Exhibit 2

Pollutants of Concern

Rev 1: 2023 SWMP
Rev Date: 05/08/23
Rev By: EPW

The Town of North Greenbush has worked with The Laberge Group to identify Pollutants of Concerns and Waterbodies of Concern that exist throughout the Town. Each of these items, while addressed in separate Exhibits, are closely related, particularly the way in which the Pollutants of Concern affect not only Waterbodies of Concern, but water quality and environmental and public health in general.

US EPA Stormwater Background

ñStormwater runoff is generated from rain and snowmelt events that flow over land or impervious surfaces, such as paved streets, parking lots, and building rooftops, and does not soak into the ground. The runoff picks up pollutants like trash, chemicals, oils, and dirt/sediment that can harm our rivers, streams, lakes, and coastal waters. To protect these resources, communities, construction companies, industries, and others, use stormwater controls, known as Best Management Practices (BMPs). These BMPs filter out pollutants and/or prevent pollution by controlling it at its source.ò

ñPopulation growth and the development of urban/urbanized areas are major contributors to the amount of pollutants in the runoff as well as the volume and rate of runoff from impervious surfaces. Together, they can cause changes in hydrology and water quality that result in habitat modification and loss, increased flooding, decreased aquatic biological diversity, and increased sedimentation and erosion. The benefits of effective stormwater runoff management can include:

- Protection of wetlands and aquatic ecosystems,
- Improved quality of receiving waterbodies,
- Conservation of water resources,
- Protection of public health, and
- Flood control.

Traditional stormwater management approaches that rely on peak flow storage have generally not targeted pollutant reduction and can exacerbate problems associated with changes in hydrology and hydraulics.ò

Pollutants of Concern (POCs)

The Town watersheds, waterbodies, land uses and POCs have been identified based upon a worksheet type analysis, which has been attached to this Exhibit. The Potential Pollutants of Concern for the Town are:

- Bacteria and Viruses (BV);
- Gross Solids (GS);
- Nutrients (N);
- Pesticides and Herbicides (PH);
- Silt and Sediment (S);
- Pools and Fountains (PF);
- Organics (O); and
- Oil and Grease (OG).

Table 1 below lists contaminant types and their generally accepted sources.

Contaminant	Generally Accepted Contaminant Sources
Sediment and Floatables	Streets, Lawns, driveways, roads, construction activities, atmospheric deposition, drainage channel erosion
Pesticides and Herbicides	Residential lawns and gardens, roadsides, utility right-of-ways, commercial and industrial landscaped areas, soil wash-off
Organic Materials	Residential lawns and gardens, commercial landscaping, animal wastes
Oil and Grease / Hydrocarbons	Roads, driveways, parking lots, vehicle maintenance areas, gas stations, illicit dumping to storm drains
Bacteria and Viruses	Lawns, roads, leaky sanitary sewer lines, sanitary sewer cross-connections, animal waste, septic systems
Nitrogen and Phosphorous	Lawn fertilizers, atmospheric deposition, automobile exhaust, soil erosion, animal waste, detergents. *[Aquatic life is harmed by elevated levels of phosphorus and nitrogen in stormwater which lead to accelerated growth of algae and eutrophication]*
Source: US EPA NPDES Stormwater Pollution Documents ñUrban Stormwater Management in the United Statesò National Research Council 2008	

Table 1: Contaminants and Generally Accepted Sources

Table 2 below summarizes typical stormwater pollutants, including a description of their common forms, as well as likely sources and normally associated land uses.

Pollutant	**Description**	**Likely Sources**	**Typical Associated Land Uses**
Bacteria and Viruses (BV)	Bacteria and viruses are pathogens present in fecal matter which get into stormwater runoff as pet waste, wildlife scat, leaky septic systems, runoff from agriculture, broken sanitary sewers, and cross connections where sanitary lines tie into stormwater lines.	Septic Systems, Aging Infrastructure; High Concentration of pet waste or droppings	Residential; Lawns/turf; Golf Courses; Livestock
Gross Solids (GS)	Gross pollutants include trash, cigarette butts and floatables as well as organic matter such as leaf litter and grass clippings. They can cause blockages in stormwater lines as well as other negative impacts.	Restaurants or stores producing trash; High Concentration of poorly maintained dumpsters; Known areas of sloppy pick up of trash	Retail

Pollutant	Description	Likely Sources	Typical Associated Land Uses
Nutrients (N)	Nutrients added to an aquatic environment can cause excessive algae growth and as the algae die the rate of decomposition increases causing oxygen to dramatically decrease. This is known as eutrophication and is harmful to fish other aquatic organisms.	Lawns or golf courses using extra fertilizers; Pet Waste; Goose Droppings	Lawns/Turf; Golf Courses; Agriculture; Professional Office Space; Schools
Organics (O)	Organics are chemical compounds that are used in the manufacturing of a large variety of products and even at low concentrations they can have serious health implications.	Businesses producing or using paint thinner, solvents, cleaners, etc.	Industrial
Sediment (S)	Sediments commonly enter stormwater as particles washed off from impervious surfaces (rooftops, pavements) or as erosion from stream banks or construction sites. Excessive sedimentation can change the light penetration of water, clog the gills of fish and negatively impact the breeding and feeding of fish.	Active construction sites; Parking lots collecting sediments; Catch basins loaded with sediment	Impervious Pathways; Residential
Pools and Fountains (PF)	Water from the maintenance of pools, spas and fountains can pose a major risk for stormwater through erosion, increase in sediment and the addition of pollutants such as chlorine and acid wash.	High concentration of swimming pools or fountains	Residential; Parks; Retail
Vectors (V)	Improperly designed and/or maintained stormwater infrastructure offers several preferred habitat requirements for rodents, small animals, and other disease vectors.	Stormwater infrastructure with standing water in need of cleaning or maintenance	Stormwater Management
Thermal Stress (TS)	When warmer water from stormwater runoff enters a cold-water system it can negatively impact cold water dependent species. This is called thermal stress.	Are there exposed parking lots or roads near trout streams	Impervious; Residential; Retail; Industrial

Pollutant	**Description**	**Likely Sources**	**Typical Associated Land Uses**
Metals (M)	Common metals found in stormwater are copper, lead, cadmium, zinc, and nickel. Metals are a concern because of their potential toxicity and ability to bio-accumulate.	Junk/scrap yards or car shops near waterbodies	Retail; Industrial; Office Professional or Office Space; Residential; Impervious
Pesticides and Herbicides (PH)	Pesticides can include anything from fungicides to insecticides, rodenticides, and herbicides. They get into stormwater by direct application as runoff.	High concentration of property owners using lawn care services; Particularly well-kept lawns and turf	Office Professional Office Space; Residential; Lawns/turf; Golf Courses; Agriculture
Oil and Grease (OG)	The effects of oil and grease in stormwater include toxicity; the coating of plants and the gills of fish which can prevent the exchange of gases; and unpleasant harmful conditions for swimmers at recreational sites.	High concentration of car repair shops; Food service business or restaurants dumping cooked oil	Residential; Retail; Impervious

Table 2: Stormwater Pollutants, Their Descriptions, Effects and Likely Sources

Best Management Practices

Best Management Practices (BMPs) are applicable on a Town-wide basis and the Town is implementing a program in which the public will be educated and encouraged to reduce pollutants in stormwater runoff. The following BMPs actions, grouped by POC include:

- Bacteria and Viruses:
    - Clean up and properly dispose of pet waste;
    - Discourage concentrated wildfowl congregation;
    - Monitor septic system maintenance and performance and correct deficiencies; and
    - Monitor agriculture waste storage areas and appropriately manage.
- Gross Solids:
    - Properly dispose of trash;
    - Properly recycle, compost or dispose of landscape maintenance debris;
    - Minimize animal waste; and
    - Keeps streets and public areas free of litter.

- Nutrients:
    - Reduce fertilizer use and use fertilizers with reduced or no phosphorus and nitrogen;
    - Clean up and properly dispose of pet waste;
    - Discourage concentrated wildfowl congregation;
    - Monitor septic system maintenance and performance and correct deficiencies; and
    - Monitor agriculture waste storage areas and appropriately manage.

- Pesticides and Herbicides:
    - Follow manufacturerôs instructions on proper application of chemicals (time, quantities);
    - Reduce or eliminate use (alternative methods);

- Silt and Sediment:
    - Use routine maintenance to reduce amounts of sediment and silt that may be washed off driveways and roadways (street sweeping);
    - Clean out catch basin;
    - Limit the duration of earth disturbance and stabilize upon cessation of activity; and
    - Perform channel stabilization routinely (inspect frequently and maintain).

- Pools and Fountains:
    - Neutralize acid wash before discharging;
    - Let pools drain slowly to prevent erosion at the discharge end;
    - Drain to lawn areas to increase filtering and infiltration and dilution of chlorinated water; and
    - Clean filters on lawn areas.

- Organics:
    - Proper storage and disposal of chemicals; and
    - Prevention of chemical dumping.

- Oil and Grease:
    - Proper maintenance of vehicles;
    - Perform hazardous waste collection programs;
    - Proper management and disposal of oil and grease.

POC Outreach Audience

Given the number of watersheds (or sub-watersheds) within the Town, the POCs and BMPs identified within this Exhibit are applicable on a Town-wide basis. To increase the effectiveness

of the Townôs outreach and education program, specific likely sources of major POCs will be targeted, as follows:

- Residential Land Uses and new construction - Snyderôs Lake Watershed;
- Residential developments / Home Owners - Town-wide;
- Commercial businesses and restaurants Town-wide;
- Car washes and laundromats Town-wide;
- Auto repair facilities and car sales garages Town-wide;
- New Construction & landscaping operations Town-wide;
- Commercial businesses and restaurants along Route 4; Town-wide; and
- Agricultural land use areas - Town-wide.

The MS4 General Permit, MCM 1: Public Education and Outreach, requires outreach to the general public and specific audiences to provide education on:

- The impacts of stormwater discharges on waterbodies;
- POCs and their sources;
- Steps that contributors of these pollutants can take to reduce pollutants in stormwater runoff; and
- Steps that contributors of non stormwater discharges can take to reduce pollutants.

Outreach efforts will be recorded periodically, assessed, and modified as needed with new, measurable goals established as necessary.

Measurable Goals

The Measurable Goals are applicable on a Town-wide basis. The following are measurable goals that the Town will work toward incorporating in a SWMP Plan update:

- Distribute handouts with information on POCs to Town residents (Examples included within this Exhibit). Record the quantity of handouts distributed.
- Post or otherwise make available stormwater educational materials in other public places.
- Continue with providing educational stormwater pamphlets in routine Town-wide mailings.

Town of North Greenbush

Rensselaer County

SPDES ID: NYR 20A191

TARGET AUDIENCE ANALYSIS WORKSHEET

A. Identified Watersheds within the Town of North Greenbush

1. Mill Creek
2. Wynants Kill (Lower)
3. Snyderôs Lake
4. Tributaries to the Hudson River

MCM 1: Identify Pollutants of Concern (POCs) and Develop and Implement a Public Educational and Outreach Program to describe to the general public and target audiences: (i.) the impacts of *stormwater discharges* on waterbodies; (ii.) *POC*s and their sources; (iii.) steps that contributors of these pollutants can take to reduce pollutants in *stormwater* runoff; and (iv.) steps that contributors of non-*stormwater discharges* can take to reduce pollutants

- Record, periodically assess, and modify as needed, *measurable goals*;
- Select and implement appropriate education and outreach *activities* and *measurable goals* to ensure the reduction of all *POC*s in *stormwater discharges* to the Maximum Extent Possible (*MEP*.)

B. List of Waterbodies of Concern (waterbodies within the identified watersheds) & their best use class

- Use the NYS DEC Waterbody Inventory/Priority Waterbodies List
- Use the NYSDEC online Environmental Resource Mapper to Identify the Best Use Class.

Waterbody	***Best Use Class***
1. Mill Creek	C (TS) = Non Contact Recreation / Trout Spawning
2. Wynants Kill	C (T) = Non Contact Recreation / Trout Habitat
3. Snyderôs Lake	B = Public Swimming & Contact Recreation
4. Tributaries to the Hudson River	C = Non Contact Recreation (fishing)

New York waterbodies are assigned a "best use" classification.
Best use classifications are:

- Class AA and A -- drinking water
- Class B -- public swimming and contact recreation activities
- Class C -- fishing and non-contact activities
- Class D -- does not support any of the uses listed above (this classification is rarely used)

Waterbodies with AA, A, B and C classifications may also have "T" or "TS" classifications, meaning they support trout populations or trout spawning.

C. Further refine the waterbodies of concern by listing them under the best use and indicate if they are Impaired with minor impacts, threatened, have possible threats or unknown or un-assessed.

- Use NYS DEC Water Inventory (WI) & Priority Waterbody List (PWL)

Additional Refinement of Waterbodies Best Use (Waterbody: WI/PWL classification)

A = Drinking	A (T) = Drinking Trout Habitat	A (TS) = Drinking /Trout Spawning Habitat	B = Contact Recreation (Swimming)	B (T) = Contact Recreation /Trout Habitat	C = Non Contact Recreation (Fishing)	C (T) = Non Contact Recreation (Trout Habitat)	C (TS) = Non Contact Recreation (Trout Spawning Habitat)	D = Lowest Classification
			Snyder's Lake Category: Minor impacts		**Tributaries to the Hudson River** Category: Un-assessed	**Wynants Kill** Category: Minor impacts	**Mill Creek** Category: No known impact	
			Uses Impacted: Recreation		**Uses Impacted:** None listed	**Uses Impacted:** Aquatic life	**Uses Impacted:** No use impairment	
			Pollutants: Algal/weed growth, nutrients (phosphorous)		**Pollutants:** None listed	**Pollutants:** Nutrients, silt/sediment, metals, priority organics, on-site septic systems, streambank erosion, sediment	**Pollutants:** None listed	
			Likely Pollutant Source: Nutrient recycling		**Likely Pollutant Source:** None listed	**Likely Pollutant Source:** Urban/storm runoff	**Likely Pollutant Source:** N/A	

Town of North Greenbush

Rensselaer County

SPDES ID: NYR 20A191

Pollutants of Concern (POC) Worksheet

Name of Watershed: Mill Creek - Hudson River

Total Area of MS4: 19.5 Sq. Mi. Watershed Area = 2.3 Sq. Mi. 12 % of MS4

	Built Areas	% of Land Use Within Watershed	Possible POCs	Target Audience
X	Impervious (Paths only: Roads, Sidewalks, Parking Lots, Driveways, etc.)	1%	S	Town Streets
	Residential (Large lots/1 single family per 1 to 5 acres)	%		
X	Residential (Small lots/1 single family/duplex per 1/8 to 1 acre)	6.49%	PF, S, BV, N	Pool Owners, Contractors, Homes with Septic Systems
	Residential (Apts/multi family 1 building per 1/8 to 1 acre)	%		
X	Retail and/or Mixed Use	0.01%	GS, O, OG	Businesses, Restaurants
	Industrial	%		
	Office Professional/Office Space/Schools/Universities	%		
	Green Areas			
	Man-made:			
X	Lawns/turf	5.93%	PH, N	Homeowners
	Golf Courses/Parks			
	Urban Tree Canopy	%		
X	Agriculture, Livestock, Nurseries, Tree Farms	41.45%	PH, N, BV	Farms
	Stormwater Management	%		
	Natural:			
X	Forest	33.99%		
X	Grassland	0.24%		
X	Wetlands	10.61%		
X	Water-Lakes, Ponds, Streams	0.29%		

Measurable Goals for this Watershed

List any Measurable goals to establish that will assist in education for the Target Audience in this Watershed

Measurable Goal 1:	Continue with providing educational stormwater pamphlets in routine Town-wide mailings.
Measurable Goal 2:	Post or otherwise make available stormwater educational materials in other public places.

Pollutants of Concern Table

Likely Pollutant	Prompt Questions	Land Use Category
Bacteria and Viruses (BV)	Septic System Present? Aging Infrastructure? High Concentration of pet waste or goose droppings?	Residential; Lawns/turf; Golf Courses; Livestock
Gross Solids (GS)	Any Restaurants or stores producing trash? High Concentration of poorly maintained dumpsters? Known area for sloppy pick up of trash	Retail
Nutrients (N)	Are there lawns or golf courses using extra fertilizers? Pet Waste? Goose Droppings?	Lawns/Turf; Golf Courses; Agriculture; Office Professional/Office Space/Schools
Organics (O)	Any businesses producing or using paint thinner, solvents, cleaners, etc.	Industrial; Retail
Sediment (S)	Any active construction sites? Parking lots collecting sediments? Catch basins loaded with sediment?	Impervious Pathways; Residential
Pools and Fountains (PF)	High concentration of swimming pools or fountains?	Residential; Parks; Retail
Vectors (V)	Any Stormwater infrastructure with standing water in need of cleaning or maintenance"	Stormwater Management
Thermal Stress (TS)	Are there exposed parking lots or roads near trout streams?	Impervious; Residential; Retail; Industrial
Metals (M)	Any junk/scrap yards or car shops near waterbodies?	Retail; Industrial; Office Professional/Office Space; Residential; Impervious
Pesticides and Herbicides (PH)	High concentration of property owners using lawn care services? Particularly well kept lawns and turf?	Office Professional/Office Space; Residential; Lawns/turf; Golf Courses; Agriculture
Oil and Grease (OG)	High concentration of car repair shops? Food service business or restaurants dumping cooked oil?	Residential; Retail; Impervious

Document Origination Date: August 21, 2020
Revised Date: August 31, 2020
Print Date: August 26, 2020
J:\2016092\Correspondence\4040 MS4 Audit Response Assistance\Target Audience and POC\Pollutants of Concern Second TA Worksheets 8 21 2020.docx

Laberge Group

Town of North Greenbush

Rensselaer County

SPDES ID: NYR 20A191

Pollutants of Concern (POC) Worksheet

Name of Watershed: Wynants Kill – Hudson River

Total Area of MS4: 19.5 Sq. Mi. Watershed Area = 10.4 Sq. Mi. 53 % of MS4

	Built Areas	% of Land Use Within Watershed	Possible POCs	Target Audience
X	Impervious (Paths only: Roads, Sidewalks, Parking Lots, Driveways, etc.)	2%	S	Town Streets
	Residential (Large lots/1 single family per 1 to 5 acres)	%		
X	Residential (Small lots/1 single family/duplex per 1/8 to 1 acre)	15.96%	S, PF, BV, N	Pool Owners, Contractors, Homes with Septic Systems
	Residential (Apts/multi family 1 building per 1/8 to 1 acre)	%		
X	Retail and/or Mixed Use	0.45%	GS, O, OG	Businesses, Restaurants
	Industrial	%		
	Office Professional/Office Space/Schools/Universities	%		
	Green Areas			
	Man-made:			
X	Lawns/turf	11.57%	PH, N	Homeowners
	Golf Courses/Parks	%		
	Urban Tree Canopy	%		
X	Agriculture, Livestock, Nurseries, Tree Farms	17.30%	PH, N, BV	Farms
	Stormwater Management	%		
	Natural:			
X	Forest	39.43%		
X	Grassland	4.92%		
X	Wetlands	6.06%		
X	Water-Lakes, Ponds, Streams	2.34%		

Measurable Goals for this Watershed

List any Measurable goals to establish that will assist in education for the Target Audience in this Watershed

Measurable Goal 1:	Continue with providing educational stormwater pamphlets in routine Town-wide mailings.
Measurable Goal 2:	Post or otherwise make available stormwater educational materials in other public places.

Pollutants of Concern Table

Likely Pollutant	Prompt Questions	Land Use Category
Bacteria and Viruses (BV)	Septic System Present? Aging Infrastructure? High Concentration of pet waste or goose droppings?	Residential; Lawns/turf; Golf Courses; Livestock
Gross Solids (GS)	Any Restaurants or stores producing trash? High Concentration of poorly maintained dumpsters? Known area for sloppy pick up of trash	Retail
Nutrients (N)	Are there lawns or golf courses using extra fertilizers? Pet Waste? Goose Droppings?	Lawns/Turf; Golf Courses; Agriculture; Office Professional/Office Space/Schools
Organics (O)	Any businesses producing or using paint thinner, solvents, cleaners, etc.	Industrial; Retail
Sediment (S)	Any active construction sites? Parking lots collecting sediments? Catch basins loaded with sediment?	Impervious Pathways; Residential
Pools and Fountains (PF)	High concentration of swimming pools or fountains?	Residential; Parks; Retail
Vectors (V)	Any Stormwater infrastructure with standing water in need of cleaning or maintenance"	Stormwater Management
Thermal Stress (TS)	Are there exposed parking lots or roads near trout streams?	Impervious; Residential; Retail; Industrial
Metals (M)	Any junk/scrap yards or car shops near waterbodies?	Retail; Industrial; Office Professional/Office Space; Residential; Impervious
Pesticides and Herbicides (PH)	High concentration of property owners using lawn care services? Particularly well kept lawns and turf?	Office Professional/Office Space; Residential; Lawns/turf; Golf Courses; Agriculture
Oil and Grease (OG)	High concentration of car repair shops? Food service business or restaurants dumping cooked oil?	Residential; Retail; Impervious

Document Origination Date: August 21, 2020
Revised Date: August 31, 2020
Print Date: August 26, 2020
J:\2016092\Correspondence\4040 MS4 Audit Response Assistance\Target Audience and POC\Pollutants of Concern Second TA Worksheets 8 21 2020.docx

Laberge Group

Town of North Greenbush

Rensselaer County

SPDES ID: NYR 20A191

Pollutants of Concern (POC) Worksheet

Name of Watershed: Unnamed Tributaries – Hudson River

Total Area of MS4: 19.5 Sq. Mi. Watershed Area = 6.8 Sq. Mi. 35 % of MS4

	Built Areas	% of Land Use Within Watershed	Possible POCs	Target Audience
X	Impervious (Paths only: Roads, Sidewalks, Parking Lots, Driveways, etc.)	3%	S	Town Streets
	Residential (Large lots/1 single family per 1 to 5 acres)	%		
X	Residential (Small lots/1 single family/duplex per 1/8 to 1 acre)	29.07%	PF, S, BV, N	Pool Owners, Contractors, Homes with Septic Systems
	Residential (Apts/multi family 1 building per 1/8 to 1 acre)	%		
X	Retail and/or Mixed Use	4.44%	GS, O, OG	Businesses, Restaurants
	Industrial	%		
	Office Professional/Office Space/Schools/Universities	%		
	Green Areas			
	Man-made:			
X	Lawns/turf	19.28%	PH, N	Homeowners
X	Golf Courses/Parks	0.51%	PH, N	Golf Course
	Urban Tree Canopy	%		
X	Agriculture, Livestock, Nurseries, Tree Farms	18.43%	PH, BV, N	Farms
	Stormwater Management	%		
	Natural:			
X	Forest	21.97%		
	Grassland	%		
X	Wetlands	1.93%		
X	Water-Lakes, Ponds, Streams	1.37%		

Measurable Goals for this Watershed

List any Measurable goals to establish that will assist in education for the Target Audience in this Watershed

Measurable Goal 1:	Continue with providing educational stormwater pamphlets in routine Town-wide mailings.
Measurable Goal 2:	Post or otherwise make available stormwater educational materials in other public places.

Pollutants of Concern Table

Likely Pollutant	Prompt Questions	Land Use Category
Bacteria and Viruses (BV)	Septic System Present? Aging Infrastructure? High Concentration of pet waste or goose droppings?	Residential; Lawns/turf; Golf Courses; Livestock
Gross Solids (GS)	Any Restaurants or stores producing trash? High Concentration of poorly maintained dumpsters? Known area for sloppy pick up of trash	Retail
Nutrients (N)	Are there lawns or golf courses using extra fertilizers? Pet Waste? Goose Droppings?	Lawns/Turf; Golf Courses; Agriculture; Office Professional/Office Space/Schools
Organics (O)	Any businesses producing or using paint thinner, solvents, cleaners, etc.	Industrial; Retail
Sediment (S)	Any active construction sites? Parking lots collecting sediments? Catch basins loaded with sediment?	Impervious Pathways; Residential
Pools and Fountains (PF)	High concentration of swimming pools or fountains?	Residential; Parks; Retail
Vectors (V)	Any Stormwater infrastructure with standing water in need of cleaning or maintenance"	Stormwater Management
Thermal Stress (TS)	Are there exposed parking lots or roads near trout streams?	Impervious; Residential; Retail; Industrial
Metals (M)	Any junk/scrap yards or car shops near waterbodies?	Retail; Industrial; Office Professional/Office Space; Residential; Impervious
Pesticides and Herbicides (PH)	High concentration of property owners using lawn care services? Particularly well kept lawns and turf?	Office Professional/Office Space; Residential; Lawns/turf; Golf Courses; Agriculture
Oil and Grease (OG)	High concentration of car repair shops? Food service business or restaurants dumping cooked oil?	Residential; Retail; Impervious

Document Origination Date: August 21, 2020
Revised Date: August 31, 2020
Print Date: August 26, 2020
J:\2016092\Correspondence\4040 MS4 Audit Response Assistance\Target Audience and POC\Pollutants of Concern Second TA Worksheets 8 21 2020.docx

Laberge Group

Town of North Greenbush

Rensselaer County

SPDES ID: NYR 20A191

Measurable Goal 1:	Continue with providing educational stormwater pamphlets in routine Town-wide mailings.
Measurable Goal 2:	Post or otherwise make available stormwater educational materials in other public places.

Pollutants of Concern (POC) Worksheet

Name of Watershed: Snyder's Lake (included in Wynants Kill watershed)

Total Area of MS4: 19.5 Sq. Mi. Watershed Area = 1.1 Sq. Mi. 6 % of MS4

	Built Areas	% of Land Use Within Watershed	Possible POCs	Target Audience
X	Impervious (Paths only: Roads, Sidewalks, Parking Lots, Driveways, etc.)	0.5%	S	Town Streets
	Residential (Large lots/1 single family per 1 to 5 acres)	%		
X	Residential (Small lots/1 single family/duplex per 1/8 to 1 acre)	16.05%	PF, S, BV, N	Pool Owners, Contractors, Homes with Septic Systems
	Residential (Apts/multi family 1 building per 1/8 to 1 acre)	%		
X	Retail and/or Mixed Use	0.06%	GS, O, OG	Businesses, Restaurants
	Industrial	%		
	Office Professional/Office Space/Schools/Universities	%		
	Green Areas			
	Man-made:			
X	Lawns/turf	11.68%	PH, N	Homeowners
	Golf Courses/Parks	%		
	Urban Tree Canopy	%		
X	Agriculture, Livestock, Nurseries, Tree Farms	21.24%	PH, BV, N	Farms
	Stormwater Management	%		
	Natural:			
X	Forest	31.55%		
X	Grassland	0.85%		
X	Wetlands	2.45%		
X	Water-Lakes, Ponds, Streams	15.6%		

Measurable Goals for this Watershed

List any Measurable goals to establish that will assist in education for the Target Audience in this Watershed

Document Origination Date: August 21, 2020
Revised Date: August 31, 2020
Print Date: August 26, 2020
J:\2016092\Correspondence\4040 MS4 Audit Response Assistance\Target Audience and POC\Pollutants of Concern Second TA Worksheets 8 21 2020.docx

Laberge Group

Town of North Greenbush

Rensselaer County

SPDES ID: NYR 20A191

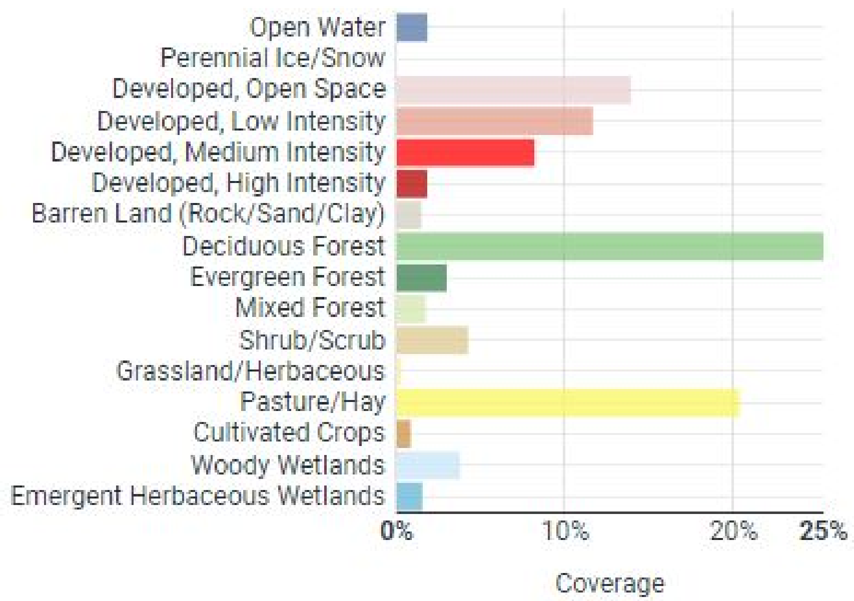
Pollutants of Concern Table

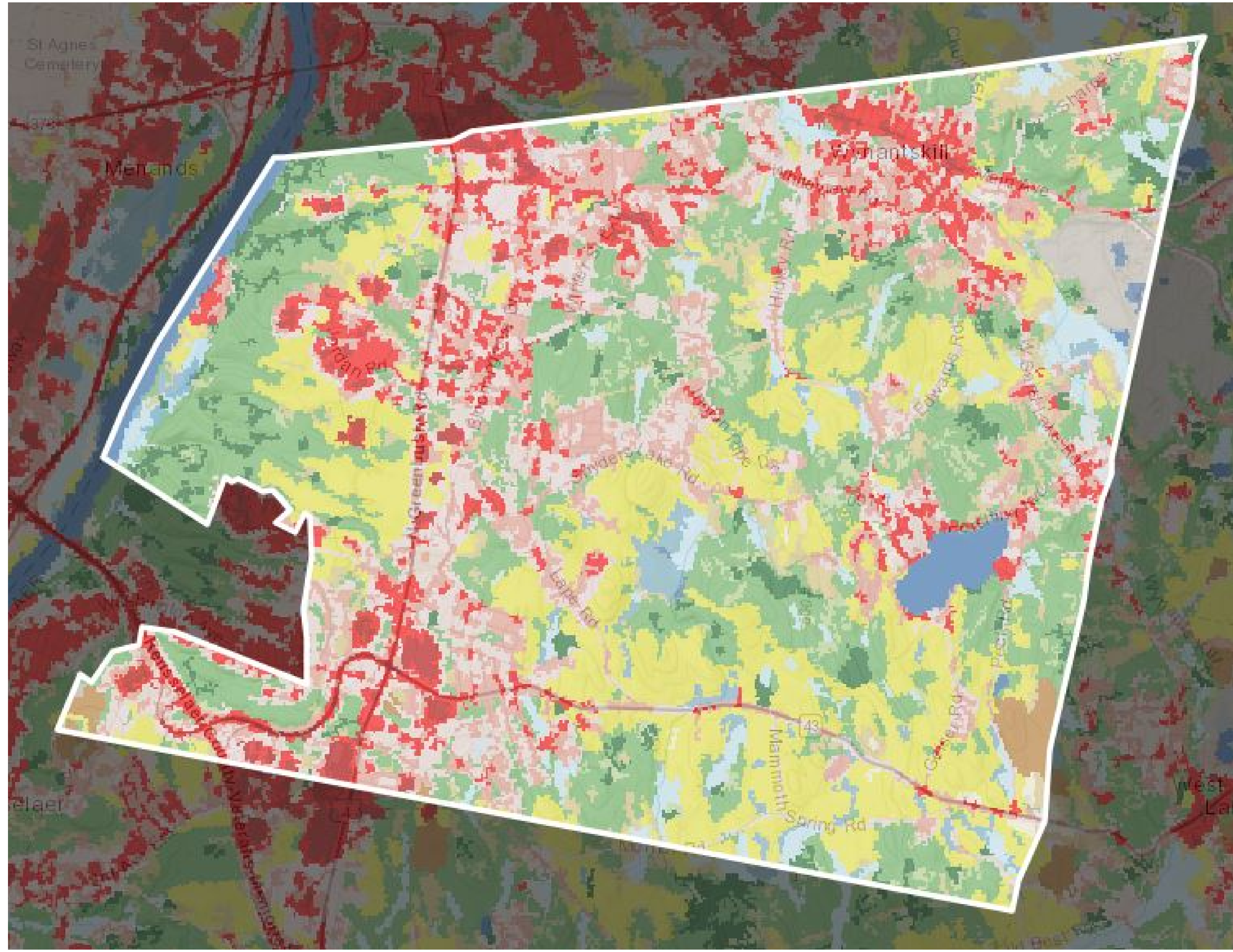
Likely Pollutant	Prompt Questions	Land Use Category
Bacteria and Viruses (BV)	Septic System Present? Aging Infrastructure? High Concentration of pet waste or goose droppings?	Residential; Lawns/turf; Golf Courses; Livestock
Gross Solids (GS)	Any Restaurants or stores producing trash? High Concentration of poorly maintained dumpsters? Known area for sloppy pick up of trash	Retail
Nutrients (N)	Are there lawns or golf courses using extra fertilizers? Pet Waste? Goose Droppings?	Lawns/Turf; Golf Courses; Agriculture; Office Professional/Office Space/Schools
Organics (O)	Any businesses producing or using paint thinner, solvents, cleaners, etc.	Industrial; Retail
Sediment (S)	Any active construction sites? Parking lots collecting sediments? Catch basins loaded with sediment?	Impervious Pathways; Residential
Pools and Fountains (PF)	High concentration of swimming pools or fountains?	Residential; Parks; Retail
Vectors (V)	Any Stormwater infrastructure with standing water in need of cleaning or maintenance"	Stormwater Management
Thermal Stress (TS)	Are there exposed parking lots or roads near trout streams?	Impervious; Residential; Retail; Industrial
Metals (M)	Any junk/scrap yards or car shops near waterbodies?	Retail; Industrial; Office Professional/Office Space; Residential; Impervious
Pesticides and Herbicides (PH)	High concentration of property owners using lawn care services? Particularly well kept lawns and turf?	Office Professional/Office Space; Residential; Lawns/turf; Golf Courses; Agriculture
Oil and Grease (OG)	High concentration of car repair shops? Food service business or restaurants dumping cooked oil?	Residential; Retail; Impervious

Document Origination Date: August 21, 2020
Revised Date: August 31, 2020
Print Date: August 26, 2020
J:\2016092\Correspondence\4040 MS4 Audit Response Assistance\Target Audience and POC\Pollutants of Concern Second TA Worksheets 8 21 2020.docx

Laberge Group

Town of North Greenbush Land Cover Map





Type	Area (km^2)	Coverage (%)
Open Water	0.89	1.76%
Perennial Ice/Snow	0	0.00%
Developed, Open Space	6.87	13.55%
Developed, Low Intensity	5.76	11.36%
Developed, Medium Intensity	4.04	7.97%
Developed, High Intensity	0.9	1.77%
Barren Land (Rock/Sand/Clay)	1.63	3.21%
Deciduous Forest	12.51	24.67%
Evergreen Forest	1.48	2.92%
Mixed Forest	1	1.97%
Shrub/Scrub	2.28	4.50%
Grassland/Herbaceous	0.25	0.49%
Pasture/Hay	10.05	19.82%
Cultivated Crops	0.42	0.83%
Woody Wetlands	1.87	3.69%
Emergent Herbaceous Wetlands	0.76	1.50%
Total	50.71	100.00%

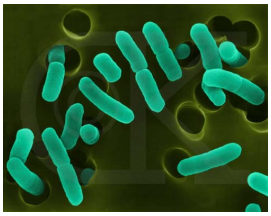
Type	Coverage (%)
Agricultural	±20%
Developed	±33%
Retail/Mixed	±2%
Forests & Wetlands	±40%

Pollutants of Concern: Bacteria and Viruses

Stormwater Coalition of Albany County

Pathogens

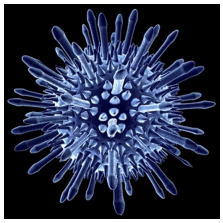
Bacteria



http://www.ecoliblog.com/2006/06/

E. Coli

Viruses



http://www.turbosquid.com/3d-models/3d-adenovirus-science/484353

Adenovirus

Pet Waste and Wildlife

http://www.geeserelief.net/

Cross Connections

Ex. The sanitary line is connected to a dry well. The dry well drains to a roadside ditch, which is near a stream.

Leaky Septic Systems

Ex. This failing septic system is draining to a roadside ditch.

General Information

Bacteria and viruses are pathogens present in fecal matter which get into stormwater runoff as pet waste, wildlife scat, leaky septic systems, runoff from agriculture, broken sanitary sewers, and cross connections where sanitary lines tie into stormwater lines. Excess amounts of these pathogens can make water unsafe to drink and force the closure of water recreational areas, such as beaches. Indicator species are used to monitor beaches for unsafe levels of pathogens. The 3 main indicators used by the EPA (1986 standards) are E. coli, Enterococcus and fecal coliform. Many of these pathogens can cause severe stomach ailments and disease. If levels of indicator species get too high, officials often close down beaches, which can negatively impact local businesses.

Best Management Practices

- Clean up after pets: flush waste down toilet; never put waste in storm drains; bag the waste.
- Monitor septic systems to ensure they are not cracked or leaking.
- Manage and control wildlife populations. Ex. Rats or raccoons in storm sewers and Canadian geese.
- Monitor agriculture waste storage areas and remove excess.
- Report suspicious odors to authorities.

Additional Information

EPA

http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=factsheet_results&view=specific&bmp=4

NYSDEC

Section 2.1 of the 2010 NYS Stormwater Management Design Manual - http://www.dec.ny.gov/chemical/29072.html

Other

http://www.deq.state.or.us/wq/pubs/factsheets/willamette/bacteria.pdf

http://www.bae.ncsu.edu/stormwater/PublicationFiles/PathogensSW.2008.pdf

Pollutants of Concern: Gross Solids

Stormwater Coalition of Albany County

Catch Basin Almost Entirely Blocked by Debris

Litter and Organic Debris Blocking a Storm Drain

Cigarette Butts on Sidewalk

General Information

Gross solids include trash, cigarette butts and floatables as well as organic matter such as leaf litter and grass clippings. Trash can cause storm systems to not function properly due to blockages and provide habitat for vectors such as mosquitoes. Nutrients, such as phosphorus and nitrogen, found in organic matter, can be pollutants.

Best Management Practices

- Street sweeping, litter cleanups, stream cleanups, recycling programs and neighborhood cleanups.
- Use of gross solid reducing devices that are appropriate for the situation such as catch basin opening screen covers, catch basin inserts, hydro-dynamic separators and end of pipe devices to name a few.
- Monitor gross solids in stormwater (location, weight, size, etc…)
- Proper maintenance of all structures including cleaning out when needed.
- Public education regarding litter and phosphorus laws, overall impacts of gross solids and what citizens can do to reduce this impact.

Additional Information

EPA

http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=5&minmeasure=1

NYSDEC

Sections 2.2 and 10.1.2 of the 2010 NYS Stormwater Design Manual - http://www.dec.ny.gov/chemical/29072.html

Other

http://www.water.ncsu.edu/watershedss/info/norganics.html

http://www.stormwater.ucf.edu/conferences/9thstormwatercd/documents/ASCEguidelines.pdf

http://www.dot.ca.gov/hq/env/stormwater/pdf/CTSW-RT-03-072.pdf

Pollutants of Concern: Nutrients

Stormwater Coalition of Albany County

Excess Algae

Pet Waste and Wildlife

http://www.geeserelief.net/

Lawn Care Products and Car Wash

Washing Vehicles on the lawn helps prevent soap from washing into the storm drain.

Use lawn care products, such as fertilizer, with care.

http://sunnymesainfo.wordpress.com/

General Information

Nutrients added to an aquatic environment can cause excessive algae growth and as the algae die the rate of decomposition increases causing the oxygen to dramatically decrease. This is known as eutrophication and is harmful to fish and other aquatic organisms. Phosphorous and nitrogen are two main contributing nutrients that are associated with eutrophication. They are found in products used for lawn care, detergents, car wash and animal waste including pets, livestock and wildlife. Flocks of geese in urban settings especially are becoming more of a concern because of their large numbers.

Best Management Practices

- Use lawn care products with reduced or no phosphorous or nitrogen.
- Read and follow directions carefully when applying lawn care products.
- Do not wash vehicles where the soapy water will go into the storm drain. Areas that have porous pavement or lawns are more appropriate because the soapy water is infiltrated into the soil.
- Clean up and properly dispose of pet waste and manage livestock to prevent them from entering water bodies.
- Take necessary steps to control wildlife populations including geese and don't encourage concentrated feeding of these animals.

Additional Information

EPA

http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/problem.cfm

NYSDEC

Section 2.1 of the 2010 NYS Stormwater Management Design Manual - http://www.dec.ny.gov/chemical/29072.html

http://www.dec.ny.gov/chemical/69489.html

Other

http://icwdm.org/handbook/birds/CanadaGeese/HumanHealthWater.aspx

Pollutants of Concern: Pesticides & Herbicides

Stormwater Coalition of Albany County

Pesticide Application Warning Sign

Read Labels With Care—Follow The Directions

Oriental Beetle Trap Used as Part of an Integrated Pest Management Program

http://www.pestmanagement.rutgers.edu/ipm/vegetable/photogallery.htm

General Information

Pesticides can include anything from fungicides to insecticides, rodenticides, and herbicides. They get into stormwater by direct application or as runoff. Pesticides are extremely variable in their effect on humans and the environment. For humans, these effects can be minor, such as skin or stomach irritations to major, including cancer and neurological effects. Environmental effects have a similar range, from no effect to serious impacts on water quality and wildlife. Some pesticides also have the potential to cause biomagnifications in the food chain. This means that potentially harmful chemicals can be carried up the food chain in higher and higher concentrations.

Best Management Practices

- Labels should be read with care and all directions should be followed to the letter.
- Cumulative effects of pesticide application of a large area should be considered.
- Other pest deterring methods should be used in conjunction in order to reduce the need for chemical pesticides.
- Participate in Integrated Pest Management (IPM) training through organizations like Cornell Cooperative Extension
- Develop and participate in public education and outreach programs which communicate the concerns and proper usage of pesticides.

Additional Information

EPA

http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=factsheet_results&view=specific&bmp=98

http://www.epa.gov/pesticides/

http://www.epa.gov/pesticides/factsheets/ipm.htm

http://www.epa.gov/nbh/pdfs/BioaccumulationBiomagnificationEffects.pdf

NYSDEC

Section 2.1 of the 2010 NYS Stormwater Management Design Manual - http://www.dec.ny.gov/chemical/29072.html

Other

http://www.water.ncsu.edu/watershedss/info/pest.html

http://npic.orst.edu/

http://www.nysipm.cornell.edu/

Pollutants of Concern: Sediment

Stormwater Coalition
of Albany County

Rain Washing Away Sediment from a Bare Building Lot

Erosion of a Stream Bank

Person Sweeping Up Sidewalk

General Information

Sediments commonly enter stormwater as particles washed off from impervious surfaces (pavement, rooftops) or as erosion from stream banks or construction sites. Excessive sedimentation can change the light penetration of water, clog the gills of fish, negatively impact feeding and breeding in fish, and damage aquatic plants. Sediment also transports pollutants, such as bacteria, pathogens, nutrients and metals and can accumulate within stormwater infrastructure causing backups and flooding.

Best Management Practices:

- Sweep driveways of sediment after gardening or home improvement projects.
- Contact local municipalities to learn about state and local laws and mandatory erosion and sediment controls.
- Evaluate slope, soil type, proximity to a water body or stormwater infrastructure and time of year before beginning a project.
- Limit the amount of exposed soil for a project and protect vegetation that is already there.
- Regularly clean out and remove sediment from stormwater structures.
- Monitor sites to make sure erosion control efforts are installed correctly and working properly.

Additional Information:

EPA

http://water.epa.gov/polwaste/sediments/

http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=factsheet_results&view=specific&bmp=59

http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=32

NYSDEC

http://www.dec.ny.gov/chemical/29066.html

Other

http://www.dot.ca.gov/hq/construc/stormwater/tempsoilstabilizationguide.pdf

Pollutants of Concern: Chlorine, Acid Wash, Erosion—Pools & Spas

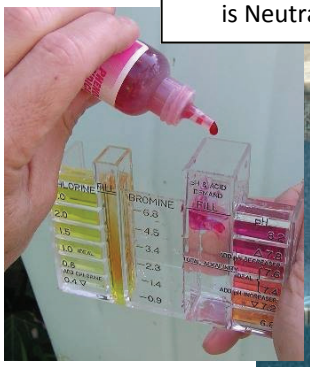
Stormwater Coalition of Albany County

Drain Pools, Fountains and Spas Slowly to the Lawn

http://nativesunpools.com/add%20services.html

http://grono.co.uk/artificial-grass/item/Grono-Lawns-Beat-The-Hose-Pipe-

Person Acid Washing A Concrete Swimming Pool



http://poolandpatio.about.com/od/maintainingyourpool/ss/pooltest_7.htm

http://civil-engg-world.blogspot.com/2011/12/concrete-swimming-pool-basics.html

Clean Pool Filters on Lawn

http://photos.nondot.org/2008-08-24-PoolFilter/normal/01%20-%20Cleaning%20the%20filter.jpg

General Information

Water from the maintenance of pools, spas and fountains can pose a major risk for stormwater through erosion, increase in sediments and the addition of pollutants such as chlorine and acid wash. High pressure, high volume hoses used to drain can increase erosion at the drainage site or by adding more volume quickly to the storm drains and causing a problem downstream. Cleaning filters near storm drains can add volume and sediment to stormwater. Chlorine easily dissolves in water and reacts with other chemicals. It can cause harm to aquatic and soil organisms even at low levels. Acid wash, if not properly neutralized can lower the PH levels of stream habitats potentially beyond the tolerable levels of native aquatic organisms.

Best Management Practices

- Do not drain chlorinated water directly into the street of storm sewer or clean filter near a storm sewer.
- Let water stand for around 10 days prior to discharging in order for chlorine to dissipate, then drain to lawn.
- Clean filters on lawn area where water will be absorbed into the ground.
- Let pools, spas and fountains drain slowly with low volume.
- Make sure acid wash used to clean pools is neutralized before discharging.
- Read and follow directions carefully for all chemicals used in pool, spa and fountain maintenance.

Additional Information

EPA

http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=103

http://www.epa.gov/chemfact/f_chlori.txt

NYSDEC

http://www.dec.ny.gov/docs/materials_minerals_pdf/hhwma.pdf

Other

http://www.arlingtontx.gov/environmentalservices/pdf/StormwaterSwimmingPool.pdf

http://www.stormwateralbanycounty.org/wp-content/uploads/2011/12/2009_Pool_Spa_SWCoal_Brochures_EMAIL_FINAL_11-4.pdf

Pollutants of Concern: Organics

Stormwater Coalition
of Albany County

Organics Found in a Typical Household Garage

Spilled Paint Draining to the Storm System

Hazardous Waste Collection Program

General Information

Organics are chemical compounds that are used in the manufacturing of a large variety of products including paint, household cleaners, solvents, pharmaceuticals, pesticides, fuel and plastics. They can be volatile or synthetic non-volatile and even at low concentrations they can have serious health implications including skin and eye irritation, effects on the nervous system, and cancer. Some common forms of contamination of stormwater from organics are direct dumping, spills and improper storage and disposal.

Best Management Practices

- Hazardous waste collection programs.
- Public education and outreach programs that encourage the use of alternative, less hazardous products.
- Follow disposal directions carefully and address spills immediately.

Additional Information

EPA

http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=104

NYSDEC

http://www.dec.ny.gov/docs/materials_minerals_pdf/hhwma.pdf

Other

http://www.water.ncsu.edu/watershedss/info/organics.html

Pollutants of Concern: Oil and Grease

Stormwater Coalition of Albany County

Oil Sheen in a Parking Lot

Oil and Grease from Cooking

http://www.pricemykitchen.com/tag/fryers-2/

http://www2.oaklandnet.com/Government/o/PWA/DOWD000876

General Information

Oil and grease is made of hydrocarbons which even at low concentrations can be toxic. Effects of oil and grease in stormwater include toxicity; the coating of plants and the gills of fish which can prevent the exchange of gases; and unpleasant potentially harmful conditions for swimmers at recreational sites. Oil and grease can also build up in the infrastructure causing backups. Sources include but are not limited to automobiles not properly maintained; spills on driveways, roadways and in garages; and improper disposal of cooking oil.

Best Management Practices

- Proper maintenance of vehicles.
- Whenever practical use green infrastructure practices like porous pavement and vegetative buffers that promote the infiltration of stormwater into soil and removal of pollution through natural processes.
- Address spills immediately and make sure they are cleaned up.
- Hazardous waste collection programs.
- Clean grease traps regularly.
- Don't pour grease into sinks, floor drains, trash bins, street gutters or parking lots.
- Public education and outreach programs informing people of proper management and disposal methods and spill cleanup procedures for oil and grease.

Additional Information

EPA

http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=factsheet_results&view=specific&bmp=95

NYSDEC

Section 2.1 of the 2010 NYS Stormwater Management Design Manual - http://www.dec.ny.gov/chemical/29072.html

Other

http://www.seas.ucla.edu/stenstro/j/j21

http://www.waynesboro.va.us/pw-es-oil.php

http://www.kingcounty.gov/environment/waterandland/stormwater/introduction/science.aspx