Stormwater Illicit Discharge Detection & Elimination (IDDE) Plan

FOR

Town of Danville, NH

VERSION 1.0 PREPARED: DECEMBER 2011
VERSION 2.0 PREPARED: DECEMBER 2013
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1.0 Introduction

Danville is one of several New Hampshire towns affected by the National Pollutant Discharge Elimination System (NPDES) Phase II rule, published as final on December 8, 1999. The rule requires regulated operators of municipal separate storm sewer systems (MS4s) to obtain a permit to discharge stormwater runoff from their MS4 and establishes conditions they must meet to reduce the impacts of stormwater discharges. One of these conditions requires regulated communities to develop an Illicit Discharge Detection and Elimination (IDDE) Program to investigate and eliminate illicit discharges to the MS4. Requirements for the program were outlined in the April 2003 NPDES General Permit for Storm Water Discharges from Small MS4s, which expired on April 30, 2008, but remains in effect until a revised permit is issued.

A new General Permit was not issued before the preparation of this plan, however, a draft permit was released in 2010 and this plan was developed in consideration of the draft. This plan should be reviewed and updated as necessary to meet the requirements of the new final permit when it is released.

1.1 Purpose

The purpose of this plan is to outline a program to detect and eliminate illicit discharges to the Danville Municipal Separate Storm Sewer System (MS4) and waterways to improve water quality and meet the Federal Phase II Stormwater requirements. A locus map is provided as **Figure 1** at the end of the report.

1.2 Illicit Discharges

An illicit discharge is defined as any non-stormwater discharge to the MS4 that is not composed entirely of stormwater. Common illicit discharges include overflow from failed septic tanks or cesspools, floor drains where regulated contaminants are stored, vehicle wash wastewater, laundry wastewater, and improper disposal of automobile and household products. These illicit discharges may contribute high levels of pollutants, including heavy metals, toxic chemicals, oil and grease, nutrients, viruses, and bacteria to water bodies.

Illicit discharges can enter the municipal system either through direct connections (pipes connected directly to the storm drain) or through indirect routes (through cracked pipes, leaking tanks, overland runoff or dumped by hand into storm drains). Municipal stormwater systems are not designed to accept, process, or discharge such illicit sources.

1.3 Exceptions

Non-stormwater illicit discharge exceptions are listed below, and should only be addressed if they are identified as significant sources of pollutants:

- Water line flushing;
- Landscape irrigation;
- Diverted stream flows;
- Rising groundwater;
- Uncontaminated groundwater infiltration;
- Uncontaminated pumped groundwater;
- Discharges from potable water sources;
- Foundation drains;
- Air conditioning condensation;
- Irrigation water;
- Springs;
- Water from crawl space pumps;
- Footing drains;
- Lawn watering;
- Individual residential car washing;
- Flows from riparian habitats and wetlands;
- De-chlorinated swimming pool water;
- Street wash water;
- Residential building wash waters without detergents; and
- Flows or discharges from fire fighting activities flows.

Based on field efforts performed by Comprehensive Environmental, Inc. (CEI), the above-referenced non-stormwater discharges are not expected to be significant contributors of pollutants to the MS4, and are not expected to cause or contribute to water quality standard exceedances.

1.4 Illicit Discharge Detection and Elimination Plan

The Phase II Stormwater rule requires regulated operators of MS4s to develop and implement an illicit discharge detection and elimination program, as outlined below.

The United States Environmental Protection Agency (EPA) recommends the following steps in developing this Illicit Discharge Detection and Elimination (IDDE) Plan:

1. Identify priority problem areas suspected of having illicit discharges;
2. Locate illicit discharge sources;
3. Remove/correct illicit connections; and
4. Document actions taken and evaluate impacts.

This plan addresses these four steps and includes the following components:

1. Assessment of Illicit Discharge Potential – Section 3.0
2. Prioritization of IDDE Activities – Section 3.0
3. Identification of Illicit Discharges – Section 4.0
4. Elimination of Illicit Discharges – Section 5.0

The data components of this report were developed based on information obtained by the Town of Danville and CEI.

1.5 Program Responsibility

The IDDE Program shall be the responsibility of the Board of Selectmen. The Highway Department shall be responsible for implementing stormwater components. The Health Department shall be responsible for implanting wastewater components. The Board of Selectmen and Planning Board shall be responsible for implementing and enforcing required ordinances.

Point of Contact for Illicit Discharges

Road Agent	*Bruce Caillouette, Road Agent*
Highway Department	*603-382-0703*

2.0 Mapping and Outfall Inventory

2.1 Mapping

As required under the 2003 Small MS4 General Permit, Danville performed system mapping of all outfalls during field efforts in 2007 and 2009. Field mapping in 2007 and 2008 focused on the regulated urbanized area (UA), while 2009 mapped the remaining known outfalls and culverts throughout the town. Since then, several additional structures have been mapped as they have been located or newly installed.

The majority of stormwater outfalls are located in the residential developed areas of Danville, which serve as key points for beginning illicit discharge detection and elimination activities. While the 2003 permit required only mapping of outfalls within the UA, Danville elected to also map additional conveyance system information, including:

- Outfalls outside the UA;
- Culverts;
- Catch basins;
- Manholes; and
- Pipe interconnectivity.

As outlined in the 2012 NH Small MS4 Draft General Permit (2012 Draft GP), the permittee must develop a revised and more detailed map that depicts the above information. As Danville has already mapped these structures, the Town is in compliance with this requirement. Note that Danville does not have any interconnections with other MS4s, municipally-owned stormwater BMPs, sanitary sewer or combined sewer.

Also as required by the 2012 Draft GP, towns must delineate catchment areas to each outfall based on topography and localized drainage characteristics for prioritization purposes. All catchments were delineated during 2013 and overlain on a revised drainage map showing topography, subwatersheds, regulated UA, community wells, and structure locations as shown on **Figure 2**.

2.2 Outfall Inventory

As outlined in Section 2.0, Danville has mapped and inventoried all known outfalls within Town limits. As part of the outfall inventory, the following information was recorded:

- Unique identifier;
- GPS location (latitude and longitude);
- Pipe diameter;
- Pipe material construction;
- Outlet structure protection;
- Connecting structures;

- Surrounding land use and slope;
- Receiving waterbody; and
- Most recent inspection results.

Drainage outfalls were identified with a unique ID to provide a consistent identification method for tracking future observations. Additionally, outfalls not previously mapped can be added according to the existing list of outfalls using the same labeling method. The location of each outfall was recorded with GPS equipment to record latitude and longitude for future location and follow-up.

Outfall pipe characteristics, include pipe diameter, material construction (concrete, steel, etc.), and outlet structure protection (headwall, riprap, none, etc.) was also recorded. Finally, outfall interconnections to nearby catch basins and manholes were also recorded for mapping purposes.

The surrounding subwatershed/catchment area was then assessed for the dominant land use, typically residential, and nearby slope. Mapping was then used to determine the receiving waterbody and associated watershed within Danville.

Finally, the outfall inventory documented the most recent inspection results as follows:

- Inspection date;
- Pipe condition (good, cracked, corroded, etc.);
- End-of-pipe deposits (sediment, brush, etc.);
- Depth of sediment, if applicable;
- Surrounding impacts to vegetation;
- Evidence of erosion;
- Maintenance needed or recommended; and
- Any additional comments or notes.

Mapping and outfall inventory results are provided in **Table 1** at the end of this report.

3.0 Catchment Assessment and Priority Ranking

3.1 Catchment Classification

As required under the 2012 Draft GP, towns must assess and priority rank catchments in terms of their potential to have illicit discharges and public health significance to better focus IDDE efforts. Catchments must be classified into the following:

- ***Excluded Catchments*** – Catchments with no potential for illicit discharges, generally limited to roadway drainage in undeveloped areas or areas limited to parks and greenspace;

- ***Problem Catchments*** – Catchments with known or suspected contributions of illicit discharges based on existing information;

- ***High Priority Catchments*** – Catchments that have not been classified as Problem Catchments 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 TMDL waters, or determined to be High Priority based on field investigations; or

- ***Low Priority Catchments*** – Catchments determined to be Low Priority based on field investigations.

Based on the above categories, all catchments were classified as outlined in the following sections.

Not Regulated, Excluded, and Problem Catchments
A total of 19 catchments are located outside of the Town's regulated UA, and thus are not covered under the Phase II program. 1 catchment was classified as excluded, as it is located away from any developed area. 0 catchments were classified as problem, as there are no areas with known or suspected illicit discharge contributions.

High Priority Catchments
0 catchments were classified as high priority. General catchment findings within the Town are described as follows:

- ***Beaches*** – No beaches exist within Danville, thereby eliminating the potential discharge threat;

- ***Recreational Areas*** – No outfalls were found to discharge directly to a recreational area, thereby eliminating this potential screening factor;

- ***Drinking Water Supplies*** – There are no surface waterbodies used for public drinking water supplies. Although there are several public drinking water supplies, all are subsurface wells less affected by stormwater than surface water-based counterparts.

- ***Shellfish Beds*** – No shellfish beds exist within the Town, thereby eliminating this potential screening factor; and

- ***TMDL Waters*** – There are no town-specific TMDLs that have been prepared for Danville waterbodies to date.

Low Priority Catchments
All remaining regulated catchments have been classified as Low Priority, for a total of 64. Catchments within this category require further prioritization as outlined in the following sections.

3.2 Catchment Prioritization within Each Category

Background and Applicability
Per the 2012 Draft GP, catchments shall be priority ranked within each category based on at least the following:

- Past discharge complaints and reports;
- Poor dry weather receiving water quality;
- Density of generating sites and septic systems;
- Age of surrounding development and infrastructure;
- Current or historic presence of sanitary and/or combined sewer; and
- Culverted streams.

To date, the Town has not received any founded complaints or reports of an illicit discharge. Any complaints received by the Health Department and/or Highway Department are promptly investigated, however have not shown any evidence of an illicit discharge.

Outfall investigations performed in 2007, 2008 and 2009 were screened for the presence of dry weather flows. Any flow encountered was sampled and analyzed for water quality indicators such as bacteria, ammonia, pH, and conductivity (see Section 4.7). To date, no evidence of illicit discharges has been encountered, and dry weather flows appear to be due to natural sources (i.e., wetland or groundwater).

Danville has been developed with a relatively uniform (low) density typical of a rural New Hampshire town. Most development is low density residential with private septic systems. With the exception of several relatively new subdivisions, development has occurred slowly but steadily over the past approximately 300 years, generally originating along Route 111 and branching outward. Although

typical of many towns, Danville does not have a centralized older historic area with small plots of land. As such, the Town has a relatively uniform density of both new and old structures, and new and old septic systems.

Finally, the Town does not have any current or historic sanitary sewer lines, combined sewer lines, or culverted streams.

Excluded, Problem, and High Priority Catchment Prioritization
Excluded Catchments, Problem Catchments, and High Priority catchments contain 1, 0, and 0 catchments, respectively and therefore do not require prioritization within each category. However, Low Priority catchments must be prioritized further as explained below.

Low Priority Catchment Prioritization
Based on the factors outlined previously as required under the 2012 Draft GP, no further useful prioritization within the Low Priority Catchment category would be possible. Therefore, Danville has prioritized Low Priority Catchments based on the following:

- Tier 1 – Catchments that discharge to an impaired waterbody;
- Tier 2 – Catchments that discharge within 250 feet of a surface waterbody;
- Tier 3 – Catchments that discharge within 400 feet of a public water supply well; or
- Tier 4 – Catchments that do not meet any of the above.

Additional information about each ranking criteria is provided below.

Water Quality
The NHDES Section 303(d) List of Threatened or Impaired Waters are priority waters identified by the state as being impaired and unable to meet water quality criteria. The Final 2012 Section 303(d) Surface Water Quality List specifies two waterbodies classified as a Category 5, meaning waters in need of a Total Maximum Daily Load (TMDL). Bartlett Brook is listed as impaired for pH and Dissolved Oxygen while Cub Pond is listed as impaired for pH. Both Bartlett Brook and Cub Pond are classified as low priority for TMDL development, with TMDLs scheduled for 2021 and 2023, respectively.

As outlined previously, no town-specific TMDLs have been prepared for Danville waterbodies to date; however, two regional TMDLs have been prepared as shown in **Table 2**. These TMDLs do not specifically address waters in Danville and, in general, develop regional recommendations for pollutant sources that contribute to atmospheric deposition.

Table 2 – TMDLs for Danville Waters

Name	Prepared In	Prepared By	Cause
TMDL for Acid Impaired Ponds	2007	ENSR[1], NHDES and EPA	atmospheric deposition of nitrogen oxides and sulfur dioxide
Northeast Regional Mercury TMDL	2007	NEIWPCC[2] and EPA	atmospheric deposition of mercury

1. ENSR is now part of AECOM
2. New England Interstate Water Pollution Control Commission

The primary source of acidity to these lakes is from atmospheric deposition. Acid deposition occurs when emissions of sulfur dioxide or nitrogen oxides react in the atmosphere with water, oxygen and oxidants to form acidic compounds. The ultimate source is air emissions, primarily from fossil fuel burning power plants and motor vehicles. While these emissions can originate locally, the mid-western region of the United States emits the greatest amount of sulfur and nitrogen oxides of any region in the nation. To address the primary components of acid deposition –sulfur dioxide and nitrogen oxide air pollution emissions NHDES has implemented various emission reduction programs and participated in regional and national efforts. Danville does not have heavy industry that is expected to substantially contribute to acidic atmospheric deposition.

The Northeast Regional Mercury TMDL is a plan to reduce mercury concentrations in fish so that water quality standards can be met. Mercury poses risks to human health when humans consume fish that contain elevated levels of mercury. The majority of mercury in the environment is released to waterbodies through atmospheric deposition. Though some mercury is due to natural sources, approximately 75 percent of mercury deposited in the region is due to man-made sources such as coal power plants, incinerators, and other sources of combustion. Recommendations for reducing mercury concentrations in fish generally require achieving larger reductions of combustion sources, particularly on coal-fired power plants in the western United States. In-region reductions include reducing emissions for other combustion sources. Danville does not have any large sources such as power plants, waste combusters, sewage incinerators, etc. However, Danville does host two yearly household hazardous waste events where residents may safely dispose of mercury-containing items in order to reduce potential releases to the environment.

Resource Waters

There are several resource waters throughout Danville that the Town values for habitat preservation, active and passive recreational uses, and education purposes. Nearly 5% of the town is comprised of surface water or wetland areas. The primary resource waters include the Exeter River to the north, Powwow River through the central section of Town, Colby Brook, which includes Little Cub Pond, Diamond Pond and a portion of Cub Pond in the south/central area, Bartlett

Brook to the south and Long Pond along the eastern town boundary. Stormwater outfalls discharging in close proximity to these waters are more likely to adversely affect water quality than outfalls located further away.

Public Drinking Water Supply

Community water supplies in the Town of Danville were identified as a priority for protection due to public health concerns. Wellhead protection is ranked the highest priority due to the importance of maintaining a clean water supply for community wells. Community wells in Danville include water supplies for small residential developments, mobile home parks, senior housing, day care, public school and commercial buildings.

A list of the Town's existing registered community wells were obtained from New Hampshire Department of Environmental Services (NHDES) as shown in **Table 3** and on Figure 2.

Table 3 – Registered Community Wells

Name	Address	Type	Population
Cotton Farms MHP	Cotton Farm Road	Community	400
Iron Wheel MHP	Back Road	Community	107
Danville Four Seasons RV Park	112 Long Pond Road	Community	200
Colby Pond	Hersey Road	Community	399
Danville Elementary School	23 School Street	Non-Transient, Non-Community	417
Mayos Market	183 Main Street	Transient, Non-Community	75
Spruce Valley MHP	Spruce Road	Community	92
Tiny Treasures Day Care	13 Cote Drive	Non-Transient, Non-Community	74

3.3 Catchment Classification and Prioritization Summary

As required under the 2012 Draft GP, catchments were evaluated for consideration as Excluded Catchments, Problem Catchments, High Priority, and Low Priority. Upon further assessment, Danville did not have any Problem Catchments or High Priority Catchments, and only 1 Excluded Catchment. A total of 19 catchments are not regulated, as they are located outside the Town's UA. All remaining catchments were classified as Low Priority and were prioritized accordingly. **Table 4** provides a prioritization summary of all catchment types found within Danville.

Table 4 – Catchment Classification and Prioritization Summary

Catchment Type:	Prioritization Discharge				Total
	Directly to Impaired Waterbody	Within 250' of a Waterbody	Within 400' of a PWS	No Prior-itization Measure	
Excluded Catchment	-	1	-	-	1
Problem Catchment	-	-	-	-	0
High Priority	-	-	-	-	0
Low Priority	6	31	3	24	64[3]
Tier 1	6	3[1]	-	-	6
Tier 2	-	31	3[2]	-	31
Tier 3	-	-	3	-	3
Tier 4	-	-	-	24	24
Not Regulated	-	8	-	11	19
TOTAL	6	43	6	35	84

1. Three catchments that are located within 250' of a surface waterbody also discharge directly to an impaired waterbody, and thus are double counted.
2. Three catchments that discharge within 400' of a public water supply are also located within 250' of a surface waterbody, and thus are double counted.
3. There are a total of 64 Low Priority catchments, with each prioritization tier counted separately below.

Figure 2 shows all catchments along with a schematic of the existing drainage system and outfalls. Table 1 attached at the end of this report provides an initial illicit discharge potential assessment and priority ranking based on available information. Danville will continually update this assessment and ranking annually based on new relevant information.

It is important to note that IDDE activities may not always follow the prioritization scheme due to other factors such as new water quality information or a complaint related to a potential illicit discharge. These issues should be addressed first, regardless of prioritization.

4.0 Identification of Illicit Discharges

This section provides the procedures for the identification of non-stormwater discharges entering the storm drain system in Danville. These procedures should be implemented beginning with the High Priority catchments and progress through Moderate Priority to Low Priority catchment areas.

4.1 Visual Field Inspection

The first step for detecting non-stormwater connections in MS4s is to physically observe all discharge points in the field during periods of dry weather.

Inspection Conditions
Visual inspections for illicit discharges must occur during dry weather conditions. Dry weather conditions are defined as a minimum of 24 consecutive hours with less than 0.10 inches of rainfall, however 72 hours is recommended. MS4s are designed to only carry stormwater runoff; therefore if a flow exists at a discharge point during the dry weather inspections, it is identified as a potential illicit discharge. Stormwater discharges to culverted streams that cannot be easily accessed (i.e., underground discharge locations) should be inspected at the nearest upstream location (e.g., manhole). It may be possible for inspection to take place inside the culverted stream depending on the size of pipes and the inspection crew's safety qualifications for work in confined spaces.

Considerations
Dry weather flow can be continuous or intermittent. Therefore, it is important to accurately document outfall conditions and evaluate whether future inspections are needed based on known water quality problems or impaired water bodies. In cases where there is physical evidence of an intermittent flow or illicit discharge, follow-up inspections should be performed to identify the dry weather flow. Intermittent flows also present an opportunity to involve the public with outfall observations. Volunteer watchers in local areas can inspect outfalls on a more frequent basis and alert the appropriate department when flow is present.

Observations and Interpretation
During inspection of an outfall for the presence of dry weather flow, physical characteristics such as odor, color, sheen, floatables, turbidity, the condition of the outfalls, and surrounding land uses and activities will be observed for further identification and confirmation of illicit discharges. **Table 5** provides some possible sources of illicit discharges based on physical parameters collected during field observations. If an outfall is inaccessible or submerged, personnel should inspect the nearest accessible upstream catch basin or manhole. A sample field inspection log is provided in **Appendix A** to assist in maintaining consistent and detailed records of inspections.

It is possible that some illicit discharges may only occur in wet weather, such as an overflow event from a septic tank. It is sometimes possible to detect these

illicit discharges at the stormwater outfall, as evident from unusual debris (e.g. toilet paper), stressed vegetation, sheen, etc.

Table 5 – Interpretation of Physical Observation Parameters[1]

Parameter	Observations	What Could it Mean?
Odor	Sewage	Stale sanitary wastewater, especially in pools near outfall.
	Sulfur (rotten eggs)	Industries that discharge sulfide compounds or organics (meat packers, canneries, dairies, etc.). Also could be petroleum related "high – sulfur" fuels.
	Rancid-sour	Food preparation facilities (restaurants, hotels, etc.)
	Oil and gas	Petroleum refineries or many facilities associated with vehicle maintenance or petroleum product storage.
Color	Yellow	Chemical plants, textile and tanning plants.
	Brown	Meat packers, printing plants, metal works, stone and concrete, fertilizers, and petroleum refining facilities.
	Green	Chemical plants, textile facilities.
	Red	Meat packers, metal works.
	Gray	Dairies, sewage.
Turbidity	Cloudy	Sanitary wastewater, concrete or stone operations, fertilizer facilities, automotive dealers.
	Opaque	Food processors, lumber mills, metal operations, pigment plants.
Floatable Matter	Oil sheen, grease	Petroleum refineries or storage facilities and vehicle service facilities, restaurants.
	Sewage	Sanitary wastewater.
Deposits and Stains	Sediment	Construction site erosion.
	Oily	Sanitary wastewater.
Vegetation	Excessive growth	Food product facilities, fertilizers, farming agricultural use.
	Inhibited growth, stressed vegetation	High stormwater flows, beverage facilities, printing plants, metal product facilities, drug manufacturing, petroleum facilities, vehicle service facilities and automobile dealers.
Damage to Outfall Structures	Concrete cracking or spalling	Industrial flows, chemicals.
	Peeling paint	
	Metal corrosion	
Source: Pitt, R. University of Alabama at Birmingham. May 1-3, 2001. IDDE Presentation at the EPA National Stormwater Coordinator's Meeting, Orlando, FL.		

1. Note that many of these sources may not apply to Danville, however are shown for reference.

4.2 Dry Weather Sampling

Although visual inspection will indicate the presence of dry weather flow, sampling and testing is needed to confirm whether these flows are illicit discharges that need further investigation. Some dry weather flows may be attributed to groundwater infiltration or other allowable non-stormwater discharges as outlined in Section 1.2, which could be confirmed through sampling. These tests can help identify contributing pollutants and the extent of water quality impairment at the outfalls. Key chemical parameters that are helpful in identifying the sources of non-stormwater discharges are shown in **Table 6**.

Table 6 – Field Survey Parameters and Non-Stormwater Flow Sources[1]

Parameter[2]	Natural Water	Potable Water	Sanitary Sewage	Septage Water	Industrial Water	Wash Water	Rinse Water	Irrigation Water
Fluoride	-	+	+	+	+/-	+	+	+
Hardness change	-	+/-	+	+	+/-	+	+	-
Surfactants	-	-	+	-	-	+	+	-
Fluorescence	-	-	+	+	-	+	+	-
Potassium	-	-	+	+	-	-	-	-
Ammonia	-	-	+	+	-	-	-	+/-
Odor	-	-	+	+	+	+/-	-	-
Color	-	-	-	-	+	-	-	-
Clarity	-	-	+	+	+	+	+/-	-
Conductivity	-	-	+	+	+	+/-	+	+
Temperature change	-	-	+/-	-	+	+/-	+/-	-
pH	-	-	-	-	+	-	-	-

Source: Pitt, R. University of Alabama at Birmingham. (May 1-3, 2001). IDDE Presentation at the EPA National Stormwater Coordinator's Meeting, Orlando, FL.

1. Note that many of these sources may not apply to Danville, however are shown for reference.
2. A minus (-) indicates that the parameter has a low value or low potential association with the flow source. A plus (+) indicates a high value or likely associated with the flow source. When both symbols are present (-/+) the parameter may be high or low depending on background readings.

EPA requires sampling fresh water at a minimum for ammonia, chlorine, conductivity, salinity, E.coli, surfactants, and temperature under the 2012 Draft GP. Additional water quality parameters such as dissolved oxygen (DO), pH, and turbidity may also be sampled to obtain additional representative data. Additional parameters may be used at the Town's discretion such as Volatile Organic Compound (VOC) analysis if non-stormwater discharges have a solvent odor or oil and grease analysis if oil or oil sheen are present The presence of any of these compounds in non-stormwater discharges indicates an illicit discharge that needs to be investigated.

It is important to identify threshold concentrations or limits for key parameters to detect illicit connections. Standards and water quality criteria are developed by state and federal agencies for the acceptable limits based on the scientific understanding of the risk to human and ecological health. Acceptable limits of identified key parameters were developed through review of the New Hampshire water quality standards and EPA's water quality criteria. A list of reference concentrations for Danville's non-stormwater discharges is provided in **Table 7**.

Table 7 – Reference Concentrations for Non-Stormwater Discharges

Sampling Parameters	Reference Concentration for Danville	
	Class A Waters	Class B Waters
Ammonia[1]	>0.50 mg/L	
Chloride[2]	Acute Standard: 860 mg/L Chronic Standard: 230 mg/L	
Dissolved Oxygen[3]	>6 mg/L	>5 mg/L
E. coli[4]	<153 colonies/100mL in a single sample	<406 colonies/100mL in a single sample
Fluoride[5]	4 mg/L	
pH[3]	As naturally occurs	Between 6.5 to 8.0 unless due to natural causes
Potassium[5]	35 mg/L	
Specific Conductivity[2]	Background Levels Normal: 0-100 µS/cm	
Surfactants[1]	>0.25 mg/L	
Temperature[3]	No numeric standard; as naturally occurs.	
TKN	No numeric standard; as naturally occurs[3] Average: 0.26 – 0.40 mg/L[2]	No numeric standard; as naturally occurring, shall contain no nitrogen in such concentrations that would impair any existing or designated uses[3] Average: 0.26 – 0.40 mg/L[2]
Total Phosphorus[6]	0.40 mg/L	
Turbidity[3]	No turbidity unless naturally occurring	Shall not exceed naturally occurring conditions by more than 10 NTU

1. 2012 NH Small MS4 Draft General Permit
2. NHDES Volunteer River Assessment Program
3. Env-Wq1700, NHDES Surface Water Quality Regulations
4. NH RSA 485-A:8, Water Pollution and Waste Disposal
5. Env-Or 600, NHDES Ambient Groundwater Quality Standards
6. 2008 Draft EPA NPDES MS4 Phase II Permit for New Hampshire

These concentrations should be used as a guideline for detecting illicit discharges when field screening dry weather flows or evaluating laboratory data for samples

that were collected. Background concentrations should also be considered. Once several outfalls have been sampled, background levels will become more evident with a range of common values. Results greater than the acceptable concentrations should flag a site for investigation; however, results that fall below these concentrations should not be ignored.

As outlined in the 2012 Draft GP, ammonia greater than or equal to 0.50 mg/L, surfactants greater than or equal to 0.25 mg/L, and either bacterial levels greater than applicable water quality criteria or detectable levels of chlorine shall be considered highly likely to contain illicit discharges. As such, these catchments shall be ranked at the top of High Priority Catchments category for investigation.

As data is collected for dry weather flows throughout town, the results that fall below the acceptable concentrations may be useful for gauging background water quality. The background concentrations can be used to evaluate sites for investigation based on the data statistics (e.g., range, average). For example, if dissolved oxygen results for dry weather flows throughout town show an average of 6.5 mg/L; sites that fall below 5.0 mg/L may warrant further investigation because the results are lower than the background level. This method of data evaluation may reveal potential sources of illicit discharges that may not be large contributors of pollution but create an opportunity to improve water quality if removed.

NPDES Permitted Facilities
Illicit discharge detection efforts in industrial areas of Danville should always consider existing dry weather flows that have a NPDES Permit to discharge. These facilities are required to meet numeric effluent standards in accordance with the NPDES provisions and the Clean Water Act. Therefore, these flows do not require additional evaluation under the Danville Illicit Discharge Detection and Elimination Plan unless it appears there is a large pollution problem.

As of December 2013, the EPA does not currently have any facilities listed with the NPDES program; however, the EPA website should be periodically checked if an industrial facility is constructed within the Town:

- http://www.epa.gov/enviro/facts/pcs/search.html

4.3 Wet Weather Sampling

Wet weather screening and sampling may be needed for some outfalls where vulnerability factors are identified as discussed under Section 4.4. In these cases, wet weather screening and sampling shall proceed during or after a storm event of sufficient depth or intensity to produce a stormwater discharge but only during the spring (March to June) when groundwater levels are relatively high. The purpose of wet weather screening and sampling is to identify illicit discharges that may activate or become evident during wet weather, therefore should be sampled under conditions where storm event intensities are likely to trigger a septic system failure (e.g., heavy rains or rains of long duration rather than first flush). Samples should be analyzed for the same parameters outlined in Section 4.2 for dry

weather sampling.

4.4 Catchment Investigation Procedures

In addition to the outfall screening, EPA is expected to require investigation of all catchments to determine the potential for illicit connections. The following procedures shall be followed for catchment investigations and updated as necessary based on the requirements in the final Massachusetts MS4 permit (note that Danville does not have, and has never had, a sanitary sewer system):

1) Review Mapping and Historic Plans and Records – Review relevant mapping and historic plans and records to the extent available, including but not limited to plans related to the construction of the storm drains in the catchment, prior work performed on the storm drain system, board of health or other municipal data on septic system failures or required upgrades, and complaint records related to septic system breakouts. This review shall be used to identify areas within the catchment with higher potential for illicit connections and System Vulnerability Factors that indicate a risk of septic system inputs to the MS4 under wet weather conditions. Identify and record the presence of any of the following specific System Vulnerability Factors:
    - Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance);
    - History of multiple Board of Health actions addressing widespread septic system failures (indicative of inadequate soils, water table separation, or other physical constraints of the area rather than poor owner maintenance).

Include the results of this evaluation with this IDDE Plan. Where System Vulnerability Factors area present, the catchment shall inspect and sample the catchment area under wet weather conditions as outlined in Section 4.3.

2) Identify and Inspect Key Junction Manholes – Identify key junction manholes for dry and wet (where System Vulnerability Factors are present) weather inspection. A key junction manhole is one that can represent one or more junction manholes in evaluating the presence of potential illicit connections. Thus, a manhole can be excluded from investigation if the same information can be gathered through investigation of other nearby key junction manholes.

3) Isolation and Source Verification – Where manhole investigations or other physical evidence or screening has identified the potential presence of illicit discharges, more detailed investigations must be performed. Follow the procedures outlined in Section 4.5 for source investigation.

4.5 Source Investigation

Once an illicit discharge is identified at an outfall, further investigation is necessary to identify the specific point where the illicit discharge comes from (source). The objective of a source investigation is to trace the path of an illicit discharge from the outfall or manhole to the upstream source.

It is important to first identify the drainage network and catchment area contributing to an outfall before evaluating the source of an illicit discharge. The sampling results may give an indication of a possible source and help narrow the search. The procedures used for source investigation will vary depending on field conditions; however, typical procedures should at least begin with historic record evaluations and field surveys before progressing through additional tests or procedures, as outlined below:

- **Field Reviews** – surveying the drainage system and land area that contributes to an outfall is the first and perhaps the quickest and easiest method for identifying the sources of illicit discharges. It is important for field crews to remember to observe the land use and activities surrounding the outfall and the upgradient drainage system to determine if there are any obvious sources that could be causing the illicit discharge. Tracing the drainage system by inspecting manholes and connecting drainage pipes can often lead to the source. A quick survey of nearby land uses and activities may reveal the source immediately (for example a nearby car washing event). Also, field crews can simply follow the non-stormwater discharge if it is flowing. However, some cases may require additional methods, as discussed below, if a flow cannot be traced due to blind connections or complicated drainage networks.

- **Dye Tracer Testing** – fluorometric dye can be used to trace flows from unknown pipes to identify illicit connections to the drainage system. Once the dye has been introduced into a drain (e.g., building floor drain) or other suspect pipe to the drainage system, the water in the collection system is monitored for the dye to determine whether an illicit connection is present. It is important to use a fluorometric dye that is non-toxic to humans and aquatic life.

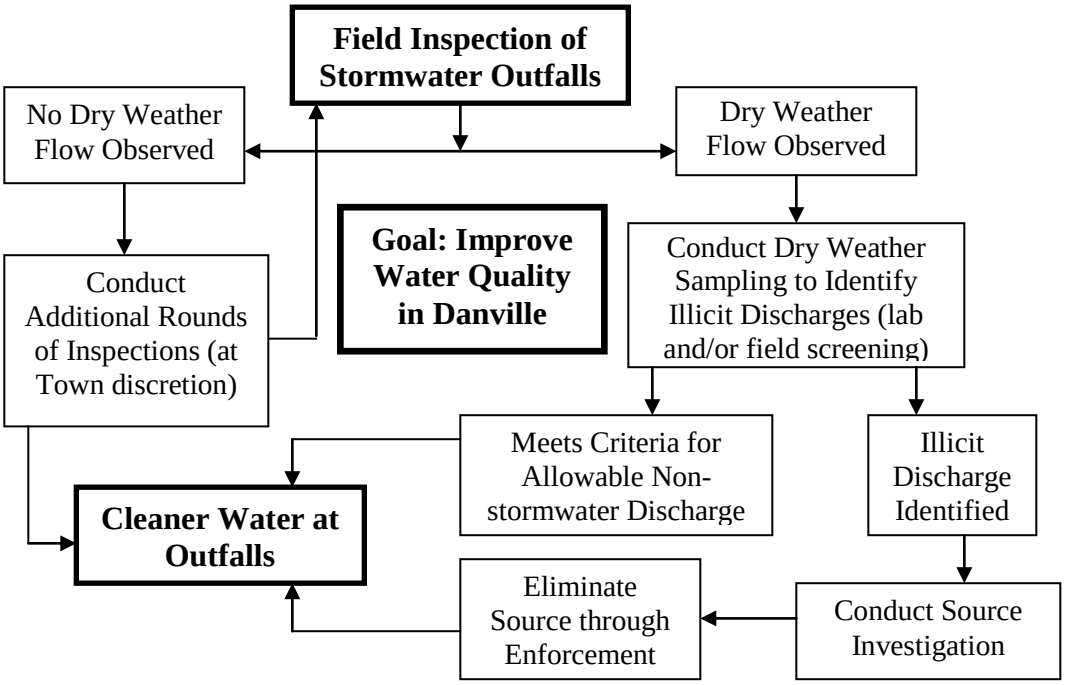
- **Smoke Testing** – smoke testing is another method used to discover and investigate illicit connections. Non-toxic smoke can be injected into the drainage system or into individual unknown connections to the drainage system. In order for the smoke test to be effective, pipes must be plugged to prevent smoke from easily escaping through manholes, catch basins, or daylight areas. For example, a portion of a drainage system could be filled with smoke to determine if there are any sanitary sewer cross connections from nearby residential buildings. If a cross connection exists, smoke will appear from the building's sanitary sewer vent at the roof. The smoke should not affect residents since nearly all sanitary sewer systems have a

trap that will prevent smoke from backing up into the house. In many cases smoke testing will only be used once an unknown pipe is identified. The individual pipe can be plugged and filled with smoke while workers look for signs of smoke at nearby buildings or facilities. It is important to notify the public prior to conducting smoke testing to inform them of when the activity will occur and that the smoke is non-toxic and will not affect their building. This notification presents a good opportunity to involve the public as observers during the smoke test and to educate local residents about stormwater, allowable non-stormwater discharges and illicit discharges. Providing the public with an opportunity to participate in the illicit discharge source investigation will promote IDDE efforts and awareness throughout town.

- **Television Inspection** – remotely guiding television cameras through the drainage system is another way to identify illicit connections. There may be blind connections (i.e., lateral connections to a pipe system with no manhole) to the drainage system that TV inspection can readily identify. Any connections identified during TV inspection that are not shown on the existing Danville storm drain map need to be investigated to determine the source. The town can typically hire a company to perform TV inspection at a cost of $2 to $3 per linear foot of drain pipe.

4.6 IDDE Approach

The approach for investigating and eliminating illicit discharges in Danville is summarized in the following flow chart and a comprehensive summary sheet is provided in **Appendix B** for field crews.



Note: Recordkeeping is an essential tool for IDDE activities.

4.7 Activities and Timelines

As outlined in the flow chart above, there is an ongoing pattern of activities for identifying and eliminating illicit discharges. The timing of some activities may appear obvious; however, a summary of the proposed activities and timelines are provided below to assist the Town in overall planning so that IDDE activities occur in a timely and cost-effective manner. **Table 8** provides a list of recommended IDDE activities and timelines.

Table 8 – Recommended IDDE Activities and Schedule

Activity	Schedule (from effective date of final permit)
Dry weather screening and sampling of every MS4 outfall and interconnection (except Excluded and Problem Catchments)	3 years
Complete catchment investigation procedure in 80% of Problem Catchments	3 years
Complete catchment investigation procedure in 100% of Problem Catchments	5 years
Complete catchment investigation procedure in 100% of catchments where information indicates sewer input*	5 years
Complete catchment investigation procedure in 40% of all catchments	5 years
Complete catchment investigation procedure in 100% of all catchments	10 years
Source investigation	As soon as sampling results are obtained and evaluated
Source elimination	As soon as possible through enforcement procedures
Confirmatory outfall or interconnection screening	Within 1 year of removal of all identified illicit discharge and SSO sources
Follow-up screening upon completion of catchment investigation and illicit discharge removal and confirmation (if necessary)	5 years

*Includes outfall/interconnection screening that indicates sewer input based on olfactory/visual evidence or sampling results (ammonia $\geq$ 0.5 mg/l, surfactants $\geq$ 0.25 mg/l, and bacteria levels greater than the water quality criteria applicable to the receiving water; or ammonia $\geq$ 0.5 mg/l, surfactants $\geq$ 0.25 mg/l, and detectable levels of chlorine)

While some activities have already been completed (see Section 4.7), some follow-up will be necessary once the new Phase II permit is finalized. When the permit becomes final, this IDDE plan will be updated to reflect new requirements.

4.8 Recordkeeping

A field inspection log is provided in Appendix A for stormwater outfall inspections. These logs begin the IDDE recordkeeping process and much more information will follow such as laboratory data, field notes for source investigations, and correspondence with property owners for source elimination and enforcement.

To ensure an effective and well-maintained IDDE program, the Town of Danville should update records annually to address the following topics:

- Summary of findings for field inspections & needs for subsequent rounds;
- Summary of dry weather sampling results & future needs;
- Identified sources & source elimination efforts;
- Illicit discharges eliminated;
- Status of IDDE activities by catchment; and
- Recommendations for future IDDE activities.

4.9 Activities Completed to Date

CEI and the Town have been performing ongoing outfall investigations and inspections since 2007. Outfall inspections were originally limited to those located within the Urbanized Area (UA), however eventually encompassed the entire town. Known storm drain system outfalls were inspected during dry weather conditions (minimum of 72 consecutive hours with less than 0.10 inches of rainfall) to determine if non-stormwater flow was present.

Temperature, pH, conductivity, and total dissolved solids (TDS) were measured in the field at flowing outfalls, while samples were collected for laboratory analysis of E. coli, ammonia, fluoride and chlorine residual at locations with dry weather flows. Field observations such as outfall pipe condition, extent of sediment and debris, paper and trash deposits, erosion, and structural maintenance issues were photographed and documented on inspection form provided in Appendix A. All records were maintained by the Town as part of their Stormwater Management Plan (SWMP). Field efforts performed to date did not indicate evidence of an illicit discharge within Danville.

Storm drain system mapping of the entire Town was performed concurrently with IDDE inspections. Culverts, catch basins and outfalls were mapped separately in the field. All structure locations were recorded with a Global Positioning System (GPS) unit and incorporated into the GIS base map as shown on Figure 2.

As new outfalls and other structure are located or installed, the base map is periodically updated approximately once a year to reflect changes. Any dry weather flows are tested for possible illicit discharges.

5.0 Elimination of Illicit Discharges

The previous sections provide background information and a program for detecting illicit discharges to the MS4 in the Town of Danville. This section focuses on program effectiveness (i.e., elimination of illicit discharges), which is the ultimate result of a successful IDDE program. Program effectiveness or the elimination of illicit discharges can be broken down into two major categories: prevention (pre-occurrence) and removal of illicit discharges (post-occurrence), which are discussed below.

5.1 Prevention

Prevention of illicit discharges is achieved through education, outreach, and advocacy. Education and advocacy programs that are targeted towards identifying where and when possible illicit discharges and connections occur are good long-term prevention activities. The following activities can be used in Danville to help prevent illicit discharges to the drainage system:

- Educate the public on illicit discharges and the impacts to ecological and human health using existing avenues such as tax bill mailers, flyer handouts, newspaper articles, local cable channel, and posting the stormwater display during Town events;
- Utilize the existing elementary school stormwater education program to inform schoolchildren on the dangers of illicit discharges;
- Utilize the Town of Danville Website by maintaining and updating a dedicated "Stormwater Management" page to provide information on upcoming programs, proper waste disposal, and pollution reduction techniques;
- Hold periodic meetings with target audiences to encourage awareness and promote stewardship of the storm drain system, emphasizing the cause and effect relationship between non-stormwater inputs to the drainage system and water quality impacts;
- Host periodic public events such as roadside cleanups to allow interested residents the opportunity to participate in the Town's stormwater program;
- Establish a storm drain marking program to educate and potentially involve the community to promote illicit discharge prevention;
- Hold bi-annual household hazardous waste collections days to give residents the opportunity to properly dispose of wastes;
- Provide information on spill response and prevention procedures, including identifying and containing spills, reporting procedures, and documentation;
- Utilize the annual IDDE program evaluation results to promote and support the program in Town;
- Educate the public about the consequences of violations; and/or
- Direct citizens to voice concerns or information regarding illicit discharges to the Road Agent.

5.2 Removing Illicit Discharges

Once an illicit discharge or connection is identified and confirmed, the Highway Department will document the following information for its records:

- Location of the discharge and its source;
- Description of the discharge;
- Method of discovery;
- Date of discovery;
- Date of elimination;
- Mitigation or enforcement action (see below); and
- Estimate of the volume of flow removed.

The removal of the illicit discharge can be accomplished through voluntary elimination or legal enforcement, as discussed below.

Voluntary Elimination
The voluntary elimination of illicit discharges is strongly encouraged. Through voluntary elimination, the responsible party of an illicit discharge can be contacted and informed about the incident by telephone. A responsible town official should make this contact after an illicit discharge has been identified and verified. When a responsible party is contacted, the following information should be provided:

- Details on the identification and verification process;
- Information on the actions or types of BMPs that should be implemented to correct the problem; and
- Potential support and incentives that the town can offer as a result of the voluntary approach.

This approach is the quickest and provides an opportunity for the responsible party to correct the problem in a cost-effective manner, versus a legal enforcement obligation, which is discussed below.

Legal Enforcement
Legal enforcement action is often necessary to completely eliminate illicit discharges in the town, particularly those that have significant cost implications. The Town of Danville has drafted an illicit discharge ordinance governing discharges to the municipal storm drain system for prohibition and removal. This ordinance will allow the Town to enforce and effectively remove illicit discharges to comply with the Phase II Stormwater Regulations. Generally, enforcement of illicit discharges can be implemented through the following methods:

- ***Written Order*** – When proof of a discharge and the responsible party are identified, the town may issue a written order outlining the requirements for compliance with local ordinances. If the enforcing person determines that abatement or remediation is required, the order shall establish a deadline that abatement or remediation activities must be completed.

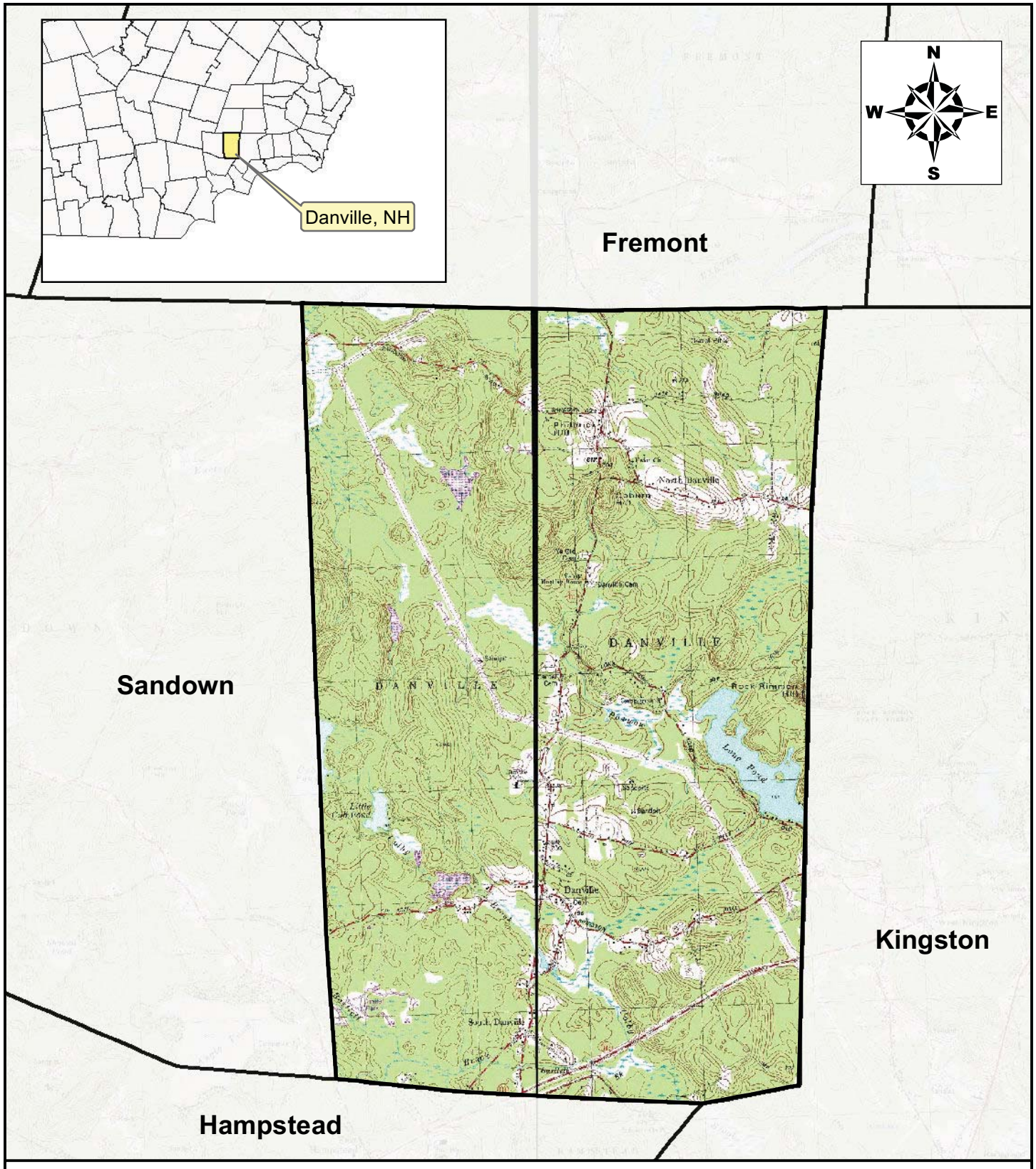
- ***Reimbursement*** – If remediation is not completed by the time outlined in the written order, the Town may complete the necessary work and seek reimbursement by the offending party. The violator will then have thirty days to reimburse the town for work incurred, or have a lien placed on the property.

- ***Penalties or Fines*** – Penalties and fines can be issued to the responsible party if the problem has not been corrected as outlined in the written order. For example, if remediation is not completed within the timetable established by the written order, the town may assess penalties to accrue for each day the violation continues. The town can use penalties and fines to recover the cost of enforcement, and may establish other appropriate corrective measures.

- ***Civil and/or Criminal Court Actions*** – As a final effort, the town may use civil and/or criminal court actions under the local, state, and federal laws and regulations such as the Clean Water Act, which may result in significant fines levied upon the noncompliant responsible parties.

5.3 Confirmatory Sampling

Within one year of removal, confirmatory sampling will be conducted during dry weather to verify that the illicit discharge has been removed. If confirmatory screening indicates evidence of an additional illicit discharge, the catchment shall be reinvestigated as documented previously.



2,500 0 2,500 5,000 7,500
Feet

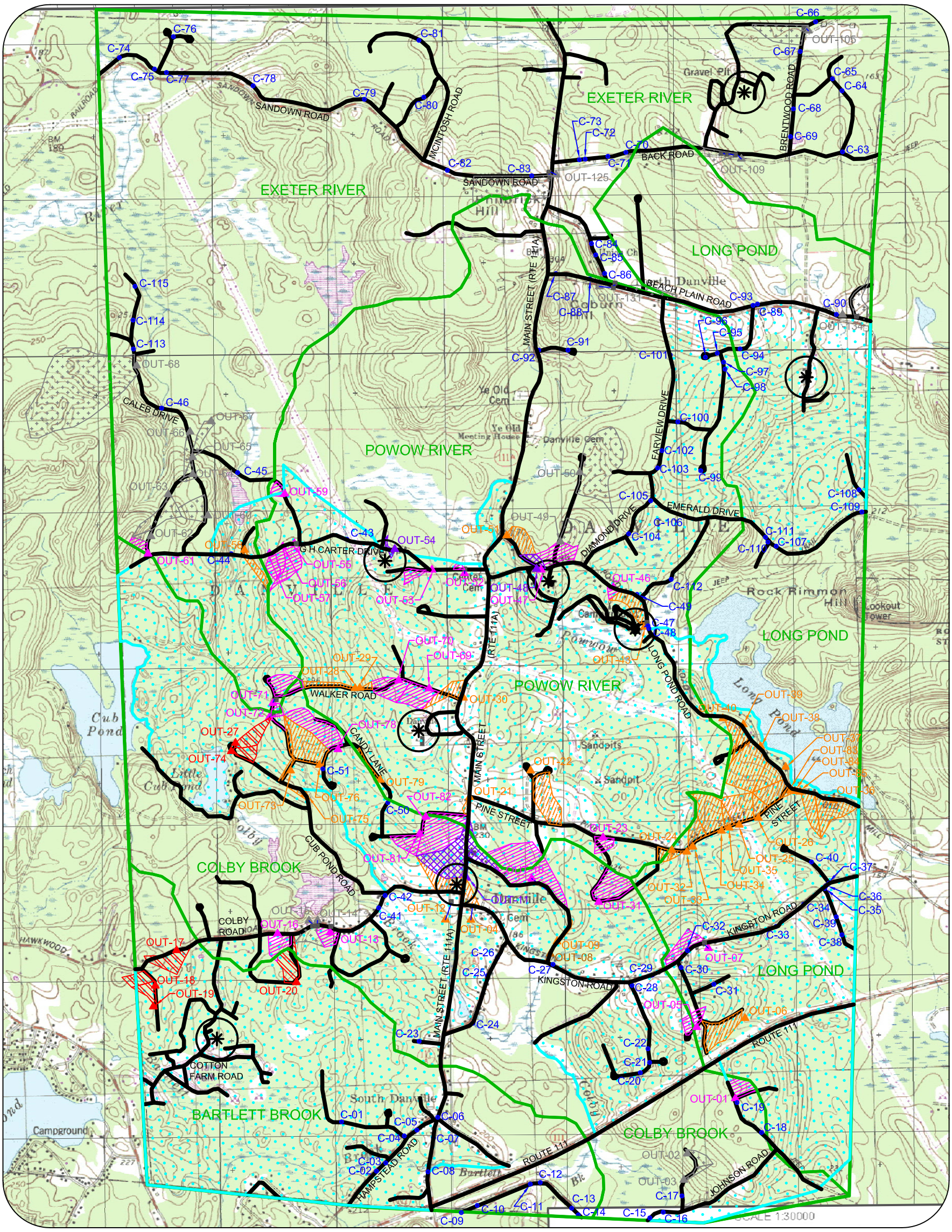
0.5 0 0.5 1 1.5
Miles

Figure 1

Town Locus

Town of Danville, NH

Comprehensive Environmental Inc.



LEGEND

- Subwatershed
- Urbanized Area Boundary
- Roadway
- Community Well
- Low Priority Catchment, Tier 1
- Low Priority Catchment, Tier 2
- Low Priority Catchment, Tier 3
- Low Priority Catchment, Tier 4
- Unregulated Catchment
- Excluded Catchment
- Outfall
- Catch Basin
- Culvert

N W E S

COMPREHENSIVE ENVIRONMENTAL INCORPORATED

21 DEPOT STREET
MERRIMACK, NH 03054

Figure 2: Catchment Mapping and Delineation

Town of Danville
210 Main Street
Danville, NH 03819

2000 0 2000 4000

APPROX. AERIAL SCALE 1" = 2000'

Project No.: 248-8
Date: MARCH 2014
Drawn By: NC

Table 1 - Outfall Inventory and Catchment Prioritization

	Outfall Characteristics						Watershed Characteristics				Catchment Classification and Prioritization					Inspection Data							
Map ID	Latitude	Longitude	Pipe Diameter (in)	Pipe Material	Catch Basins	Outlet Structure Protection	Land Use	Slope	Urbanized Area	Subwatershed / Receiving Waterbody	Catchment Category	Priority Ranking	Discharges to Impaired Waterbody	Surface Water within 250'	Within 400' of a PWS	Inspection Date	Pipe Condition	Deposits	Vegetation Impacts	Erodibility	Sediment (in)	Maintenance Needed	Comments
OUT-01	42.90213	-71.10393	18	HDPE	0	No Protection	Residential	Flat	**Yes**	Colby Brook	Low Priority	4	No	No	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-02	42.89923	-71.10743	12	HDPE	0	Flared End, Riprap	Residential	Flat	No	Colby Brook	Not Regulated	-	No	No	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-03	42.89779	-71.10770	12	HDPE	0	Flared End	Residential	Flat	No	Colby Brook	Not Regulated	-	No	**Yes**	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-04	42.91167	-71.12289	**unknown**	**unknown**	0	No Protection	Residential	Flat	**Yes**	Colby Brook	Low Priority	2	No	**Yes**	**Yes**	9/20/07	**Other**	**Sediment**	Little to No Distress	Little/No Erosion	**Heavy sediment**	**Remove sediment**	Pipe not visible, buried under debris
OUT-05	42.90586	-71.10672	12	Concrete	0	No Protection	Residential	Flat	**Yes**	Long Pond	Low Priority	4	No	No	No	9/20/07	Good	**Sediment**	Little to No Distress	Little/No Erosion		**Remove sediment**	None
OUT-06	42.90637	-71.10324	15	HDPE	0	Flared End, Riprap	Residential	Moderate	**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-07	42.91006	-71.10581	12	HDPE	1	No Protection	Residential	Flat	**Yes**	Long Pond	Low Priority	4	No	No	No	9/20/07	Good	**Sediment**	Little to No Distress	Little/No Erosion	**8**	**Remove sediment**	None
OUT-08	42.90975	-71.11720	24	Concrete	0	Headwall	Residential	Flat	**Yes**	Colby Brook	Excluded	-	No	**Yes**	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-09	42.91042	-71.11673	24	Concrete	0	Headwall	Residential	Flat	**Yes**	Colby Brook	Low Priority	2	No	**Yes**	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-10	42.91381	-71.11846	12	Concrete	1	Headwall	Residential	Flat	**Yes**	Colby Brook	Low Priority	4	No	No	No	9/20/07	Good	**Sediment**	Little to No Distress	Little/No Erosion	**6**	**Remove sediment**	None
OUT-11	42.91386	-71.12317	6	Clay	3	Headwall	Residential	Flat	**Yes**	Colby Brook	Low Priority	3	No	No	**Yes**	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-12	42.91165	-71.12470	12	HDPE	1	Headwall	Residential	Flat	**Yes**	Colby Brook	Low Priority	2	No	**Yes**	**Yes**	9/20/07	Good	**Sediment**	Little to No Distress	Little/No Erosion	**4**	**Remove sediment**	Empties into swale leading to swamp
OUT-13	42.91120	-71.13300	12	Concrete	1	Headwall	Residential	Flat	**Yes**	Colby Brook	Low Priority	4	No	No	No	9/20/07	Good	None	Little to No Distress	**Small Areas of Erosion**	0	None	None
OUT-14	42.91152	-71.13401	12	Concrete	1	Headwall	Residential	Flat	No	Colby Brook	Not Regulated	-	No	**Yes**	No	9/20/07	Good	**Sediment**	Little to No Distress	Little/No Erosion		**Unclog outfall**	Outfall clogged
OUT-15	42.91149	-71.13431	6	HDPE	1	No Protection	Residential	Flat	No	Colby Brook	Not Regulated	-	No	**Yes**	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-16	42.91095	-71.13682	12	Concrete	0	Headwall	Residential	Flat	**Yes**	Colby Brook	Low Priority	4	No	No	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-17	42.91012	-71.14403	18	Concrete	0	Headwall	Residential	Flat	**Yes**	Bartlett Brook	Low Priority	1	**Yes**	**Yes**	No	9/20/07	Good	**Sediment**	Little to No Distress	Little/No Erosion	**9**	**Remove sediment**	None
OUT-18	42.90818	-71.14561	12	Corrugated Steel	0	No Protection	Residential	Flat	**Yes**	Bartlett Brook	Low Priority	1	**Yes**	No	No	9/20/07	**Crushed**	None	Little to No Distress	Little/No Erosion	0	**Replace crushed pipe**	Pipe is crushed
OUT-19	42.90718	-71.14574	12	Corrugated Steel	0	No Protection	Residential	Flat	**Yes**	Bartlett Brook	Low Priority	1	**Yes**	No	No	9/20/07	**Crushed**	None	Little to No Distress	Little/No Erosion	0	**Replace crushed pipe**	Pipe is crushed
OUT-20	42.90840	-71.13543	18	Concrete	0	Riprap	Residential	Flat	**Yes**	Bartlett Brook	Low Priority	1	**Yes**	No	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	
OUT-21	42.91812	-71.12294	12	Corrugated Steel	0	No Protection	Residential	Flat	**Yes**	Powow River	Low Priority	2	No	**Yes**	No	9/20/07	**Corroded**	**Sediment**	Little to No Distress	Little/No Erosion		**Repair damaged pipe**	Heavy vegetation, clogged. Pipe damaged
OUT-22	42.91952	-71.11855	18	HDPE	0	Headwall	Residential	Flat	**Yes**	Powow River	Low Priority	2	No	**Yes**	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-23	42.91591	-71.11328	12	Concrete	0	No Protection	Residential	Flat	**Yes**	Powow River	Low Priority	4	No	No	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-24	42.91523	-71.10839	12	Concrete	0	Headwall	Residential	Flat	**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-25	42.91659	-71.10350	12	Corrugated Steel	0	No Protection	Residential		**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-26	42.91695	-71.10218	12	Corrugated Steel	0	No Protection	Residential	Flat	**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	9/20/07	Good	**Sediment**	Little to No Distress	Little/No Erosion		**Unclog outfall**	Outfall clogged
OUT-27	42.92106	-71.13973	12	PVC	0	Headwall	Residential	Flat	**Yes**	Colby Brook	Low Priority	1	**Yes**	**Yes**	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-28	42.92392	-71.13080	24	HDPE	0	Headwall	Residential	Flat	**Yes**	Powow River	Low Priority	2	No	**Yes**	No	9/20/07	Good	None	Little to No Distress	Little/No Erosion	0	None	Rust colored stain at base of pipe
OUT-29	42.92393	-71.13072	24	Corrugated Steel	0	No Protection	Residential	Flat	**Yes**	Powow River	Low Priority	2	No	**Yes**	No	9/20/07	**Corroded**	None	Little to No Distress	Little/No Erosion	0	**Replace corroded pipe**	None
OUT-30	42.92338	-71.12332	unknown	unknown	0	No Protection	Residential	Flat	**Yes**	Powow River	Low Priority	2	No	**Yes**	No	9/20/07	**Buried**	**Sediment**	Little to No Distress	Little/No Erosion		**Remove sediment**	Outfall is buried, covered by debris and sediment. No visible pipe
OUT-31	42.91253	-71.11368	24	Corrugated Steel	0	Riprap	Residential	Flat	**Yes**	Colby Brook	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-32	42.91517	-71.10730	12	Concrete	0	No Protection	Residential	Flat	**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	10/23/07	Good	**Sediment**	Little to No Distress	Little/No Erosion		**Remove sediment**	Some sediment
OUT-33	42.91542	-71.10685	12	Corrugated Steel	0	No Protection	Residential	Flat	**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-34	42.91626	-71.10483	12	Corrugated Steel	0	No Protection	Residential	Flat	**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-35	42.91643	-71.10426	12	Corrugated Steel	0	Headwall	Residential	Flat	**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	10/23/07	Good	**Sediment**	Little to No Distress	**Small Areas of Erosion**		**Remove sediment**	None
OUT-36	42.91785	-71.09674	12	Concrete	0	No Protection	Residential	Flat	**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	10/23/07	**Other**	**Sediment**	Little to No Distress	Little/No Erosion		**Remove sediment**	Outfall only partially visible
OUT-37	42.91962	-71.10017	12	Corrugated Steel	0	Riprap	Residential	Moderate	**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-38	42.92070	-71.10192	unknown	unknown	0	**unknown**	Residential		**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	10/23/07	unknown	unknown	**unknown**	**unknown**	0	None	No access; #221 Long Pond Rd.
OUT-39	42.92181	-71.10323	unknown	unknown	1	**unknown**	Residential		**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	10/23/07	unknown	unknown	**unknown**	**unknown**	0	None	No access; Long Pond Rd.
OUT-40	42.92223	-71.10464	12	HDPE	0	No Protection	Residential	Flat	**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-43	42.92707	-71.11025	6	HDPE	1	No Protection	Residential		**Yes**	Powow River	Low Priority	2	No	**Yes**	**Yes**	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-46	42.92917	-71.11248	6	Corrugated Steel	0	No Protection	Residential	Flat	**Yes**	Powow River	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	**Remove sediment**	Some sediment
OUT-47	42.93014	-71.11765	12	Corrugated Steel	0	Headwall	Residential	Flat	**Yes**	Powow River	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-48	42.93018	-71.11796	6	HDPE	0	Headwall	Residential	Flat	**Yes**	Powow River	Low Priority	3	No	No	**Yes**	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None

Table 1 - Outfall Inventory and Catchment Prioritization

	Outfall Characteristics						Watershed Characteristics				Catchment Classification and Prioritization					Inspection Data							
Map ID	**Latitude**	**Longitude**	**Pipe Diameter (in)**	**Pipe Material**	**Catch Basins**	**Outlet Structure Protection**	**Land Use**	**Slope**	**Urbanized Area**	**Subwatershed / Receiving Waterbody**	**Catchment Category**	**Priority Ranking**	**Discharges to Impaired Waterbody**	**Surface Water within 250'**	**Within 400' of a PWS**	**Inspection Date**	**Pipe Condition**	**Deposits**	**Vegetation Impacts**	**Erodibility**	**Sediment (in)**	**Maintenance Needed**	**Comments**
OUT-49	42.93160	-71.11627	12	Corrugated Steel	0	Headwall	Residential	Flat	No	Powow River	Not Regulated	-	No	No	No	10/23/07	**Crushed**	**Sediment**	Little to No Distress	Little/No Erosion		**Remove sediment and repair crushed pipe**	Pipe is crushed
OUT-50	42.93528	-71.11483	18	Corrugated Steel	0	Headwall	Residential	Flat	No	Powow River	Not Regulated	-	No	**Yes**	No	10/23/07	**Crushed**	None	Little to No Distress	Little/No Erosion		**Replace crushed pipe**	Pipe is crushed
OUT-51	42.93195	-71.12009	12	HDPE	0	Headwall	Residential		**Yes**	Powow River	Low Priority	2	No	**Yes**	No	10/23/07	**Other**	**Sediment**	Little to No Distress	Little/No Erosion	0	**Remove sediment**	Outfall clogged
OUT-52	42.92998	-71.12315	8	Corrugated Steel	1	No Protection	Residential	Flat	**Yes**	Powow River	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-53	42.93016	-71.12548	12	HDPE	0	Headwall	Residential	Flat	**Yes**	Powow River	Low Priority	4	No	No	No	10/23/07	Other	None	Little to No Distress	Little/No Erosion	0	**Replace crushed pipe**	None
OUT-54	42.93125	-71.12820	15	HDPE	0	Headwall	Residential		**Yes**	Powow River	Low Priority	3	No	No	**Yes**	10/23/07	Good	**Sediment**	Little to No Distress	Little/No Erosion		**Remove sediment**	None
OUT-55	42.93158	-71.13538	12	HDPE	1	Headwall	Residential	Flat	**Yes**	Powow River	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-56	42.93145	-71.13626	12	HDPE	0	No Protection	Residential	Flat	**Yes**	Powow River	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-57	42.93108	-71.13720	12	HDPE	0	Headwall	Residential	Flat	**Yes**	Powow River	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-58	42.93126	-71.13898	12	HDPE	0	Headwall	Residential	Flat	**Yes**	Exeter River	Low Priority	2	No	**Yes**	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-59	42.93422	-71.13606	12	HDPE	0	Headwall	Residential	Flat	**Yes**	Powow River	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-60	42.93311	-71.14161	15	HDPE	0	Headwall	Residential	Flat	No	Exeter River	Not Regulated	-	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-61	42.93112	-71.14589	12	HDPE	0	Headwall	Residential	Flat	**Yes**	Exeter River	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-62	42.93203	-71.14568	12	HDPE	0	Headwall	Residential	Flat	No	Exeter River	Not Regulated	-	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-63	42.93424	-71.14445	12	HDPE	0	Headwall	Residential	Flat	No	Exeter River	Not Regulated	-	No	**Yes**	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-64	42.93529	-71.14270	12	HDPE	0	Headwall	Residential	Flat	No	Exeter River	Not Regulated	-	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-65	42.93620	-71.14269	15	HDPE	0	Headwall	Residential	Flat	No	Exeter River	Not Regulated	-	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-66	42.93755	-71.14289	20	HDPE	0	Headwall	Residential	Flat	No	Exeter River	Not Regulated	-	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-67	42.93808	-71.14132	15	HDPE	0	Headwall	Residential	Flat	No	Exeter River	Not Regulated	-	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-68	42.94107	-71.14668	4' W x 2'L	Concrete	0	Headwall	Residential	Flat	No	Exeter River	Not Regulated	-	No	**Yes**	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-69	42.92388	-71.12574	24	Concrete	0	Headwall	Residential	Flat	**Yes**	Powow River	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-70	42.92430	-71.12792	24	Corrugated Steel	0	Headwall	Residential	Flat	**Yes**	Powow River	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-71	42.92317	-71.13702	12	HDPE	1	Flared End	Residential	Flat	**Yes**	Exeter River	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-72	42.92242	-71.13725	12	HDPE	1	Flared End	Residential	Flat	**Yes**	Colby Brook	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-73	42.91959	-71.13582	unknown	unknown	0	Headwall	Residential	Flat	**Yes**	Colby Brook	Low Priority	2	No	**Yes**	No	10/23/07	unknown	unknown	Little to No Distress	Little/No Erosion	0	None	unknown
OUT-74	42.92064	-71.14003	12	Concrete	0	Headwall	Residential	Flat	**Yes**	Colby Brook	Low Priority	1	**Yes**	**Yes**	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	No access to outfall
OUT-75	42.91837	-71.13477	12	Concrete	0	Headwall	Residential	Flat	**Yes**	Colby Brook	Low Priority	2	No	**Yes**	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-76	42.91987	-71.13371	24	Concrete	0	Headwall	Residential	Flat	**Yes**	Colby Brook	Low Priority	2	No	**Yes**	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-78	42.92071	-71.13237	12	Concrete	0	Headwall	Residential	Flat	**Yes**	Colby Brook	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-79	42.91908	-71.12932	12	Concrete	0	Headwall	Residential	Flat	**Yes**	Powow River	Low Priority	2	No	**Yes**	No	10/23/07	Good	**Sediment**	Little to No Distress	Little/No Erosion		**Remove sediment**	None
OUT-81	42.91620	-71.12650	12	Concrete	0	Headwall	Residential	Flat	**Yes**	Colby Brook	Low Priority	4	No	No	No	10/23/07	Good	**Sediment**	Little to No Distress	Little/No Erosion		**Remove sediment**	None
OUT-82	42.91713	-71.12605	18	Concrete	0	Headwall	Residential	Flat	**Yes**	Colby Brook	Low Priority	4	No	No	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-83	42.91836	-71.09981	12	Corrugated Steel	0	No Protection	Residential	Flat	**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-84	42.91832	-71.09946	15	Corrugated Steel	0	No Protection	Residential	Flat	**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	10/23/07	Good	None	Little to No Distress	Little/No Erosion	0	None	None
OUT-85	42.91829	-71.09914	12	Corrugated Steel	0	No Protection	Residential	Flat	**Yes**	Long Pond	Low Priority	2	No	**Yes**	No	10/23/07	Good	**Sediment**	Little to No Distress	Little/No Erosion	**0.5**	**Remove sediment**	None
OUT-105	42.95851	-71.09813	18	HDPE	1	Headwall	Residential	Flat	No	Exeter River	Not Regulated	-	No	No	No	3/26/09	Good	**Brush and Sediment**	**Moderate Distress**	Little/No Erosion	**1**	**Remove brush and sand**	Catch basin to outlet swale.
OUT-109	42.95176	-71.10307	12	Concrete	3	No Protection	Forest	Flat	No	Exeter River	Not Regulated	-	No	No	No	3/26/09 & 3/27/09	Good	None	Little/No Distress	Little/No Erosion	0	None	2 inlets, both buried under melting snow, likely accounts for flow. Possible animal scat in water at base of pipe.
OUT-125	42.95102	-71.11642	12	Concrete	1/2/00	No Protection	Residential	Moderate	No	Exeter River	Not Regulated	-	No	No	No	3/26/09	**Cracked**	**Sediment**	**Moderate Distress**	**Small Areas of Erosion**	**3**	**Remove sediment. Repair bank.**	2 catch basins to outlet. Gets roadway runoff, discharges to field.
OUT-131	42.94508	-71.11330	6	PVC	1/2/00	Unknown	Forest	Flat	No	Powow River	Not Regulated	-	No	**Yes**	No	3/26/09	Unknown	None	Little/No Distress	Little/No Erosion	0	None	Pipe buried under leaves. 2 catch basins to 6" pipe, discharges to woods.
OUT-134	42.94347	-71.09587	18	Concrete	1	Flared End	Residential	Flat	No	Long Pond	Not Regulated	-	No	**Yes**	No	3/26/09 & 3/27/09	Good	None	Little/No Distress	Little/No Erosion	0	None	Runoff from single catch basin to stream. Receives runoff from residential neighborhood.

APPENDIX A
Stormwater Outfall Inspection Checklist

Danville, NH - Stormwater Outfall Inspection Checklist

Outfall ID# _____ Location Aid _____

Date:_____ **Time:**_____ **Weather Today:**_____

Surveyor/Observer:_____ **Weather over past 72 hours:**_____

Flow Observed (circle): YES NO

1. Flow Observations (fill out this section only if flow is observed)	**Pipe Flow Depth (inches) Note: measure from pipe invert**	**Channel, Ditch or Swale Flow Depth (inches) Note: measure from center of conveyance**	**Flow Appearance / Color**	**Flow Odor**	**Field Monitoring Data (note: fill in units for each parameter)**				**Comments and Notes**
					Turbidity	**Temperature**	**pH**	**Conductivity**	
	 _____ Depth	 _____ Depth	__ Clear __ Cloudy/Milky __ Dark (Tea) __ Sheen __ Suspended sediment (opaque) __ Other *	__ None __ Chemical __ Petroleum __ Sewage __ Other *					
2. Structure Details (pipe or other conveyance info.)	**Pipe Material**	**Pipe Condition**	**Channel, Ditch or Swale Condition**	**Diameter or Width (specify distance units)**	**Slope (degrees)**	**Outlet Structure**	**GPS Coordinates**	**Discharge directly to surface water?****	**Comments and Notes**
	__ Clay __ Concrete __ Corrugated Steel __ PVC __ Cast Iron __ HDPE __ Steel (DI)	__ Good __ Cracked __ Exposed Steel __ Corroded __ Other*	__ Good __ Clogged __ Debris __ Scoured or Eroded __ Other*		__ Flat __ Moderate __ Steep	__ Headwall __ Riprap __ Flared End __ No Outlet Protection __ Other*	_____Lat. _____Lon.	__ Yes __ No If Yes, Provide Receiving Water Name	
3. Outfall Observations (general conditions at outfall)	**Deposits**	**Surrounding Vegetation**	**Erodibility**	**Land Use at Outfall**	**Land Use Upstream of Outfall**	**Appearance / Color**	**Odor**	**Sediment Depth (inches) (if present)**	**Comments and Notes**
	__ None __ Grease/Oil __ Paper/Trash __ Foam __ Heavy sediment deposits __ Other *	__ Little or No Distress __ Moderate Distress __ High Distress	__ Little or No Erosion __ Small Areas of Erosion __ Many Eroded Areas	__ Forest __ Agriculture __ Residential __ Commercial __ Industrial __ Waterbody __ Detention Pond/Basin	__ Forest __ Agriculture __ Residential __ Commercial __ Industrial	__ Clear __ Cloudy/Milky __ Dark (Tea) __ Sheen __ Suspended sediment (opaque) __ Other *	__ None __ Chemical __ Petroleum __ Sewage __ Other *		
4. Laboratory Analysis (check if submitted)	**Surfactant**	**Ammonia Concentration**	**E. coli**	**Oil & Grease (if oil or sheen is observed)**	**VOCs (if solvent odor is present)**	**Additional Field Comments and Notes**			

Notes:

* Provide additional comments to describe the observations made for the category.

** Discharges directly to surface waters are defined as: any conveyance or discernable concentrated flow (i.e., pipe, swale, ditch) other than overland sheet flow that enters a body of water.

APPENDIX B
Illicit Discharge Investigation Summary Sheet for Field Crews

Illicit Discharge Investigation Summary Sheet for Field Crews