

# Good Housekeeping Workshops

Merrimack Valley Stormwater Collaborative



## Workshop 2 – Buildings, Facilities, Vehicle and Equipment Maintenance

March 20, 2015

**Anne Kitchell , Gary Hedman, and Ellie Baker**  
Horsley Witten Group, Inc.



# Good Housekeeping Workshop Agenda

## **Workshop 1 – Parks & Recreation Areas**

Tuesday, March 10, 2015 (8 - 11:00 AM)

Snow date: Thursday, March 12, 2015

Northern Essex Community College -  
Classroom

## **Workshop 2: Buildings, Facilities, Vehicle and Equipment Maintenance**

Friday, March 20, 2015 (8 - 11:00 AM)

Andover Public Safety Building and Public  
Works Maintenance Yard

## **Workshop 3: Stormwater Management and Infrastructure Maintenance**

Friday, April 10, 2015 (8 - 11:00 AM)

Northern Essex Community College –  
Classroom

- Introduction
- Water quality, regulations, and municipal facilities
- Field Trip- Andover DPW
- Pollution prevention practices and SWPPs
- Spill Prevention Measures and SPCCPs
- Opportunities for Regional Efficiencies
- Wrap up







## Some municipal operations that can impact stormwater quality

- **Municipal Hotspot Facility Management**
- Municipal Construction Projects
- Street Repair and Maintenance
- Street Sweeping
- Storm Drain Repair/Maintenance
- Landscape & Park Maintenance
- Stormwater BMP Maintenance
- Municipal Employee Training







**Stormwater hotspots are those sites that produce high levels of stormwater pollutants**



**AND/OR**



**present a high risk for spills, leaks or illicit discharges**



# Do you know your municipal stormwater hotspots?

1. How many hotspot facilities are located in your community?
2. Have all hotspots been the subject of an on-site investigation?
3. Have pollution prevention measures been implemented?

- Public Works Yards
- Vehicle/Equipment Storage
- Maintenance Yards
- Water and Wastewater Treatment Facilities
- Landfills
- Solid Waste Handling and Transfer Facilities
- Composting Facilities
- Public Buildings (Schools, Libraries, Police and Fire Departments)
- Public Parks
- Public Golf Courses
- Public Swimming Pools



**Table 4: Pollution Generating Activities and Stormwater Pollutants Associated with Municipal Operations**

Pollution Generating Activity	Stormwater Pollutants					
	Sediment	Nutrients	Metals	Hydro-carbons	Toxins	Others
<i>Hotspot Facility Management</i>						
Vehicle Repair	○	○	●	●	●	
Vehicle Fueling	×	○	●	●	●	
Vehicle Washing	●	●	⊙	⊙	●	
Vehicle Storage	○	×	⊙	●	○	Trash
Outdoor Loading	●	⊙	⊙	○	○	Organic Matter
Outdoor Storage	●	⊙	⊙	⊙	⊙	Chloride
Waste Management	○	⊙	⊙	⊙	●	Trash , bacteria
Building Repair	●	○	⊙	⊙	⊙	
Building Maintenance	●	×	●	○	⊙	
Parking Lot Maintenance	●	○	⊙	●	⊙	Chloride
Turf Management	⊙	●	×	×	●	Pesticides , bacteria
Landscaping	○	●	×	×	●	Pesticides
Swimming Pool Discharges / Fountains	×	×	×	×	×	Chlorine, bacteria

**Key**

× = not associated with operation

● = frequently associated with operation

⊙ = infrequently associated with operation

○ = rarely associated with operation

Source: Municipal Pollution  
Prevention/ Good Housekeeping  
Practices (CWP, 2008)



- Sand
  - plugged storm drains, which can cause flooding
  - fill in aquatic habitats, and cloud waterbodies
- Oils, metals, etc
  - Toxic
- Salt
  - highly soluble in water and no BMPs to easily remove it
  - deteriorated paved surfaces and infrastructure
  - vegetation dieback and effects on metabolic processes of aquatic biota.
  - groundwater contamination, trace metal leaching, changes to soil composition
  - poor vertical mixing in ponds



# Chloride concentrations measured in the Chesapeake Bay Region

Runoff, Salt storage areas	50,000 to 80,000 mg/l
Highway melt-water runoff	5000 to 15,000 mg/l
Snow piles in parking lots	2000 to 4000 mg/l
Street melt-water runoff	2000 to 4000 mg/l
Urban streams in winter	1500 to 3000 mg/l
Urban streams in summer	50 to 400 mg/l
Normal Freshwater	20 to 50 mg/l
Chesapeake Bay	1000 to 10,000 mg/l
Mouth of Chesapeake	20,000 to 30,000 mg/l
Ocean Water	30,000 to 36,000 mg/l

<http://chesapeakestormwater.net/2009/01/winter-road-salt-and-the-chesapeake-bay/>





# Why do we care about Pollution Prevention?

- Prevention is more cost-effective than mitigation/restoration
- Our stormwater BMPs can't do all the work
- Helps reduce liability and future maintenance/clean up burden
- Minimizes health risks to residents and workers
- It is required:
  - Municipal Separate Storm Sewer System (MS4) Program
  - RCRA, Hazardous materials and spill response regulations



## MS4 Minimum Control Measures

1. Public Education & Outreach
2. Public Involvement & Participation
3. Illicit Discharge Detection and Elimination
4. Construction Runoff
5. Post-Construction Stormwater Management
- 6. Pollution Prevention & Good Housekeeping in Municipal Operations**

Welcome to the MS4 program!



# **MS4 Permit Requirements For Pollution Prevention / Good Housekeeping in Municipal Operations**

## **2003 Permit**

- Develop and implement a program with the goal of preventing and/or reducing pollutant runoff from municipal operations
- Include an employee training component
- Include maintenance activities for parks and open space, playing fields, fleet maintenance, building maintenance
- Develop schedules for maintenance activities
- Develop inspection procedures and schedules for structural controls



# MS4 Permit Requirements 2.3.7 for Pollution Prevention / Good Housekeeping Control Measures

## 2014 Draft

- Inventory all facilities by end of Permit Yr 1
- Develop written O&M procedures by end of Permit Yr 1:
  - Parks and Open Space (Workshop 1)
  - **Buildings and Facilities**
  - **Vehicle and Equipment Maintenance**
  - Stormwater Infrastructure (Workshop 3)
- Implement specific (minimum) activities and schedules
- Develop Stormwater Pollution Prevention Plans (SWPPPs) for certain facilities (with inspection and record keeping requirements)
- Includes additional requirements for TMDL or impaired waters





## 2014 Draft Permit: O&M Program **for buildings and facilities** 2.3.7(a)(ii)(b)

### Applicable sites:

- Permittee-owned or operated
- Where pollutants are exposed to stormwater
- Includes usual suspects plus schools, town offices, police, fire, parking garages, and pools
- Parking lot and building housekeeping measures

### Permittees must:

- Evaluate use, storage, and disposal of petroleum products & other potential stormwater pollutants
- Provide employee training
- Ensure that Spill Prevention Plans are in place and coordinate with Fire Department, if applicable
- Develop management procedures for dumpsters and other waste equipment
- Sweep parking lot and areas surrounding facility







## 2014 Draft Permit: O&M Program for **vehicles and equipment** 2.3.7(a)(ii)(c)

Permittees are required to:

- Establish procedures for vehicle storage
  - Vehicles with fluid leaks to be stored indoors or contained until repaired
- Evaluate permittee-owned or operated fueling areas
  - If possible, place under cover
- Establish vehicle washing procedures
  - Eliminate discharge of wash waters to storm drain or surface waters
  - These discharges are not authorized by this permit.



# Related items at individual facilities

## 2014 Draft Permit: **Infrastructure** O&M 2.3.7(a)(iii)

Permittees are required to:

(b) Clean catch basins

- 50% capacity threshold
- Optimization/increased frequency where needed
- Maintenance logs- quantity of material removed

(c) Sweep streets/parking areas 1/yr  
(more in target pollutant areas)

(d) Properly store catch basin  
cleanings/sweepings prior to  
disposal

(e) Procedures for salt storage/useage

(f) Stormwater drain/BMP inspection  
and maintenance



**Workshop 3: Stormwater  
Management and Infrastructure  
Maintenance**  
Friday, April 10, 2015 (8 - 11:00 AM)  
Northern Essex Community College –  
Classroom





# **2014 Draft Permit: Stormwater Pollution Prevention Plans (SWPPPs) 2.3.7(b)**

Develop and implement SWPPP for each facility

- maintenance garages , public works yards, transfer station, and other waste handling facilities where pollutants are exposed to stormwater
- If multiple facilities on same property, can develop one SWPPP
- Not needed if already under a Multi-Sector General Permit

(i) Completed by end of Permit Yr 2

(ii) Include specific elements and measures

(iii) Conduct quarterly site inspections (once during rain event)

(iv) Keep written records of maintenance, inspections and trainings



# Components of a SWPPP 2.3.7(b)(ii)

## Elements of the SWPPP

- (a) Pollution Prevention Team
  - Names, titles, roles
- (b) Description of facility & pollution source identification
  - Map with location of outfalls, receiving waters, floor drains, controls, etc
- (c) Identification of Stormwater Controls
  - Including measures to control off-site run-on
  - Address pollutants of concern
- (d) Management Practices


## Management practices to include

1. Minimize /prevent exposure
2. Good housekeeping
3. Preventative maintenance
4. **Spill prevention and response**
5. Erosion and sediment control
6. Management of runoff
7. Salt storage piles (enclose or cover by YR2, minimize exposure during transfer)
8. Employee training (annual)
9. Maintenance of control measures



# Survey Says...

## Vehicle refueling/fuel storage locations

DPW yard	8
Separate Parks Dept 	1
Outside provider	4

## Type of Fuel Stored

Unleaded	4
Diesel	9
Propane/Natural Gas	0
Fuel Oil	1

## Storage Type

UST Storage capacity	5
AST Storage capacity	6

## Existing compliance items for DPW/Maintenance yards

SPCCP	7
SWPPP	4
Annual Tier 2 Reporting	4
UST Operator (Class A/B/C)	2

## Where does vehicle / equipment washing occur? n=10

DPW/ Maintenance yard (discharge to ground surface or stormwater drain)	9
Vehicle wash rack (discharge to tight tank or sewer)	0
Outside of building	1
Other	1

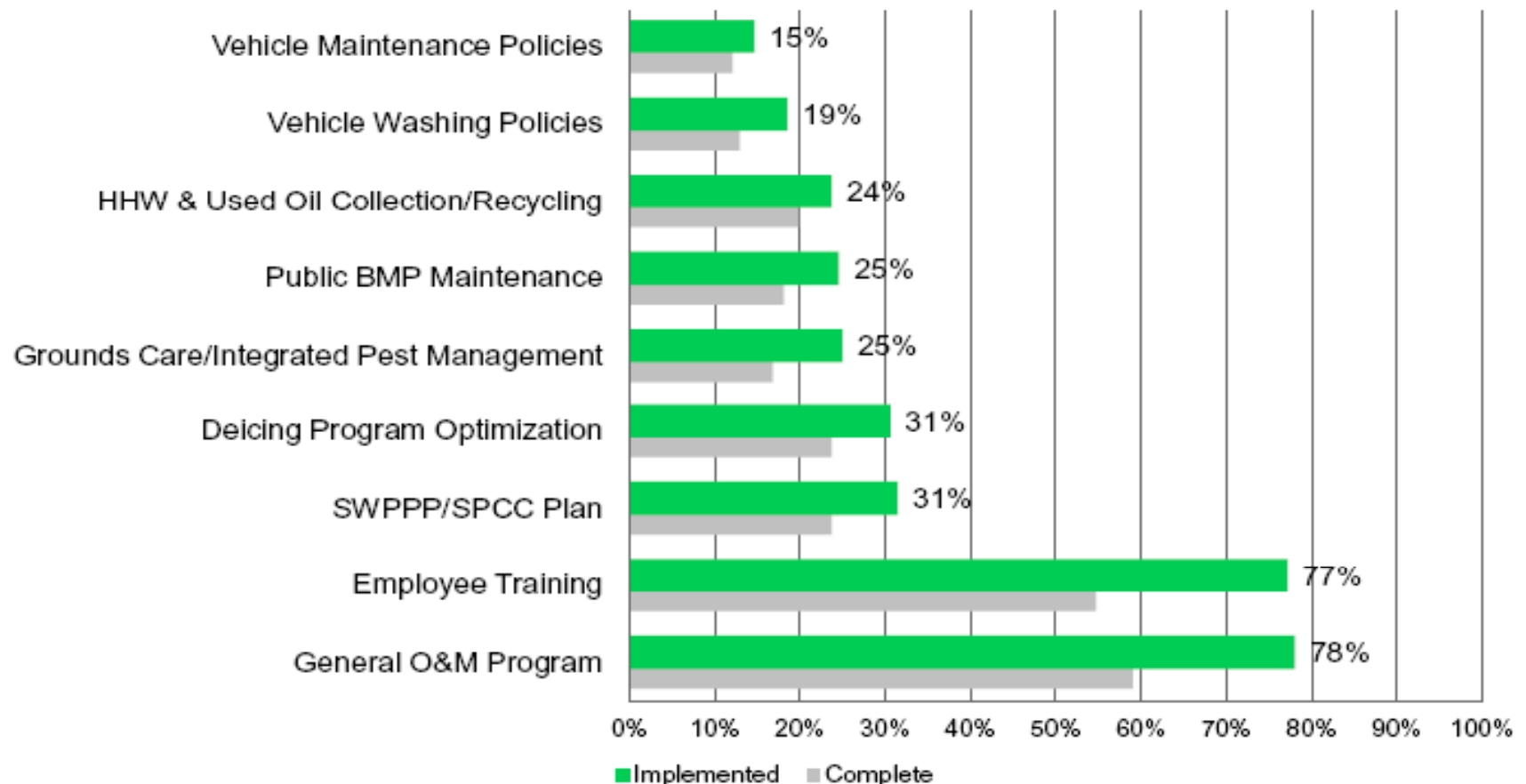
## Are there existing programs/ procedures in place for the following? n=10

Storage of materials	2
Refueling	1
Fleet washing facilities	1
Salt storage	3



## EPA 2011-2012 Annual Report Summary (232 of 238 MS4s)

### Pollution Prevention and Good Housekeeping BMPs (MCM6)



Percent reporting the use and completion of practice among the 97% of MA municipalities reporting








**What if my site drains to impaired waters?**

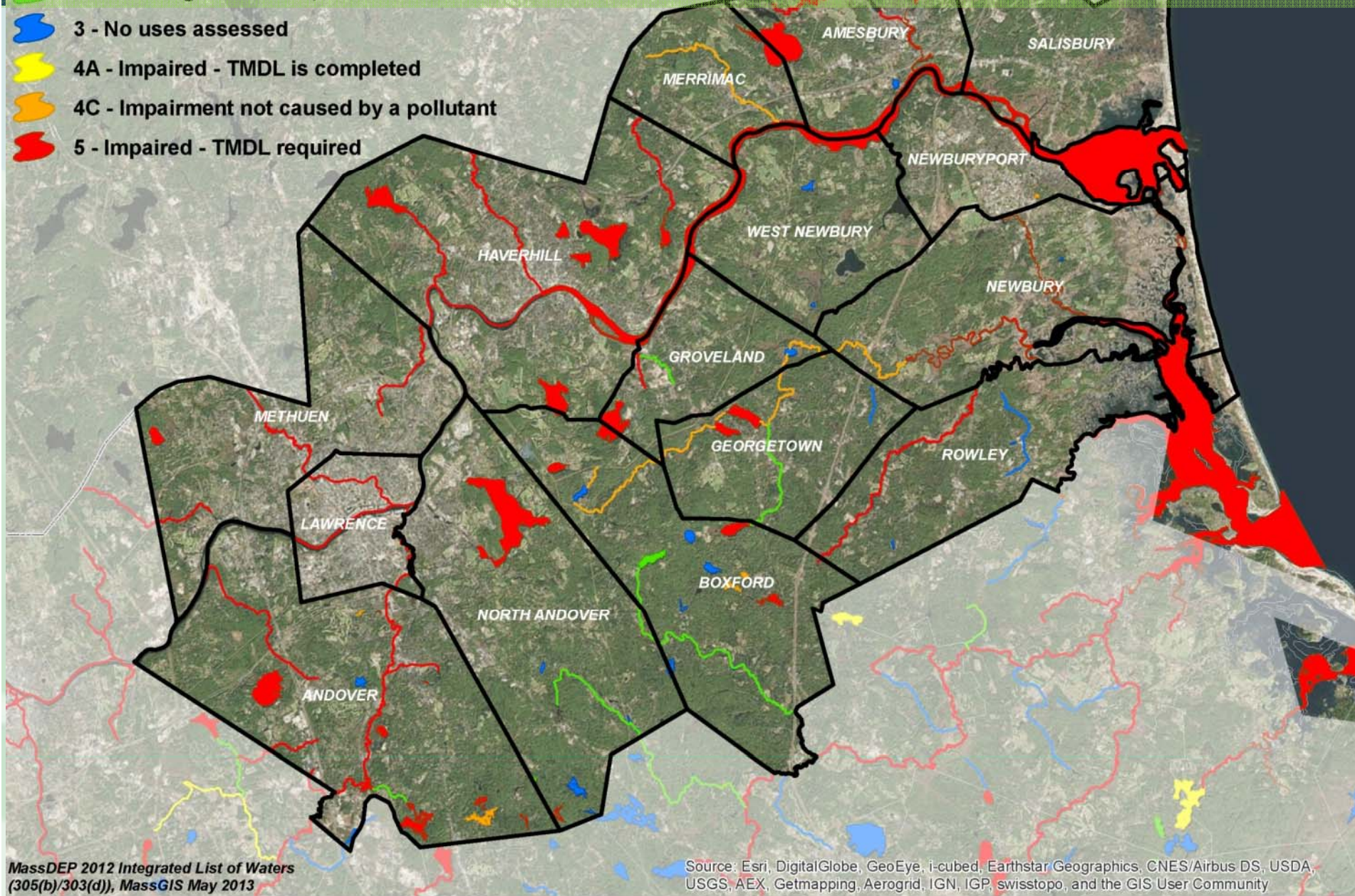




# MassDEP 2012 Integrated List of Waters (305(b)/303(d))



-  2 - Attaining some uses; other uses not assessed
-  3 - No uses assessed
-  4A - Impaired - TMDL is completed
-  4C - Impairment not caused by a pollutant
-  5 - Impaired - TMDL required





# Enhanced PP/GH measures for impaired waters (Appendix F and H)

## Nutrients

- Use of slow release fertilizer (nitrogen impaired)
- Procedures to manage grass clippings and leaf litter, including prohibiting blowing of organic waste onto impervious cover
- Increased street-sweeping frequency (2x/yr spring and fall)
- Other
  - Targeted residential education on fertilizer, organic waste management, pet waste
  - Stormwater BMPs optimized for nutrient removal

## Bacteria/pathogens

- No additional PPP
- Other
  - Public education focus on pet waste and septics
  - Outfall catchments prioritized under IDDE program

## Metals

- increased sweeping freq. in high priority areas
- Potential for increased catch basin cleaning to target high pollutant loads



# Enhanced PP/GH measures for impaired waters

## Chloride

1. Salt Reduction Plan (5YR to fully implement)
2. Track salt type and amount used
3. Operational changes, equipment changes, training, guidelines for application rate
4. Address privately-owned facilities
  - Ordinance to prevent stockpile exposure private applicators
  - Annual educ. message on proper storage and application rates

- Prewetting, pretreating stockpile, increased plowing, monitoring road surface temp.
- Equipment upgrades to provide better calibration or pre-wetting capabilities
- Training of staff and contractors
- Winter Parking Lot and Sidewalk Maintenance Manual (2008); Operator Field Handbook (2012)
- Regular calibration of spreading equipment
- Designation of no/low salt zones
- Measure to prevent stockpile exposure
- Estimates on total tonnage of salt reduction expected



# Field Trip: Andover Municipal Yard





# Small Group Walkabout

- Break into 6 groups (see # on name tag)
- Grab handout/clipboard.
- Walk to site.
- 30 minutes to evaluate site:
  1. Map the drainage network (inlets, BMPs, discharge point) and note surface drainage patterns
  2. Mark locations of potential pollutants
    - Type
    - Pollution prevention measure used, or what is needed
  3. Identify best or most innovative measure observed at the site.
  4. What is the most challenging pollutant/feature of the site?



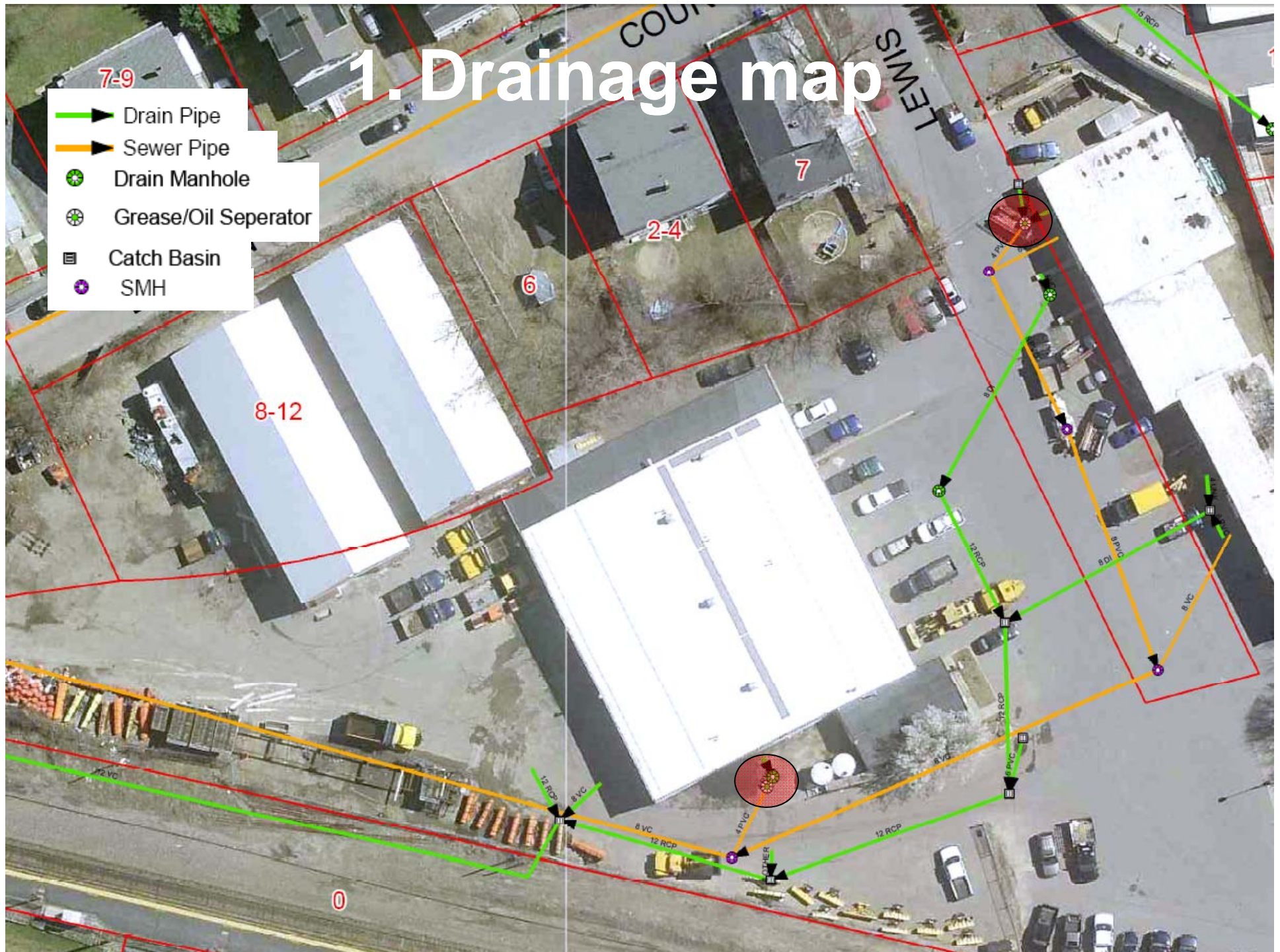


# Field Trip: Andover Municipal Yard





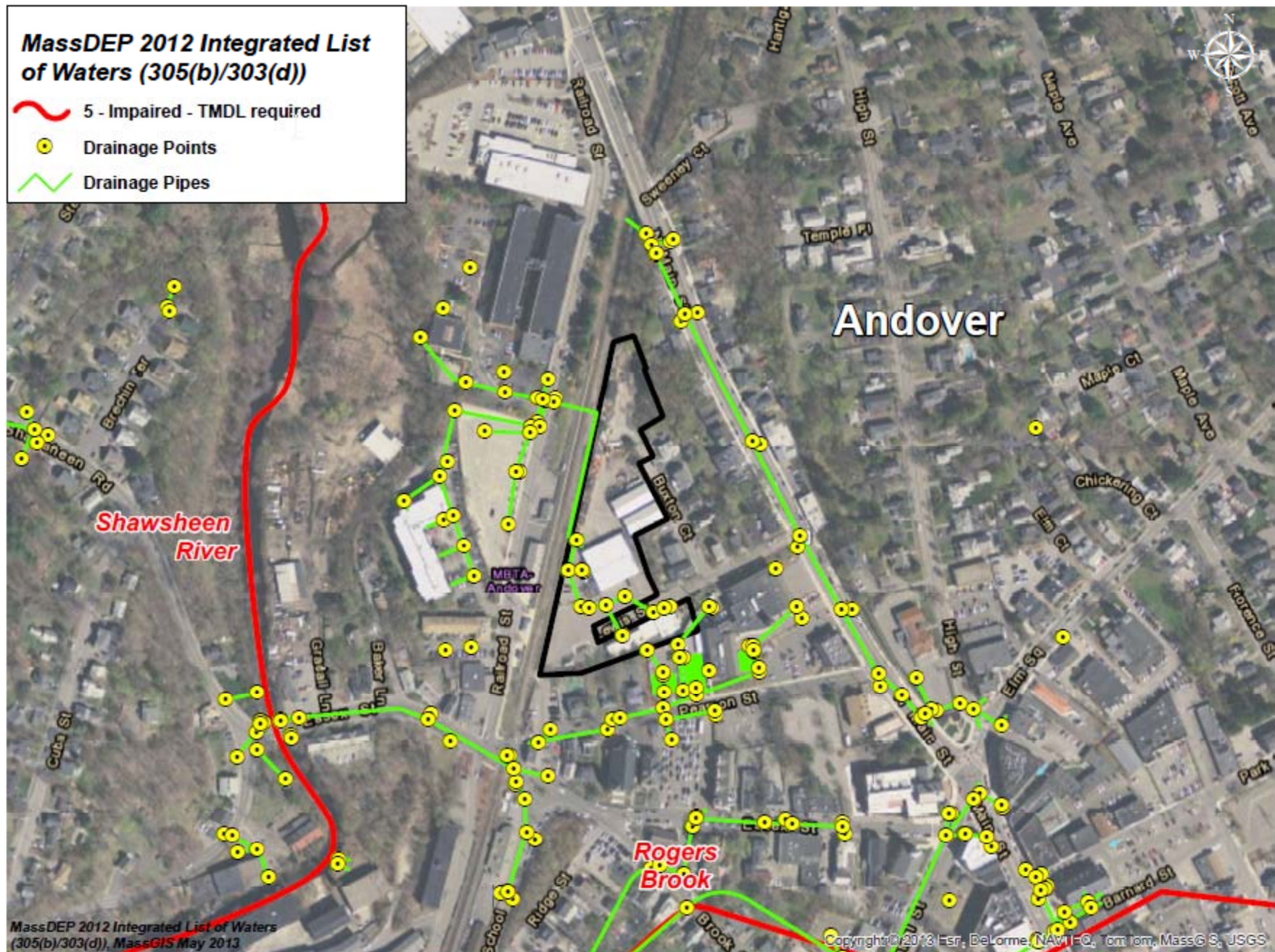
# 1. Drainage map





**MassDEP 2012 Integrated List  
of Waters (305(b)/303(d))**

-  5 - Impaired - TMDL required
-  Drainage Points
-  Drainage Pipes







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# Causes of Impairment

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## Shawsheen River

From Wikipedia, the free encyclopedia

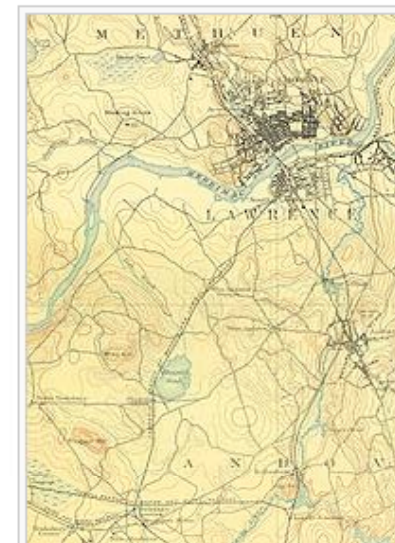
Coordinates:  42°7′53″N 71°14′03″W﻿ / ﻿



The Shawsheen River in Billerica 

The **Shawsheen River** is a 26.7-mile-long (43.0 km)<sup>[1]</sup> tributary of the [Merrimack River](#) in northeast [Massachusetts](#). The name has had various spellings. According to Bailey's history of Andover, the spelling Shawshin was the most common in the old records, although Shawshine, Shashin, Shashine, Shashene, Shawshene, and later, Shawsheen, are found. The name, says Bailey, is said to mean "Great Spring".<sup>[2]</sup>

The river runs generally northward through the towns of [Bedford](#), [Billerica](#), [Wilmington](#), [Tewksbury](#), [Andover](#), and [Lawrence](#), where it joins the Merrimack. Like its parent, the river has played an important role in the development of the area, including industrial development, with many mills built to take advantage of the





## Causes of Impairment for Reporting Year 2010

[Description of this table](#)

Cause of Impairment	Cause of Impairment Group	State TMDL Development Status
Dissolved Oxygen	Organic Enrichment/Oxygen Depletion	TMDL needed
Fecal Coliform	Pathogens	TMDL completed

## References [\[edit\]](#)

- ↑ U.S. Geological Survey. National Hydrography Dataset high-resolution flowline data. *The*

 Shawsheen River 



## 2. What potential pollutants/measures did you see?





# PP/GH control measures

## 3. What was your favorite PP/GH?

**Table 4: Pollution Prevention/Good Housekeeping Practices Commonly Used to Control Stormwater Pollution at Municipal Hotspot Facilities**

Hotspot Activity	Pollution Prevention/Good Housekeeping Practices
Vehicle Maintenance and Repair	Drip pans, tarps, covered outdoor storage areas, secondary containment, discharge of washwater to sanitary sewer system, proper disposal of used fluids, disconnected storm drains, automatic shutoff nozzles, signs, spill response plans, spill clean up materials, dry clean up methods, employee training, stormwater retrofits
Vehicle Fueling	
Vehicle Washing	
Vehicle Storage	
Outdoor Loading and Unloading	Covered loading and unloading areas, secondary containment, storm drain disconnection or treatment, inventory control, spill response plans, spill clean up materials, dry clean up methods, employee training, stormwater retrofits
Outdoor Storage	
Dumpster/Waste Management	Dumpster/waste management, secondary containment, storm drain disconnection or treatment, liquid separation/containment, employee training
Building Repair	Temporary covers/tarps, employee training, contractor training, proper cleanup and disposal procedures, disconnected storm drains, dry cleaning methods, stormwater retrofits
Building Maintenance	
Parking Lot Maintenance	
Turf Management	Integrated pest management, reduced non-target irrigation, careful applications, proper disposal of landscaping waste, avoid blowing and hosing to storm drain, employee training, stormwater retrofits
Landscaping	
Swimming Pool Discharges	Discharge to sanitary sewer system, discharge to pervious areas, employee training



# Vehicle Operations



**Vehicle Storage**



*Source: United States Department of Energy*

**Vehicle Repair**



**Vehicle Fueling**



*Source: City of Memphis, TN*

**Vehicle Washing**



# Vehicle Fueling



- Cover
- Stormwater management



# On-Site Fuel Storage



Spill response and cleanup measures

## REFUELING PROCEDURES

1. All refueling operation will be conducted by a licensed vehicle operator.
2. The operator of the vehicle being refueled will be at refuel nozzle at all times that the pump is engaged.
3. The vehicle operator shall observe at all times the dispensing of motor fuel into the vehicle.
4. Hold-Open devices in the dispensing nozzle are NOT allowed; i.e. gas caps, tennis balls, or any other wedging device. This nozzle will be held open manually by the vehicle operator.
5. Smoking is NOT allowed within 50 feet of the refueling island.
6. Turn off engine before refueling.
7. Do not run over hoses or other equipment.
8. Fuel pumps are under surveillance 24 hours per day.

All spills or damage must be reported immediately at extension 8288 from 7:00 am to 5:00 pm and the Fire Department after normal working hours.

*Failure to comply with the above procedures may result in disciplinary action.*

Signage and training







# Vehicle maintenance and repair

## PP/GH Measures

- Indoors or covered
- Drip pans, leak containment
  - Dry cleanup
- Proper fluid disposal collection and signage
  - Spill response and cleanup measures







Secondary containment (or other options...)









Empty drum management







# Vehicle Washing

- Designated wash areas
- Collection of washwater
- Connection to sewer





Drain cleanouts















Outdoor wash area considerations



# Outdoor Material Storage and Transfer



- Cover or enclose
- Locate away from stormdrains
- Secondary containment
- Stormwater treatment
- Dry cleanup methods
- Employee training and Awareness
- Retrofits











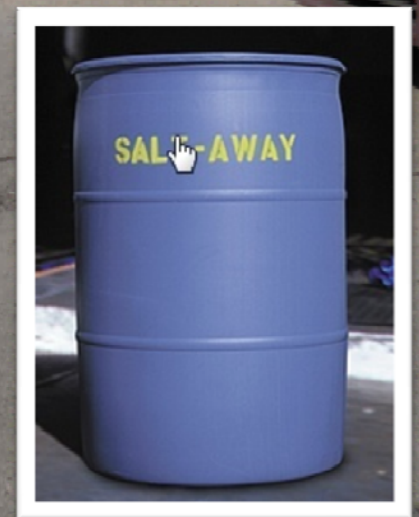
Minimize exposure at loading/unloading  
(sweeping, temporary covers, etc)







- SWPPP requirements include enclosing or covering all salt stockpiles
  - Prevent exposure of storage areas to precipitation
  - Identify storage areas
  - Assign responsibility for storage area management
- Public education
- Reduce salt application in chloride sensitive areas

















# Waste Management



Dumpster



Type of Waste

- Dumpster cover or enclosure
- Disconnection from storm drain or provide treatment
- Liquid separation/containment
- Employee training







**WASTE OIL  
ONLY**

**NO**

TRANSMISSION OIL  
GREASE OR CHEMICALS  
TO BE DEPOSITED IN TANK

**WASTE OIL  
ONLY**





# Buildings, parking lots, stormwater BMPs







- Washwater from building/surface cleaning cannot be discharged to stormdrains
- Sweeping of parking lots and maintenance of catch basins
- Maintenance of stormwater facilities
- Repaving considerations
- Reducing sedimentation and contamination on unpaved yard areas
- Disconnecting impervious cover



# Managing Run-on





# Stormwater Treatment Practices

- What and where are they?
- Are they the best option for my facility's pollutants and downstream waterway?
- What is the maintenance procedure?
- Can we retrofit?



4. What is the biggest PP/GH challenge at this site?

- What does Andover DPW need to implement to comply with 2014 MS4 PP/GH requirements?





# Spill Prevention Control & Countermeasure Plans

- Required under 40 CFR 112 for facilities that:
  - Have an aboveground oil storage capacity of more than 1,320 gallons or a completely buried oil storage capacity greater than 42,000 gallons; and
  - Could reasonably be expected to discharge oil to navigable waters or adjoining shorelines in quantities that may be harmful



# Spill Prevention Control & Countermeasure Plans

- Aggregate storage volume:
  - Example:
    - Three 55-gallon drums
    - 1,000 gallon Diesel AST
    - 250 gallon Gasoline AST
    - 1,415 gallons of storage capacity combined



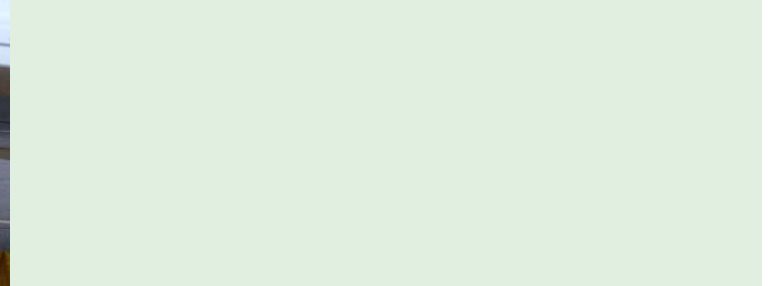


# Secondary Containment Requirements:





# Spill Response Resources





# Employee Training / Emergency Response

- SPCCP Requirements:
  - Annual Discharge Prevention Briefings
  - Initial training for all oil handling personnel
  - Established spill response procedures
  - Established notification procedures:
    - Local Response Officials
    - Cleanup Contractors
    - Facility Managers
    - Massachusetts DEP
    - National Response Center



**EMERGENCY RESPONSE ACTION PLAN  
ATTACHMENT TO THE SPILL PREVENTION, CONTROL, AND  
COUNTERMEASURE PLAN**

**SUN ISLAND FUEL, INC.  
NANTUCKET, MASSACHUSETTS**

This Emergency Response Action Plan has been developed for Sun Island Fuel, Inc., 5 Sun Island Road, Nantucket, Massachusetts, 02554 as a guide to assist in the response to releases of oil or hazardous materials to the environment.

**1.0 EMERGENCY NOTIFICATION PHONE LIST**

National Response Center (to report a release to navigable waters)

24-Hour Call Center: (800) 424-8802

Massachusetts Department of Environmental Protection

Emergency Response Center

24-Hour Call Center: (888) 304-1133

Massachusetts State Police: 911 or (508) 228-0706

Nantucket Fire Department: 911 or (508) 228-2323

Nantucket Police Department: 911 or (508) 228-1212

Sun Island Fuel, Inc. Emergency Response Personnel include the following:

**Spill Response Coordinator:**

Dennis Egan, President  
Sun Island Fuel, Inc.  
(774) 836-5664 (24-Hour Contact Number)

**Alternate Spill Response Coordinator:**

Scott Herrick  
Operations Manager  
(508) 228-3272 (24-hour contact number)





# SPCCP Program Management

- SPCCP must be amended if there is a change in the potential for a discharge from the facility (within 6 months)
- SPCCP must be reviewed every 5 years
  - Amended within 6 months to include more effective prevention and control technology



# Additional Regulations

- Tier II Reporting
  - For all hazardous chemicals: 10,000 pounds (~1500 gallons for diesel / 1650 gallons for gasoline)
  - Emergency Planning and Community Right to Know Act (EPCRA)
  - Notification to local, county, and state emergency response agencies
- Underground Storage Tank Requirements
  - Class A/B Operator
  - Monitoring and inventory reconciliation
  - Inspection Requirements by Third Party Inspector (every 3 years)





# Resources

Merrimack Valley Planning Commission <http://mvpc.org/>

## Pollution Prevention/Good housekeeping Practices

- [EPA http://water.epa.gov/polwaste/npdes/swbmp/Pollution-Prevention-Good-Housekeeping-for-Municipal-Operators.cfm](http://water.epa.gov/polwaste/npdes/swbmp/Pollution-Prevention-Good-Housekeeping-for-Municipal-Operators.cfm)
- Winter Parking Lot and Sidewalk Maintenance Manual (June 2008)  
[www.pca.state.mn.us/publications/parkinglotmanual.pdf](http://www.pca.state.mn.us/publications/parkinglotmanual.pdf)
- Minnesota Snow and Ice Control: Field Handbook for Snow Operators (Sept 2012).  
[www.mnltap.umn.edu/publications/handbooks/documents](http://www.mnltap.umn.edu/publications/handbooks/documents)

## Regulations

- EPA Region 1 MS4 Permit Information  
<http://www.epa.gov/region1/npdes/stormwater/#smallms4program>
- Spill Prevention, Control, and Countermeasure Rule:  
<http://www.epa.gov/oem/content/spcc/>
- MassDEP 2012 Integrated List of Waters 303(d)  
[http://www.epa.gov/region1/npdes/stormwater/MS4\\_MA.html](http://www.epa.gov/region1/npdes/stormwater/MS4_MA.html)





## CENTRAL MASSACHUSETTS REGIONAL STORMWATER COALITION

  
Search

### Stormwater Pollution Prevention Plan Template

[Printer-Friendly Version](#)

#### Document

[SWPPP Template Narrative](#)

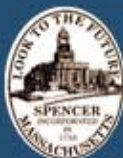
[Appendix D: Tier 1 Qualified SPCC Plan Template](#)

[Appendix E: Spill Documentation Form](#)

[Appendix F: Training Documentation & Attendance](#)

[Appendix G: Facility Inspection Form](#)

[USEPA Annual Facility Inspection Form](#)



157 Main Street  
Spencer, MA 01562  
[www.spencerma.gov](http://www.spencerma.gov)



67 Forest Street  
Marlborough, MA 01752  
[www.tataandhoward.com](http://www.tataandhoward.com)

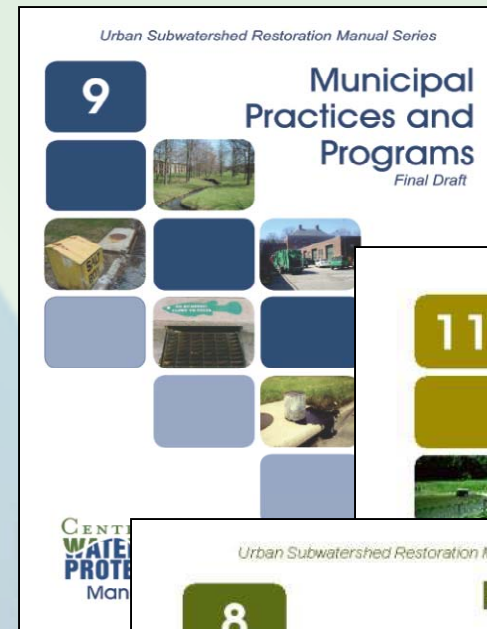


# CWP Urban Watershed Restoration Manual Series

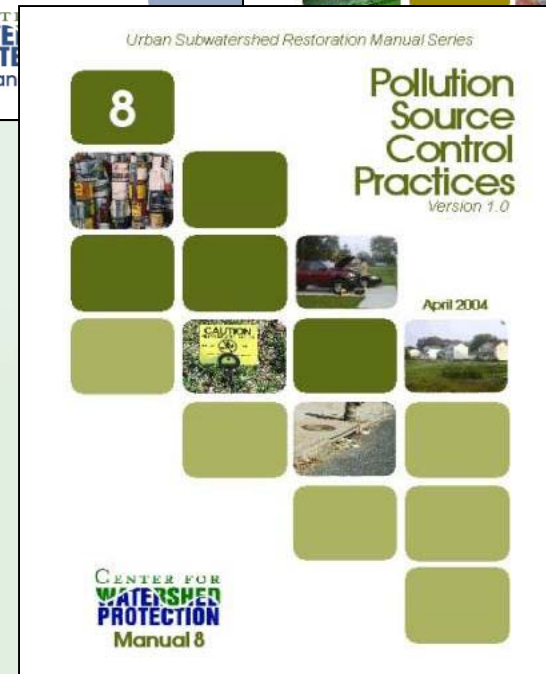
#9 Municipal Pollution Prevention/Good Housekeeping Practices—**Programs**

#8 Pollution Source Control Practices--**Solutions**

#11 Unified Subwatershed and Site Reconnaissance: A User's Manual—**Assessment Protocols**



[www.cwp.org](http://www.cwp.org)



## Water: Best Management Practices

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# Pollution Prevention/Good Housekeeping for Municipal Operators

### Education

[Municipal Employee Training and Education](#)

### Municipal Activities

[Coal-Tar Sealcoats and Polycyclic Aromatic Hydrocarbons](#) (2 pp, 389K, [About PDF](#))

[Municipal Landscaping](#)

[Municipal Vehicle Fueling](#)

[Municipal Vehicle and Equipment Maintenance](#)

[Municipal Vehicle and Equipment Washing](#)

[Parking Lot and Street Cleaning](#)

[Road Salt Application and Storage](#)

[Roadway and Bridge Maintenance](#)

[Storm Drain System Cleaning](#)

### Municipal Facilities

[Hazardous Materials Storage](#)

[Materials Management](#)

[Municipal Facilities Management](#)

[Spill Response and Prevention](#)

### EPA Internet Resources:

- [Urban Management Measures Guidance](#) Chapters 7, 9 and 11 address some of the issues found in this minimum measure.
- [Stormwater case studies on good housekeeping](#) includes case studies of how a Phase I or Phase II community has implemented the good housekeeping requirements.

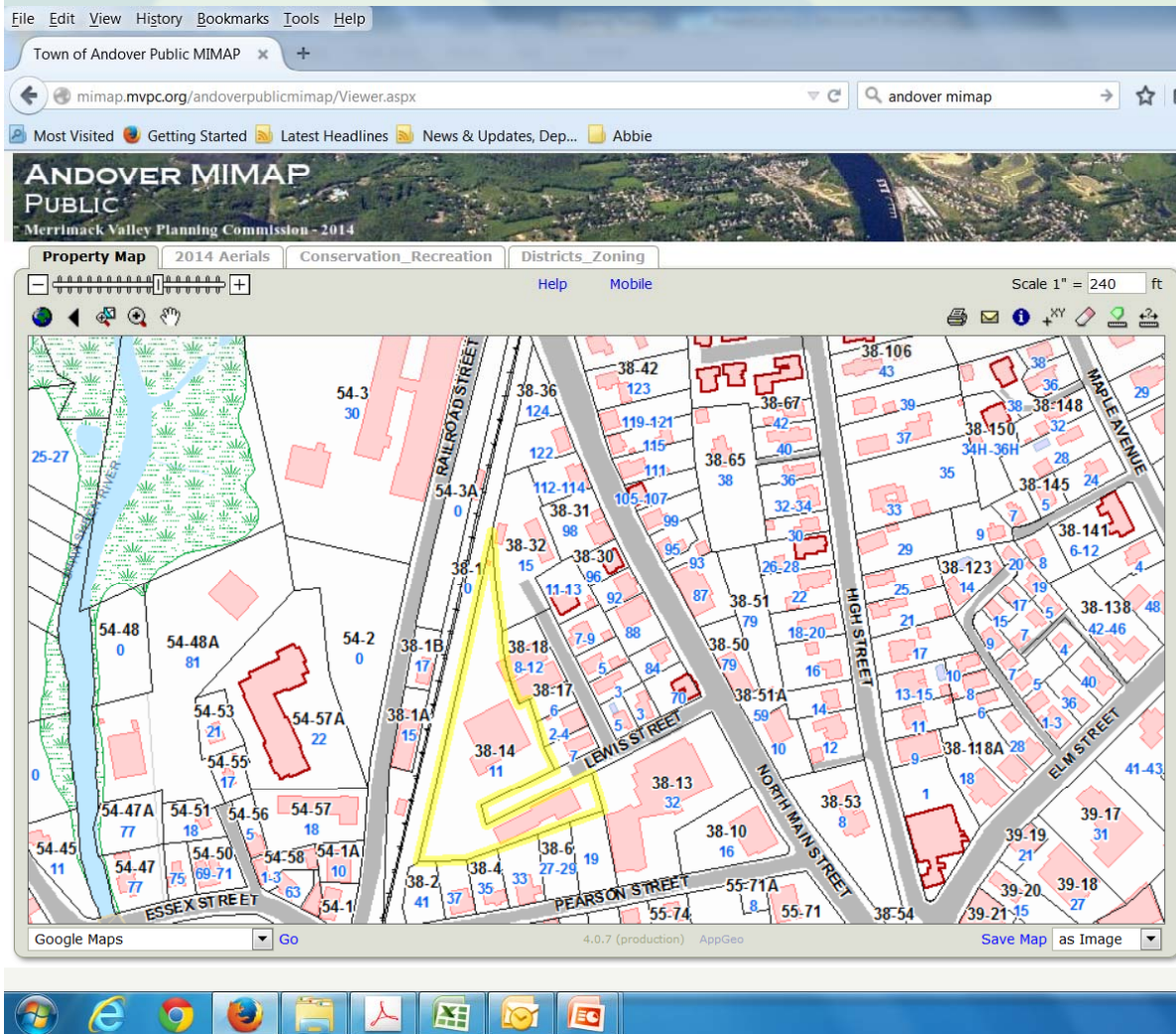
### Other Internet Resources:

- [California Municipal Stormwater BMP Handbook](#) [EXIT Disclaimer](#)
- [2005 Stormwater Management Manual for Western Washington : Volume IV -- Source Control BMPs](#) [EXIT Disclaimer](#)
- [Example Good Housekeeping Practices - Alameda Countywide Clean](#)





# Efficiencies, Cost Sharing, Working Together



## Food for Thought:

- Mapping
- Field Investigation
- Training
- Outreach
- Purchasing



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