Municipality/Organization: Wrentham Developmental Center

EPA NPDES Permit Number: MAR042030

MassDEP Transmittal Number: W-035610

Annual Report Number & Reporting Period: **Year 12**
April 1, 2014 – March 31, 2015

NPDES PII Small MS4 General Permit Annual Report (Due: May 1, 2015)

Part I. General Information

Contact Person: Michael Gardner | Title: Director of Operations

Telephone #: (508) 384-1656 | Email: Michael.Gardner@state.ma.us

Mailing Address: Wrentham Developmental Center, P.O. Box 144, 131 Emerald St.
Wrentham, MA 02093

Certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: Michael Gardner

Printed Name: Michael Gardner

Title: Director of Operations

Date: 27 April 2015

Part II. Self-Assessment

The Wrentham Developmental Center has completed the required self-assessment and has determined that our Facility is in compliance with all general permit conditions, effective May 1, 2003, extended May 1, 2008 to present.

Part III. Summary of Minimum Control Measures

1. Public Education and Outreach

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12 (Reliance on non-municipal partners indicated, if any)	Planned Activities
1-01	Fact sheet in newsletter	Brett Butz/ Compliance	Awareness and Feedback	Changed the formatting of the letter and have increased our email and electronic presence to promote the letter to all employees and persons in the buildings.	Maintain our annual distribution of the Storm Water Fact Sheet in the facility newsletter, *Crossroads*.
Revised					
1-02	Notice posted in the food and cleaning services building	Brett Butz/ Compliance	Awareness of proper disposal practices	Increased poster visibility, updated the poster, and performed spot checks around the area to help with compliance.	Maintain conspicuous visibility of the posters and continue spot checking.
Revised					
1-03	Present a stormwater fact sheet to each new employee at orientation	Mike Gardner/ Operations	Increase awareness and improve work habits	Fact sheet distributed to each employee during orientation.	Change the format and presentation of our stormwater practices to the new employees.
Revised					
1-04	Establish a stormwater education center in the compliance office	Brett Butz/ Compliance	Increase awareness and available resources for staff with questions	Updated the current center and moved it into the compliance office. Also listed the location on the newsletter in *Crossroads*.	Offered further outreach to try and bring individuals to the education center.
Revised					
Revised					
Revised					

1a. Additions

2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12 (Reliance on non-municipal partners indicated, if any)	Planned Activities
2-01	Recruit designated person per shift; food and cleaning services	Mike Gardner/ Operations	Oversight with increased awareness	Annual Stormwater and Spill Prevention Meeting with all department heads, supervisory administrative personnel, food services manager, and cleaning services manager. (Sign-in required).	Continue to administer Annual Storm Water and Spill Prevention Meeting.
Revised					
2-02	Request volunteers per Unit per shit by supervisory personnel	Mike Gardner/ Operations	Oversight with increased awareness	Request volunteers from each Unit for each shift by supervisory personnel at the Annual Stormwater and Spill Prevention Meeting.	Continue to request volunteers and request continued oversight by supervisors.
Revised					
2-03	Security Training and Awareness	Mike Gardner/ Operations	Reporting incidents	The Security Supervisor's attendance at the Annual Stormwater and Spill Prevention Meeting for information gathering. Establish procedures for the reporting and response to incidents.	Review the reporting and response plan and revise the policy as needed.
Revised					
2-04	Training for Transport, Grounds, Paint, and all Maintenance Depts.	Mike Gardner/ Operations	Awareness and Improved Working Habits	Spot meetings to promote proper work habits.	Continue the meetings and general oversight.
Revised					
Revised					

2a. Additions

3. Illicit Discharge Detection and Elimination

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12 (Reliance on non-municipal partners indicated, if any)	Planned Activities
3-01	Regularly inspect outfalls for dry weather discharge	Mike Gardner/ Operations	Early detection and correction	Continued monitoring of outfalls. No dryweather discharge detected.	Continued monitoring of outfalls.
Revised					
3-02	Update map of discharge areas	Mike Gardner/ Operations	Create a easily accessed and mapped area for reference	Complete facility-wide mapping was completed with GPS coordinates.	Added a copy of the map to the Stormwater Information Center.
Revised					
3-03	Use test kits for pH, nitrate, phosphate, copper, and ammonia as nitrogen during severe wet weather	Mike Gardner/ Operations	Early detection and correction	Annual testing (of three outfalls) conducting during rainfall event on 04/23/2014. Tests indicated a normal outfall conditions.	Continue sampling after heavy stormwater sporadically throughout the year.
Revised					
3-04	Spill Response Plan	Mike Gardner/ Operations	Spill control kits on grounds; E.Q. Northeast for clean-up and emergency response.	Addressed at the Annual Stormwater and Spill Prevention Meeting. Spill control kits are maintained in the Plumbing, Security, and Compliance vehicles.	Continued the Annual Stormwater and Spill Prevention Meeting and follow up to check quality of the control kits are adequate.
Revised					
Revised					

Revised					

3a. Additions

4. Construction Site Stormwater Runoff Control

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12 (Reliance on non-municipal partners indicated, if any)	Planned Activities
4-01	Insert standard construction controls and penalties into contract documents	Mike Gardner/ Operations	Erosion, sediment, and waste control.	Standard construction controls have been placed into all contract documents, included site specific material as needed, and added EPA requirements as needed.	Continue to follow our contract procedures about construction control
Revised					
4-02	Perform site inspections and impose penalties as needed	Mike Gardner/ Operations	Erosion, sediment, and waste control.	Site inspections are performed as required.	Continue monitoring construction sites.
Revised					
Revised					
Revised					
Revised					

Revised					

4a. Additions

5. Post-Construction Stormwater Management in New Development and Redevelopment

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12 (Reliance on non-municipal partners indicated, if any)	Planned Activities
5-01	Standard post-construction controls and penalties in contract documents	Mike Gardner/ Operations	Erosion, sediment, and waste control. Soil depth restoration.	Standard post-construction controls maintained in contract documentation.	Standard post-construction controls to be maintained in contract documents.
Revised					
Revised					
Revised					
Revised					
Revised					

Revised					

5a. Additions

6. Pollution Prevention and Good Housekeeping in Municipal Operations

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 12 (Reliance on non-municipal partners indicated, if any)	Planned Activities
6-01	Contract for catch basin cleaning, inspection, and repair	Mike Gardner/ Operations	Proper operation of stormwater collection system.	Contract work performed as required by the yearly permit in May 2015.	Contract activities satisfied.
Revised					
6-02	Town of Wrentham to clean public roads and some parking areas	Mike Gardner/ Operations	Proper operation of system with reduction of salt/sand in catch basins.	Cleaning and sweeping of public roadways and certain parking areas to be completed by the town.	Contract to continue for cleaning/sweeping of remaining areas.
Revised					
6-03	Contract for remaining areas and parking lots to be cleaned.	Mike Gardner/ Operations	Proper operation of system with reduction of sand in catch basins.	Contract for cleaning and sweeping of remaining parking areas to be completed in May 2015.	Contract to continue for cleaning/sweeping of remaining areas.
Revised					
6-04	Limit salt use; store salt and sand in a contained area	Mike Gardner/ Operations	Limit salt to water table.	Salt use has been tempered and more sand has been used. Included the salt/sand mix in the Tier II report.	Salt use to continue to be controlled and stored in a roofed area.
Revised					

6-05	Inspect and clean trash and debris from roadsides and culverts	Mike Gardner/ Operations	Proper operation of storm-drain system.	Regular inspection and cleaning of debris from roadside and culverts ongoing.	Regular inspections and spot cleaning, as needed, to continue.
Revised					
Revised					

6a. Additions

7. BMPs for Meeting Total Maximum Daily Load (TMDL) Waste Load Allocations (WLA) *<<if applicable>>*

BMP ID #	**BMP Description**	**Responsible Dept./Person Name**	**Measurable Goal(s)**	**Progress on Goal(s) – Permit Year 12** (Reliance on non-municipal partners indicated, if any)	**Planned Activities**
7-01	Maintain status of all discharges being "allowable"	Mike Gardner/ Operations	No significant nutrient or sediment loading.	All discharges remain "allowable" under the permit and there have not been any illicit discharges detected. Testing sheet and results are appended.	All discharges are to be maintained as "allowable." Will continue to monitor for illicit discharges.
Revised					
7-02	Non-stormwater discharges not a significant contributor of pollutants	Mike Gardner/ Operations	Prevent pollutants from entering into the stormwater.	Continue to prevent non-stormwater discharges from becoming a significant contributor of pollutants.	Continue to promote good housekeeping and working conditions to promote proper practices.
Revised					
Revised					

Revised					
Revised					
Revised					

7a. Additions

7b. WLA Assessment

Not applicable to the Wrentham Developmental Center.

Part IV. Summary of Information Collected and Analyzed

Water quality testing was conducted during a rainfall event on 04/22/2015. Testing for pH, total phosphorous, ammonia nitrogen, nitrate, and copper are all attached. All testing was performed at our wastewater treatment plant by a certified operator in accordance with NPDES and MassDEP testing standards.* All test results fell within the approved range and should be considered "normal".

*Note: Copper tested using colorimetric test kit.

Part V. Program Outputs & Accomplishments (OPTIONAL)

(Since beginning of permit coverage unless specified otherwise by a **, which indicates response is for period covering April 1, 2014 through March 31, 2015)

Programmatic

	(Preferred Units)	Response
Stormwater management position created/staffed	(y/n)	
Annual program budget/expenditures **	($)	
Total program expenditures since beginning of permit coverage	($)	
Funding mechanism(s) (General Fund, Enterprise, Utility, etc)		

Education, Involvement, and Training

Estimated number of property owners reached by education program(s)	(# or %)	
Stormwater management committee established	(y/n)	
Stream teams established or supported	(# or y/n)	
Shoreline clean-up participation or quantity of shoreline miles cleaned **	(y/n or mi.)	
Shoreline cleaned since beginning of permit coverage	(mi.)	
Household Hazardous Waste Collection Days		
▪ days sponsored **	(#)	
▪ community participation **	(# or %)	
▪ material collected **	(tons or gal)	
School curricula implemented	(y/n)	

Legal/Regulatory

	In Place Prior to Phase II	Reviewing Existing Authorities	Drafted	Draft in Review	Adopted
Regulatory Mechanism Status (indicate with "**X**")					
▪ Illicit Discharge Detection & Elimination					
▪ Erosion & Sediment Control					
▪ Post-Development Stormwater Management					
Accompanying Regulation Status (indicate with "**X**")					
▪ Illicit Discharge Detection & Elimination					
▪ Erosion & Sediment Control					
▪ Post-Development Stormwater Management					

Mapping and Illicit Discharges

	(Preferred Units)	Response
Outfall mapping complete	(%)	
Estimated or actual number of outfalls	(#)	
System-Wide mapping complete (complete storm sewer infrastructure)	(%)	
Mapping method(s)		
▪ Paper/Mylar	(%)	
▪ CADD	(%)	
▪ GIS	(%)	
Outfalls inspected/screened **	(# or %)	
Outfalls inspected/screened (Since beginning of permit coverage)	(# or %)	
Illicit discharges identified **	(#)	
Illicit discharges identified (Since beginning of permit coverage)	(#)	
Illicit connections removed **	(#); and (est. gpd)	
Illicit connections removed (Since beginning of permit coverage)	(#); and (est. gpd)	
% of population on sewer	(%)	

% of population on septic systems	(%)	

Construction

	(Preferred Units)	Response
Number of construction starts (>1-acre) **	(#)	
Estimated percentage of construction starts adequately regulated for erosion and sediment control **	(%)	
Site inspections completed **	(# or %)	
Tickets/Stop work orders issued **	(# or %)	
Fines collected **	(# and $)	
Complaints/concerns received from public **	(#)	

Post-Development Stormwater Management

Estimated percentage of development/redevelopment projects adequately regulated for post-construction stormwater control	(%)	
Site inspections (for proper BMP installation & operation) completed **	(# or %)	
BMP maintenance required through covenants, escrow, deed restrictions, etc.	(y/n)	
Low-impact development (LID) practices permitted and encouraged	(y/n)	

Operations and Maintenance

Average frequency of catch basin cleaning (non-commercial/non-arterial streets) **	(times/yr)	
Average frequency of catch basin cleaning (commercial/arterial or other critical streets) **	(times/yr)	
Qty of structures cleaned **	(#)	
Qty. of storm drain cleaned **	(%, LF or mi.)	
Qty. of screenings/debris removed from storm sewer infrastructure **	(lbs. or tons)	
Disposal or use of screenings (landfill, POTW, compost, beneficial use, etc.) **	(location)	

Basin Cleaning Costs		
• Annual budget/expenditure (labor & equipment)**	($)	
• Hourly or per basin contract rate **	($/hr or $ per basin)	
• Disposal cost**	($)	
Cleaning Equipment		
• Clam shell truck(s) owned/leased	(#)	
• Vacuum truck(s) owned/leased	(#)	
• Vacuum trucks specified in contracts	(y/n)	
• % Structures cleaned with clam shells **	(%)	
• % Structures cleaned with vactor **	(%)	

	(Preferred Units)	Response
Average frequency of street sweeping (non-commercial/non-arterial streets) **	(times/yr)	
Average frequency of street sweeping (commercial/arterial or other critical streets) **	(times/yr)	
Qty. of sand/debris collected by sweeping **	(lbs. or tons)	
Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.) **	(location)	
Annual Sweeping Costs		
• Annual budget/expenditure (labor & equipment)**	($)	
• Hourly or lane mile contract rate **	($/hr. or ln mi.)	
• Disposal cost**	($)	
Sweeping Equipment		
• Rotary brush street sweepers owned/leased	(#)	
• Vacuum street sweepers owned/leased	(#)	
• Vacuum street sweepers specified in contracts	(y/n)	
• % Roads swept with rotary brush sweepers **	%	
• % Roads swept with vacuum sweepers **	%	

Reduction (since beginning of permit coverage) in application on public land of: ("N/A" = never used; "100%" = elimination)		
▪ Fertilizers	(lbs. or %)	

▪ Herbicides	(lbs. or %)	
▪ Pesticides	(lbs. or %)	
Integrated Pest Management (IPM) Practices Implemented	(y/n)	

	(Preferred Units)	Response
Average Ratio of Anti-/De-Icing products used ** (also identify chemicals and ratios used in specific areas, e.g., water supply protection areas)	% NaCl % $CaCl_2$ % $MgCl_2$ % CMA % Kac % KCl % Sand	
Pre-wetting techniques utilized **	(y/n or %)	
Manual control spreaders used **	(y/n or %)	
Zero-velocity spreaders used **	(y/n or %)	
Estimated net reduction or increase in typical year salt/chemical application rate	(±lbs/ln mi. or %)	
Estimated net reduction or increase in typical year sand application rate **	(±lbs/ln mi. or %)	
% of salt/chemical pile(s) covered in storage shed(s)	(%)	
Storage shed(s) in design or under construction	(y/n or #)	
100% of salt/chemical pile(s) covered in storage shed(s) by May 2008	(y/n)	

Water Supply Protection

Storm water outfalls to public water supplies eliminated or relocated	# or y/n	
Installed or planned treatment BMPs for public drinking water supplies and their protection areas	# or y/n	
Treatment units induce infiltration within 500-feet of a wellhead protection area	# or y/n	

Wrentham Developmental Center, Wrentham, MA
NPDES Permit # MAR042030

30 April 2015

Stormwater Sampling Results for Annual Stormwater Report for the period April 1, 2014-March 31, 2015.

Sampled by: Brett Butz
Title: Compliance Officer II

Sample Date: 23 April 2015

Analyzed by: Kevin Magowan
Title: Wastewater Treatment Plant Operator 3

Analysis Date: 23 April 2015

Location	pH	Total Phosphorous	Ammonia Nitrogen	Nitrate	Copper
Ewalt	6.96	0.00 mg/L	0.15 mg/L	1.72 ppm	0.05 ppm
Heffron Hall	6.59	0.07 mg/L	0.16 mg/L	0.52 ppm	0.01 ppm
Marion Moore Hall	6.53	0.09 mg/L	0.05 mg/L	0.41 ppm	0.02 ppm

*Note: Please see the attached sheets for analytical method used.

STORMWATER MANAGEMENT PLAN

NEW HIRE ORIENTATION

WELCOME TO THE WRENTHAM DEVELOPMENTAL CENTER!

First, welcome to the Wrentham Developmental Center! On behalf of the Operations Department, we would like to welcome you to our facility. Serving our residents is a rewarding and fulfilling experience. In doing so, please be mindful of our Stormwater practices here at the WDC.

WHAT IS STORMWATER?

The Environmental Protection Agency (EPA) is concerned about pollutants in the stormwater. From chemicals to cigarette butts, trash to fertilizer, anything improperly discarded can find a way into a water basin and ultimately end up in a waterway. This can cause *serious* damage to the ecological systems in a waterway and violate our Stormwater permit.

HOW CAN YOU HELP?

Everyone should aim to minimize the amount of damage that we cause to the environment. To start, make sure that chemicals are disposed of properly, cleaning rules are followed, and eliminate all littering, especially cigarette butts. Also, make sure that all trash containers have their lids closed and firmly secured to prevent trash from blowing out or animals taking trash out. Finally, learn more at the Stormwater Information Center at 105 North Street.

WHERE CAN YOU LEARN MORE?

The annual Stormwater report is printed in the *Crossroads* newsletter which is emailed monthly. Additional copies will be made available upon request.

If you have any questions, please feel free to contact Brett Butz, our Compliance Officer, at 384-5536.

Stormwater Report Announcement

Wrentham Developmental Center | 5/1/2015 | Operations Department

What is the Stormwater Report?

And why should you care?

Each year, the WDC is required to file an annual stormwater report about the contents of things that fall into our stormwater drains and how those items change the natural stormwater. The Environmental Protection Agency (EPA) is concerned about pollutants in the stormwater. From chemicals to cigarette butts, anything thrown into a water basin can, and will, make its way to a waterway. This can cause *serious* damage to the ecological systems in the waterway and violate our permit.

We have updated our Stormwater Education Center. If you would like more information, please come to 105 North Street behind the Heffron buildings and gain valuable insight into what Stormwater is, why it is important, and what you can do to help us stay in compliance.

Public Announcement

Where can you find the information?

The annual stormwater report for the 2014-2015 year will be published in the *Crossroads* newsletter. Additional copies will be made available upon request.

If you have any questions, please feel free to contact Brett Butz, our compliance officer, at 384-5536.

Locations of the Posted Report

In addition to being posted in the *Crossroads* newsletter, you can find a copy of the 2014-2015 report in the following areas throughout grounds:

- Richard W. Krant Administration Building, 1st floor hallway.
- Francis X. Waldron Good Times Café, entrance hallway.
- Gail Parslow Training Center, new employee Orientation Center and staff training, 1st floor.
- 105 North Street inside the front door.
- Cottage 8, Maintenance Office, front entrance hallway.
- Morrison Food Services, employee information posting board.
- Tufts Dental, the May Center.

Stormwater Management Notice

What is Stormwater

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How You Can Help

Everyone should aim to minimize the amount of damage that we cause to the environment. To start, make sure that chemicals are disposed of properly, cleaning rules are followed, and eliminate all littering, especially cigarette butts. Also, make sure that all trash containers have their lids closed and firmly secured to prevent trash from blowing out or animals taking trash out. Finally, become educated about stormwater and how you can help the environment by visiting the Stormwater Information Center at 105 North Street.

When it rains, it drains!

More Questions?

Contact Brett Butz at 384-5536 or stop by 105 North Street to learn more about Stormwater Management!

WRENTHAM DEVELOPMENTAL CENTER

Waste Water Treatment Plant
pH Bench Sheet

Sample Date 4/23/2015 Time _____ By _____

Analysis Date 4/23/2015 Time _____ By KJM

Calibration Check 7, 10, Check 4 Sample Type Grab

Sample Time	Analysis Time	Location	pH	Temperature (C)
	6:20 PM	MMH ~~Influent~~	6.53	7.6
	6:22 PM	~~Aeration Tank #2~~ HHB	6.59	5.6
	6:25 PM	~~Aeration Tank #2~~ EWALT ~~Effluent~~	6.96	6.8
		Clarifier Effluent		
		Lagoon Effluent		
		Final Effluent		
		Downstream		

Calibration: _____

Comments: _____

_____

_____

Total Phosphorus Test (Low Range 0.00 to 4.00 mg/L)

Analysis Method: LaMotte Ascorbic Acid Reduction with Persulfate Digestion (Code 4024), which adheres to the following methodologies: EPA 365.3, and 4500-P E. in Standard Methods 22nd Edition, Page 4-155 to 4-156.

Analysis Procedure

1. Preheat COD reactor to 150 (± 2) degrees Celsius.
2. Use a clean pipet to add 2.5 mL of distilled water to a Total Phosphorus Reagent Tube.
3. Rinse pipet by drawing in and dispensing clean distilled water three times.
4. Use clean pipet to add 2.5 mL of final composite sample to the Total Phosphorus Reagent Tube.
5. Use the 0.15 g spoon and a funnel to add one level measure of Digestion Reagent Powder in the tube. Tap funnel to dispense powder completely. Cap tightly and shake until powder completely dissolves.
6. Place the tube in the COD reactor for 30 minutes.
7. At the end of the heating period, a beep sounds and the reactor automatically powers down. Immediately remove the tube from the reactor, place tube into a test tube rack, and allow it to cool to room temperature.
8. At the end of the cooling period, press and hold "ON" button on the LaMotte SMART 2 Colorimeter, until the colorimeter turns on.
9. Press "Enter" button to start.
10. Press "Enter" button to select "Testing MENU".
11. Select "ALL TESTS".
12. Scroll to and select "82 Phos T LR" from the menu.
13. Remove the cap from the digested tube. Use another 1 mL pipet to add 1.0 mL of Total Phosphorus LR Hydroxide Reagent to the tube. Cap and invert to mix.
14. Wipe the tube with pre-moistened wipe to remove fingerprints or smudges. Allow tube to air dry for 30 seconds.
15. Insert the tube into the chamber. Select "SCAN BLANK". Remove the tube from the colorimeter.
16. Use another 1 mL pipet to add 1.0 mL of Phosphate Acid Reagent. Cap and invert tube to mix.
17. Use the 0.1 g spoon and a funnel to add one spoon of Phosphate Reducing Agent. Tap funnel to dispense powder completely. Cap tube and shake until powder dissolves.
18. Wait five minutes.
19. Wipe the tube with a pre-moistened wipe. Allow tube to air dry for 30 seconds.
20. Insert the tube into the colorimeter chamber. Select "SCAN SAMPLE". Record the reading of Total Phosphate as mg/L PO_4.
21. **Multiply mg/L PO_4 result by 0.326 to get Total Phosphorus mg/L, record this result as mg/L P on the bench sheet.**

Total Phosphorus (Low Range) Bench Sheet

Sample Date: 4/23/2015 Time: _____ By: _____

Sample Type: Grab Hold Temp (C): ≤ 6°C

Sample Location: MMH

Analysis Date: 4/23/2015 Time: 3:00 pm By: KSM

Volume Used: 5 mL of sample Dilution Factor: none

Initial Result: 0.29 mg/L Duplicate Initial Result: ~~_____~~

Calculation: Initial Result X Dilution Factor = Test Result mg/L PO_4

Calculations: ~~_____~~

Calculations: ~~_____~~

Test Results: 0.29 mg/L PO_4 Duplicate Test Result: ~~_____~~ mg/L PO_4

Total Phosphorus Calculation: Test Result mg/L PO_4 X 0.326 = Total P mg/L.

Calculations: 0.29 X 0.326

Calculations: _____

End Result: 0.09 mg/L P Duplicate End Result: ~~_____~~ mg/L P

Comments: _____

Total Phosphorus Test (Low Range 0.00 to 4.00 mg/L)

Analysis Method: LaMotte Ascorbic Acid Reduction with Persulfate Digestion (Code 4024), which adheres to the following methodologies: EPA 365.3, and 4500-P E. in Standard Methods 22nd Edition, Page 4-155 to 4-156.

Analysis Procedure

1. Preheat COD reactor to 150 (± 2) degrees Celsius.
2. Use a clean pipet to add 2.5 mL of distilled water to a Total Phosphorus Reagent Tube.
3. Rinse pipet by drawing in and dispensing clean distilled water three times.
4. Use clean pipet to add 2.5 mL of final composite sample to the Total Phosphorus Reagent Tube.
5. Use the 0.15 g spoon and a funnel to add one level measure of Digestion Reagent Powder in the tube. Tap funnel to dispense powder completely. Cap tightly and shake until powder completely dissolves.
6. Place the tube in the COD reactor for 30 minutes.
7. At the end of the heating period, a beep sounds and the reactor automatically powers down. Immediately remove the tube from the reactor, place tube into a test tube rack, and allow it to cool to room temperature.
8. At the end of the cooling period, press and hold "ON" button on the LaMotte SMART 2 Colorimeter, until the colorimeter turns on.
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21. **Multiply mg/L PO_4 result by 0.326 to get Total Phosphorus mg/L, record this result as mg/L P on the bench sheet.**

Total Phosphorus (Low Range) Bench Sheet

Sample Date: 4/23/2015 Time: _____ By: _____

Sample Type: Grab Hold Temp (C): ≤6 °C

Sample Location: HHB

Analysis Date: 4/23/2015 Time: 3:00 pm By: KJM

Volume Used: 5 mL of Sample Dilution Factor: none

Initial Result: 0.23 mg/L Duplicate Initial Result: —

Calculation: Initial Result X Dilution Factor = Test Result mg/L PO_4

Calculations: —

Calculations: —

Test Results: 0.23 mg/L PO_4 Duplicate Test Result: — mg/L PO_4

Total Phosphorus Calculation: Test Result mg/L PO_4 X 0.326 = Total P mg/L.

Calculations: 0.23 x 0.326

Calculations: _____

End Result: 0.07 mg/L P Duplicate End Result: — mg/L P

Comments: _____

Total Phosphorus Test (Low Range 0.00 to 4.00 mg/L)

Analysis Method: LaMotte Ascorbic Acid Reduction with Persulfate Digestion (Code 4024), which adheres to the following methodologies: EPA 365.3, and 4500-P E. in Standard Methods 22nd Edition, Page 4-155 to 4-156.

Analysis Procedure

1. Preheat COD reactor to 150 (± 2) degrees Celsius.
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7. At the end of the heating period, a beep sounds and the reactor automatically powers down. Immediately remove the tube from the reactor, place tube into a test tube rack, and allow it to cool to room temperature.
8. At the end of the cooling period, press and hold "ON" button on the LaMotte SMART 2 Colorimeter, until the colorimeter turns on.
9. Press "Enter" button to start.
10. Press "Enter" button to select "Testing MENU".
11. Select "ALL TESTS".
12. Scroll to and select "82 Phos T LR" from the menu.
13. Remove the cap from the digested tube. Use another 1 mL pipet to add 1.0 mL of Total Phosphorus LR Hydroxide Reagent to the tube. Cap and invert to mix.
14. Wipe the tube with pre-moistened wipe to remove fingerprints or smudges. Allow tube to air dry for 30 seconds.
15. Insert the tube into the chamber. Select "SCAN BLANK". Remove the tube from the colorimeter.
16. Use another 1 mL pipet to add 1.0 mL of Phosphate Acid Reagent. Cap and invert tube to mix.
17. Use the 0.1 g spoon and a funnel to add one spoon of Phosphate Reducing Agent. Tap funnel to dispense powder completely. Cap tube and shake until powder dissolves.
18. Wait five minutes.
19. Wipe the tube with a pre-moistened wipe. Allow tube to air dry for 30 seconds.
20. Insert the tube into the colorimeter chamber. Select "SCAN SAMPLE". Record the reading of Total Phosphate as mg/L PO_4.
21. **Multiply mg/L PO_4 result by 0.326 to get Total Phosphorus mg/L, record this result as mg/L P on the bench sheet.**

Total Phosphorus (Low Range) Bench Sheet

Sample Date: 4/23/2015 Time: _____ By: I

Sample Type: Grab Hold Temp (C): ≤6 °C

Sample Location: FWALT

Analysis Date: 4/23/2015 Time: 3:00 pm By: KJM

Volume Used: 5 mL of Sample Dilution Factor: none

Initial Result: 0.00 mg/L Duplicate Initial Result: ~~_____~~

Calculation: Initial Result X Dilution Factor = Test Result mg/L PO_4

Calculations: _____

Calculations: _____

Test Results: 0.00 mg/L PO_4 Duplicate Test Result: ~~_____~~ mg/L PO_4

Total Phosphorus Calculation: Test Result mg/L PO_4 X 0.326 = Total P mg/L.

Calculations: _____

Calculations: _____

End Result: 0.00 mg/L P Duplicate End Result: ~~_____~~ mg/L P

Comments: _____

PROCEDURE

☑ NOTE: Place Dispenser Cap (0692) on *Mixed Acid Reagent (V-6278). Save this cap for refill reagents.

1. Press and hold **ON** button until colorimeter turns on.
2. Press **ENTER** to start.
3. Press **ENTER** to select TESTING MENU.
4. Select ALL TESTS (or another sequence containing 64 Nitrate-N LR) from TESTING MENU.
5. Scroll to and select 64 Nitrate-N LR from menu.
6. Rinse a clean tube (0290) with sample water. Fill to 10 mL line with sample.
7. Insert tube into chamber, close lid and select SCAN BLANK.
8. Remove tube from colorimeter and pour off 5 mL into graduated cylinder or similar. Discard the remaining sample.
9. Pour the 5mL sample from a graduated cylinder or similar into the tube. Use the graduated cylinder or similar to measure 5 mL of *Mixed Acid Reagent (V-6278) and add to tube. Cap and mix. Wait 2 minutes before proceeding to Step 10.
10. Use the 0.1 g spoon (0699) to add two measures of *Nitrate Reducing Reagent (V-6279). Cap.
11. Hold tube by index finger and thumb and mix by inverting approximately 50-60 times a minute for four minutes. Wait 10 minutes for maximum color development.
    ☑ NOTE: At end of waiting period an undissolved portion of Nitrate Reducing Reagent may remain in bottom of the tube without affecting results.
12. At the end of the 10 minute waiting period, mix, insert tube into chamber, close lid and select SCAN SAMPLE. Record result.
13. Press **OFF** button to turn colorimeter off or press **EXIT** button to exit to a previous menu or make another menu selection.

☑ NOTE: For best possible results, a reagent blank should be determined to account for any contribution to the test result by the reagent system. To determine the reagent blank, follow the above test procedure to scan a distilled or deionized water blank. Then follow the above procedure to perform the test on a distilled or deionized water sample. This test result is the reagent blank. Subtract the reagent blank from all subsequent test results of unknown samples. It is necessary to determine the reagent blank only when a new lot number of reagents are obtained.

To convert Nitrate Nitrogen (NO_3–N) results to ppm Nitrate (NO_3), multiply by 4.4.

Nitrate-Nitrogen-Low Range TEST

WORKSHEET

Cadmium Reduction Method

Sample Date 4/23/2015 Time _____ By _____

Sample Location MMH Temp _____

24 Hour Compost Sample _____ Other Grab

Analysis Date 4/23/2015 Time 5:30pm By KJM

Nitrate Nitrogen

Test Results 0.41 ppm Duplicate Results _____

Comments: _____

Volume Used: 5 mL of Sample

Calculations _____

PROCEDURE

☑ NOTE: Place Dispenser Cap (0692) on *Mixed Acid Reagent (V-6278). Save this cap for refill reagents.

1. Press and hold **ON** button until colorimeter turns on.
2. Press **ENTER** to start.
3. Press **ENTER** to select TESTING MENU.
4. Select ALL TESTS (or another sequence containing 64 Nitrate-N LR) from TESTING MENU.
5. Scroll to and select 64 Nitrate-N LR from menu.
6. Rinse a clean tube (0290) with sample water. Fill to 10 mL line with sample.
7. Insert tube into chamber, close lid and select SCAN BLANK.
8. Remove tube from colorimeter and pour off 5 mL into graduated cylinder or similar. Discard the remaining sample.
9. Pour the 5mL sample from a graduated cylinder or similar into the tube. Use the graduated cylinder or similar to measure 5 mL of *Mixed Acid Reagent (V-6278) and add to tube. Cap and mix. Wait 2 minutes before proceeding to Step 10.
10. Use the 0.1 g spoon (0699) to add two measures of *Nitrate Reducing Reagent (V-6279). Cap.
11. Hold tube by index finger and thumb and mix by inverting approximately 50-60 times a minute for four minutes. Wait 10 minutes for maximum color development.
    ☑ NOTE: At end of waiting period an undissolved portion of Nitrate Reducing Reagent may remain in bottom of the tube without affecting results.
12. At the end of the 10 minute waiting period, mix, insert tube into chamber, close lid and select SCAN SAMPLE. Record result.
13. Press **OFF** button to turn colorimeter off or press **EXIT** button to exit to a previous menu or make another menu selection.

☑ NOTE: For best possible results, a reagent blank should be determined to account for any contribution to the test result by the reagent system. To determine the reagent blank, follow the above test procedure to scan a distilled or deionized water blank. Then follow the above procedure to perform the test on a distilled or deionized water sample. This test result is the reagent blank. Subtract the reagent blank from all subsequent test results of unknown samples. It is necessary to determine the reagent blank only when a new lot number of reagents are obtained.

To convert Nitrate Nitrogen (NO_3–N) results to ppm Nitrate (NO_3), multiply by 4.4.

Nitrate-Nitrogen-Low Range TEST

WORKSHEET

Cadmium Reduction Method

Sample Date 4/23/2015 Time _____ By _____

Sample Location HHB Temp _____

24 Hour Compost Sample _____ Other Grab

Analysis Date 4/23/2015 Time 5:35 pm By KJM

Test Results 0.52 ppm Nitrate-Nitrogen Duplicate Results —

Comments: _____

Volume Used: 5 mL of Sample

Calculations _____

PROCEDURE

☑ NOTE: Place Dispenser Cap (0692) on *Mixed Acid Reagent (V-6278). Save this cap for refill reagents.

1. Press and hold **ON** button until colorimeter turns on.
2. Press **ENTER** to start.
3. Press **ENTER** to select TESTING MENU.
4. Select ALL TESTS (or another sequence containing 64 Nitrate-N LR) from TESTING MENU.
5. Scroll to and select 64 Nitrate-N LR from menu.
6. Rinse a clean tube (0290) with sample water. Fill to 10 mL line with sample.
7. Insert tube into chamber, close lid and select SCAN BLANK.
8. Remove tube from colorimeter and pour off 5 mL into graduated cylinder or similar. Discard the remaining sample.
9. Pour the 5mL sample from a graduated cylinder or similar into the tube. Use the graduated cylinder or similar to measure 5 mL of *Mixed Acid Reagent (V-6278) and add to tube. Cap and mix. Wait 2 minutes before proceeding to Step 10.
10. Use the 0.1 g spoon (0699) to add two measures of *Nitrate Reducing Reagent (V-6279). Cap.
11. Hold tube by index finger and thumb and mix by inverting approximately 50-60 times a minute for four minutes. Wait 10 minutes for maximum color development.
    ☑ NOTE: At end of waiting period an undissolved portion of Nitrate Reducing Reagent may remain in bottom of the tube without affecting results.
12. At the end of the 10 minute waiting period, mix, insert tube into chamber, close lid and select SCAN SAMPLE. Record result.
13. Press **OFF** button to turn colorimeter off or press **EXIT** button to exit to a previous menu or make another menu selection.

☑ NOTE: For best possible results, a reagent blank should be determined to account for any contribution to the test result by the reagent system. To determine the reagent blank, follow the above test procedure to scan a distilled or deionized water blank. Then follow the above procedure to perform the test on a distilled or deionized water sample. This test result is the reagent blank. Subtract the reagent blank from all subsequent test results of unknown samples. It is necessary to determine the reagent blank only when a new lot number of reagents are obtained.

To convert Nitrate Nitrogen (NO_3–N) results to ppm Nitrate (NO_3), multiply by 4.4.

Nitrate-Nitrogen-Low Range TEST

WORKSHEET

Cadmium Reduction Method

Sample Date 4/23/2015 Time _____ By _____

Sample Location EWALT Temp _____

24 Hour Compost Sample _____ Other Grab

Analysis Date 4/23/2015 Time 6:10pm By KJ

Test Results 1.72 ppm Nitrate-Nitrogen Duplicate Results —

Comments: _____

Volume Used: 5 mL of Sample

Calculations _____

Ammonia-Nitrogen Test

LaMotte Test Code 3680-01, which follows the Nesslerization method adhering to the following methodologies EPA 350.2, and 4500-NH3 C. in Standard Methods 22nd Edition, Page 4-112.

Analysis Procedure

1. Rinse and fill a colorimeter tube to the 10 mL line with well mixed final composite sample, cap and wipe clean with pre-moistened glass wipe and allow to air dry.
2. Insert the tube into the 1200 Colorimeter chamber, being sure to align the index line with the arrow on the meter. Close the lid. This tube is the blank.
3. Push the "READ" button on the colorimeter to turn the meter on. Press the "ZERO" button and hold it for 2 seconds until "BLA" is displayed. Release the button to take a blank reading (0.0 ppm).
4. Remove tube from colorimeter and add 8 drops of Ammonia Nitrogen Reagent # 1. Cap and mix.
5. Use 1.0 mL pipet to add 1.0 mL of Ammonia Nitrogen Reagent #2.
6. Cap tube, invert to mix, and wipe clean with pre-moistened glass wipe and allow to air dry. Wait five minutes.
7. Align the index line with the arrow on the meter and insert tube into chamber. Close the lid. Push the "READ" button. (Note: Push the "READ" button once or twice over this period to keep the colorimeter from turning off).
8. Record the result on the bench sheet as mg/L NH_3-N.

Ammonia Nitrogen Bench Sheet

Sample Date: 4/23/2015 Time: _____ By: _____

Sample Type: Grab Hold Temp (C): ≤ 6 °C

Sample Location: MMH

Analysis Date: 4/23/2015 Time: 3:25 pm By: KJM

Volume Used: 10 mL of Sample

Calculations: none

Test Results: 0.05 mg/L NH_3-N

Duplicate Test Result: _____ mg/L NH_3-N

Comments: _____

Copper = 0.02 ppm

10mL ~~5mL~~ Sample

Smart 2 Colorimeter (Test 32)

Analysis: 4/23/2015 At 4:05 pm

Ammonia-Nitrogen Test

LaMotte Test Code 3680-01, which follows the Nesslerization method adhering to the following methodologies EPA 350.2, and 4500-NH3 C. in Standard Methods 22nd Edition, Page 4-112.

Analysis Procedure

1. Rinse and fill a colorimeter tube to the 10 mL line with well mixed final composite sample, cap and wipe clean with pre-moistened glass wipe and allow to air dry.
2. Insert the tube into the 1200 Colorimeter chamber, being sure to align the index line with the arrow on the meter. Close the lid. This tube is the blank.
3. Push the "READ" button on the colorimeter to turn the meter on. Press the "ZERO" button and hold it for 2 seconds until "BLA" is displayed. Release the button to take a blank reading (0.0 ppm).
4. Remove tube from colorimeter and add 8 drops of Ammonia Nitrogen Reagent # 1. Cap and mix.
5. Use 1.0 mL pipet to add 1.0 mL of Ammonia Nitrogen Reagent #2.
6. Cap tube, invert to mix, and wipe clean with pre-moistened glass wipe and allow to air dry. Wait five minutes.
7. Align the index line with the arrow on the meter and insert tube into chamber. Close the lid. Push the "READ" button. (Note: Push the "READ" button once or twice over this period to keep the colorimeter from turning off).
8. Record the result on the bench sheet as mg/L NH_3-N.

Ammonia Nitrogen Bench Sheet

Sample Date: 4/23/2015 Time: _____ By: ~~KDC~~

Sample Type: Grab Hold Temp (C): ≤6°C

Sample Location: HHB

Analysis Date: 4/23/2015 Time: 3:30 pm By: KSM

Volume Used: 10 mL of Sample

Calculations: None

Test Results: 0.16 mg/L NH_3-N

Duplicate Test Result: — mg/L NH_3-N

Comments: _____

Copper = 0.01 ppm

~~5mL~~ 1 Sample
10mL

Smart 2 colorimeter (Test 32)

Analysis: 4/23/2015 at 4:15 pm

Ammonia-Nitrogen Test

LaMotte Test Code 3680-01, which follows the Nesslerization method adhering to the following methodologies EPA 350.2, and 4500-NH3 C. in Standard Methods 22nd Edition, Page 4-112.

Analysis Procedure

1. Rinse and fill a colorimeter tube to the 10 mL line with well mixed final composite sample, cap and wipe clean with pre-moistened glass wipe and allow to air dry.
2. Insert the tube into the 1200 Colorimeter chamber, being sure to align the index line with the arrow on the meter. Close the lid. This tube is the blank.
3. Push the "READ" button on the colorimeter to turn the meter on. Press the "ZERO" button and hold it for 2 seconds until "BLA" is displayed. Release the button to take a blank reading (0.0 ppm).
4. Remove tube from colorimeter and add 8 drops of Ammonia Nitrogen Reagent # 1. Cap and mix.
5. Use 1.0 mL pipet to add 1.0 mL of Ammonia Nitrogen Reagent #2.
6. Cap tube, invert to mix, and wipe clean with pre-moistened glass wipe and allow to air dry. Wait five minutes.
7. Align the index line with the arrow on the meter and insert tube into chamber. Close the lid. Push the "READ" button. (Note: Push the "READ" button once or twice over this period to keep the colorimeter from turning off).
8. Record the result on the bench sheet as mg/L NH_3-N.

Ammonia Nitrogen Bench Sheet

Sample Date: 4/23/2015 Time: _____ By: _____

Sample Type: Grab Hold Temp (C): ≤6°C

Sample Location: EVALT

Analysis Date: 4/23/2015 Time: 3:40 pm By: KSA

Volume Used: 10 mL of sample

Calculations: none

Test Results: 0.15 mg/L NH_3-N

Duplicate Test Result: — mg/L NH_3-N

Comments: _____

Copper = 0.05 ppm
10 mL Sample
Smart 2 Colorimeter (Test 32)
Analysis: 4/23/2015 At 4:30 pm