NORTHERN MIDDLESEX STORMWATER COLLABORATIVE
MS4 EMPLOYEE TRAINING 2024
IDDE and MUNICIPAL GOOD HOUSEKEEPING PROGRAMS

Emily Scerbo, Cassandra LaRochelle, and Kate Burke
Tighe & Bond
April 16, 2024

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TRAINING GOALS

- Meet your annual employee training requirement for Permit Year 6
- Review how to identify illicit discharges and complete catchment investigations
- Discuss how to prevent or reduce pollutant runoff from municipal operations
- Upcoming Stormwater Requirements
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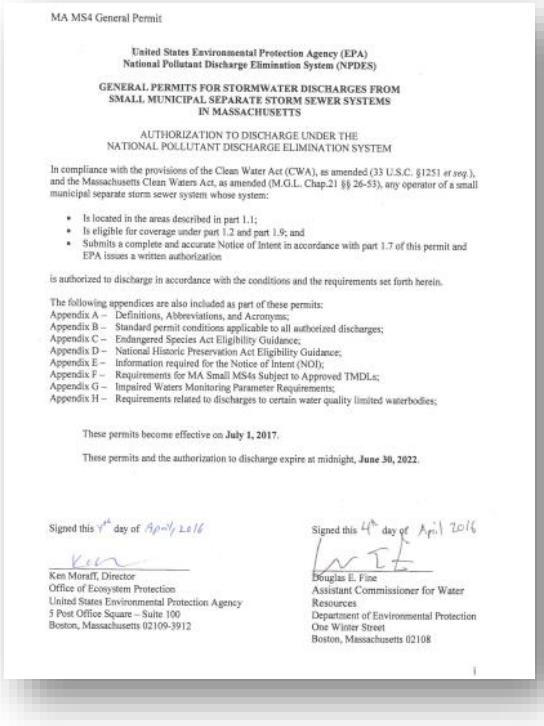
EPA'S SIX MINIMUM CONTROL MEASURES

- **6 Minimum Control Measures (MCMs):**
  1. Public Education and Outreach
  2. Public Involvement and Participation
  3. Illicit Discharge Detection and Elimination (IDDE) Program
  4. Construction Site Stormwater Runoff Control
  5. Stormwater Management in New Development and Redevelopment
  6. Good Housekeeping and Pollution Prevention



MA MS4 General Permit

United States Environmental Protection Agency (EPA)
National Pollutant Discharge Elimination System (NPDES)

GENERAL PERMITS FOR STORMWATER DISCHARGES FROM SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS IN MASSACHUSETTS

AUTHORIZATION TO DISCHARGE UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act (CWA), as amended (33 U.S.C. §1251 *et seq.*), and the Massachusetts Clean Waters Act, as amended (M.G.L. Chap.21 §§ 26-53), any operator of a small municipal separate storm sewer system whose system:

- Is located in the areas described in part 1.1;
- Is eligible for coverage under part 1.2 and part 1.9; and
- Submits a complete and accurate Notice of Intent in accordance with part 1.7 of this permit and EPA issues a written authorization

is authorized to discharge in accordance with the conditions and the requirements set forth herein.

The following appendices are also included as part of these permits:
Appendix A – Definitions, Abbreviations, and Acronyms;
Appendix B – Standard permit conditions applicable to all authorized discharges;
Appendix C – Endangered Species Act Eligibility Guidance;
Appendix D – National Historic Preservation Act Eligibility Guidance;
Appendix E – Information required for the Notice of Intent (NOI);
Appendix F – Requirements for MA Small MS4s Subject to Approved TMDLs;
Appendix G – Impaired Waters Monitoring Parameter Requirements;
Appendix H – Requirements related to discharges to certain water quality limited waterbodies;

These permits become effective on **July 1, 2017**.

These permits and the authorization to discharge expire at midnight, **June 30, 2022**.

Signed this 4th day of April 2016

Ken Moraff, Director
Office of Ecosystem Protection
United States Environmental Protection Agency
5 Post Office Square – Suite 100
Boston, Massachusetts 02109-3912

Signed this 4th day of April 2016

Douglas E. Fine
Assistant Commissioner for Water Resources
Department of Environmental Protection
One Winter Street
Boston, Massachusetts 02108

- **Total Maximum Daily Loads (TMDLs) and Impaired Waterbody Requirements based on receiving waterbodies**

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IDDE PROGRAM

Identifying Illicit Discharges
Catchment Investigations & Wet Weather Outfall Sampling

ILLICIT DISCHARGES AND CONNECTIONS

- **Illicit discharges or connections – *any discharge to a MS4 that is not composed entirely of stormwater***
  - Indicators include:
    - Odor
    - Color
    - Turbidity
    - Floatables (not trash)

- **Allowable non-stormwater discharges**
  - Flows from fire fighting activities
  - Water main/hydrant flushing
  - Dechlorinated swimming pool water
  - Water from individual residential vehicle washing
  - Landscape irrigation or lawn watering
  - Uncontaminated pumped groundwater

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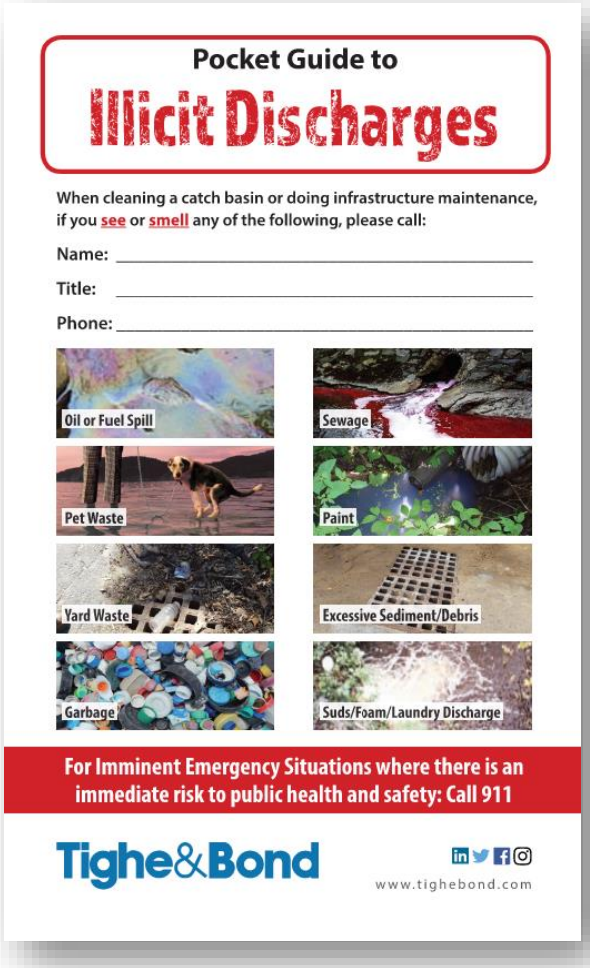
TRICKY VISUAL INDICATORS

- **Iron Ochre** = Iron deposits when soluble iron is oxidized by (naturally occurring) bacteria
- Orange-brown slimy filamentous deposit, flocculant and surface sheen might be present at the outfall
  - To tell natural bacterial sheens from oil sheens run a stick through sheen: **natural bacterial sheen should break apart and stay separated while oil will swirl and reform**
- Bacteria is harmless to humans, wildlife, aquatic species; iron and ochre are not considered toxic
- Can cause under-performance or failure of drainage system but is not evidence of a suspected illicit discharge or connection

REPORTING ILLICIT DISCHARGES

Due to the wide spectrum of illicit discharges, the appropriate authorities to contact vary and are specified in the Municipality's *Statement of IDDE Program Responsibilities* in the IDDE Plan



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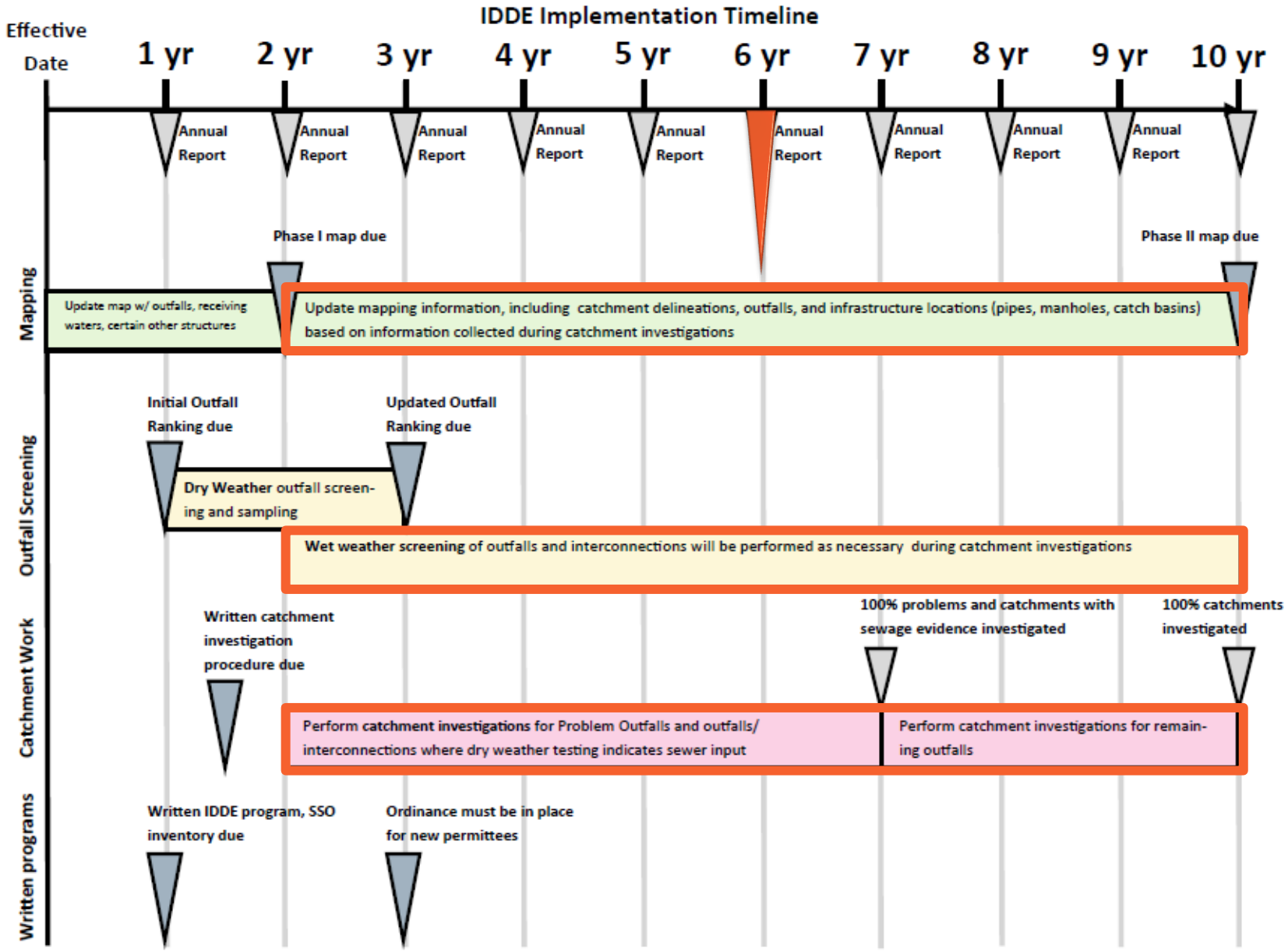
IDDE PROGRAM SCHEDULE



CATCHMENT INVESTIGATIONS (PART 1)

Manhole Inspections

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WHAT IS A CATCHMENT AND WHAT ARE WE INVESTIGATING?

- **Catchment:** the area that drains to an individual outfall or interconnection

- **Investigations:**
  - Completed during dry weather
  - Serve to observe, sample, and evaluate drainage structures to determine approximate location of a suspected illicit discharge/connection

- **Junction Manholes**
- **Key Junction Manholes**

Can be catch basins too!

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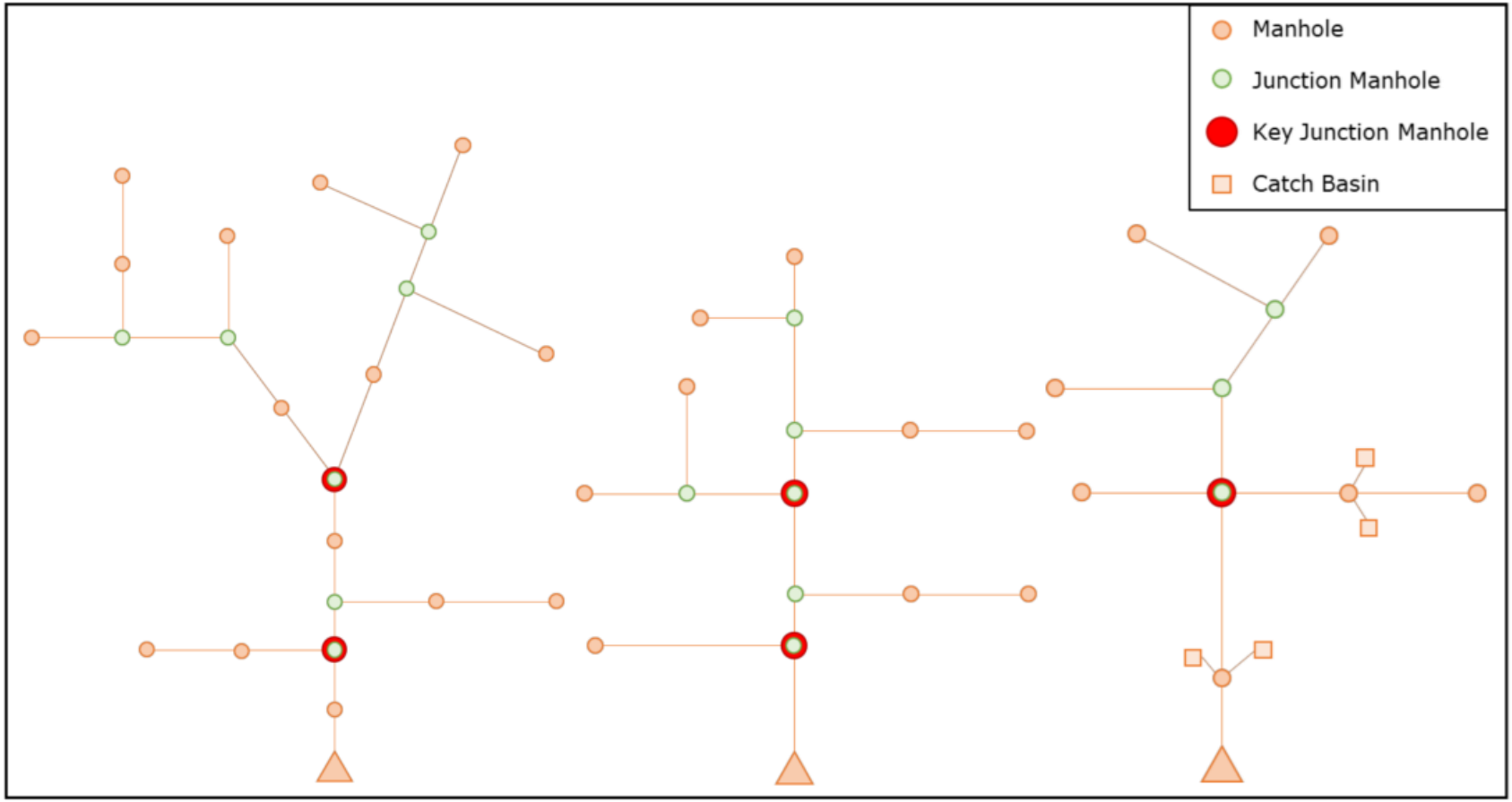
JUNCTION AND KEY JUNCTION MANHOLE IDENTIFICATION



Identifying Junction and Key Junction Manholes

(sketches above adapted from the Center for Watershed Protection's IDDE Guidance Manual, Chapter 13: Tracking Discharges to a Source)

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WATER QUALITY SCREENING

- Screen for visual and olfactory evidence of illicit connection
  - For example, “excrement, toilet paper, white/gray filamentous bacterial growth, or sanitary products present”
- Sample dry weather flow and test for surfactants (test kit), chlorine (colorimeter), and ammonia (test strips)
- Threshold Levels: Compare in-situ readings to EPA thresholds

Parameter	Threshold Level	Source
Surfactants	≥ 0.25 mg/L	EPA New England Bacterial Source Tracking Protocol
Ammonia	≥ 0.5 mg/L	EPA New England Bacterial Source Tracking Protocol
Chlorine	≥ 0.02 mg/L	EPA 2016 General Permit

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WATER QUALITY SCREENING

- **Review of criteria for evidence of suspected illicit discharge:**
  - Per *Section 2.3.4.7.a.ii* (page 35) of the MS4 General Permit, **likely sewer input** indicators are any of the following:
    - Olfactory or visual evidence of sewage

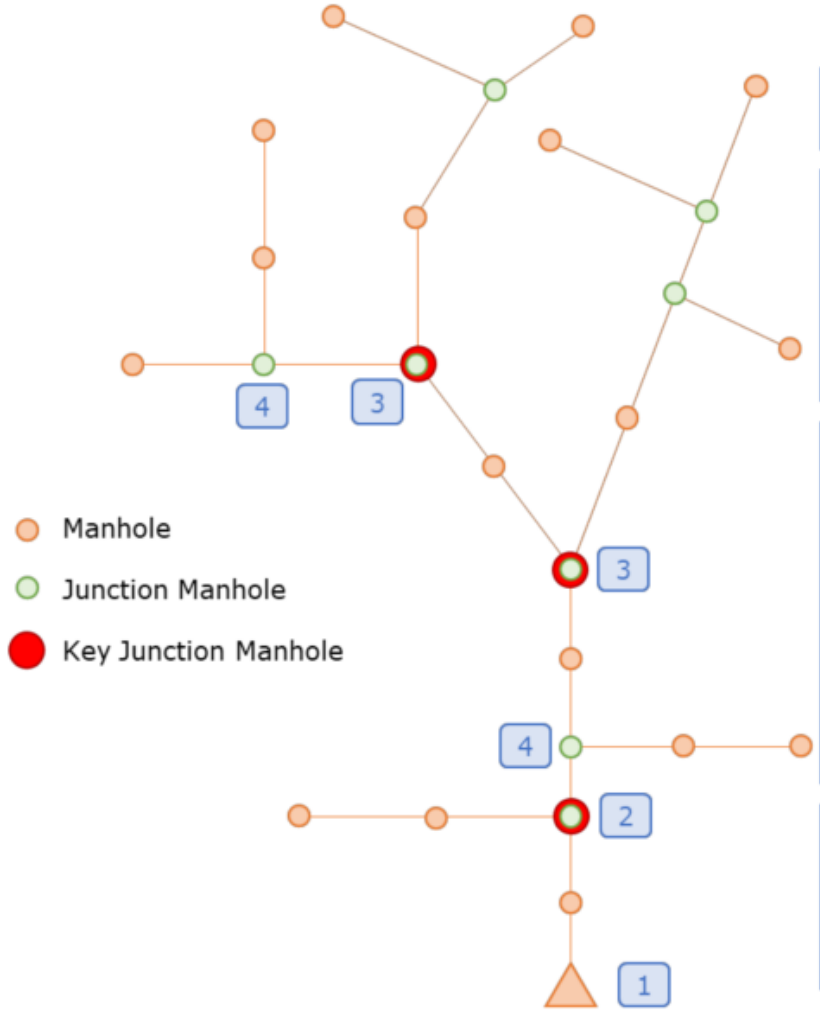
    Or

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

    Or

    - Ammonia ≥ 0.5 mg/L and surfactants ≥ 0.25 mg/L, and bacteria levels greater than water quality criteria applicable to the receiving water
- **Water quality results must hit or exceed *all three* thresholds (surfactants, ammonia, and chlorine) for it to be considered a likely sewer input**

ISOLATING FLOW BETWEEN MANHOLES



1. Outfall in catchment with junction manhole(s)

2. Investigate key junction manhole closest to outfall and inspect for evidence of illicit connections.

If flow IS present in key junction manhole, sample using test kits and compare to in-situ threshold levels.

3. If in-situ threshold levels are exceeded or evidence of illicit connections is present, identify upstream key junction manhole(s) and repeat investigation procedure.

If flow is NOT present in the key junction manhole closest to the outfall, remaining key junction manhole(s) in catchment must also be screened for the catchment to be considered complete.

4. If in-situ threshold levels are exceeded or evidence of illicit connections is present, continue investigations at junction manhole(s) until the source is isolated between two manholes

Next: CCTV, dye testing, or other methods to isolate the illicit source

Example of Isolating Illicit Discharge Between Manholes

(adapted from the Center for Watershed Protection's IDDE Guidance Manual, Chapter 13: Tracking Discharges to a Source)

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CATCHMENT INVESTIGATIONS (PART 2)

Wet Weather Outfall Investigations

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WET WEATHER OUTFALL INVESTIGATIONS

- **MS4 General Permit requirements:**
  Conduct wet weather sampling at all outfalls with at least 1 System Vulnerability Factor (SVF)
  - Examples of SVFs include:
    - History of SSOs
    - Inadequate level of service or frequent complaints of backups
    - Manholes or trenches with both storm drain and sanitary sewer
    - Sanitary sewers known or suspected to have underdrains
    - Defects in sanitary sewer infrastructure
    - Areas formerly served by combined sewers

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WET WEATHER OUTFALL INVESTIGATIONS

- **How does the MS4 General Permit define wet weather?**
  - Does not specify minimum rainfall event required
  - Requires “a storm event of sufficient depth or intensity to produce a stormwater discharge”
  - Recommends sampling in the spring when groundwater levels are high
  - Recommends avoiding the first flush

- **Inspection procedure and sampling requirements are the same as dry weather**

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CASE STUDY

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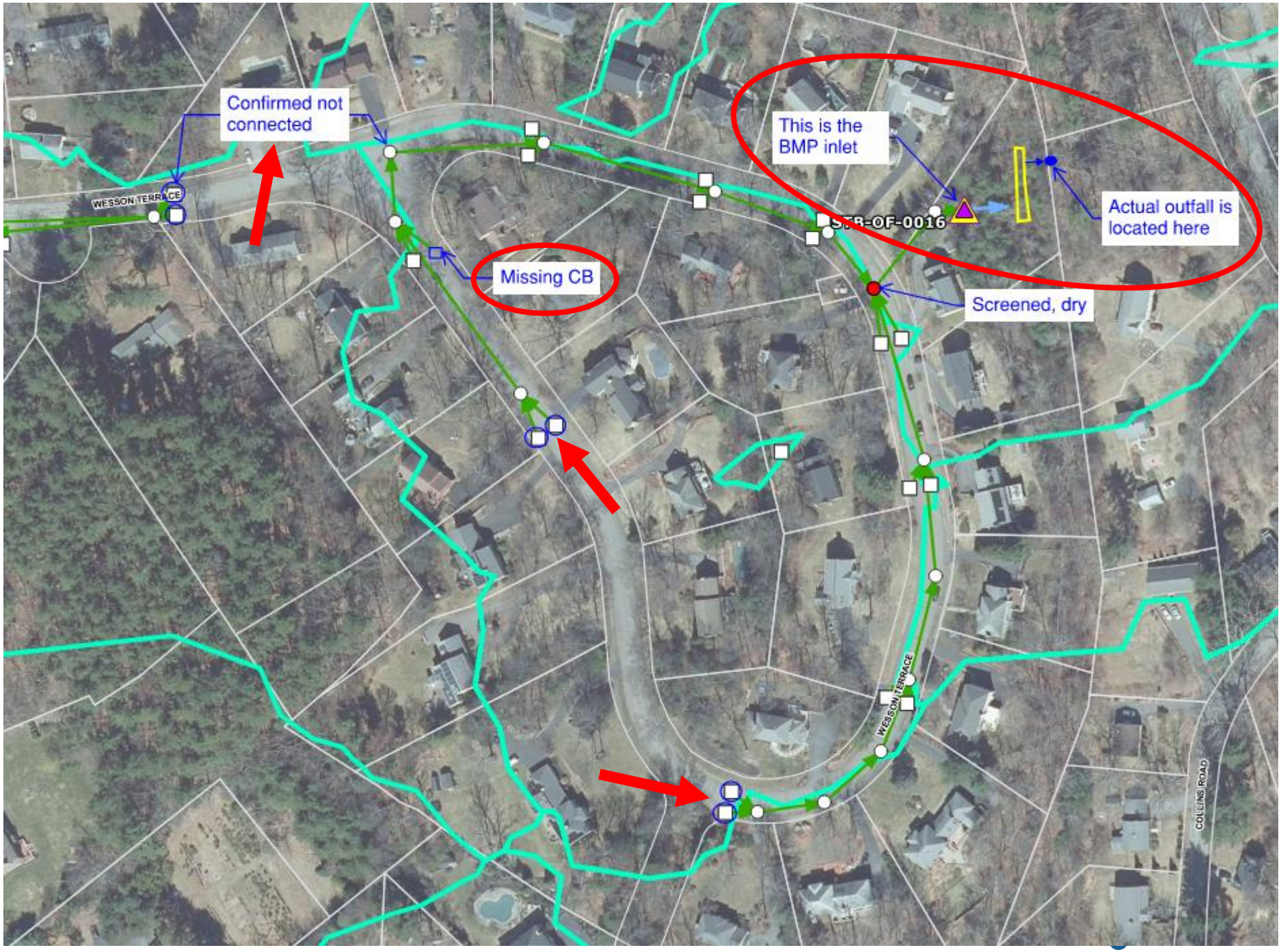
Confirmed not connected
This is the BMP inlet
Actual outfall is located here
Missing CB
Screened, dry
WESSON TERRACE
WESSON TERRACE
COLLINS ROAD

CHECKING IN: ANY IDDE QUESTIONS?

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MUNICIPAL GOOD HOUSEKEEPING

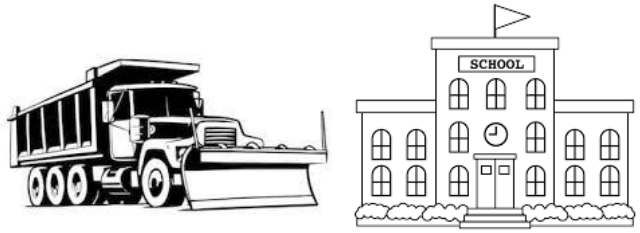
MS4 Requirements

MUNICIPAL GOOD HOUSEKEEPING REQUIREMENTS

- **Goal: Prevent or reduce pollutant runoff and protect water quality from municipal operations**

- Operations and Maintenance (O&M) Program Permit Year 2
  - Written O&M procedures
  - Municipal inventories of parks & open space, buildings & facilities, vehicles & equipment

- Record keeping
- Annual reporting
- Regular employee training!



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ADDITIONAL GOOD HOUSEKEEPING REQUIREMENTS

In addition to the O&M program, some municipalities are required to develop:

Stormwater Pollution Prevention Plan (SWPPP)

- Municipal maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater
- A SWPPP is not required for sites that already have an individual NPDES permit for industrial activities
- Quarterly site inspections are required, including 1 in wet weather

Oil Spill Prevention, Control, and Countermeasures (SPCC) Plan

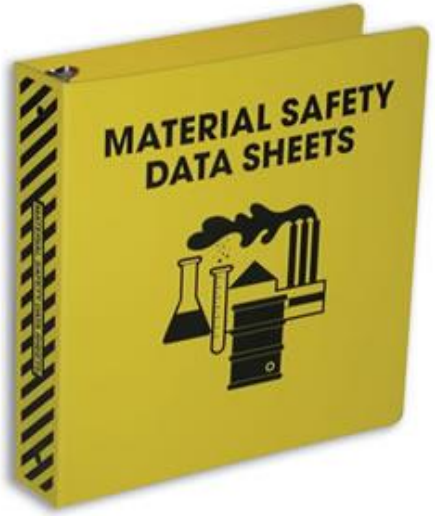
- Plan outlining oil handling procedures and spill prevention and response measures to prevent the discharge of oil to receiving waters
- Typical applicability: aboveground oil storage > 1,320 gallons or belowground oil storage > 42,000 gallons
- Use this EPA questionnaire to find out if your facility needs an SPCC Plan

MUNICIPAL GOOD HOUSEKEEPING

Buildings & Facilities

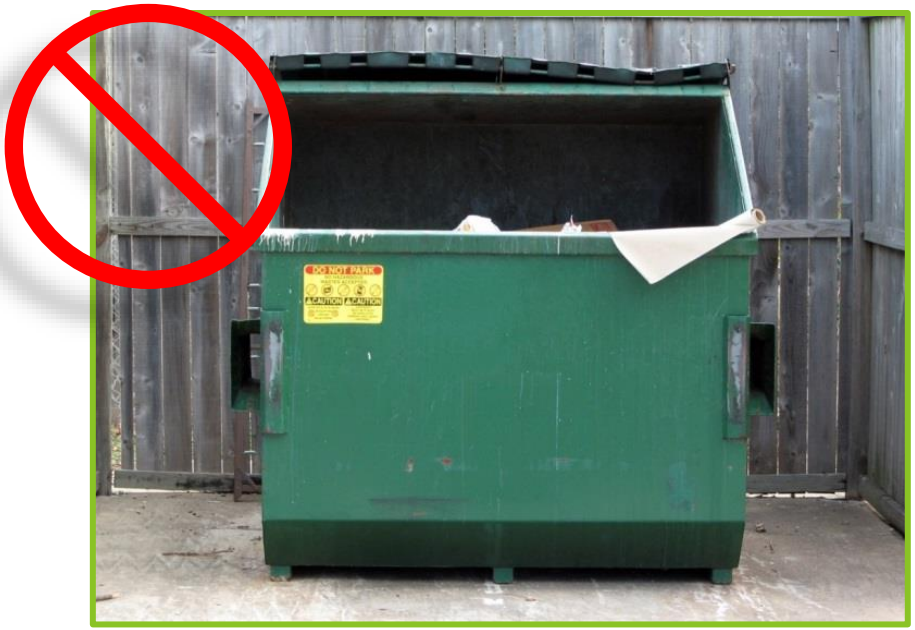
SOPs FOR MUNICIPAL OPERATIONS – BUILDINGS & FACILITIES

- Keep materials inside, away from stormwater
- SDS for all chemicals should be current and accessible to staff
- All containers with 55-gallon capacity must have secondary containment
- Know where pipes from facility floor drains go
  - Floor drains must discharge to a certified industrial wastewater holding tank or connect to a municipal sewer system
- Household hazardous waste accepted at limited facilities



SOPs FOR MUNICIPAL OPERATIONS – BUILDINGS & FACILITIES

- Dumpsters should have covers (closed!)
- Dumpster should be located away from catch basins and receiving waters
- Dumpster condition should be inspected regularly



SOPs FOR MUNICIPAL OPERATIONS – BUILDINGS & FACILITIES

- Examples of good practices – all materials are kept inside and labeled
- Inspect weekly

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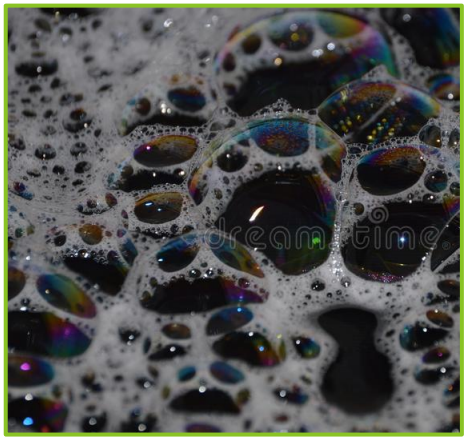
SOPs FOR MUNICIPAL OPERATIONS – BUILDINGS & FACILITIES

Pavement Tells a Story…



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MUNICIPAL GOOD HOUSEKEEPING

Parks & Open Spaces

SOPs FOR MUNICIPAL OPERATIONS – PARKS & OPEN SPACES

- Maintain pet waste handling and disposal locations
- Limit pesticide/herbicide use
- Adaptive turf maintenance program
  - Fertilizers, mowing, irrigation

SOPs FOR MUNICIPAL OPERATIONS – PARKS & OPEN SPACES

- Landscaping practices should protect water quality

Be aware of catch basins near mulched areas

Proper disposal of grass clippings and leaves (not like this!)

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MUNICIPAL GOOD HOUSEKEEPING

Vehicles & Equipment

SOPs FOR MUNICIPAL OPERATIONS – VEHICLES AND EQUIPMENT

- Conduct maintenance inside, not outdoors or near catch basins
- Store vehicles with fluid leaks inside
- Equipment containing oil should be stored inside

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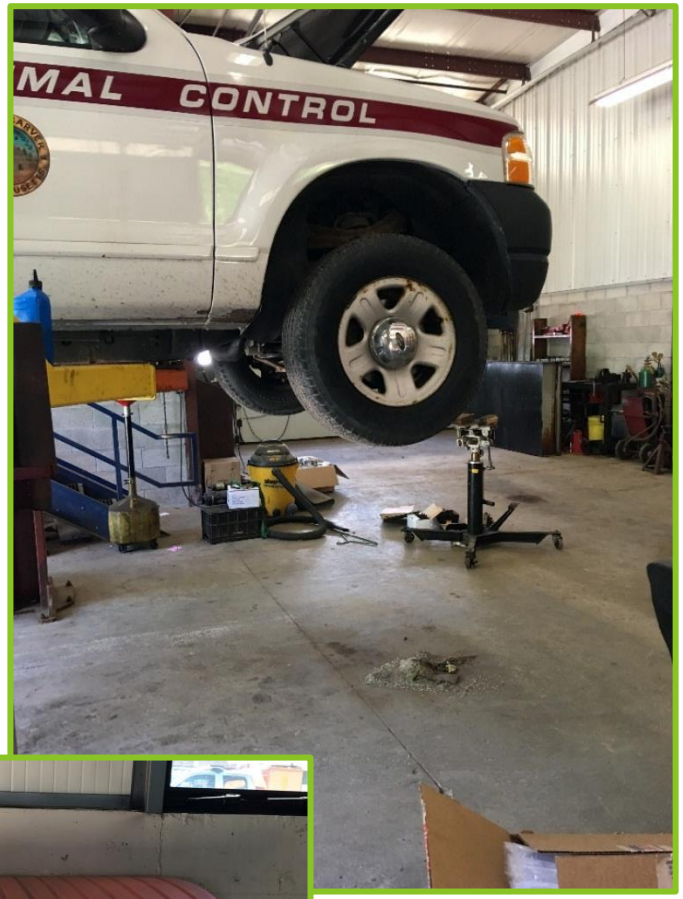
SOPs FOR MUNICIPAL OPERATIONS – VEHICLES AND EQUIPMENT

- Safe fueling practices
- Regular inspection and maintenance of garages



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SIDEBAR: SPILL RESPONSE REGULATORY NOTIFICATION

Regulatory agencies:

- National Response Center
  Call 800-424-8802
- MassDEP Emergency Response
  Call 888-304-1133

Municipal agencies:

- Fire & Police
- Highway Department/DPW
- Health Agent
- Water Department
- SPCC Emergency Coordinator

State (MassDEP)

- 10 gal or more (PCB < 500 PPM)
- 1 gal or more (PCB ≥ 500 PPM)
- Presents a sheen on water
- Impacts drinking water
- Poses an “imminent hazard”
- Storm drain or sanitary sewer

Federal (NRC)

- Sheen on waters
- Sludge or emulsion to waters
- Impacts water quality
- PCB 1 lb or More

Different chemicals have different Reportable Quantities (RQ)

SOPs FOR MUNICIPAL OPERATIONS – VEHICLES AND EQUIPMENT

- Avoid washing vehicles outdoors
- Use a vehicle washing station or commercial car wash
  - More information: EPA's Municipal Vehicle and Equipment Washing Fact Sheet

MUNICIPAL GOOD HOUSEKEEPING

MS4 Infrastructure Maintenance

SOPs FOR MUNICIPAL OPERATIONS – MS4 INFRASTRUCTURE

- Sweep all municipally-owned streets and parking lots in the urbanized area once per year
  - Nutrient impairments/TMDLs require sweeping twice per year in spring and fall
  - Solids, oil, grease, metals – increased sweeping in areas with high impervious area, commercial, high density residential
  - Maintain sweeping documentation
  - Ensure proper disposal (landfill) or approved reuse (restricted use compost, landfill cover, roadway fill)
    - MassDEP Policy #BWP-94-092: *Reuse & Disposal of Street Sweepings*

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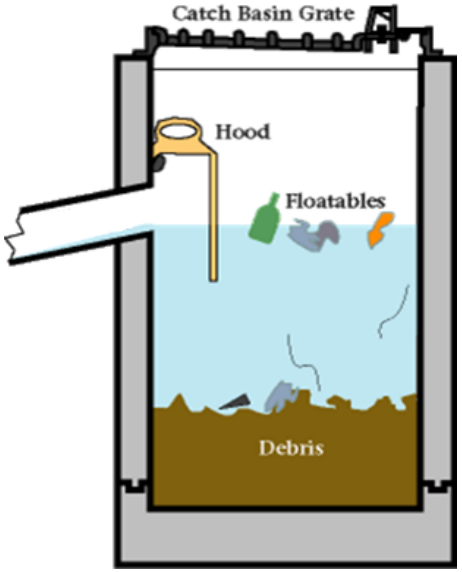
SOPs FOR MUNICIPAL OPERATIONS – MS4 INFRASTRUCTURE

- Catch basin cleaning
  - Catch basins must be cleaned to ensure sumps are not more than 50 percent full
  - Ensure proper disposal or reuse according to Mass DEP Policy *Management of Catch Basin Cleanings*
  - Conduct a visual inspection to make sure there are no maintenance issues to address (sediment buildup, broken grate, etc.)
  - Track percent full and maintain cleaning documentation using inspection forms
  - Report sewage odor or evidence of an illicit discharge



SOPs FOR MUNICIPAL OPERATIONS – SNOW STOCKPILE & REMOVAL

- Proper stockpiling
  - Stockpile on grassy areas and away from heavy vehicle traffic
  - Avoid surface waters and wetlands

- Plowing activities
  - Avoid blocking drainage structures – could cause localized flooding

For more information, visit the MassDEP Snow Disposal Guidance page

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SOPs FOR MUNICIPAL OPERATIONS – ROAD SALT/SAND APPLICATION & STORAGE

- Salt
  - It's very soluble! When exposed to stormwater it can migrate into and contaminate groundwater and surface waters.
- Proper storage
  - Keep sand and salt in a covered storage facility on a paved pad
  - Must be covered per MS4 permit AND MassDEP Drinking Water Protection regs
  - See MassDEP Guidelines on Road Salt Storage

- Proper use
  - Operator training
  - Calibration of equipment
  - Minimize use of chloride and other salts;
  - Evaluate use of alternative materials

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NEXT UP

Preview of Upcoming Stormwater Requirements

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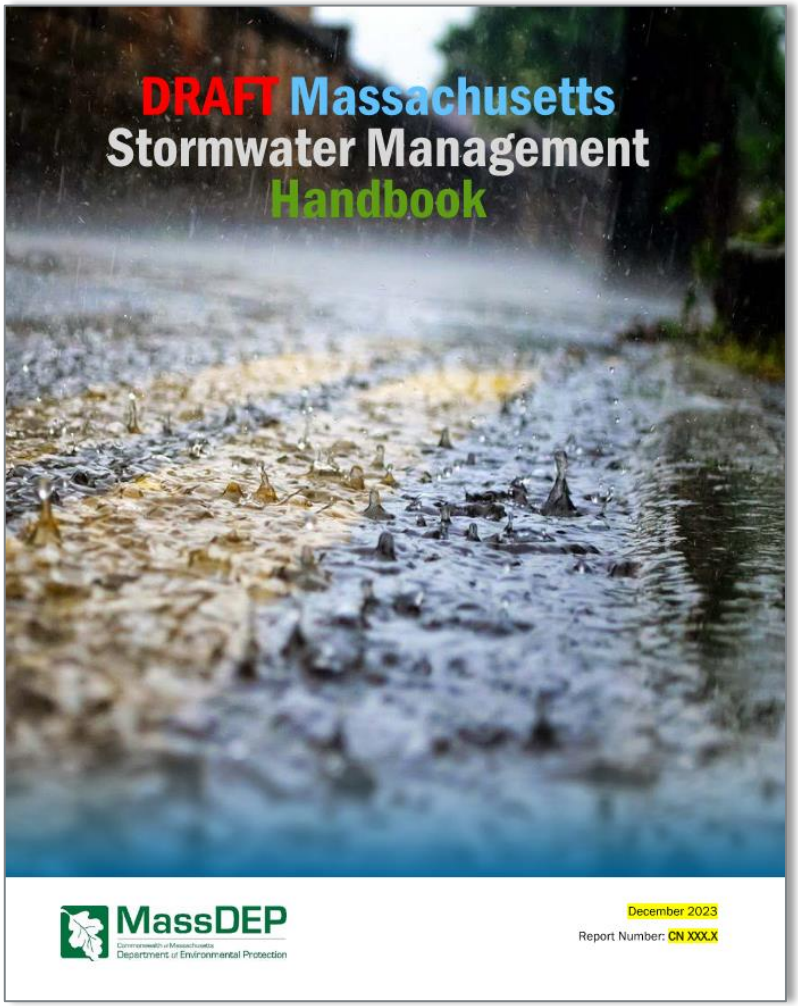
UPCOMING STORMWATER ITEMS

- **Draft Wetlands Protection Act Regulations Update & New MA Stormwater Handbook**
  - Public comment period ends April 30, 2024 at 5:00PM
  - Submit questions/comments to NMSC by Friday

- **Draft MS4 Permit**
  - 2016 Permit administratively continued
  - New Permit draft expected "later in 2024"
  - Anticipate 90+ day comment period and NOI & SWMP due within 1 year of effective date



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PERMIT YEAR 6 ANNUAL REPORT – DUE SEPT 28

Year 6 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: July 1, 2023-June 30, 2024

- **Continue with Annual Requirements** (public education & involvement, catchment investigations, construction site permit tracking, BMP inspections, sweeping & CB cleaning, etc.)
- **New Permittees**
  - Develop report assessing current street design and parking lot guidelines and other local requirements that affect the creation of impervious cover
  - Develop report assessing local regulations to determine the feasibility of making green infrastructure practices allowable
  - Identify properties that could potentially be modified or retrofitted with BMPs to reduce impervious areas (maintain a minimum of 5 sites)
  - Nitrogen/Phosphorus Source Identification Report (if applicable)
- **Impaired Waters/TMDL Requirements** (nitrogen, phosphorus, bacteria, chloride, solids, metals)
  - Continue seasonal messaging to applicable audiences
  - Install demonstration BMP (nitrogen/phosphorus)
  - Phosphorus Control Plans – Performance Evaluation

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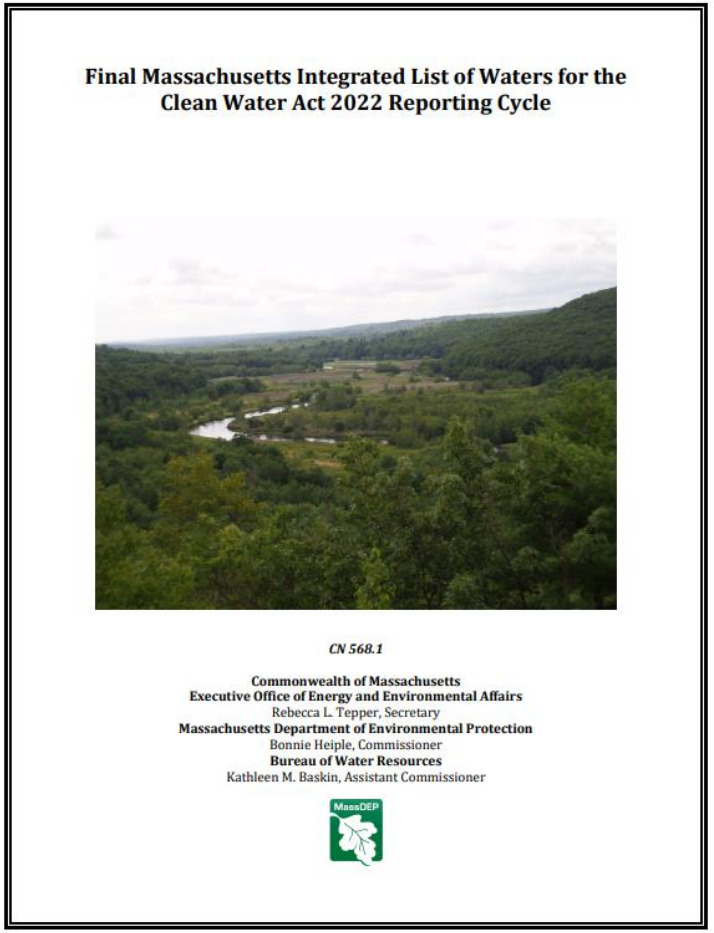
COMING UP IN PERMIT YEAR 7

- **Continue with Annual Requirements**
- **Complete Problem Catchment Investigations**
- **Impaired Waters/TMDL Requirements** (nitrogen, phosphorus, bacteria, chloride, solids, metals)
  - Phosphorus Control Plans – Performance Evaluation
  - New Permittees: complete written PCP
- **Review 2024 Integrated List of Waters when posted by MassDEP**


Final Massachusetts Integrated List of Waters for the Clean Water Act 2022 Reporting Cycle

CN 568.1

Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
Rebecca L. Tepper, Secretary
Massachusetts Department of Environmental Protection
Bonnie Heiple, Commissioner
Bureau of Water Resources
Kathleen M. Baskin, Assistant Commissioner

MassDEP

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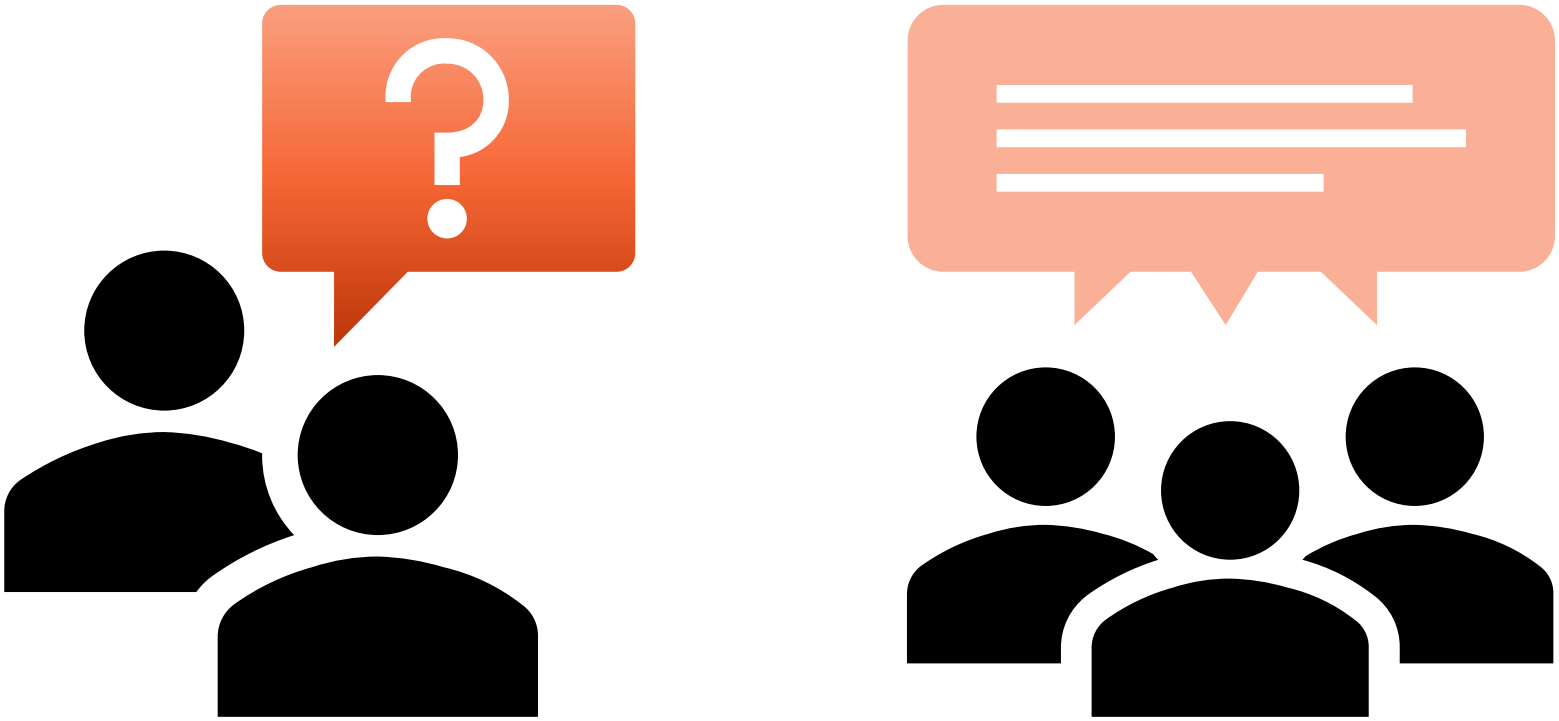

Thank You!

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