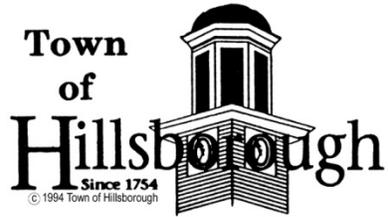


Town of Hillsborough



NPDES Phase II Stormwater Management Program



Comprehensive Stormwater Management Plan

September 2014

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INTRODUCTION

Why Care About Stormwater?

Adding impervious surface decreases the amount of stormwater that infiltrates into the ground. This increases the amount and velocity of stormwater runoff. This can cause accelerated erosion and downstream flooding. In addition, as stormwater flows across impervious surfaces, it picks up various pollutants. These include excess nutrients, oil and grease, bacteria and sediment. Polluted stormwater flows down storm drains and ditches where it is discharged, untreated, into local streams, rivers, and lakes. Stormwater runoff pollution causes adverse impacts to aquatic ecosystems, poses human health risks, and can greatly increase the cost of treating drinking water.

Program Background

In 1972, the National Pollutant Discharge Elimination System (NPDES) program was established under the authority of the Federal Clean Water Act. Phase I of the NPDES Stormwater program was established in 1990. It required NPDES permit coverage for municipalities with populations of 100,000 or more.

Phase II of the NPDES Stormwater program was signed into law in December 1999. The Phase II program extended permit coverage to smaller (< 100,000 pop.) communities and public entities that own or operate a municipal separate storm sewer system (MS4). It required these smaller communities to develop a stormwater program and obtain an NPDES permit for stormwater discharges.

In North Carolina, the Department of Environment and Natural Resources (NCDENR) administers the NPDES Stormwater program. NCDENR issued the Town of Hillsborough's (Town) initial Phase II permit, on October 1, 2005. The permit required the Town to develop, implement, and enforce a stormwater program designed to reduce the discharge of pollutants from the MS4 to the maximum extent practicable. The program was implemented in phases over five years of the initial permit. Pursuant to the permit the stormwater program included the following six minimum measures or best management practices (BMPs):

1. Public education and outreach on stormwater impacts;
2. Public involvement/participation;
3. Illicit discharge detection and elimination;
4. Construction site stormwater runoff control (Erosion Control);
5. Post-construction stormwater management for new development and redevelopment;
6. Pollution prevention/good housekeeping for municipal operations.

The Town's current permit, Number NCS000466, was issued on October 1, 2010. This comprehensive stormwater management plan was written to meet the permit requirements.

1. Storm Sewer System Information

1.1 Population Served

Estimated population served 6,292¹

1.2 Growth Rate

Estimated growth rate 3.4%²

1.3 Jurisdictional Area

Town Limits 5.6 sq. mi

ETJ 5.1 sq. mi.

1.4 MS4 Conveyance System

Due to the age of the town, MS4 consists of a variety of stormwater conveyances and components. These range from typical curb and gutter systems conveyed by concrete pipes to simple sheet flow. The predominate conveyance components include grass lined swales and vegetated drainage ditches with various pipes and culverts. There are also various detention systems within the Town's jurisdiction, however these are on private property.

MS4 system components are periodically inspected to ensure proper function. The North Carolina Department of Transportation (NCDOT) maintains systems within state road rights-of-way. Systems located on private property, including detention facilities and other engineered stormwater controls, are maintained by the owner.

1.5 Land Use Composition

Estimated Land Use³

Residential 27%

Commercial 14%

Industrial 4%

Open Space 55%

Total 100%

¹ July 2012 Data from North Carolina Office of Budget and Management, State Demographics Data, <http://www.osbm.state.nc.us/>.

² Percentage increase from 2010 to 2012 (North Carolina Office of Budget and Management, State Demographics Data, <http://www.osbm.state.nc.us/>.)

³ Land use percentages were estimated from the Town of Hillsborough Land Use GIS database. Area of parcels for each designated land use type were summed and calculated for relative percentage of the planning jurisdictional area.

1.6 TMDL Identification

Currently, no streams flowing into or out of the Town of Hillsborough’s jurisdiction have an associated Total Maximum Daily Load.

2. Receiving Streams

The Town of Hillsborough lies entirely within the Falls Lake Watershed, which is part of the Neuse River Basin. Specifically, the town drains to the Eno River. Receiving waters are listed below.

Receiving Stream	Description	Classification	Index No.
Eno River (Corporation Lake, Lake Ben Johnston)	From a point 0.4 mile upstream of Dry Run to dam at Lake Ben Johnston (Orange County water supply intake & Town of Hillsborough water supply intake)	WS-II; HQW, CA, NSW	27-2-(3.5)
Eno River	From dam at Lake Ben Johnston to Orange County SR 1561	C; NSW, N	27-2-(7)
Seven Mile Creek	From a point 0.4 mile upstream of I-85 to Lake Ben Johnston, Eno River	WS-II; HQW, CA, NSW	27-2-6-(1.5)
Rocky Run	From a point 0.5 mile upstream of I-85 to Seven Mile Creek	WS-II; HQW, NSW	27-2-6-2-(2)
Cates Creek	From source to Eno River	C; NSW	27-2-8
Strouds Creek	From source to Eno River	C; NSW	27-2-9
Stony Creek	From source to a point 0.4 mile upstream of Orange County SR 1710	C; NSW	27-2-13-(1)

3. Existing Water Quality Programs

3.1 Local Programs

The following programs and ordinances are being implemented within the Town of Hillsborough’s jurisdiction.

Unified Development Ordinance (UDO) – regulates overall development and land use. Specific water quality aspects include riparian buffer rules and post construction stormwater requirements, including nutrient limits.

Flood Damage Prevention – through its UDO the Town protects water quality by preventing new development within flood hazard zones.

Local Nutrient Sensitive Waters (NSW) Strategy - through its UDO the Town adopted stormwater requirements for new development to meet the Falls Lake Nutrient Management Strategy (Falls Lake rules).

Local Water Supply Watershed Program – a portion of the Town’s jurisdiction includes designated Critical Area and WS-II classification. Protection measures are included in the Town’s UDO and are approved by the state.

Delegated Neuse Riparian Buffer Program – The Town of Hillsborough requested and received delegated authority from the state to enforce the states’ Neuse Riparian Buffer Program within the Town’s planning jurisdiction.

Delegated Erosion And Sediment Control Program - as noted in Section 6, the Town relies on Orange County to conduct an erosion control program. Orange County has local delegated authority from the state.

3.2 State Programs

State programs, including the Neuse, Falls Lake, and Water Supply Watershed rules are implemented at a local level. The Town of Hillsborough does rely on NCDOT to maintain stormwater facilities and programs within state-owned road rights-of-way.

4. Permitting Information

The Town’s Stormwater Program is under direction of the Town’s Stormwater Program Manager. The Stormwater Program Manager works closely with Utilities, Public Works and Planning departments, and is supervised by the Town’s Planning Director.

4.1 Responsible Party Contact List

Overall implementation and oversight of the Town’s Stormwater Program is coordinated by:

Terry Hackett, Stormwater Program Manager
Town of Hillsborough
P.O. Box 429
101 E. Orange Street
Hillsborough, NC 27278
Telephone: 919-732-1270
Email: terry.hackett@hillsboroughnc.org

4.2 Organizational Chart

The Town’s organization chart is included in the Appendix.

4.3 Signing Official

The Town of Hillsborough operates under a council-manager form of government. The town manager is responsible for management and oversight of the Town's daily operations. Contact information is listed below:

Eric Peterson, Town Manager
Town of Hillsborough
101 E. Orange Street
P.O. Box 429
Hillsborough, NC 27278
Telephone: 919-732-1270
Email: eric.peterson@hillsboroughnc.org

4.4 Duly Authorized Representative

Not applicable.

5. Co-Permit Status Information

The Town of Hillsborough holds its own NPDES Phase II permit and does not co-permit with another entity.

6. Reliance on Another Entity

The Town of Hillsborough utilizes Orange County to implement the Construction Site Stormwater Runoff Control (i.e. erosion control) portion of its stormwater program.

6.1 Name of Entity

Orange County

6.2 Elements Implemented

Construction site stormwater runoff control (erosion control).

6.3 Contact Information

Orange County	Howard W. Fleming Jr., Erosion Control Supervisor
Erosion Control Program:	Orange County Planning and Inspections Department
	131 W Margaret Lane, Suite 201
	Hillsborough, NC 27278
	919-245-2586
	hffleming@orangecountync.gov

6.4 Legal Agreement

The Town maintains an inter-local agreement with Orange County to provide erosion control services. The current agreement was approved in October 2012.

7. Stormwater Management Program Plan

The following sections describe the Town's stormwater management program and measurable goals for each BMP. Measurable goals are based on the Town's current NPDES Phase II permit, original stormwater management plan, and modifications needed to best meet the objectives of the Town's Stormwater Program during its initial implementation. While the six BMPs are not expected to change over the life of this stormwater management plan, measurable goals may be modified, removed, or new goals added. Changes may be necessary to meet permit renewal requirements, changes in resources, or to be more effective in reducing impacts to the MS4. Modifications to these goals will be documented within the required annual report.

7.1 Public Education and Outreach

The Town's stormwater public education and outreach program includes dissemination of educational materials, stormwater newsletter, school programs centered on earth day celebrations, BMP demonstration site at Stillhouse Creek, and membership in the Clean Water Education Partnership.

Target Pollutant Sources

Land use within the Town's jurisdiction is composed primarily of residential and commercial uses. Target pollutant sources from these land uses include:

Excess nutrients – the Town is located within an NSW. Excess nutrients can lead to high algal growth in downstream waterbodies causing low oxygen levels.

Sediment – the Piedmont region of North Carolina is known for erodible clay soils. Sediment can adversely impact waterways and aquatic environments. Due to recent drought cycles, maintaining vegetative cover has been an issue. For new construction, erosion control is necessary to keep sediment on site.

Litter/Yard Waste – Litter and yard waste can block stormwater conveyances. As litter and yard waste decompose it introduces chemicals and additional nutrients into the storm system.

General Household and Landscape Chemicals – this includes fertilizers, pesticides, automotive chemicals, and detergents and can cause significant impacts to aquatic environments.

Target Audience

Two primary target audiences have been identified, local citizens and business owners. Local citizens include single-family residences, churches, schools, and other civic groups. Business owners, especially restaurants and developments with high impervious surfaces will be targeted.

Measurable Goals

- **Develop and Distribute Materials**

Develop educational materials or modify/utilize existing materials available from other agencies. Distribute educational materials through educational programs, local events (such as Hog Day, Eno River Festival, Last Friday's, etc.) and place informational flyers at Town Hall and the Orange County Library. Materials will also be distributed electronically through email and electronic lists, and made available on the Town's website.
- **Stormwater Newsletter**

Write articles and publish *The Stormwater Almanac* a local newsletter developed by stormwater staff, two to four times annually. Paper copies of the newsletter will be distributed at various events and educational programs. Work with the Town's public information officer to post the newsletter on the Town's website and send a notification when a new issue is available to those subscribed to the Town's email notification list.
- **School Programs**

Partner with other local government departments conducting environmental education to conduct school programs. This includes participation in established Earth Day and Earth Walk programs coordinated by Orange Soil and Water Conservation District (OSWCD). Support other agencies such as Orange County Department of Environment, Agriculture, Parks and Recreation (OCDEAPR) that also conducts school programs. Continue support of the "eco-classroom" at C.W. Stanford and Orange High Schools, which has a strong stormwater education component. Participate in the Outdoor Science Club, an after school enrichment program focusing on water quality issues. Participate in annual field trip to the Eno River by the Orange High School AP Environmental/Earth Science class.
- **Stillhouse Creek Program**

Continue collaboration with OSWCD, OCDEAPR, and Hillsborough's Public Works department on the stormwater BMP demonstration project. Since this is a highly visible location, staff will continue developing an educational program centered on this area. This may include a rain garden workshop(s) and possibly other outreach events promoting these stormwater BMPs. Educational materials will be installed within the information kiosk that is part of the demonstration project.
- **Additional Educational Programs**

The Town of Hillsborough is a member of the Clean Water Education Partnership (CWEP). CWEP leverages resources from multiple local governments to conduct educational and outreach programs geared towards reducing stormwater runoff pollution and clean water. Programs include mass

media campaigns such as television, radio, internet, and printed materials. Stormwater staff will continue serving on the CWEP steering committee.

Continue providing educational programs to scout groups, homeowner associations, and other civic groups as requested. Provide educational information to local business, and evaluate the feasibility of conducting workshops for local business targeting illicit discharge and good housekeeping practices.

Evaluation

The Town's Public Education and Outreach program will be evaluated by assessing progress towards each measurable goal listed above. Information and data towards completion of each measurable goal will be tracked. Progress will be reported each year in the annual report to the state.

7.2 Public Involvement and Participation

The Town's stormwater public involvement and participation program includes maintaining an informational website with contact information, participation in local events and festivals, participation in NC Big Sweep, volunteer stream monitoring at two locations, input from the Town board, and a rain garden program.

Measurable Goals

- **Public Meeting**
The Town of Hillsborough will conduct one public meeting to allow local citizens to review and provide input on the stormwater management plan.
- **Informational Website and Hotline**
Provide stormwater content and information for the Town maintained website. Include contact information for citizens to report concerns or make requests. Respond to citizen request as warranted.
- **Outreach Events/Festivals**
Participate in various local events and festivals. This may include Hog Day Festival, Eno River Festival, Last Friday's and other events/festivals. Hand out information to the public regarding stormwater impacts and answer citizen questions.
- **NC Big Sweep**
Coordinate the Town's participation in the annual NC Big Sweep event each fall.
- **Volunteer Stream Monitoring**
Currently there are two volunteer groups conducting stream monitoring within the Town's jurisdiction. Triangle Fly Fishers a local Trout Unlimited and Federation of Fly Fishers affiliate, has started monitoring a section of the Eno

River, as well as adopting the Town's stormwater wetland in Gold Park; another volunteer group made up from students from C.W. Stanford Middle School has begun monitoring the stream flowing through their eco-classroom.

Continue providing assistance to volunteer groups currently conducting stream monitoring. Assistance may include training, providing materials (as resources allow), and reviewing collected data to determine possible water quality trends. As part of this goal, information will be disseminated to other volunteer groups interested in starting a stream monitoring program.

- Town Board and Planning Board Input

Once annually, present an update to Hillsborough's Town Board regarding the stormwater program and seek input on pertinent issues. Once annually, present information to the Town's Planning Board and/or Board of Adjustment regarding stormwater impacts from development.

- Rain Garden Program

Distribute handouts and information on rain gardens to local citizens through events, festivals, and information requests. As resources allow, conduct a rain garden workshop, centered on the rain garden at Stillhouse Creek. Coordinate with other local staff to promote installation of rain gardens, and provide technical expertise in designing and constructing rain gardens as needed and as time and resources allow.

Evaluation

The Town's Public Involvement and Participation program will be evaluated by assessing progress towards each measurable goal listed above. Information and data towards completion of each measurable goal will be tracked. Progress will be reported each year in the annual report to the state.

7.3 Illicit Discharge Detection and Elimination

The Town's stormwater illicit discharge detection and elimination program is outlined in its *Illicit Discharge Detection and Elimination Plan*. This plan details measures that Town staff follows to find and eliminate illicit discharges and connections to the MS4. Other components of this program include employee cross-training, updating mapping, and evaluating funding sources to expand the program. A copy of the plan is included in the Appendix.

Storm Sewer System Map

The Town of Hillsborough maintains a Geographic Information System (GIS) database that includes drainage areas, receiving streams, land use information, zoning, soils, floodplain data, water quality designations, impervious cover and other pertinent data. This information is updated periodically often based on actual site reconnaissance, such as on site surface water identifications.

Pursuant to the Town of Hillsborough's current permit, components of their MS4 were mapped using Global Positioning System (GPS) technology and are

included in the GIS. This information is updated periodically based on changes in development and during routine inspections if warranted.

Regulatory Mechanism

Prohibition of illicit discharges and connections are regulated through *Chapter 11, Article V Control of Illicit Discharges into the Stormwater System* of the Town of Hillsborough's Municipal Code.

Measurable Goals

- **Procedures for Illicit Discharge Detection and Elimination**

Continue implementing the Town's *Illicit Discharge Detection and Elimination Plan*. This includes identifying at least one new priority area annually and conducting dry weather inspections of the area identified. Update the IDDEP to include enforcement response procedures.

- **Conduct Employee Cross-training**

Conduct at least one training session for Town Public Works and Utility employees annually. Provide information regarding appropriate training sessions provided by other entities. Identify other Town employees that can be cross-trained.

- **Update Mapping**

Update the GIS stormwater mapping system to reflect changes to the MS4 as necessary. This may include updating stormwater system components for new development, repairs, and maintenance, in addition to updating stream data based on surface water identification requests. Mapping updates of the MS4 is solely the Town's responsibility.

- **Local Stream Monitoring**

Evaluate the need for additional stream sampling/monitoring. Identify possible partnerships for collaborative sampling/monitoring efforts.

- **Public Education and Reporting**

Generally, this portion of the stormwater management plan is included in sections 1 and 2 above and will include distribution of an illicit discharge fact sheet to residences and businesses through events described above.

- **Explore funding**

Provide input to the Town Manager so that funding sources and funding options can be fully explored. Discuss funding options with the Town Board.

Evaluation

The Town's Illicit Discharge Detection and Elimination program will be evaluated by assessing progress towards each measurable goal listed above. Section 7 of the Town's Illicit Discharge Detection and Elimination Plan (included in the

Appendix) details how the program will be evaluated. Generally, inspection and complaint information will be logged and tracked. Assessments will be made toward completion of the goals listed above. Progress will be reported each year in the annual report to the state.

7.4 Construction-Site Stormwater Runoff Control

Orange County implements and enforces construction site stormwater runoff control for the Town of Hillsborough through its erosion control program. Orange County has local delegated authority from the state to implement an erosion control program.

Regulatory Mechanism

The Town of Hillsborough and Orange County have an inter-local agreement in place allowing Orange County to enforce its sedimentation and erosion control ordinance within the Town's jurisdiction.

Measurable Goals

- **Plan Review**

Orange County will review and approve erosion control plans for proposed new development projects within the Town's jurisdiction to ensure compliance with the county's erosion control ordinance. Plan review will be conducted in conjunction with the Town's Technical Review Committee.

- **Inspections**

Orange County will inspect permitted construction sites within the Town's jurisdiction to ensure compliance with approved erosion control plans. As needed, request corrective actions, issue notice of violations and stop work orders as outlined in the county's erosion control ordinance.

- **Site Audits**

As required through its NPDES Phase II permit, Town stormwater staff will periodically inspect active construction sites to confirm that county staff are inspecting sites and ensuring compliance with approved erosion control plans.

Evaluation

The Orange County Erosion Control Division maintains a database and inspection reports on each permitted construction site. Information regarding number of sites, acreage of disturbance, compliance, notice of violations, and enforcement actions are tracked and will be included in the annual report to the state for sites within the Town's jurisdiction. Information on site audits will also be included.

7.5 Post-Construction Stormwater Management

The Town's post-construction stormwater program includes four primary components: new development review, stormwater BMP inspection, education and outreach, and retro-fit opportunities.

Regulatory Mechanism

The Town of Hillsborough combined its zoning and development ordinances into a Unified Development Ordinance (UDO). The Town's UDO was adopted on February 28, 2011. Section 6.20 of the UDO includes post-construction stormwater requirements. Post-construction requirements were updated in the UDO to reflect additional standards to meet the state's Falls Lake Nutrient Management Strategy (15A NCAC 02B .0277) on December 10, 2012.

Post-Construction Stormwater Requirements

The Town of Hillsborough utilizes both structural and non-structural BMPs to treat and control post-construction stormwater. Non-structural BMPs include stream buffers, flood hazard zone protection, landscape requirements, and educational materials as described in Section 7.1.

Structural stormwater BMPs include those listed in the NCDENR *Stormwater BMP Manual*. Since the Town's jurisdiction falls within a NSW, most structural BMPs being installed are designed to reduce nutrients, including bioretention, stormwater wetlands, filter strips and grassed swales.

Through its UDO, the Town requires structural BMPs to have a recorded restrictive covenant, a signed operations and maintenance agreement, and certification by a licensed engineer that the BMPs have been properly constructed. These measures are in place to ensure proper operation of the BMP.

Pursuant to Section 6.20 of the Town of Hillsborough's UDO and the State of North Carolina's Falls Lake Rules (15A NCAC 2B .0277), stormwater standards apply to all development and re-development projects that:

- Add 10,000 square feet or more of impervious surface
- Disturb 10,000 square feet or more of land for purpose of development
- Disturb ½ acre or more for a single lot residential projects (not part of a larger project)
- Disturb ½ acre or more for recreational facilities on a single lot

Projects may be developed as either low-density or high density with the following standards:

Low-density development (less than 24% impervious) requirements include:

- Use vegetative conveyances;
- Minimum riparian buffers (50-feet);

- No net increase in peak flow for the 1-year, 24-hour storm
- Meet Falls Lake Rules nutrient loading requirements:
Total Nitrogen, 2.2 pounds/acre/year
Total Phosphorous, 0.33 pounds/acre/year
- Must have an operation and maintenance agreement and restrictive covenants for structural BMPs.

High-density development (24% impervious or higher) requirements include:

- Minimum riparian buffers (50-feet)
- Requires structural stormwater control (i.e. wet pond, bioretention, wetland, etc.)
- Must have an operation and maintenance agreement and restrictive covenants for structural BMPs.
- Control/treat runoff from all surfaces generated from first inch of rain
- Runoff volume drawdown 48-120 hours
- 85% Total Suspended Solids (TSS) reduction
- Meet applicable stream buffers
- No net increase in peak flow for the 1-year, 24-hour storm
- Meet Falls Lake Rules nutrient loading requirements:
Total Nitrogen, 2.2 pounds/acre/year
Total Phosphorous, 0.33 pounds/acre/year

Other Related Policies, Practices, Regulations

In addition to the specific post-construction stormwater requirements listed above, the Town of Hillsborough employs other policies, practices and regulations that help protect water quality of its receiving waters. Measures currently in place help to protect natural resources, protect open space, preserve trees, regulate redevelopment and street design. Through current policies the Town addresses green infrastructure elements and practices including low impact development and improved site design. A detailed list and description of these measures is included in the appendix.

Measurable Goals

- New Development Review
Review and approve proposed new development projects to ensure compliance with the Town's stormwater post-construction requirements. This includes addressing nutrient loading since the Town is within an NSW (Neuse Basin and Falls Lake Watershed).

- BMP Inspections

Inspect new structural stormwater BMPs at the time the project is complete to ensure compliance with approved plans. Map new BMPs using GPS/GIS technology. Review required annual inspection reports submitted by the BMP owner. Conduct follow-up inspections as warranted and provide inspection reports to owner outlining follow up actions. Issue notices of violations if warranted.

- Education/Outreach

This portion of the post-construction stormwater management program is part of the overall education/outreach component described in items 1 and 2 above. Primarily this includes providing information to businesses, homeowner associations and other stormwater BMP owners about maintenance and inspection requirements.

- Retro-fit Opportunities

Identify at least one new possible stormwater retro-fit location annually. Evaluate sites already identified based on land availability, willing ownership, potential for pollution reductions, and other pertinent variables. Rank these sites and evaluate grant availability and/or other funding sources to implement retro-fits. Identify potential partnerships to develop and fund retro-fit projects.

Evaluation

The Town of Hillsborough maintains an electronic database used to track approved stormwater management plans, BMP inspections and other pertinent information for its post-construction stormwater program. This information is included in the annual report to NCDENR. Additionally, the Town submits similar information to NCDENR as part of its Falls Lake Rules annual report.

7.6 Pollution Prevention/Good Housekeeping for Municipal Operations

The Town's pollution prevention/good housekeeping program includes four primary components: evaluate Town operations, corrective action, employee training, and public awareness. A Good Housekeeping plan has been developed and a copy is included in the Appendix.

Town Operations

The following facilities are owned by the Town and included in the Good Housekeeping plan:

- | | |
|------------------------------|---------------------------------|
| 1. Community Policing Center | 9. Public Works |
| 2. Cemetery | 10. Riverwalk Greenway |
| 3. Gold Park | 11. Town Hall |
| 4. Motor Pool | 12. Town Hall Annex |
| 5. Murray Street Park | 13. Turnip Patch Park |
| 6. Orange County Museum | 14. Water Treatment Plant |
| 7. Police Department | 15. Waste Water Treatment Plant |
| 8. Public Parking Lot | 16. Water Distribution |

The Town also maintains public road rights-of-way (ROW) in portions of their jurisdiction that are not owned by NCDOT.

Measurable Goals

- **Evaluate Town Operations**
Conduct annual Good Housekeeping inspections at each of the Town's facilities and maintain inspection information in an electronic database. Provide inspection reports to each facility manager as well as the Town Manager. Provide input during the budget process as necessary to address stormwater runoff management at Town facilities being considered for capital improvements.
- **Corrective Action**
Correct deficiencies noted during the Good Housekeeping inspections. Conduct follow-up inspections to ensure corrective actions have been completed.
- **Roadway/Drainage Maintenance**
Within non-NCDOT road ROW, inspect stormwater conveyance components and complete repairs as warranted. Periodically sweep "curb and gutter" streets to remove debris. Annually remove fallen leaves from streets, ditches and from private residences that rake leaves to roadsides.

- Employee Training

Conduct Good Housekeeping training for new employees and provide “refresher” training to employees as warranted. As staff time and resources allow, expand Good Housekeeping training to all Town employees, even those not directly involved with Good Housekeeping requirements.

- Public Awareness

This portion of the Town’s Good Housekeeping Plan will continue to be part of the public outreach and education component described above.

Evaluation

Inspection data is maintained in an electronic database that includes a list of facilities, inspection dates, results, and corrective actions. The number of facility inspections will be noted, along with corrective actions and when completed. Assessments will be made toward completion of the goals listed above. Progress will be reported each year in the annual report to the state.

ANNUAL REPORTING

In order to help evaluate the effectiveness of the Town’s NPDES Phase II stormwater program, NCDENR requires the submittal of an annual report. The annual report submitted to NCDENR is an online report that quantifies program elements completed in the previous permit year. Additionally, stormwater staff prepares a narrative annual report containing the same information as submitted online, but is made available to Town staff, elected officials and citizens.

STORMWATER PROGRAM BMP SUMMARY TABLES

The following tables summarize the six program elements, BMPs, measurable goals and responsible entity.

The following tables summarize the six program elements, BMPs, measurable goals and responsible person/entity. Abbreviations used in the following tables include:

SPM – Stormwater Program Manager

PIO – Public Information Officer

TM - Town Manager

TB – Town Board

PW – Public Works staff

UD – Utility Department staff

OCED – Orange County Erosion Control Division staff

OSWCD – Orange Soil and Water Conservation District staff

1. Education and Outreach

BMP	Measurable Goal	Responsible Party
Develop and Distribute Materials	Develop educational materials or modify existing materials as needed	SPM
	Distribute educational materials through educational programs and local events	SPM
	Place informational flyers at appropriate locations	SPM
Stormwater Newsletter	Write articles and publish <i>The Stormwater Almanac</i> two to four times annually.	SPM
	Distribute paper copies of newsletter at various events and educational programs	SPM
	Post newsletter on the Town's website; send notification when a new issue is available via the Town's email notification list	PIO
School Programs	Partner with other local government departments to conduct school programs	SPM, OSWCD, OCED
	Work with OSWCD to expand existing educational programs	SPM
	Develop additional educational programs based on interest from local schools	SPM
	Support of the "eco-classroom" at C.W. Stanford and Orange High Schools	SPM
Stillhouse Creek Program	Continue developing an educational program centered on Stillhouse Creek	SPM, OSWCD
	Place educational materials within the kiosk that is part of the demonstration project	SPM, OSWCD
	Periodically hold workshops or other events highlighting the project	SPM, OSWCD
Additional Educational Programs	Maintain membership in CWEP	TM, SPM
	Represent the Town's interests on the CWEP steering committee	SPM
	Provide educational programs to civic groups as requested	SPM
	Provide educational information to local businesses	SPM
	Evaluate the feasibility of workshops for local business targeting illicit discharge and good housekeeping practices; if feasible develop and hold workshop(s)	SPM
Evaluation	Assess progress towards each measurable goal listed above. Track information and data towards completion of each measurable goal. Report progress each year in the annual report to the state.	SPM

2. Public Involvement and Participation

BMP	Measurable Goal	Responsible Party
Informational Website and Helpline	Maintain and update a stormwater informational website and helpline	PIO
	Provide content and updates for the website	SPM
	Respond to citizen request for assistance through the website/helpline	SPM, PW
Outreach Events/Festivals	Participate in local events and festivals and hand out information to the public regarding stormwater impacts and answer citizen questions	SPM, PW, UD
NC Big Sweep	Coordinate the Town's participation in the annual NC Big Sweep event each fall	SPM
Volunteer Stream Monitoring	Assist current volunteer groups in monitoring efforts	SPM
	Disseminate information to other civic groups, schools and business to expand volunteer stream monitoring program	SPM, PIO
Town Board and Planning Board Input	Once annually, present an update to Hillsborough's Town Board regarding the stormwater program and seek input on pertinent stormwater issues	SPM, TM, TB
	Once annually, present information to the Town's Planning Board and/or Board of Adjustment regarding stormwater impacts from development	SPM, TM
Rain Garden Program	Distribute handouts and information on rain gardens to local citizens through events, festivals, and information requests	SPM
	Promote installation of rain gardens at local government buildings, business and private residences	SPM
	Provide technical information and expertise in designing and constructing rain gardens for local citizens, as needed and as time and resources allow	SPM
Evaluation	Assess progress towards each measurable goal listed above. Track information and data towards completion of each measurable goal. Report progress each year in the annual report to the state.	SPM

3. Illicit Discharge Detection and Elimination

BMP	Measurable Goal	Responsible Party
Illicit Discharge Detection and Elimination	Continue implementing the Town's <i>Illicit Discharge Detection and Elimination Plan</i> .	SPM, PW, UD
	Identify one new priority area annually and conduct dry weather inspections.	SPM
	Conduct dry weather inspections of identified priority area	SPM
Conduct Employee Cross-Training	Identify other Town employees that can be cross-trained.	SPM
	Conduct at least one training session for Town employees annually, or provide information regarding appropriate training sessions provided by other entities.	SPM
Local Stream Monitoring	Stormwater staff will evaluate the need for additional stream sampling/monitoring.	SPM
Public Education and Reporting	This portion of the stormwater management plan is included as part of the overall education and outreach program	SPM
Explore Funding	Provide input to the Town so that funding sources and funding options can be fully explored.	SPM, TM, TB
	Follow-up on recommendations and implement funding	SPM, TM, TB
Update Mapping	Update the GIS stormwater mapping system to reflect changes to the MS4 as necessary	SPM
Evaluation	Assess progress towards each measurable goal listed above. Track information and data towards completion of each measurable goal as detailed in the Town's "Illicit Discharge Detection and Elimination Plan. Report progress each year in the annual report to the state.	SPM

4. Construction-Site Stormwater Runoff Control

BMP	Measurable Goal	Responsible Party
Implement Erosion Control Program	Review and approve erosion control plans for new development projects within the Town's Jurisdiction	OCED
	Inspect permitted construction sites to ensure compliance with approved erosion control plans	
	Request corrective actions, issue notice of violations and stop work orders as necessary.	
	Conduct construction site audits to help ensure compliance	SPM
Evaluation	Maintain a database and inspection reports on each permitted construction site. Track information regarding number of sites, acreage of disturbance, compliance, notice of violations, and enforcement actions. Include this information in the annual report to the state for sites within the Town's jurisdiction.	OCED

5. Post-Construction Stormwater Management

BMP	Measurable Goal	Responsible Party
New Development Review	Review proposed new development projects to ensure compliance with the Town's stormwater post-construction requirements	SPM
BMP Inspections	Inspect new structural stormwater BMPs at the time the project is complete to ensure compliance with approved plans	SPM
	Map new BMPs using GPS/GIS technology	SPM
	Review required annual inspection reports submitted by the BMP the owner	SPM
	Conduct follow-up inspections as warranted and provide inspection reports to owner outlining follow up actions	SPM
	Issue notice of violations if warranted	SPM
Education/Outreach	This portion of the post-construction stormwater management program is part of the overall education/outreach component described in items 1 and 2 above	SPM
Retro-fit Opportunities	Identify at least one new possible stormwater retro-fit location annually	SPM
	Evaluate sites already identified based on land availability, willing ownership, potential for pollution reductions, and other pertinent variables	SPM
	Rank these sites and evaluate grant availability and/or other funding sources to implement retro-fits	SPM
	Provide this information to the state and identify potential partnerships to develop and fund retro-fit projects	SPM
Evaluation	Maintain an electronic database to track approved stormwater management plans, BMP inspections and other pertinent information. Include information in the annual report to NCDENR.	SPM

6. Pollution Prevention/Good Housekeeping for Municipal Operations

BMP	Measurable Goal	Responsible Party
Evaluate Town Operations	Conduct annual Good Housekeeping inspections at each of the Town’s facilities	SPM
	Maintain inspection information in a database	SPM
	Provide inspections reports to facility managers and the Town Manager.	SPM
	Provide input during the budget process to address stormwater runoff management at Town facilities being considered for capital improvements	SPM, TM
Roadway/Drainage Maintenance	Within non-NCDOT road ROW, inspect stormwater conveyance components and completes repairs as warranted. Periodically sweep streets to remove debris. Annually remove fallen leaves from streets, ditches and from private residences that rake leaves to roadsides.	PW
Corrective Action	Correct deficiencies noted during the Good Housekeeping inspections.	PW, UD
	Conduct follow-up inspections to ensure corrective actions have been completed.	SPM
Employee Training	Conduct Good Housekeeping training for new employees or provide information on training opportunities provided by other entities	SPM
	Provide “refresher” training to employees as warranted	SPM
	Expand training to all Town employees (as staff time and resources allow)	SPM
Public Awareness	This portion of the Town’s Good Housekeeping Plan will continue to be part of the public outreach and education component described above.	SPM
Evaluation	Maintain facility inspection data in an electronic database, including corrective actions completed and those pending. Report number of facilities inspected, number of inspections conducted and corrective actions taken in the annual report to the state.	SPM

APPENDICES

Organization Chart

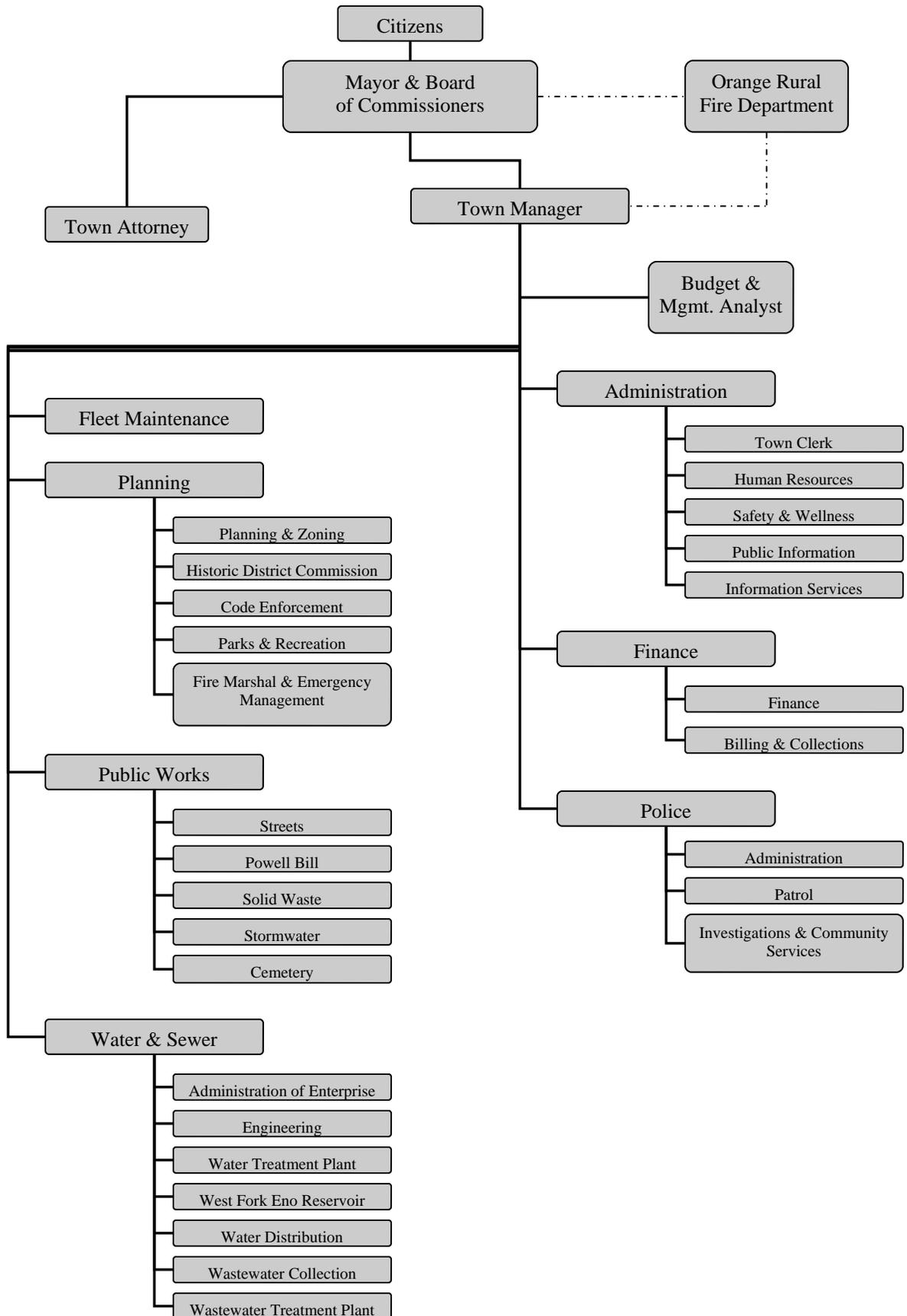
Illicit Discharge Detection and Elimination Plan

Good Housekeeping Plan

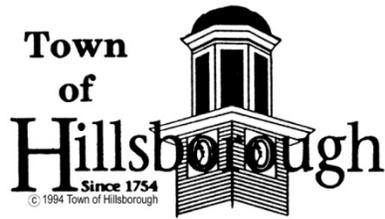
Stormwater/Water Quality Related Policies, Practices and Regulations

TOWN OF HILLSBOROUGH

Organization Chart



Town of Hillsborough



NPDES Phase II Stormwater Management Program



Illicit Discharge Detection and Elimination Plan

September 2014

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Introduction

The Town of Hillsborough's (Town) National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater permit requires the Town to develop and implement an illicit discharge detection and elimination program (IDDE). Illicit discharges include unauthorized connections to the Town's municipal separate storm sewer system (MS4) as well as illegal dumping of prohibited substances into the MS4. This plan outlines the Town's IDDE program, which consists of the following components:

1. Develop a storm sewer system base map;
2. Establish and maintain appropriate legal authority;
3. Implement illicit discharge detection procedures;
4. Conduct employee cross-training;
5. Provide public education and establish a reporting mechanism.

Goal

The goal of this plan is to develop and implement procedures that will locate and ultimately eliminate illegal connections and dumping into the MS4. By eliminating these discharges and connections, both public health and the health of the receiving water ecosystem will be protected.

1. Stormwater System Mapping

The first step in conducting a successful IDDE program is to identify where illicit discharges and connections may occur. To do this, it is important to know where the various components of the MS4 exist. At a minimum the Town must identify outfall locations, drainage areas and receiving streams.

1.1 *Stormwater Facilities*

The Town's stormwater system includes curb inlets, yard inlets, storm drains, catch basins, pipes, open channels, ditches, swales, as well as other man-made and natural stormwater runoff conveyances. These facilities, including outfalls, were mapped using Global Positioning System (GPS) technology and imported into a Geographic Information System (GIS). As new outfalls and stormwater facilities are constructed they will be mapped using GPS technology and updated into the GIS system, or their location will be provided by the developer for inclusion into the GIS system.

1.2 *High Priority Areas*

High priority areas will be identified by the stormwater program manager using GIS data and land use to identify areas more likely to contain illicit discharges or connections. Obviously, commercial and industrial land uses

are more likely to have discharges that contain harsh pollutants. On the other hand, due to the Town's age, some residential areas may contain illicit connections, such as washing machine discharges.

The following list of screening factors will be utilized to rank high priority areas:

1. Facilities with NDPEs permits;
2. Industrial/commercial land use;
3. Stormwater outfall density;
4. Density of development;
5. Citizen complaints;
6. Aging septic systems;
7. Aging sanitary sewer;
8. Poor dry weather water quality.

Areas containing these factors will be identified on the GIS system and systematic inspections of stormwater outfalls in these areas will be conducted as described in Section 3 below.

2. Legal Mechanism

Prohibition of illicit discharges and connections are regulated through Chapter 11, Article V Control of Illicit Discharges into the Stormwater System of the Town of Hillsborough's Municipal Code.

3. Illicit Discharge Detection Procedures

The Town of Hillsborough employs a full time stormwater program manager. However the Town does not have the resources to maintain additional full time stormwater staff. In order to implement this plan, certain Town employees will be cross-trained to identify possible illicit discharges and connections as part of their other routine duties.

3.1 *Responsible Staff*

The Town's stormwater program manager is responsible for implementation of this IDDE plan. The stormwater program manager will ensure that other town employees are provided training in illicit discharge detection. While the goal will be having all town employees trained, the following departments will be targeted.

Public Works

Since the stormwater program operates as part of the Public Works Development, Public Works employees can be trained to identify and look for illicit discharges. Staff is often inspecting and making repairs to street right-of-way owned by the Town, which may include portions of the stormwater system.

Utility Department

The Town's Utility Department also employs field personnel that can assist in identifying illicit discharges. Utility Department personnel are responsible for maintaining water and sanitary sewer systems and easements. This includes investigating and correcting sanitary sewer overflows.

Fire Marshal Office

The Town's Fire Marshal is responsible for enforcement of the Town's hazardous waste regulations, which is part of the fire prevention ordinance. This includes investigating spills and discharges of hazardous materials. The Fire Marshal's office also inspects local business, residences, and institutions for compliance with applicable code. During these inspections, illegal discharges can be noted if found.

3.2 *Inspection Procedures*

There are six primary responsibilities when staff will conduct illicit discharge inspections. These include:

1. Dry weather flows;
2. Stormwater system maintenance;
3. Citizen requests/complaints;
4. Illicit discharge source;
5. Sanitary sewer system maintenance & inspection;
6. Hazardous spill/discharge response.

Procedures relating to illicit discharge inspections for each of these tasks or indicators are described in the following sections

(1) Dry Weather Flows

Dry weather flows mean that there is actually flow from an outfall but it has not been raining. During performance of routine duties, Public Works, Utilities and other trained staff will look for dry weather flows from storm sewer pipes. If found, staff will document the location and the following physical indicators of the flow from the outfall:

- Odor;
- Color;
- Turbidity (i.e. cloudiness);
- Floatables (foam, trash, etc.).

If possible staff will photograph the flow, then contact the stormwater program manager to conduct a follow up inspection.

If the follow up inspection determines that the dry weather flow is indeed an illegal discharge, a Notice of Violation (NOV) letter will be sent to the property owner by the stormwater program manager. The NOV will provide a timeline to mitigate the discharge and if not complied with, the owner will be subject to civil penalties in accordance with town code. If necessary, the Town will take action to correct the problem at the owner's expense.

(2) Stormwater System Maintenance & Inspection

Public Works staff conduct routine maintenance of road right-of-ways owned by the Town. This includes portions of the stormwater system. As part of their routine maintenance, staff will look for indicators of illicit discharges and connections. These indicators include the following:

- Outfall damage;
- Deposits/stains;
- Poor pool quality;
- Non-stormwater pipes;
- Pipe benthic growth.

If illicit discharges or connections are suspected, staff will provide the location, description of the indicators found, and photographs if possible, to the stormwater program manager. Staff will also follow procedures listed under item (1) above if dry weather flows are noted during maintenance activities.

As part of this process, the stormwater program manager will review mapped stormwater outlets and using the criteria outlined in Section 1.2 above, conduct inspections of outfalls in high priority areas. Since this portion of the program is still being developed, this Plan will be updated to include procedures for inspecting identified outfalls.

(3) Citizen Requests/Complaints

Often, citizens will contact various departments with drainage issues, nuisance odors, erosion concerns, etc. Staff will investigate these

requests or complaints and if it is stormwater related, provide a description and location to the stormwater program manager to investigate. As listed above, should an illicit discharge or connection be discovered, an NOV letter will be sent to the property owner by the stormwater program manager. Appropriate action will be taken by the Town to ensure the responsible party removes the illicit discharge or connection.

(4) Illicit Discharge Source

Should an illicit discharge or connection be identified through dry weather inspections, citizen complaints, or simply through performing routine duties, Public Works staff will assist the stormwater program manager with tracing the problem to its source. Once the source is identified, the stormwater program manager will notify the owner to remove the discharge. As necessary the Town will take action, including measures outlined in the appropriate sections of the stormwater Ordinance, to ensure the illicit discharge is removed.

(5) Sanitary Sewer System Maintenance

The Town's Utility Department is responsible for the operation and maintenance of the sanitary sewer system. Sanitary sewer spills or overflows are a type of illicit discharge. Spills and overflows are also regulated by the State and requires additional procedures to be followed. In addition to the procedures required by the State, the Utility Department will notify the stormwater program manager in the event of a reportable sewage spill from the sanitary sewer system and indicate the location of the spill, if it entered the storm sewer system, or reached a surface water.

The Utility Department will inform the stormwater program manager when areas of significant erosion along sanitary sewer easements are found. Utility employee will stabilize areas as soon as practicable. Likewise, the Utility Department will notify the stormwater program manager when maintenance work involves impact to a designated stream buffer. This will help to ensure that sediment, vehicle fluids or other substances do not reach receiving waters during maintenance of the system.

(6) Hazardous Spill Response

Regulations regarding hazardous materials are included within the Town Code. The Town's Fire Marshal Office enforces these regulations. A copy of the Town's hazardous material control regulations is included as Attachment B.

When a hazardous material spill or discharge occurs the Fire Marshal will notify the stormwater program manager and describe the spill and whether it reached the MS4 or receiving water. This notification is in addition to required notifications outlined in Attachment B. The Fire Marshal will notify the appropriate state and federal entities, as applicable.

3.3 *Stream Sampling*

In a coordinated effort with Orange County, a two year water quality sampling program was conducted. The sampling data indicated that water quality was within acceptable standards. The sampling specifically looked at nutrient concentrations. Excess nutrients are one of the target pollutants and this information is being used to help develop nutrient reduction plans as required through the state's Falls Lake Rules.

As part of the Falls Lake Rules requirements, additional monitoring has recently begun through the Upper Neuse River Basin Association (UNRBA). The Town is a member of the UNRBA and the data collected will also be used to assist the Town and other UNRBA member governments to develop plans to reduce nutrients in the watershed.

The Town will continue to evaluate the need for additional stream sampling to facilitate identification of potential ongoing illegal discharges.

4. Employee Cross-Training

Recognizing illicit discharges and connections are an essential part of the IDDE Plan. Since the Town does not maintain full time staff dedicated to finding and removing illicit discharges, it is even more important that staff in multiple departments understand how to identify possible illicit discharges and connections. In order to successfully identify illicit discharges and connections, training opportunities will be provided for staff identified in Section 3 of this plan.

The stormwater program manager will conduct training for staff and/or identify other training opportunities that may exist through the state or in conjunction with other local governments. Information regarding IDDE training opportunities will be circulated to supervisors of these departments to determine which staff should attend. On an on going basis, additional staff members who would benefit from the cross-training will be identified and trained.

5. Public Education and Reporting

Information regarding the IDDE plan will be included as part of the overall stormwater education and outreach program. An informational fact sheet has been developed and is distributed both to citizens and businesses. The fact sheet explains what

constitutes an illicit discharge and connection. It contains a phone number and other contact information for the public to report suspected illegal stormwater discharges.

6. Implementation

It is important to note that this is a working plan. The Plan will be updated periodically and details will be added as they are developed. Changes to this Plan that affect the Town's Comprehensive Stormwater Management Plan (CSWMP) will be noted in the CSWMP. Implementation of the IDDE program is set pursuant to the Town's NPDES Phase II permit.

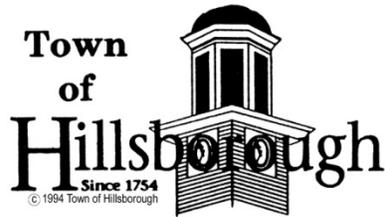
7. Evaluation

To maintain an effective working plan periodic evaluation of its effectiveness is key. As this plan is implemented various components will be qualitatively evaluated to determine effectiveness. Quantitative measures will also be evaluated as they become available. Some areas and means to evaluate this program include, but are not limited to:

- Number of citizen complaints
- Repeat incidents
- Number and frequency of inspections
- Response time between request and inspection
- Number of staff trained in IDDE (including cross-training of staff)
- Number of spills and amounts
- Number of NOVs issued
- Stream sampling results
- Outreach activities (flyers, events, brochures)
- Proactive detection/elimination versus reactive/complaint based
- Proactive maintenance of stormwater and sanitary sewer
- Review of industrial and commercial facilities

This information will be logged and maintained by the stormwater program manager. At least annually, this information will be utilized to improve the effectiveness of the program, included in the annual report, and where appropriate used to assist with permit renewal.

Town of Hillsborough



NPDES Phase II Stormwater Management Program



Stormwater Wetland at Gold Park

Pollution Prevention/ Good Housekeeping Plan

September 2014

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Introduction

The Town of Hillsborough's (Town) National Pollutant Discharge Elimination System (NPDES) Phase II Stormwater permit requires the Town to develop and implement a Good Housekeeping program to prevent stormwater pollution. The Town's Good Housekeeping program focuses efforts at Town facilities and centers on maintenance activities at these locations.

The program also includes activities directly related to stormwater facilities, such as street sweeping, storm drain cleaning, and litter removal. Lastly, the program will develop Best Management Practices (BMPs) the Town will utilize to contain spills, manage trash and address non-stormwater discharges.

The Town's Pollution Prevention/Good Housekeeping Plan (Plan) is composed of four main components. These include:

1. Facility List
2. Inspection Program;
3. Training;
and
4. Implementation.

Goal

Develop and implement an operation and maintenance program that will ultimately reduce or eliminate pollutant runoff from Town operations and facilities into the storm sewer system.

1. Facility List

The following facilities are owned by the Town and are included in the Plan:

- | | |
|------------------------------|---------------------------------|
| 1. Community Policing Center | 9. Public Works |
| 2. Cemetery | 10. Riverwalk Greenway |
| 3. Gold Park | 11. Town Hall |
| 4. Motor Pool | 12. Town Hall Annex |
| 5. Murray Street Park | 13. Turnip Patch Park |
| 6. Orange County Museum | 14. Water Treatment Plant |
| 7. Police Department | 15. Waste Water Treatment Plant |
| 8. Public Parking Lot | 16. Water Distribution |

The Town also maintains public road rights-of-way (ROW) in portions of their jurisdiction that are not owned by NCDOT. Stormwater conveyances within town-owned ROW are periodically inspected and maintained by the Town.

2. Inspection Program

The inspection program under this Plan has three primary components. These include annual facility inspections conducted by stormwater staff, self-inspections conducted by facility staff and operation review.

2.1 Annual Facility Inspection

The stormwater program manager or designee will conduct a stormwater good housekeeping inspection of each facility listed in Section 1 annually. Each facility will be evaluated in the following categories as applicable: facility maintenance, stormwater system, materials/chemical storage and handling, vehicle/equipment management and the presence of illegal dumping or illicit discharges.

Each inspection item under the categories listed above will be inspected to determine compliance and will be assigned one of the following:

Compliant – the item meets proper best management practices for pollution prevention.

Compliant with Conditions – the item generally meets proper best management practices for pollution prevention but there are minor issues that need corrected or a certain practice simply needs to be improved.

Not Applicable – simply means that this facility does not contain this item; i.e. no chemical storage or vehicle maintenance, etc.

Non-Compliant – this indicates that the best management practice is inadequate, not implemented and that there is pollution entering the stormwater management system or the potential for pollution is high.

The inspection report will include action items if applicable and a date to complete them. Non-compliant items will have short time frames based on risk. Follow-up inspections will be conducted to ensure action items are complete.

Inspection data will be maintained in an electronic database. Copies of inspection reports will be emailed to the facility manager/supervisor, their supervisor and the Town manager.

2.2 Self-Inspections

Some facilities are considered higher risk due to the nature of the operations. These facilities operate under a specific pollution prevention/good housekeeping plan developed specifically for the facility. In general, these plans require quarterly monitoring/inspection by staff that work at the given facility.

2.3 Operation Review

Periodically, the stormwater program manager or designee will review facility specific stormwater pollution prevention plans with facility staff. As necessary,

operations to determine if best management practices need to be altered, improved, eliminated or added. Input will be given on whether capital improvements are needed to help ensure pollution prevention so that funding can be budgeted.

3. Training

Training is a key component of this Plan. Training will be conducted at least annually and may include web-based presentations, videos, staff presentations, and handouts, as well as informational signs posted at locations where regular activities may have the most impact to stormwater.

Existing training tools developed by the Environmental Protection Agency (EPA), North Carolina's Department of Environment and Natural Resources (NCDENR), materials developed by private firms, and other local governments, as well as items developed in-house will be utilized and adapted to meet the Town's goal under this plan.

A training log will be maintained of employees trained under the plan. Informal training may also be conducted at each facility as necessary. As resources allow, pollution prevention/good housekeeping training will be offered to all town employees.

4. Implementation

It is important to note that this is a working plan. The Plan will be updated periodically and details will be added as necessary. Changes to this Plan that affect the Town's CSWMP will be noted in the CSWMP. Attached to this Plan is a list of suggested pollution prevention and good housekeeping best management practices. This list may be included in facility specific pollution prevention plans as well, but is meant to provide employees a starting point to understand what they can do to prevent stormwater runoff pollution.

Attachments

Pollution Prevention and Good Housekeeping Best Management Practices

Pollution Prevention and Good Housekeeping Best Management Practices

On the Job Training

- Conduct and document on the job training for both safety and stormwater pollution control

First Aid and Emergency Response

- Provide first aid training to employees expected to respond to a medical emergency
- Provide hepatitis B vaccinations
- Provide training to employees on procedures to protect themselves from bloodborne pathogens

Hazard Communication

- Ensure MSDSs are available and accessible in the work area
- Ensure containers are properly labeled
- Provide HAZCOM training to employees
- Ensure proper personal protective equipment is available and used when required

Personal Protective Equipment

- Perform and document a site PPE assessment
- Safety glasses and hard hats shall be ANSI approved
- Wear eye and head protection in required areas
- Added protection (i.e., face shields, goggles) shall be available and used when required
- Train employees in proper selection, maintenance, and storage of PPE
- Maintain PPE in a sanitary condition and ready for use
- Do not consume food and beverages in areas where there is exposure to toxic materials, blood or other potentially infectious materials
- Provide special respirator physicals when required

Fire Protection

- Fire extinguishers are accessible and in the proper location
- Inspect all fire extinguishers
- Train employees on the use of fire extinguishers
- Display evacuations routes
- Train employees on evacuation routes
- Post exit signs where required
- Test fire alarms
- Acquaint local fire department with the facility, its location, and specific hazards
- Maintain fire doors in good operating condition and unobstructed
- Inspect fire sprinkler systems
- Document all inspections and tests

Pollution Prevention and Good Housekeeping Best Management Practices

Eye Wash Stations and Safety Showers

- Locate eye wash stations and safety showers where ever chemicals are used, off-loaded, and stored
- Inspect and test eye wash stations and safety showers to ensure they are properly maintained and functioning properly.

General

- Provide and maintain emergency spill kits in designated areas
- Post emergency telephone numbers where they can be readily found in case of an emergency
- Make MSDSs available where employees may be exposed to any hazardous chemicals
- Signs concerning "Exiting from buildings," are posted where appropriate
- Mark all exits an exit sign
- Mark all doors, passageways, or stairways, that are neither exits nor access to exits and which could be mistaken for exits, "NOT AN EXIT"
- Ensure all exits are free of obstructions
- Provide at least two means of egress from elevated platforms, pits, or rooms
- Provide obvious and direct exits
- Designed exit doors to be opened from the direction of exit travel without the use of a key or special knowledge or effort when the building is occupied

Housekeeping

- Maintaining dry and clean floors
- Clean up dry loose debris with brooms before using wet cleaning to prevent solids from discharging to drains
- Use drip pans
- Use dry cleanup methods to collect spills
- Clean up spills promptly and thoroughly
- Regularly pick up and disposing of garbage, debris, and waste materials
- Keep all areas exposed to storm water clean and orderly
- Inspect drains, loading docks, outdoor storage and waste collection areas daily for signs of contamination
- Ensure areas are free from tripping hazards, adequately illuminated.
- Remove combustible scrap, debris, and waste from the work site promptly

Preventative Maintenance

- Inspect and maintain storm water management devices and equipment designed to prevent spills, leaks, erosion, and flooding
- Regularly clean storm water catch basins, sediment traps, and oil-water separators to remove debris and make sure that the systems are working properly
- Regularly inspect, test, clean, repair, and replace chemical handling equipment such as pumps, hoses, and seals on a regular schedule.

Pollution Prevention and Good Housekeeping Best Management Practices

Loading and Unloading Procedures

Prior to loading and unloading inspect areas

- Check for leaks from tanks, containers, and/or equipment
- Check for stained concrete and/or soil
- Check to ensure fire extinguishers are in place and operative
- Check to ensure inlet protection is available
- Check to ensure a spill kit available, adequate, and fully stocked and adequate
- Check secondary containment
- Check to ensure drain for secondary containment is closed

Loading and Unloading Procedure

- Check incoming vehicles and equipment for leaks
- Have the driver sign in with the operator and obtain a copy of these instructions
- Notify the appropriate maintenance/utility personnel
- Have appropriate maintenance/utility personnel conduct the tank truck to the unloading area
- Have the truck driver position his truck in the proper manner as directed by the maintenance/utility personnel
- Have the driver set the hand brake, shut off his truck engine, and remove the key
- Place a sign "WARNING TRUCK UNLOADING" at the front and rear of the tank truck
- The maintenance/utility personnel will provide a bucket for placement under the tank valves.
- The maintenance/utility personnel will supervise the hooking up of the tank truck to the proper fill line.
- Instruct the driver and the maintenance/utility personnel to stay in sight with an unobstructed view of the hookup during unloading
- Notify appropriate personnel in the event of a spill and request assistance, if necessary.
- When unloading has been completed, check tank line valves and close and lock all fill caps. Have the driver close the valves on the tanker
- Check for any evidence of oil leaked during the unloading operation and take appropriate clean-up action
- Check the drains and outlets on tank trucks for leakage prior to departure

Pollution Prevention and Good Housekeeping Best Management Practices

Spill Response

All spill response should be conducted with safety in mind first and protection of the environment and property as a secondary concern. In general, response to spills that can be handled by personnel on-site and the time of the spill should be conducted as follows:

- Safety is First and foremost – Don't take risks
- Keep people away from the area where the spill occurred
- Do not touch or walk in the spilled material
- Be on the guard for any gas or vapor
- Stay up wind and at a higher elevation
- Do not inhale any gases, fumes, or smoke
- Stop the spill at its source if it can be done safely. Close valves, shut down pumps, and/or rotate or upend leaking containers
- Cover drains and/or protect storm sewer
- Dig a ditch or use absorbent material or sand to build a temporary berm to prevent entry into water or sewer
- Pump or remove excess material
- Use absorbent material or sand to clean up the spill
- Collect and package used absorbent for disposal
- Report spill and arrange for waste pick-up

Response to spills that present a risk to health or safety of personnel should be conducted as follows:

- Evacuate area to ensure personnel safety
- Set up barricades to keep people away from the area
- Notify appropriate emergency response personnel

Complete and submit a Spill Incidence Report. Maintain records, including:

- Name and telephone number of individual who discovered and/or reported spill
- Location of spill and waters involved
- Time spill was observed
- Cause and circumstance of spill
- Source of spill
- Existing or potential hazards
- Personal injuries or casualties, if any
- Type of material released
- Volume of spill
- Type of cleanup operation, time initiated, and approximate time table to control contain and clean up spill
- Effectiveness of the cleanup operations
- Weather conditions
- Persons on the scene and a contact person

Pollution Prevention and Good Housekeeping Best Management Practices

Proper Material Storage and Handling

- Store drums and containers of chemicals and wastes away from direct traffic routes
- Follow procedures when loading, unloading, or transferring materials, chemicals, fuels, and waste
- Use the appropriate equipment when handling chemicals
- Store materials, waste and used oil in appropriate areas
- Store containers inside and on pallets or similar devices whenever possible
- Place secondary containment under containers

Often the most reliable method used to reduce pollutants in storm water runoff is to eliminate potential exposure.

- Move maintenance activities indoors or under a roof
- Divert run off away from areas where chemicals are used or stored
- Equipment and materials that are not directly associated with loading or unloading activities should be stored indoors
- If activities are conducted outdoors cover all storm drains and clean up immediately after each activity and/or at the end of the day.

Aboveground Storage Tanks

- Check and maintain the condition of all tanks, piping systems, and valves in good condition
- Check and maintain alarm systems
- Check and maintain level indicators
- Check and maintain spill containment in good condition
- Check to ensure tanks are constructed of materials compatible with the substance stored
- Check to ensure appropriate containment and diversionary structures prevent discharged materials from reaching waters of the state
- Construct tanks with secondary containment or store in an area that can contain the entire contents of the tank
- Lock fill and discharge ports when not in use
- Label tanks with contents
- Coat tanks and associated piping to prevent corrosion and degradation
- Inspect water being drained from secondary containment for the presence of oil before discharging. In the event that oil is present, it must be collected and disposed or recycled
- Inspect tanks on a weekly basis
- Maintain weekly inspection records, Material Safety Data Sheets, training records, design specifications/manufacturer's data, and testing/repair records
- Separate chemicals which will react with each other

Pollution Prevention and Good Housekeeping Best Management Practices

Underground Storage Tanks

- Track throughput (input/output) of materials in the tank to aid in release detection
- Register all USTs with the state
- At least annually, Test USTs and piping for integrity
- Perform and document daily monitoring
- Perform and document weekly UST Inspections
- Maintain maintenance records
- Maintain annual Integrity Test Record
- Maintain current notification
- Maintain records of releases or reports when there has been a loss of contents

Flammable and Combustible Storage

- Store all flammable or combustible in designated areas (i.e., no storage in stairways, passageways, or near exits)
- Store flammable materials in OSHA approved containers with self-closing lids and flash arrestors
- Locate at least one fire extinguisher outside the storage room within 50 feet of the door
- Provide adequate containment
- Label all containers as to their contents and post “Danger No Smoking” signs
- Provide an emergency communication phone
- Use approved containers, tanks, and cabinets to store flammable and combustible liquids
- Keep all flammable liquids in closed containers when not in use
- Ground and bond flammable liquid containers when adding or removing material
- Provide storage rooms for flammable and combustible liquids with explosion proof lights and adequate ventilation
- Select and provide fire extinguishers for the types of materials in the areas where they are used
- Mount appropriate fire extinguishers within 75 feet of outside areas containing flammable liquids and within 10 feet of any inside storage area
- Provide free and unobstructed access to fire extinguishers
- Service, maintain and tag fire extinguishers at intervals not exceeding one year
- Use safety cans for dispensing flammable or combustible liquids
- Clean up spills promptly
- Adequate vent and storage tanks and equip with emergency venting

Pollution Prevention and Good Housekeeping Best Management Practices

Compressed Gas Cylinders

Compressed gas cylinders can be extremely hazardous if stored improperly. Ruptured cylinders can create missile hazards, or cause chemical exposure, fire or explosions. Compressed gases include nitrogen, oxygen, propane, breathing air, carbon dioxide, and acetylene.

- Place cap on cylinder when not in use
- Store compressed gases in a secure, upright position
- Separate flammable gases from oxidizers by a minimum of 20 feet, or a 1 hour fire wall, at least 5 feet in height
- Mark and clearly identify contents of gas cylinders
- Place valve protectors on cylinders when not in use or connected for use
- Separate full cylinders from empty cylinders
- Secure cylinders with chains or other restraints
- Keep away from high traffic areas
- Keep away from heat or direct sunlight
- Return cylinders when empty
- Store 50 feet from occupied buildings
- Do not subject to freezing temperatures
- Keep cylinders in an approved storage area
- Never use wrenches or other tools, except those provided or approved by the manufacturer
- Withdrawal rate must not exceed manufacturer specifications
- Maintain records of weekly inspections

Petroleum, Oils, and Lubricants (POL) Storage

Proper storage of POL can prevent costly spills and reduce hazards. Spills of POL cause product loss, increase environmental management costs, and require personnel to divert their attention away from other activities.

- Do not store with incompatible materials
- Close and secure containers
- Keep spill kits near any location where POL is used or stored
- Keep fire extinguisher nearby
- Store away from high traffic areas
- Store away from or near sources of high heat or open flames
- Install NFPA markings on buildings and containers for hazard communication
- Maintain MSDSs
- Maintain accurate inventories
- Maintain good housekeeping
- Inspect dispensing systems daily for leaks, spills, and corrosion
- Maintain a daily inspection log and weekly inspection records

Pollution Prevention and Good Housekeeping Best Management Practices

Used Oil Storage

Standards for the management of used oil are found in 40 CFR 279. Requirements include labeling, storage and disposal prohibitions. Whenever possible, recycle used oil. Most local governments should be able to take advantage of local commercial recyclers that can handle their material and exchange of used oil when purchasing new oil.

- Check the area around the storage for signs of leaks or spills
- Store used oil in containers or tanks that are secure, protected from weather, and in good condition (No excessive rust, dents, punctures, free of visible leaks, etc.)
- Store containers in a secure area that has secondary containment
- Do not mix used oil with other waste materials
- Label containers with the words "Used Oil"
- Promptly clean up any spills of used oil
- Close containers when not adding or removing used oil
- Recycle used oil through an approved vendor
- Maintain shipping manifests and used oil storage inspections
- Do not use of waste oil for dust suppression and weed control

Solid Waste Collection

Solid waste management helps prevent fires, storm water pollution, and helps control disease-carrying vectors. Collection of waste must be performed in a safe efficient manner, prevent fires, safety hazards, pest harborage and disease carrying vectors. The number and size of containers must be sufficient to prevent overflow of waste.

- Empty containers that collect food waste at least weekly to reduce pest harborage and disease transmission
- Provide lids and cover all outside trash containers to prevent pests from entering containers and to contain trash and debris
- Close all outside trash containers in areas that may come into contact with precipitation to prevent storm water collecting in the containers and becoming contaminated
- Inspect all trash collection frequently
- Store of potentially flammable or combustible waste materials a minimum of 50 feet from occupied buildings
- Do not dispose of liquids in solid waste containers
- Completely empty pressurized containers, such as aerosol cans, before disposal.
- Do not dispose of tires - recycle tires are to be recycled
- Post signs on trash containers listing prohibited items, such as: "No Hazardous Waste, No Recyclable Materials, and No Liquids"

Contact the trash hauler or landfill for prohibitions on waste that may be disposed. Periodically inspect waste haulers while on-site to ensure that they are performing their work in a clean and compliant manner. Maintain records of disposal permission letter from landfill operator and solid waste weekly inspection.

Pollution Prevention and Good Housekeeping Best Management Practices

Vehicle and Equipment Storage, Maintenance, and Washing

- Regularly inspect equipment that could result in leaks/ spills
- Ensure all stored equipment is free of leaks and drips
- Where practical perform maintenance activities indoors
- Puncture oil filters and completely drained before recycling/ disposal
- Do not pour liquid waste down drains
- Properly segregate, label and discard waste materials
- Recycle engine fluids and batteries
- Drain fluids and properly store wrecked vehicles and equipment

Wash Areas

- Use nontoxic cleaning compounds
- Use soaps and detergent that are designed for use in oil water separators
- Use phosphate-free and bio-degradable detergents
- Contain wash water or otherwise keep out of the storm drainage system
- Perform cleaning operations indoors or 1) ensure wash-water drains to the sanitary sewer system, 2) collect runoff and providing treatment or recycling, or 3) provide equivalent measures. If sanitary sewer is not available and cleaning operations take place outdoors, the cleaning operations shall take place on grassed or graveled areas to prevent discharges of the wash water into the storm drains or surface waters.
- Where cleaning operations cannot be performed as described above and when operations are performed in the vicinity of a storm drainage collection system, the drain is to be covered with a portable drain cover during clean activities. Any excess water shall be removed and properly handled prior to removing the drain cover.
- The direct discharge of vehicle and equipment wash waters, including tank cleaning operations, are not authorized and must be covered under a separate NPDES permit or discharged to a sanitary sewer in accordance with applicable industrial pretreatment requirements

Fueling

- Fuel tanks are to be filled carefully without allowing over-splash
- Protect fueling areas from precipitation and run-on or run off
- Avoid washing down fueling area with water

Pesticide Application

Pesticides can cause serious health effects and environmental damage.

- Any contractors applying pesticides must be licensed
- Use all pesticides in accordance with manufacturer's recommendations
- Hire licensed contractors to apply any required pesticides
- Maintain pesticide usage reports, contractor license, and MSDS

Pollution Prevention and Good Housekeeping Best Management Practices

Parts Washers

Depending on the solvent selected, organic solvent parts washers may generate hazardous waste and air pollution. The use of self-contained parts washers is an effective means of recycling solvents and preventing contamination of wastewater. However, solvent selection can have environmental consequences. Most units can operate using a variety of solvents that can be supplied by the respective vendor. Waste solvents, that are flammable (flashpoint less than 140°F), must be managed as hazardous waste. The increase in compliance management activities often negates any savings achieved through solvent performance. A non-hazardous solvent with a higher flashpoint is generally less expensive to purchase and manage.

- Remove gross contamination before placing in parts washer
- Use solvents with a flashpoint of 150° F or greater
- Keep lids closed
- Keep a spill kit nearby
- Keep fire extinguisher nearby
- Drain parts/equipment containing fluids (oil, hydraulic oils, radiator fluids, etc.) prior to placing into parts washer
- When parts are washed, allow excess solvent to drain back into the parts washer
- Inspect weekly
- Maintain the MSDSs for solvent, disposal records, and a weekly inspection log.
- Dispose of contaminated solvent per manufacturer's recommendations

Oil Water Separators (OWS)

OWS can be effective at removing oil from wastewater. They are used primarily on wash racks and equipment storage areas where there is the potential for oil to leak onto the ground. OWS remove oils by trapping floating oil in one section, allowing water to flow out, and allowing sand, grit, sludge, and heavy grease to settle. The water then flows to the sewer or other treatment. Separators must be cleaned periodically to ensure proper operation. Liquids must be pumped from the collection basin into a drum for disposal as used oil. Solids must be placed into an open top drum, sealed, and labeled. Samples must be analyzed and the material must be sent for disposal, as appropriate. Most septic tank cleaning service companies can pump separators and dispose of the waste.

- Post signs giving instructions for use
- Label all piping including the direction of flow
- Do not allow the direct disposal of petroleum, oil, or lubricants (POL) in an OWS
- Do not add unauthorized chemicals
- Do not use soaps or detergents that are not intended for use in OWS
- Keep mud and other debris out of OWS when possible
- Perform visual inspection daily and weekly written inspections
- Clean out the OWS according to manufacturer's recommendations
- Maintain weekly inspection, maintenance, cleaning, and disposal records

Pollution Prevention and Good Housekeeping Best Management Practices

Backflow Preventers

The National Primary Drinking Water regulations set standards for the treatment of potable water including process control, sampling, and permitting. Cross-connection controls ensure that contaminated water connected to a supply does not flow back into the distribution system. Backflow Prevention Devices (BFPD) protect drinking water.

- All backflow preventers shall be maintained and inspected by a licensed plumber
- Install temporary backflow preventers on all spigots where hoses may be connected (utility sinks, outdoor spigots, maintenance areas). Temporary backflow preventers can be purchased from most hardware stores, home improvement stores and industrial supply vendors
- Maintain an inventory of BFPDs
- Maintain BFPDs maintenance/inspection records

The inventory does not need to include temporary BFPDs on spigots where hoses may be connected.

Hazardous Waste

- Document the amount and kinds of Hazardous Waste generated
- Document how waste are determined to be Hazardous Waste (i.e., knowledge and/or testing)
- Maintain copies of completed manifests and land disposal notifications used to ship hazardous wastes for at least 3 years
- Store Hazardous Waste in proper containers or tanks
- Properly mark and date Hazardous Waste containers or tanks
- Secure, closed, protected from weather, Hazardous Waste containers
- Store Hazardous Waste in containers that are compatible with the contents, properly grounded, and in good condition
- Provide adequate aisle space and secondary containment
- Provide adequate spill response equipment
- Provide an emergency communication phone or radio

Used Antifreeze

Used antifreeze can be toxic. Used antifreeze must be collected for proper management. Most facilities should be able to take advantage of local commercial recyclers that can handle their material.

- Label containers accumulating used antifreeze with the words "Used Antifreeze"
- Contracts must be with licensed vendors to provide for exchange of used antifreeze when purchasing new antifreeze
- Store used antifreeze in antifreeze containers only
- Do not mix oil or other chemicals with used antifreeze
- Store containers in a secure area
- Close containers when not adding or removing used antifreeze
- Maintain shipping records and used antifreeze storage weekly inspections

Pollution Prevention and Good Housekeeping Best Management Practices

Used Oil Filters

- Puncture used oil filters on the closed end of the filter and allow to drain for 24 hours before recycling or discarding
- Document approval from the landfill or recycler before disposal or recycling
- Maintain recycle and/or disposal records

Universal Waste

EPA developed Universal Waste (UW) regulations, which are less restrictive than Hazardous Waste regulations, to manage batteries (nickel-cadmium and mercury), mercury containing lamps and thermostats, and certain pesticides.

- Label waste with the words “Universal Waste” and the name of the item. The label can be placed on the outside of the package or on the item itself
- Keep materials in a secure area protected from rainfall
- Recycle fluorescent bulbs unless permission is received from the local landfill for disposal
- Use fluorescent lamps that are low-mercury. They typically have a green cap on one end of the tube. These can be discarded into general trash.
- Place universal waste fluorescent lamps in the original package and mark the package with the words “Universal Waste Lamps” and the date that the first tube was placed in the package;
- Send universal waste lamps to be recycled every 11 months to keep from violating storage time provisions
- Maintain manifests/bill of lading for three years
- Document shipments - include the name and address, the name and address of the destination facility, quantity of each type of UW, and the date shipped and received
- Inform employees who handle or have responsibility for managing universal waste on proper handling and emergency procedures appropriate to the type(s) of universal waste handled

Aerosol Cans

Aerosol cans may create fire and safety hazards for solid waste management and release hazardous substances to air.

- Aerosol cans containing hazardous materials must be completely emptied before disposal
- Puncture aerosol cans with an aerosol can puncturer
- Capture and properly dispose of liquids and vapors - contents of the cans may be hazardous
- Completely empty cans of their contents, including propellant, and discarded into general trash or recycled

Pollution Prevention and Good Housekeeping Best Management Practices

Used Tires

- Store used tires 50 feet from permanent buildings and equipment
- Stack tires neatly with adequate access for fire-fighting equipment
- Store used tires flat on their side or covered with a tarp to prevent water from collecting within the cavity of the tire, which will help prevent pest harborage and mosquito-borne illness
- Maintain shipping records and monthly inspection records

Recycling

Recycling activities reduce waste disposal costs. Recyclable materials must be stored in a manner that prevents fires and pest harborage. If appropriate, reuse purchased items and their packaging materials and recycle items that have exceeded their useful life, if economically feasible. Evaluate and document the economic feasibility of recycling. A proper evaluation includes generation rates, labor costs, and disposal costs for items being considered.

- Train personnel on recycling procedures
- Label containers with their contents
- Properly segregate materials to prevent fire, health, or safety hazards
- Properly contain or bundle recycled materials so as not to result in spillage or leaks
- Inspect recycling areas at least monthly
- Maintain recycling inspection records and track the volume of wastes recycled

Absorbent Materials

Generally, absorbent materials such as dry sweep, floor dry, absorbent pads, etc., used to clean up small spills may be disposed of in Subtitle D Landfills if certain conditions are met. Subtitle D Landfills are required to prohibit disposal hazardous waste and materials that have free liquids. Contact the local landfill to receive permission to dispose of incidental quantities of absorbent materials.

- Disposed of absorbent materials used to clean up spills according to instructions from the local landfill
- At no time should the absorbent materials be shipped off-site if oil or liquids is leaking from the material
- Mark containers used to store contaminated absorbent materials with the words "Used Absorbent Material"
- Contact local landfill for permission to dispose of contaminated materials
- Maintain disposal permission information

Pollution Prevention and Good Housekeeping Best Management Practices

Erosion and Sediment Controls

To prevent sedimentation from reaching surface waters, erosion and sediment controls must be used wherever land is disturbed. These controls may include fabric silt fences, hay bales, sediment retention ponds, check dams or earthen dikes, and vegetation buffers.

- Use proper erosion and sediment controls
- Inspect erosion and sediment controls after significant rain events and repair as required
- Seed or sod disturbed areas as quickly as possible.

Storm Water Monitoring

Storm water discharge points or outfalls should be monitored to make sure that pollutants are not being released. When inspecting storm water discharges, look for possible signs of contamination. These signs may include cloudy discharges, unusual color, odors, floating, suspended, or settled solids, foaming, oil sheens and other obvious signs of contamination.

- Inspect storm water discharges, note any signs of contamination - cloudy discharges, unusual color, odors, floating, suspended, or settled solids, foaming, oil sheens and other obvious signs of contamination
- Immediately report any signs of possible contamination
- Investigate any possible contamination and correct as soon as possible
- Document findings and corrective action

Inspections

Inspect all areas of the facility where contaminants could be exposed to storm water. Inspect oil/water separators, equipment, and systems designed to prevent contamination of surface waters. Inspect all storm water conveyances and discharge points. Inspect incoming vehicles and equipment for leaks. Inspect areas for the following:

- Oily or contaminated equipment, debris, or pallets exposed to rain
- Corroded or open drums
- Corroded or damaged tanks, tank supports, or drain valves
- Torn bags of chemicals or bags exposed to stormwater
- Corroded or leaking pipes
- Leaking or improperly closed valves or fittings
- Leaking pumps or hose connections
- Broken or cracked dikes, walls, or other secondary containment systems
- Windblown dry chemicals

Immediately report any malfunctions or problems observed. Any problem must be investigated and corrected as soon as possible.

Spill control materials should be inspected regularly to ensure the required equipment is readily available and suitable for the types of spills that employees might encounter.

Pollution Prevention and Good Housekeeping Best Management Practices

PCB Articles

PCBs are believed to cause serious human health effects. Federal regulations prescribe methods for marking and disposal of PCBs. Additionally, the use of PCBs is limited to a totally enclosed manner to ensure that any exposure of human beings or the environment to PCBs will be insignificant.

Fluorescent light ballasts, manufactured before 1978, unless labeled: "NO PCBs" should be considered PCB fluorescent light ballasts because the small capacitors included as one component of the ballast probably contains PCBs. According to data submitted, ballasts manufactured prior to July 1978 have a better than 50% chance of containing PCBs at 50 ppm or greater in their potting material. Fluorescent light ballasts containing PCBs must be disposed of in a TSCA-approved disposal facility under 40 CFR 761.62.

Not all fluorescent light ballasts contain PCBs. Ballasts manufactured between July 1978 and July 1998, require a "No PCB" label indicating that they do not contain PCBs.

- Inspect ballasts when replacing lamps
- Remove suspected or known PCB ballasts from the fixture and place in a container, of adequate size, with a lid that will prevent the spill of liquids (5-gallon buckets and 55-gallon drums are adequate) labeled with the words "Contains PCBs" and the date that the ballast was removed from service
- Line containers with a plastic bag and partially filled with absorbent material to capture any possible spills.
- Place in appropriate storage area labeled with the words "Contains PCBs"
- Inspect storage area monthly recording inspections in a log
- Maintain records of PCB storage area inspections, PCB spill cleanup, and disposal

Batteries (Lead Acid & NiCad)

Lead-acid batteries and nickel-cadmium batteries may be hazardous to human health and the environment if not properly handled.

- Recycle lead-acid and NiCad batteries
- Properly packaged lead acid batteries for recycling (vent caps should be taped to secure them in place, the battery should be wrapped in plastic, secured to the pallet or placed in a rigid container)
- Terminals should not be used to support the weight of other batteries.
- Secure batteries upright as to not tip over and release electrolyte.
- NiCad batteries should be store in a secure, dry area away from flammables
- Label lead-acid and NiCad batteries with the words "Used Battery" and the date taken out of service
- Within one year of date taken out of service, return battery to an approved vendor

Pollution Prevention and Good Housekeeping Best Management Practices

Batteries (Lithium)

Lithium batteries are water reactive and can explode when in contact with water. The rapid rise in heat can cause injuries or fires. The purpose of this work instruction is to provide guidelines for the management of spent lithium batteries.

Waste Lithium-Sulfur Dioxide batteries, frequently used in communications equipment, are considered hazardous waste until the Complete Discharge Device (CDD) on the battery, if available, has been activated. Until the battery has been properly deactivated, all the rules of hazardous waste management apply (accumulation time, labeling, manifest tracking, inspections, etc.).

Only trained personnel will perform deactivation. Metal objects must not be used to deactivate lithium batteries. The latest CDDs require removal of a protective sticker, allowing the CDD tab to pop up for deactivation.

- Store Lithium-Sulfur Dioxide batteries in a waterproof container, such as a plastic bag
- Store Lithium-Sulfur Dioxide batteries in a dry, secure area
- If the batteries are stored inside a permanent structure, the area must be equipped with sprinkler protection or a class D fire extinguisher should be nearby
- The local fire department shall review storage practices
- Mark the battery with the date discharged on each battery and properly dispose of all discharged batteries
- Maintain battery discharge training records. All affected personnel must be trained in Lithium battery discharge practices and proper use of Personal Protective Equipment (PPE) and Control Measures on MSDS.
- Weekly inspect Lithium battery storage areas
- Discharging tools must be constructed of wood or plastic

Prior to discharging:

- Mark the date and time of day on the battery
- Remove clear plastic label that covers the CDD completely
- Perform discharging (pressing the CDD button) outdoors with a breeze to disperse the vapors
- Depress the CDD button GENTLY - Ensure that the button is depressed by touch or visual inspection and then remove the tool slowly to ensure that the button stays depressed
- Since lithium batteries react violently with water, place discharging batteries in a covered and secured area on a wooden pallet
- Separate batteries by at least 2 inches on all sides from any objects
- Batteries must discharge for a minimum of 5 - 7 days, but 10 days is recommended for cold weather
- Check all battery CDD buttons after the discharging time period to ensure none have popped back out - on average 10% of the CDD buttons pop back out during discharging
- Check the CDD button by pressing gently and feel for a movement - if you feel no movement the button remained secure and the battery is discharged.

Pollution Prevention and Good Housekeeping Best Management Practices

Fall Protection

- Use proper platforms and ladders to reach work areas
- Scaffolds greater than 10 feet above the ground or floor shall be completely decked and have guard rails and toe boards on all sides
- Barricade all floor openings, work platforms, wall openings
- Inspect safety harnesses prior to use
- Use safety harnesses when working 4 feet or more above the ground
- Do not work from pipes, equipment, or cable trays
- Cover or otherwise provide guards for pits and floor openings
- Install toe boards around the edges of permanent floor openings

Stairs and Stairways

- Provide standard stair rails or handrails on all stairways having four or more risers
- Stairways shall be at least 22 inches wide
- Stair angles shall be no more than 50 and no less than 30 degrees
- Stair hand rails shall be located between 30 inches and 34 inches above the leading edge of the stair tread
- Stair way handrail shall have at least 3 inches of clearance between the handrail and surface they are mounted on

Walkways

- Keep aisles and passageways clear
- Repaired, covered, or otherwise make safe any holes in the floor, sidewalk, or other walking surface
- Promptly clean up spills
- Maintain safe aisles and walkways that pass near moving or operating machinery, welding operations, or similar operations
- Maintain adequate headroom for the entire length of any aisle or walkway
- Standard guardrails shall be provided wherever aisle or walkways surfaces are elevated more than 30 inches above any adjacent floor or the ground

Portable Ladders

- Maintain all ladders in good condition and free of grease and oil
- Provided all ladders with non-slip safety feet
- Remove defective ladders from service
- Do not use metal ladders around energized electrical equipment
- Secure portable ladders when in use
- Portable rung ladders used to gain access to elevated platforms shall extend 3 feet above the elevated surface
- Do not work from top step of ladders

Pollution Prevention and Good Housekeeping Best Management Practices

Forklifts

- Post and enforce required lift truck operator rules
- Train and certify forklift operators
- Provide each industrial truck with a warning horn, whistle, gong, or other device which can be clearly heard above the normal noise in the areas where operated
- Provide brakes on each industrial truck capable of bringing the vehicle to a complete and safe stop when fully loaded
- Provide parking brake that effectively prevents the vehicle from moving when unattended
- Provide directional lighting on each industrial truck

Confined Space Entry

- Calibrate and maintain monitoring equipment per manufacturers recommendations
- Identify and mark confined spaces
- Inspect, maintain, and provide required personal protective equipment and emergency response equipment
- Conduct required emergency drills
- Maintain Confined Space Entry Permits on file for 1 year
- Remove all corrosive or hazardous substances before entry
- Valve off and blank or disconnect and separated all lines containing inert, toxic, flammable, corrosive or other hazardous materials shall be before entry
- Lock out all impellers, agitators, or other moving parts inside a confined space if they present a hazard
- Provide either natural or mechanical ventilation prior to entry
- Perform appropriate atmospheric tests to check for oxygen deficiency, toxic substances, and explosive concentration
- Provide adequate illumination
- Monitor the atmosphere inside the confined space frequently or continuously monitored (if required)
- Assign a safety standby outside the confined space
- Provide training for assigned safety standby, entry, supervisors, and rescue employees
- Either ground and insulate or equip with ground fault protection all portable electrical equipment used inside confined spaces
- Before gas welding or burning is started check all hoses for leaks, do not use compressed gas bottles inside confined spaces, light torches only outside confined spaces, and test the confined space each time a lighted torch is to be taken into a confined space
- Provide sufficient air when employees will be using oxygen-consuming equipment (i.e., salamanders, torches, and furnaces)
- Make provisions to exhaust combustion type equipment outside the enclosure and away to assure exhaust is not re- introduced into the confined space
- Check confined spaces for decaying vegetation or animal matter which might produce methane
- Check confined spaces for rust which might reduce oxygen levels

Town of Hillsborough
Stormwater/Water Quality Related Policies, Practices and Regulations

Prepared by the Town of Hillsborough Planning Department

1. Natural Resource Protection

- a. The Town's Flood Damage Prevention prohibits new development, with the exception of public parks and utility facilities, in the 100-year floodplain and the floodway. Even the limited development allowed must be designed to minimize flood damage.
- b. The Town's Subdivision Regulations contain the following requirements:
 - The Planning Board is to consider the overall design of a subdivision in light of the land's suitability for development. Suitability is to be determined by investigating the following conditions: flood prone areas, wetlands, soil drainage, drainage patterns, slope, historic sites, and unique natural areas.
 - 50-foot wide stream buffers are required along both sides of water features in areas designated for water supply watershed protection.
 - The Regulations contain a process allowing reductions in lot sizes and clustering of lots in order to preserve floodplains, steep slopes and other unique natural features present on a development site.
 - Requirement that developers of major subdivisions (more than 4 lots) dedicate common open space as part of the development. The goal is to preserve significant natural features and cultural resources.
- c. The Town's Zoning Ordinance contains the following requirements:
 - 50-foot wide stream buffers along both sides of water features located within the Town's planning jurisdiction, provided said streams are indicated on a USGS map, soil survey or identified in the field.
 - Watershed protection standards for areas identified as Water Supply Watershed Protection areas. The requirements mandate maximum impervious surface limits allowed on individual lots, more stringent stream buffer widths than those found elsewhere in the Town's Ordinances, as well as additional building and septic system setbacks from perennial and intermittent streams and water impoundments areas. Clustering of lots to preserve open space for watershed protection is also allowed.
 - Performance standards related to the review and approval of Special Use Permits. One of the standards relates to the preservation of the site's natural state. Specifically, as part of the development process, desirable vegetation or other unique natural features are to be preserved in their natural state when practical.

- d. The Town's adopted Vision 2010 Plan (1991, amended 2000) contains the following goals, objectives and recommendations:
 - Maintain and improve Hillsborough's natural and historic resources by creating a preservation plan identifying open spaces and other areas for protection; contacting owners of significant tracts of land to inform them of the financial benefits of dedications and conservation easements, and the use of tax incentives and public acquisition of land.
 - Development and adoption of regulations restricting development of sensitive lands.
 - Conduct full environmental impact reviews for all proposed new developments.
 - Strengthen the floodplain ordinance to go beyond the minimum requirements and prohibit development within floodplains.
 - e. The Town has and continues to purchase land along the Eno River for use as a greenway (Riverwalk).
 - f. The Town constructed a large community park adjacent to the Eno River (Gold Park) in 2008/2009.
2. Open Space Protection
- a. The Town currently contains approximately 916 acres of dedicated open space consisting of existing parks, lands dedicated through land subdivision process, and Town-owned greenway land.
 - b. The Town's Subdivision Regulations contain the following requirements:
 - Developers of major subdivision developments (more than 4 lots) must dedicate common open space as part of the development.
 - c. The Town's adopted Vision 2010 Plan (1991, amended 2000) contains the following goals, objectives and recommendations:
 - Preserve and maintain current open spaces created by a mixture of lot sizes.
 - Maintain and improve Hillsborough's natural and historic resources.
 - Create a preservation plan identifying open spaces and other areas for protection.
 - Contact owners of significant tracts of land to inform them of the financial benefits of dedications and conservation easements.
 - Use of tax incentives and public acquisition of land
 - Town purchase of vacant lots in existing neighborhoods for use as small neighborhood parks.
 - d. The Town has and continues to purchase land along the Eno River for use as a greenway (Riverwalk).

- e. The Town constructed a large community park adjacent to the Eno River (Gold Park) in 2008/2009.

3. Tree Preservation

- a. The Town's Subdivision Regulations contain the following requirements:
 - Protection of exiting vegetation on lots to be created through the major subdivision (more than 4 lots) by designating Primary and Secondary Tree Preservation areas on individual lots. Use of existing vegetation to meet this requirement is encouraged under the Regulations.
 - Planting of street trees in major subdivisions (more than 4 lots).
 - Planted land use buffers of various widths in areas where existing vegetation will not satisfy the buffer requirement. Use of existing vegetation for buffers is encouraged under the Regulations.
- b. The Town's Zoning Ordinance contains the following requirements:
 - Screening between incompatible land uses. All screening types include planting of trees. Use of existing vegetation for screening is encouraged under the Ordinance.
 - Parking lots with more than 10 spaces must include interior shaded landscaped islands.
 - Performance standards related to the review and approval of Special Use Permits. One of these standards relates to the preservation of the site's natural state. Specifically, one requirement for the review is that an Environmental Protection Plan be submitted that includes the locations of all existing trees 12 inches or more in diameter as measured 4 feet from ground level.
- c. The Town's Historic District Design Guidelines applicable in the Town's Historic District Overlay zoning district contain provisions for the protection of existing trees on individual sites. Specifically, trees 12 inches in diameter measured 4 feet above ground level cannot be removed without approval of the Historic District Commission unless proof is submitted that the tree is diseased or damaged in some manner so that it will not survive. Staff approval may be given for the removal of smaller trees.
- d. The Town Code of Ordinances established a Tree Board. This board oversees the planting, removal, and/or pruning of trees located within the public right-of-way (street trees) and on publicly owned properties (parks and town facilities).
- d. The Town's adopted Churton Street Corridor Strategic Plan (2006) and US 70/Corneilus Street Corridor Strategic Plan (2007) both recommend that street trees and planted medians be planted as part of corridor improvements.
- e. The Town's adopted Vision 2010 Plan (1991, amended 2000) recommends the Town enhance and expand its Tree board and that it inventory significant trees.

4. Redevelopment

- a. The Town's Zoning Ordinance requires sites undergoing redevelopment to meet current zoning standards to the maximum extent feasible. This includes landscaping, buffering, and stormwater management requirements.
- b. The Town's adopted Vision 2010 Plan (1991, amended 2000) recommends the Town require retrofitting and full compliance as part of expansions or redevelopment.

5. Development in Areas with Existing Infrastructure

- a. The Town's adopted Vision 2010 Plan (1991, amended 2000) recommends the Town:
 - Investigate the implementation of an urban growth boundary. The Town has finalized a plan to do this.
 - Limit the approval of utility extension agreements to control the location and timing of development.

6. Mixed-use Development

- a. The Town's Zoning Ordinance contains the following provisions for mixed-use development:
 - Entranceway Special Use District allowing for the development of projects with a mixture of office, commercial and employment uses along primary entrances into Town. Residential uses are also permitted when part of a planned/mixed-use development.
 - Combination Uses (the combination of two or more principal uses on one lot) are permitted in certain zoning districts.

7. Street Design

- a. The Town's Subdivision Regulations currently defer to the NCDOT Subdivision Road standards. The Town does allow private gravel streets that serve 3 or fewer lots. The narrowest street right-of-way width allowed is 50 feet.
- b. The Town's adopted Vision 2010 Plan (1991, amended 2000) recommends the Town allow flexibility in street widths.

8. Green Infrastructure Elements and Street Design

- The Town's current land use regulations do not contain green infrastructure elements. The Town is currently in the process of writing a UDO (Unified Development Ordinance) and may consider adopting such design elements.

9. Reduced Parking Requirements

- a. The Town's Zoning Ordinance allows for the use of shared-parking facilities between uses when the individual uses operate at different hours.

10. Transportation Demand Management Alternatives:

- a. The Town does not currently offer incentives or payment in-lieu to allow a reduction in parking.

11. Minimizing Stormwater from Parking Lots:

- a. The Town's Zoning Ordinance contains the following requirements:
 - Screening of parking lots from streets and adjacent residential areas. Screening types include planting of trees. Use of existing vegetation for screening is encouraged under the Ordinance.
 - Parking lots with more than 10 spaces must include interior shaded landscaped islands.

12. Green Infrastructure Practices

- a. The Town's current land use regulations do not discourage the use of green infrastructure as long as it meets the Town's stormwater requirements as found in the Zoning Ordinance and Subdivision Regulations. The Town is currently in the process of writing a UDO (Unified Development Ordinance) and may consider codifying specific practices as formally being acceptable.
- b. The Town requires preliminary approval of stormwater plans as part of the site plan and subdivision review process. Many applications must be reviewed by the Town's Technical Review Committee before the plans are formally reviewed by an approval body. Stormwater issues are normally identified at this stage in the process.
- c. The Town generally has no regulations regarding the use of rain barrels, etc. for rainwater harvesting. However, the use of rain barrels and other above-ground rain catching devices may require approval from the Town's Historic District Commission if the property is located in the Historic District Overlay zoning district.

13. Maintenance/Enforcement

- a. The Town has begun requiring operation and maintenance plans for stormwater control devices to be recorded with the Register of Deeds Office to ensure perpetual maintenance of stormwater facilities.