CITY OF ALGONAC

CITY OF ALGONAC

STORMWATER MANAGEMENT SYSTEM

OPERATIONS AND MAINTENANCE PLAN

January, 2019

TABLE OF CONTENTS

TABLES

APPENDICIES

I. PURPOSE

The primary purpose of the Operations & Maintenance Plan (O&M Plan) shall be to minimize stormwater pollution from operation and maintenance activities conducted by the City of Algonac in its management of the DPW and Water Department.

II. COVERAGE AREA

The coverage area considered in this document includes All City of Algonac Entities.

III. APPLICABLE OPERATIONS

The O&M Plan covers the following City operations:

- All routine and preventative maintenance of the City of Algonac stormwater system
- Road, Bridge, sidewalk, and parking lot maintenance practices, including: deicing, snow removal, and salting.
- Vehicle fleet maintenance, including: mechanical repairs, fueling, and washing.
- External building maintenance, including: exterior cleaning, washing, painting, and other maintenance activities.
- Grounds maintenance, including: fertilizer, pesticides, and herbicide application, green waste disposal, trash management, and sediment and erosion control.
- Materials storage, including: stockpiling of gravel or other debris and heavy equipment storage.

lV. OPERATION AND MAINTENANCE PROCEDURES

All scheduled inspections and maintenance of the City of Algonac stormwater system are contained in the stormwater Management System Inspection and Maintenance Logs included as Appendix A.

All City operations listed in section lll above shall be conducted in accordance with the applicable Standard Operating Procedures as outlined below. Standard Operating Procedures for City operations & maintenance are included in Appendix B and are summarized in Table 1 below.

New City owned or operated facilities or new structural stormwater controls for water quantity be designed and implemented in accordance with the post-construction stormwater runoff control performance standards and long-term operation and maintenance requirements.

Table 1. Summary of Standard Operating Procedures for City Operations & Maintenance

STANDARD OPERATING PROCEDURES	APPLICABLE WORK
General Good Housekeeping Procedures	All work conducted by City of Algonac employee
Stormwater System Maintenance	Routine and preventative work on the City of Algonac's Stormwater System
Road, Bridge, Parking Lot, Sidewalk Maintenance	Snow plowing, winter salt, sand, or deicer application,

	paving or patching asphalt or concrete work, painting and striping, trash and debris removal.
Vehicle Maintenance and Fueling	Vehicle and equipment maintenance, good housekeeping
	and waste disposal, vehicle washing, vehicle fueling, fuel spill clean-up
Fueling Site and Vehicle/Equipment Fueling	Maintenance of the fueling site, fueling equipment, good housekeeping, fuel spill clean-up.
Building Maintenance	Janitorial practices, waste management, pressure washing and exterior surface cleaning, painting, sanding, and sandblasting, HVAC system maintenance
Grounds Maintenance	Landscape Maintenance, mowing, mulching, graveling trails and parking lots, trash removal/waste management
Fertilizers & Herbicides Application	Storage, mixing, and application of fertilizers and herbicides.
DPW Yard	Maintenance, yard inspection, waste disposal, record keeping.
Materials Storage	Liquid materials storage, hazardous materials storage, stockpiling materials including: sand & gravel, wood products, including lumber, chips, sawdust, demolition debris including asphalt and concrete, decommissioned equipment
Incidental Spill Response and Clean-up	Limited actions taken to respond to an incidental release of potentially hazardous material

APPENDIX A

STORMWATER MANAGEMENT SYSTEM

INSPECTION AND MAINTENANCE LOGS

Ditches/Swales/Leaching Basins (suggested frequency-as needed and on schedule with catch basins)

1. Ditches, swales and leaching basins should be inspected at the same time as inspection of catch basins within the same area.
2. Public complaints shall warrant inspection.
3. When cleaning, remove obstacles/debris
4. If necessary, cut/remove vegetation (as opposed to scraping) to allow capture of sediment
5. ID excessive siltation in ditching-may indicate the need to re-grade the ditch
6. During ditch scraping, maintain vegetation (downstream of ditch) to capture sediment
7. Debris shall be removed from leaching basin (see catch basin cleaning) without interrupting the bottom of basin.

CITY OF ALGONAC
STORMWATER MANAGEMENT PROGRAM
INSPECTION AND MAINTENANCE SCHEDULE, SWALES/DITCHES

(CIRCLE ONE)

SPRING (To be completed annually between March 1st and May 1st, after the last significant snow & ice event)

FALL (To be completed annually between September 1st and November 1st, before the beginning of leaf collection)

Inspection date: _____ Location: _____

Inspection conducted by: _____

Instructions: Complete inspection by answering yes/no questions and check follow-up boxes when action is complete. Make any notes necessary to document the condition of the location and maintenance actions taken. When inspection & maintenance actions are completed, submit form to Public Service Supervisor.

Swales: Is there evidence of erosion or channeled flow? Yes: ____ No: ____ ☐ If yes, consult engineer and regrade Are there bare spots? Yes: ____ No: ____ ☐ If yes, reseed and monitor Is there sediment build-up? Yes: ____ No: ____ ☐ If yes, remove, correct source and monitor Additional Maintenance ☐ Grass mowed & maintained at 4-9" ☐ Clean curb cuts	**Notes:**
Ditches: Is there evidence of erosion or channeled flow? Yes: ____ No: ____ ☐ If yes, consult engineer and regrade. Are there bare spots? Yes: ____ No: ____ ☐ If yes, reseed and monitor. Is there sediment or debris build-up Yes: ____ No: ____ ☐ If yes, remove, correct source, and monitor	**Notes:**

Storm Structures (annual inspection, 1/3rd of city basins cleaned annually and as needed)

1. Identify catch basins that need frequent maintenance.
2. Prioritize catch basins based on inspection findings, location in the City , and public complaints. (e.g. inspection finds above expected debris and storm water, structures reside in low areas or near discharges to the surface water, public complaints on flood areas and non working structures.)
3. During cleaning, identify the need for repair of structure (also pertains to manholes and piping).
4. Clean catch basins when debris has filled it 1/3 of the way to the outlet
5. Inspect/determine the need for cleaning after storm events
6. Coordinate catch basin cleaning with related street/parking lot sweeping events

Prior to catch basin maintenance, conduct visual inspection to ensure the water in the sump has not been contaminated. If necessary, collect a grab sample of the water and look for signs of contamination such as visible sheen, discoloration, obvious odor, etc.

If there is any doubt of the quality of water, it should be collected into a vactor truck and treated as waste under part 121 or part 115 Solid waste Management (part 115) of NREPA.

Using a sump pump or any other pumping mechanism, remove the majority of the water in the sump without disrobing the solid material below. Do not use pumps connected to the vactor truck's holding tank.

The clear water may be directly discharged to one of the following:

- Sanitary system (with prior approval from St Clair County sewer plant)
- Curb and gutter
- Back into the storm sewer system as long as it is contained within the system during dry weather conditions to ensure no discharge into surface water
- Applied to the ground adjacent to the catch basin (evenly distributed at a maximum rate of 250 gallons/acre/year)

The resulting solid waste must be disposed of in a licensed landfill.

*Annual updates and or revisions shall be made to prioritize problem areas based on inspection findings and citizen complaints.

CITY OF ALGONAC
STORMWATER MANAGEMENT PROGRAM
INSPECTION AND MAINTENANCE SCHEDULE, STORM STRUCTURES

Catch Basins:
Location: _____
Date of last clean out: _____

Has debris accumulated in the catch basin Yes: ____ No: ____

☐ If yes, clear obstruction/debris

Has more than 1" of oil or 6" of sludge? Yes: ____ No: ____

If yes, schedule vactoring

Notes:

Appearance of any illicit discharging? _____
(If "Yes" discribe below)

Visually inspect area around structure for additional maintenance.

Additional Maintenance:

☐ Schedule street sweeping of all municipal parking lots

☐ Re-seed any exposed ground in system

Additional notes:

Vactor contractor:
Tri-County VAC
810-650-2244

Street Sweeping (inspection seasonally, 1/3rd of city's curbed roads cleaned annually)

1. City owned parking lots are included.
2. Inspect road at seasons' end .
3. Prioritize streets based on inspection, public complaints and grouped into sections.
4. Streets without curbing and catch basins do not apply.
5. Note any road damage that may hinder storm flow to structures.
6. More frequent sweeping may be needed in targeted areas on the basis of pollutant load reduction potential (based on inspections, pollutants, catch basin cleaning, land use, and surface water location).
7. Street sweeping should be performed at posted road speed limits.
8. No sweeping should be done during inclement weather (rain, snow).
9. If spills occur or illegal discharges are seen, report to the proper authorities.
10. Sweepers should be regularly maintained.
11. Employees should be properly trained on equipment prior to sweeping.
12. Records should be kept and the following should be included:

- Date/Weather/
- Streets swept
- Miles swept
- Employees who performed work

13. Street sweeping waste will be taken back to the DPW and dewatered.
14. Clear water may be discharged to seep into the ground or released to the sanitary or storm sewer.
15. All solid waste must be disposed of in a licensed landfill.
16. Procedure should be reassessed within 30 days of a identifying a need to revise a priority level.

CITY OF ALGONAC
STORMWATER MANAGEMENT PROGRAM
STREET SWEEPING LOG

Location: _____

Date Swept: _____

Employee/Company: _____

Debris Disposal Location: _____

Photo Documentation? _____

Additional Notes:

On site Material Storage Inspection - Bi-Weekly

See Standard Operating Procedure - DPW Yard and
Standard Operating Procedure - Material Storage, DPW Yard

SITE INPSECTION - MATERIALS
ALGONAC DPW YARD

All significant materials stored on site must be inspected for leaking, contamination and damage to container.

Inspector:

Inspection Date:

List of materials stored on site.

	Material Name	Handling and Storage Procedure	Potential for Discharge	Inspected
1	Above ground diesel tank	sealed tank, elec. Pump, clean up over fills	low risk	
2	portable gas cans	certified self sealing containers, store in fire proof locker	low risk	
3	Muriatic acid	sealed plastic gallons, use per SDS's, store indoor	very low risk	
4	Mineral spirits	sealed 55 gallon drum, use per SDS's, parts washer, store indoor	very low risk	
5	Oils, engine, hyd, used	sealed 55 gallon drum, use per SDS's, clean spills, store indoor	very low risk	
6	windshield solvent	sealed 55 gallon drum, use per SDS's, store indoor	very low risk	
7	Antifreeze	sealed 55 gallon drum, use per SDS's, store indoor	very low risk	
8	Cold patch	3-5 yard pile, store outdoor contained be cement bariers	low risk	
9	Paint	sealed 1-5 gallon containers, store indoor	very low risk	
10	Stone, sand, earth spoils	5-60 yard piles, store on high ground,keep piles neat	low risk	
11	road salt	200-500 yards stored indoor salt barn	very low risk	

Is any material leaking?

If yes, list material and describe

If yes, is there contamination due to the leaking?

Are any storage containers damaged?
If yes, describe

Please note and describe any other concerns involving significant on site materials. (Example - Material not properly cleaned up after use)

Inspector signature

Date

On site Material Storage Inspection - Bi-Weekly

See Standard Operating Procedure - Material Storage, Water Treatment Plant

SITE INPSECTION - MATERIALS
ALGONAC WATER TREATMENT PLANT

All significant materials stored on site must be inspected for leaking, contamination and damage to container.

Inspector:

Inspection Date:

List of materials stored on site.

	Material Name	Handling and Storage Procedure	Potential for Discharge	Inspected
1	cas #664939 Sulfuric Acid 50%	Stored in two 750 lb drums	low risk	
2	Citric Acid	Stored in 55 gallon drum	low risk	
3	Sodiumhypochlorite	Stored in 3000 gallon storage tank	low risk	
4	Hyrdrofluosilic Acid	Stored in 55 gallon drums	low risk	

Is any material leaking?

If yes, list material and describe

If yes, is there contamination due to the leaking?

Are any storage containers damaged?
If yes, describe

Please note and describe any other concerns involving significant on site materials. (Example - Material not properly cleaned up after use)

Inspector signature

Date

Discharge Point Inspection (Dry inspection yearly)

Prioritize discharge points and perform dry inspection annually.

Visually inspect the outlet, the receiving waters and the surrounding area of each point.

Note the following:

Water flowing?
Damage to outlet?
Erosion at outlet?
Blockage to outlet?
Debris within outlet?

Wet weather inspections should be performed after rain event where outlet should be flowing.

Note the following for wet weather inspections:

Water flowing?
Cloudy?
Color?
Odor?
Debris/sheen/foam?

CITY OF ALGONAC
STORMWATER MANAGEMENT PROGRAM
DISCHARGE POINT INSPECTION

Discharge Point Location: _____

Discharge Point ID: _____ Inspector: _____

Map ID: _____ Day/Date: _____

Weather/Temp: _____

Receiving Surface Water or Other MS4 Jurisdiction: Time: _____

_____

Photos taken?: _____

During/After Rain Significant Rain Event?: _____

(If "Yes" document the rain event below)

Dry Weather Inspection:

Visually Inspect the outlet, the reciving waters and the surronding areas.

(If "Yes" please describe)

Is there flow through outlet? _____

Damage to Outlet? _____

Erosion at Outlet? _____

Blockage to Outlet? _____

Debris within Outlet? _____

Note any concrens of the outlet, recieveing waters, and surronding areas below.

Wet Weather Inspection:

Take water sample and visually inspect physical properties.

(If "yes" please describe)

Cloudy? _____

Color? _____

Odor? _____

Debris/Floating solids/oil sheens/foam? _____

Notes:

E. coli Reduction

The expected potential sources of E. coli contamination within the City's property is improper pet waste disposal on the Park Grounds. Signage with pet waste bag dispensers are placed in the parks reminding park goers to pick up their pet's waste.

It is possible for wildlife to contribute to any E. coli contamination at the outfalls. If E. coli testing shows results above standards the area will be monitored for avian or other wildlife grouping.

E. coli Testing

1. E. coli testing should be performed twice a permit cycle (5 years), during a stretch of wet weather.
2. Areas that direct flow to the St. Clair River are considered high priority areas and should be tested. Identify those areas on site.
3. Take water sample per manufacturer's directions.

Prior to sampling, conduct visual inspection to ensure the water flowing into the St. Clair River from the City property is clean. Note the condition of the water on the log form. Include the color of the water and any obvious odors. Note any noticeable earth disturbances, debris or damage to structures at the outlet as well as any obstructions to flow.

Once the test results are found, compare the results to the following standards from the Michigan Department of Environmental Quality:

***Water Quality Standard for* E. coli**

Total Body Contact (May1 - October 31):
Daily Maximum Geometric Mean: 300 E. coli per 100 milliliters (ml)
30-Day Geometric Mean: 130 E. coli per 100 ml

Partial Body Contact (all year):
Daily Maximum Geometric Mean: 1,000 E. coli per 100 ml

If test results are below these standards no further action is needed.

If test results are above these standards action should be taken to identify the source(s) of E.coli.

1. Inspect the entire area that flows to the St. Clair River from the City's property.
2. Perform the applicable Standard Operating Procedures to determine contamination cause.
3. Once the contaminant is located, perform the necessary maintenance, disposal or storage procedure.
4. Retest the location 30 days later.
5. If the E. coli levels are still above normal, continue investigating potential sources and/or implementing additional BMPs.

CITY OF ALGONC
STORMWATER MANAGEMENT SYSTEM
INSPECTION AND MAINTENANCE SCHEDULE

E. coli Testing:	
Name:	Date:
Weather Conditions:	
Area 1:	(Location of sample)
Area 2:	(Location of sample)
Sample ID:	
Area 1:	
Area 2:	

Observations:	
Location:	
Water color:	
Odor:	
Disturbances at outlets:	
Structure damage at outlet:	
Obstructuions to flow	
Notes:	
Location:	
Water color:	
Odor:	
Disturbances at outlets:	
Structure damage at outlet:	
Obstructuions to flow	
Notes:	

CITY OF ALGONAC
STORMWATER MANAGEMENT SYSTEM
INSPECTION AND MAINTENANCE SCHEDULE

E. coli Testing (con't.):

Test Results

Area 1: _____

Is further action needed?: Yes No

Area 2: _____

Is further action needed?: Yes No

Further Actions

Area: _____

Determine if any maintenance work was performed within the drainage area that did not meet Standard Operating Procedure guidlines.

Notes:

Perform the following Standard Operating Procedures:

General Good Housekeeping	Date: _____	By: _____
Stormwater System Maintenance	Date: _____	By: _____
Road, Parking Lot, & Sidewalk Maintenance	Date: _____	By: _____
Grounds Maintenance	Date: _____	By: _____
DPW Yard	Date: _____	By: _____
Rain Garden and Green Roof	Date: _____	By: _____

Found cause of E. coli contamination and corrective actions: