Related Guidance:	
	<ul style="list-style-type: none"> • NHDES Health Officer's Manual ENV-Ws 1000 Subdivision and Individual Sewage Disposal System Design rules

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.)

**TABLE 2-9:
NOTIFICATION AND REMOVAL PROCEDURES FOR ILLICIT DISCHARGES INTO THE MUNICIPAL SEPARATE
STORM SEWER SYSTEM**

Financially Responsible Party	Source Identified	Enforcement Authority	Procedure to Follow
Private Property Owner	One-time illicit discharge (e.g., spill, dumping, etc.)	Ordinance enforcement authority (e.g., Code Enforcement Officer)	<ul style="list-style-type: none"> • Contact Owner • Issue Notice of Violation • Issue fine
Private Property Owner	Intermittent or continuous illicit discharge from legal connection	Ordinance enforcement authority (e.g., Code Enforcement Officer)	<ul style="list-style-type: none"> • Contact Owner • Issue Notice of Violation • Determine schedule for removal • Confirm removal
Private Property Owner	Intermittent or continuous illicit discharge from illegal connection or indirect (e.g., infiltration or failed septic)	Plumbing Inspector	<ul style="list-style-type: none"> • Notify plumbing inspector
Municipal	Intermittent or continuous illicit discharge from illegal connection or indirect (e.g., failed sewer line)	Ordinance enforcement authority (e.g., Code Enforcement Officer)	<ul style="list-style-type: none"> • Issue work order • Schedule removal • Remove connection • Confirm removal
Exempt 3 rd Party <ul style="list-style-type: none"> • New Hampshire Department of Transportation (NHDOT) (in selected urbanized areas) • University of New Hampshire (UNH) (Durham) • Youth Development Center (Manchester) • Stafford County Complex (Dover) • Industrial Facilities with selected SIC codes 	Any	USEPA	<ul style="list-style-type: none"> • Notify exempt third party and USEPA of illicit discharge

Appendix DG

IDDEP Employee Training Record

