

4/17/12

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Municipality/Organization: Wrentham Developmental Center

EPA NPDES Permit Number: MAR042030

MassDEP Transmittal Number: W035610

Annual Report Number 9
& Reporting Period: April 1, 2011 – March 31, 2012

NPDES PII Small MS4 General Permit Annual Report (Due: May 1, 2012)

Part I. General Information


Contact Person: Stephen Legendre Title: Director of Operations

Telephone #: 508-384-1656 Email: Steve.Legendre@state.ma.us

Mailing Address: Wrentham Developmental Center, P.O. Box 144, 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: 

Printed Name: Stephen Legendre

Title: Director of Operations

Date: April 13, 2012

Wrentham Developmental Center: Permit # MAR042030, DEP Transmittal # W035610, Permit Year 9, 2011-2012

Part II. Self-Assessment: The Wrentham Developmental Center has completed the required self-assessment and has determined that our municipality 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 9 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Year
1-01 Revised	Fact Sheet in newsletter	Steve Legendre/ Director of Operations	Awareness / feedback	Fact Sheet in newsletter distributed to all buildings and employees of facility	Maintain annual distribution of Storm Water Fact Sheet in facility newsletter, <u>CROSSROADS</u>
1-02 Revised	Notice posted in food and cleaning services buildings	Steve Legendre/ Director of Operations	Awareness of proper disposal practices	Posters remain in visually conspicuous area for the employees of these subcontracted service providers	Maintain storm water posters in designated areas
1-03 Revised	Present a storm water fact sheet at each new employee orientation	Steve Legendre/ Director of Operations	Awareness / improved work habits	Fact sheet distributed during each employee orientation	Continue to distribute fact sheet at each orientation to promote basic awareness among all new employees of SWMP, applicable BMPs, and participation opportunities
1-04 Revised	Establish storm water education center in Operations Dept. Office	Steve Legendre/ Director of Operations	Availability of educational materials and SWMP reference materials	Storm Water education center maintained in Director of Operations' office	Maintain storm water educational materials center. (to include comprehensive SWMP documents as per next permit NOI)

1a. Additions

2. Public Involvement and Participation

BMP ID #	BMP Description	Responsible Dept./Person Name	Measurable Goal(s)	Progress on Goal(s) – Permit Year 9 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Year
2-01 Revised	Recruit designated person per shift; food and cleaning services	Steve Legendre/ Director of Operations	Oversight with increased awareness	Annual Stormwater and Spill Prevention Meeting of 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. Update information as needed for next permit NOI SWMP
2-02 Revised	Request volunteers per Unit per shift by supervisory personnel	Steve Legendre/ Director of Operations	Oversight with increased awareness	Request volunteers per Unit per shift by supervisory personnel attending Annual Storm Water Meeting	Continue to request volunteers per Unit/Dept. per shift be watchful for proper disposal practices Update information as needed for next permit NOI
2-03 Revised	Security Training/Awareness	Steve Legendre/ Director of Operations	Reporting of incidents	Security supervisor attendance at Annual Storm Water / Spill Prevention Meeting. Establish procedure for the reporting and response to incidents	Security supervisor to attend Annual Storm Water Meeting and maintain documentation of incidents as needed Update information as needed for next permit NOI
2-04 Revised	Training for Transport, Grounds, Paint, and all Maintenance Depts.	Steve Legendre/ Director of Operations	Awareness/improved work habits	Tailgate meetings to promote proper work habits as related to SWMP	Tailgate meetings to promote proper work habits as related to SWMP Update information as needed for next permit NOI

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 9 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Year
3-01 Revised	Regularly inspect outfalls for dry weather discharges	Steve Legendre/ Director of Operations	Early detection and correction	Continued monitoring of outfalls. No dry weather discharges detected. Mapping improved by W&S Services for incorporation into revised SWMP for upcoming NOI.	Continued monitoring of outfalls. Improve mapping and establish tracking and analysis methods for discovered flows. (Keep in SWMP)
3-02 Revised	Use test kits for pH, nitrate, phosphate, during severe wet weather <i>Testing includes: copper, Ammonia Nitrogen, and Nitrate</i>	Steve Legendre/ Director of Operations	Early detection and correction	Annual testing conducted during rainfall event on 5-17-11 and 9-8-11. Tests seem to indicate normal outfall conditions.	Continue sampling during severe wet weather event each Revise sampling to incorporate SWMP changes set forth by W&S Services and EPA guidance as per new permit requirements.
3-03 Revised	Spill Response Plan	Steve Legendre/ Director of Operations	Spill Control Kit(s) on site; E.Q Northeast for clean-up and Emergency Response	Annual Storm Water / Spill Prevention Meeting did address Spill Response Plan. Spill control kits maintained in Plumbing and Ground's department shops and in WDC Security vehicles. Completed Annual First Responder Awareness-Level Training for 15+ staff who may be involved with spill response. (4-07-11)	Continue to administer Annual Storm Water/ Spill Prevention (and response) Meeting with required attendance by designated supervisory personnel. Maintain spill control kits at appropriate locations. Continue Annual First Responder Awareness-Level Refresher Training.

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 9 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Year
4-01 Revised	Insert standard construction controls and penalties into contract documentation	Steve Legendre/ Director of Operations	Erosion, sediment, and waste control	Standard construction controls maintained in contract documentation	Standard construction controls to be maintained in contract documentation Incorporate EPA guidance as per new permit requirements. Construction-site specific educational materials development as per next permit NOI as needed
4-02 Revised	Perform site inspections and impose penalties as required	Steve Legendre/ Director of Operations	Erosion, sediment, and waste control	Site inspections performed as required	Site inspections performed as required Incorporate EPA guidance as per new permit requirements.

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 9 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Year
5-01	Standard post-construction controls and penalties into contract documentation	Steve Legendre/ Director of Operations	Erosion, sediment, and waste control. Soil depth restored.	Standard post-construction controls maintained in contract documentation	Standard post-construction controls to be maintained in contract documentation. Incorporate EPA guidance as per new permit requirements.
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 9 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Year
6-01 Revised	Contract for catch basin cleaning, inspection and repair	Steve Legendre/ Director of Operations	Proper operation of storm water collection system	Contract activities satisfied New contract work incorporated for vactor-truck technology for catchbasin cleaning	Contract activities to be satisfied Specify vactor-technology in catchbasin cleaning as needed.
6-02 Revised	Town of Wrentham to clean public roads and some parking areas	Steve Legendre/ Director of Operations	Proper operation of system with reduction of sand in catch basins	Cleaning/sweeping of public roadways and certain parking areas completed	Cleaning/sweeping of public roadways and certain parking areas to be completed
6-03 Revised	Contract for remaining parking areas to be cleaned	Steve Legendre/ Director of Operations	Proper operation of system with reduction of sand in catch basins	Contract for cleaning/sweeping of remaining parking areas completed	Contract to continue for cleaning/sweeping of remaining parking areas
6-04 Revised	Limit salt use; store salt/sand mixtures under roofed area	Steve Legendre/ Director of Operations	Limit salt to water table	Salt use controlled. Salt/sand mixture stored under roofed area. Reported sand/salt storage in Annual Tier 2 report to MEMA/SERC	Salt use to be controlled. Salt/sand mixture to be stored under roofed area. Continue to report sand/salt storage in Annual Tier 2 report
6-05 Revised	Inspect and clean trash and debris from roadsides and culverts	Steve Legendre/ Director of Operations	Proper operation of storm-drain system	Regular inspection and cleaning of debris from roadside and culverts completed.	Regular inspection and cleaning of debris from roadside and culverts

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 9 (Reliance on non-municipal partners indicated, if any)	Planned Activities – Next Permit Year
7-01 Revised	Maintain status of all discharges being “Allowable”	Steve Legendre/ Director of Operations	No significant nutrient or sediment loading	All discharges remain “Allowable” No illicit discharges detected	All discharges maintained as “Allowable.” Continue to monitor for illicit discharges
7-02 Revised	Non-Storm Water Discharges not a significant contributor of pollutants	Steve Legendre/ Director of Operations		Non-Storm Water Discharges not a significant contributor of pollutants	No direct receiving waters where TMDL is applicable Develop for new NOI / revised SWMP assessment and documentation procedures for non-storm water discharges when encountered. Keep in SWMP.

7a. Additions

7b. WLA Assessment: Not Applicable

Part IV. Summary of Information Collected and Analyzed

Water quality testing was conducted on during rainfall events on 5-17-11 and 9-8-11. Testing results for pH, Phosphate, Ammonia Nitrogen, Nitrate, and Copper are attached. All testing is done at our waste water treatment plant by a certified operator in accordance with NPDES and MassDEP testing standards*. (*)Note: Copper tested using colorimetric test kit, SM Vol. 21, 3500- Cu B.

Note: An engineering firm has been contracted for preparation of upcoming NOI and a newly formatted SWMP.

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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, 2011 through March 31, 2012)

Programmatic

	(Preferred Units)	Response
Stormwater management position created/staffed	(y/n)	n
Annual program budget/expenditures **	(\$)	\$14,220
Total program expenditures since beginning of permit coverage	(\$)	\$111,942
Funding mechanism(s) (General Fund, Enterprise, Utility, etc)		Gen Fund

Education, Involvement, and Training

Estimated number of property owners reached by education program(s)	(# or %)	n/a
Stormwater management committee established	(y/n)	y
Stream teams established or supported	(# or y/n)	n
Shoreline clean-up participation or quantity of shoreline miles cleaned ** -- Meadow Brook--	(y/n or mi.)	0.15 (all)
Shoreline cleaned since beginning of permit coverage	(mi.)	0.15
Household Hazardous Waste Collection Days		
<ul style="list-style-type: none"> ▪ days sponsored ** ▪ MassDEP oversight of hazardous waste collection at facility ▪ community participation ** ▪ material collected ** 	(#)	n/a
School curricula implemented	(# or %)	n/a
	(tons or gal)	unknown
	(y/n)	n/a

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Legal/Regulatory

In Place Prior to Phase II Reviewing Existing Authorities Drafted Draft in Review Adopted

Regulatory Mechanism Status (indicate with "X")	**state contracts specify	standard	construction controls	
▪ Illicit Discharge Detection & Elimination	X			
▪ Erosion & Sediment Control	X			
▪ Post-Development Stormwater Management	X			
Accompanying Regulation Status (indicate with "X")				
▪ Illicit Discharge Detection & Elimination				
▪ Erosion & Sediment Control				
▪ Post-Development Stormwater Management				
Mapping and Illicit Discharges				
Outfall mapping complete		(%)		100
Estimated or actual number of outfalls		(#)		10
System-Wide mapping complete (complete storm sewer infrastructure)		(%)		98
Mapping method(s)				
▪ Paper/Mylar		(%)		98
▪ CADD		(%)		98
▪ GIS		(%)		0
Outfalls inspected/screened **		(# or %)		10
Outfalls inspected/screened (Since beginning of permit coverage)		(# or %)		10
Illicit discharges identified **		(#)		0
Illicit discharges identified (Since beginning of permit coverage)		(#)		0
Illicit connections removed **		(#); and (est. gpd)		0
Illicit connections removed (Since beginning of permit coverage)		(#); and (est. gpd)		0
% of population on sewer		(%)		98
% of population on septic systems		(%)		1

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Construction	(Preferred Units)	Response
Number of construction starts (>1-acre) **	(#)	0
Estimated percentage of construction starts adequately regulated for erosion and sediment control **	(%)	0
Site inspections completed **	(# or %)	0
Tickets/Stop work orders issued **	(# or %)	0
Fines collected **	(# and \$)	0
Complaints/concerns received from public **	(#)	0

Post-Development Stormwater Management

Estimated percentage of development/redevelopment projects adequately regulated for post-construction stormwater control	(%)	0
Site inspections (for proper BMP installation & operation) completed **	(# or %)	0
BMP maintenance required through covenants, escrow, deed restrictions, etc.	(y/n)	0
Low-impact development (LID) practices permitted and encouraged	(y/n)	0

Operations and Maintenance

Average frequency of catch basin cleaning (non-commercial/non-arterial streets) **	(times/yr)	1
Average frequency of catch basin cleaning (commercial/arterial or other critical streets) **	(times/yr)	1
Qty of structures cleaned **	(#)	86
Qty. of storm drain cleaned **	(%, LF or mi.)	0
Qty. of screenings/debris removed from storm sewer infrastructure **	(lbs. or tons)	50.3 tons *
Disposal or use of screenings (landfill, POTW, compost, beneficial use, etc.) **	(location)	landfill

* Please Note: This significant increase is likely due to the first-time use of a vacuum truck. Also, the quantity of screenings and sweepings are estimated as a percent of a total of 60 tons removed from the facility.

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Basin Cleaning Costs			
• Annual budget/expenditure (labor & equipment)**		(\$)	\$11,820
• Hourly or per basin contract rate **		(\$/hr or \$ per basin)	\$14.95 per basin
• Disposal cost** Please Note: Disposal costs estimated @ 84% of total disposal costs @ \$65.00 per ton		(\$)	\$3,270.00
Cleaning Equipment			
• Clam shell truck(s) owned/leased		(#)	0
• Vacuum truck(s) owned/leased		(#)	0
• Vacuum trucks specified in contracts		(y/n)	Y
• % Structures cleaned with clam shells **		(%)	0
• % Structures cleaned with vactor **		(%)	100

	(Preferred Units)	Response
Average frequency of street sweeping (non-commercial/non-arterial streets) **	(times/yr)	1
Average frequency of street sweeping (commercial/arterial or other critical streets) **	(times/yr)	1
Qty. of sand/debris collected by sweeping **	(lbs. or tons)	9.7 tons
Disposal of sweepings (landfill, POTW, compost, beneficial use, etc.) **	(location)	landfill
Annual Sweeping Costs		
• Annual budget/expenditure (labor & equipment)**	(\$)	\$2,400
• Hourly or lane mile contract rate **	(\$/hr. or in mi.)	n/a
• Disposal cost** Please Note: Disposal costs estimated @ 16% of total disposal costs @ \$65.00 per ton	(\$)	\$630.00
Sweeping Equipment		
• Rotary brush street sweepers owned/leased	(#)	0
• Vacuum street sweepers owned/leased	(#)	0
• Vacuum street sweepers specified in contracts	(y/n)	n
• % Roads swept with rotary brush sweepers **	%	100
• % Roads swept with vacuum sweepers **	%	0

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Reduction (since beginning of permit coverage) in application on public land of: ("N/A" = never used; "100%" = elimination)	
▪ Fertilizers	(lbs. or %) 2%
▪ Herbicides	(lbs. or %) n/a
▪ Pesticides	(lbs. or %) n/a
Integrated Pest Management (IPM) Practices Implemented	(y/n) n
(Preferred Units) Response	
Average Ratio of Anti-/De-Icing products used **	% NaCl 23%
(also identify chemicals and ratios used in specific areas, e.g., water supply protection areas)	% CaCl ₂ 0
	% MgCl ₂ 0
	% CMA 0
	% Kac 0
	% KCl 0
	% Sand 77%
Note: Water Supply Zone II(s) controlled by Town(s) and outside of WDC MS4 boundaries. Water Supply Zone I(s) not in proximity of WDC MS4. WDC uses sand only in its PWS Zone I - outside of MS4 boundaries.	
Pre-wetting techniques utilized **	(y/n or %) n
Manual control spreaders used **	(y/n or %) y
Zero-velocity spreaders used **	(y/n or %) n
Estimated net reduction or increase in typical year salt/chemical application rate	(±lbs/ln mi. or %) 0
Estimated net reduction or increase in typical year sand application rate **	(±lbs/ln mi. or %) 0
% of salt/chemical pile(s) covered in storage shed(s)	(%) 100
Storage shed(s) in design or under construction	(y/n or #) 0
100% of salt/chemical pile(s) covered in storage shed(s) by May 2008	(y/n) y

Water Supply Protection

Storm water outfalls to public water supplies eliminated or relocated	# or y/n	0
Installed or planned treatment BMPs for public drinking water supplies and their protection areas	# or y/n	0
<ul style="list-style-type: none"> • Treatment units induce infiltration within 500-feet of a wellhead protection area 	# or y/n	0

W.D.C

STORM WATERS

5/17/11

OUTFALL TEST AREA

	<u>E wall</u>	<u>mm Hall # 1</u>	<u>mm Hall # 2</u>
P.H.	6.61	6.90	6.74
COPPER	0.04 ^{mg/L}	0.01 ^{mg/L}	0.05 ^{mg/L}
PHOSPHATE	0.01 ^{mg}	0.22 ^{mg}	0.02 ^{mg}
AM AS NITROGEN	0.48 ^{mg}	0.42 ^{mg}	0.61 ^{mg}
NITRATE	0.06 ^{mg}	0.28 ^{mg}	0.12 ^{mg}

STORM WATER

P.H.

WORKSEET

Sample Date 5/17/11 Time 11.50 BY MSL

Analysis Date 5/17/11 Time 12.10 BY MSL

Calibration Check ✓ Sample type G

	P.H.	Temp
M.M. Hall #1	<u>6.90</u>	_____
	_____	_____
M.M. Hall #2	<u>6.74</u>	_____
	_____	_____
E. Wall	<u>6.61</u>	_____

Comments: STORM WATER

COPPER TEST PROCEDURE - DIETHYLDITHIOCARBAMATE

Read the 1200 Colorimeter Manual before proceeding. Carefully wipe tubes dry before inserting into the colorimeter chamber.

COPPER



1. Fill the Water Sample Collecting Bottle (0688) with sample water. This will be used to dispense sample water for the tests.

2. Rinse and fill a colorimeter tube (0290) to the 10 mL line with sample water. Cap and wipe dry.

3. Insert the tube into the chamber, being sure to align the index line with the arrow on the meter. Close the lid. This tube is the blank or zero.

4. Push the **READ** button 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).

5. Remove tube from colorimeter. Add 5 drops of *Copper 1 (6446).

6. Cap and invert to mix. Wipe tube dry.

7. Align the index line with the arrow on the meter, insert tube into chamber. Close the lid. Push the **READ** button. Record results as ppm Copper.

STORM LABS

COPPER TEST WORKSHEET

Sample Date 5/17/11 Time 11:50 By SR

Sample Location (EWH1) (MNH41)
(MNH42) Temp _____

24 Hour Compost Sample G Other _____

Analysis Date 5/17/11 Time 12:40 By SR

Test Results EWH1 (.04)
MNH41 (.01)
MNH42 (.05) Duplicate Results _____

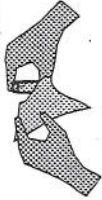
Comments: _____

Volume Used: 10 mL

Calculations: _____

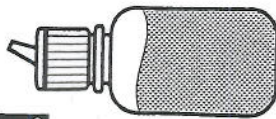
PHOSPHATE PROCEDURE - ASCORBIC ACID METHOD

Read the 1200 Colorimeter Manual before proceeding. Carefully wipe tubes dry before inserting into the colorimeter chamber.



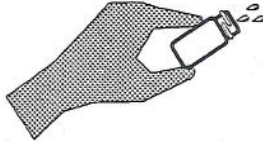
PHOSPHATE

1.



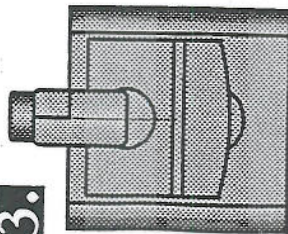
Fill the Water Sample Collecting Bottle (0688) with sample water. This will be used to dispense sample water for the tests.

2.



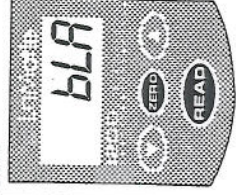
Rinse and fill a colorimeter tube (0290) to the 10 mL line with sample water. Cap and wipe dry.

3.



Insert the tube into the chamber, being sure to align the index line with the arrow on the meter. Close the lid. This tube is the sample blank or zero.

4.



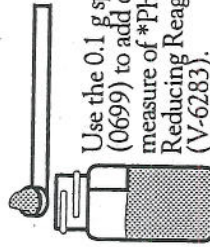
Push the **READ** button to turn the meter on. Press the **ZERO** button and hold it for 2 seconds until **bla** is displayed. Release the button to take a blank reading (0.0 ppm).

5.



Remove tube from colorimeter. Use 1.0 mL pipet (0354) to add 1.0 mL of *Phosphate Acid Reagent (V-6282). Cap and mix.

6.



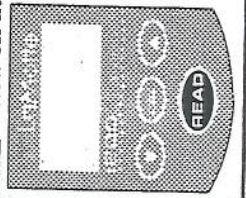
Use the 0.1 g spoon (0699) to add one measure of *Phosphate Reducing Reagent (V-6283).

7.



Cap and shake until powder dissolves. Wait 5 minutes for full color development. Solution will turn blue if phosphates are present. Wipe tube dry.

8.



Align the index line with the arrow on the meter, insert tube into chamber. Close the lid. Push the **READ** button. Record results as ppm Orthophosphate.

STORM LABS

PHOSPHATE TEST

WORKSHEET

Sample Date 5/17/11 Time 11:5 BY STORM

Sample Location (E-11) (M H #1) (M H #2) Temp _____

24 Hour Compost Sample Grab Other _____

Analysis Date 5/17/11 Time 12:25 BY STORM

Test Results (E-11) (0.02) (0.02) (0.01) Duplicate Results _____

Comments: _____

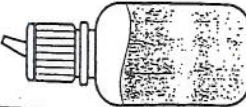
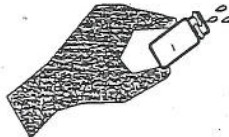
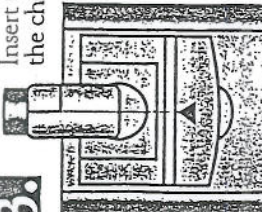
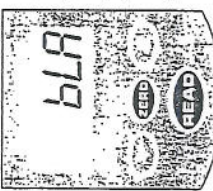
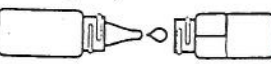
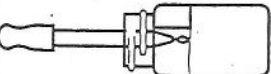
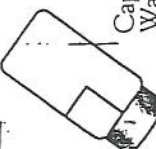

Volume Used: 10 mL

Calculations _____

AMMONIA NITROGEN TEST PROCEDURE: NESSLER METHOD

Read the 1200 Colorimeter Manual before proceeding. Carefully wipe tubes dry before inserting into the colorimeter chamber.

AMMONIA NITROGEN

<p>1. Fill the Water Sample Collecting Bottle (0688) with sample water. This will be used to dispense sample water for the tests.</p> 	<p>2. Rinse and fill a colorimeter tube (0290) to the 10 mL line with sample water. Cap and wipe dry.</p> 
<p>3. Insert the tube into the chamber, being sure to align the index line with the arrow on the meter. Close the lid. This tube is the blank or zero.</p> 	<p>4. Push the READ button 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).</p> 
<p>5. Remove tube from colorimeter. Add 8 drops of Ammonia Nitrogen Reagent #1 (V-4797). Cap and mix.</p> 	<p>6. Use 1.0 mL pipet (0354) to add 1.0 mL of *Ammonia Nitrogen Reagent #2 (V-4798).</p> 
<p>7. Cap and invert to mix. Wait 5 minutes for full</p>  	<p>8. Align the index line with the arrow on the meter, insert tube into chamber. Close the lid. Push the READ button. Record results as ppm Ammonia.</p>

STDRM WAT 2015

AMMONIA NITROGEN TEST WORKSHEET

Sample Date 5/17/11 Time 11:50 By MA

Sample Location (E wall) (mm #1) (mm #2) Temp _____

24 Hour Compost Sample C Other _____

Analysis Date 5/17/11 Time 12:35 By MA

Test Results E wall (0.48) Duplicate Results _____
mm #1 (0.42)
mm #2 (0.01)

Comments: _____

Volume Used: 1.0 mL

Calculations: _____

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 5 mL 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 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 (NO₃-N) results to ppm Nitrate (NO₃), multiply by 4.4.

WORK SHEET
NITRATE

Sample Date 5/17/11 Time 11:50 By ML

Sample Location EM-11 (MNH#1)
(MNH#2)

24 Hour Compost Sample G Other _____

Analysis Date 5/17/11 Time 1:00 By ML

Test Results EM-11 (0.00)
MNH#1 (0.28)
MNH#2 (0.12) Duplicate Results _____

Comments: _____

Volume Used: 1.6 mL

Calculations _____

STORMWATERS

OUTFALL TEST AREA

	<u>E-WAIT</u>	<u>mm Hall #1</u>	<u>mm Hall #2</u>
P.H.	6.76	7.16	6.83
COPPER	0.00 ^{mg/L}	0.03 ^{mg/L}	0.03 ^{mg/L}
PHOSPHATE	0.06 ^{mg/L}	0.03 ^{mg/L}	0.14 ^{mg/L}
AM AS NITROGEN	0.30 ^{mg/L}	0.24 ^{mg/L}	0.21 ^{mg/L}
NITRATE	0.12 ^{mg/L}	0.04 ^{mg/L}	0.0 ^{mg/L}

COPPER TEST PROCEDURE - DIETHYLDITHIOCARBAMATE

Read the 1200 Colorimeter Manual before proceeding. Carefully wipe tubes dry before inserting into the colorimeter chamber.

COPPER



1. Fill the Water Sample Collecting Bottle (0688) with sample water. This will be used to dispense sample water for the tests.

2. Rinse and fill a colorimeter tube (0290) to the 10 mL line with sample water. Cap and wipe dry.

3. Insert the tube into the chamber, being sure to align the index line with the arrow on the meter. Close the lid. This tube is the blank or zero.

4. Push the **READ** button to turn the meter on. Press the **ZERO** button and hold it for 2 seconds until **BLR** is displayed. Release the button to take a blank reading (0.0 ppm).

5. Remove tube from colorimeter. Add 5 drops of *Copper 1 (6446).

6. Cap and invert to mix. Wipe tube dry.

7. Align the index line with the arrow on the meter, insert tube into chamber. Close the lid. Push the **READ** button. Record results as ppm Copper.

COPPER TEST WORKSHEET

Stormwater

Sample Date 9/8/11 Time 8:20 By SL

Sample Location mm Hall #1 Temp 20
mm Hall #2

24 Hour Compost Sample CARB Other _____

Analysis Date 9/8/11 Time 9:40 By RL

Test Results mm Hall #1 0.03 Duplicate Results _____
mm Hall #2 0.03
ERTT 0.00

Comments: _____

Volume Used: 10 mL

Calculations (no adjustments)

P.H.

WORKSEET

Sample Date 9/8/11 Time 8:20 BY SL

Analysis Date 9/8/11 Time 8:50 By M

Calibration Check Sample type G

	P.H.	Temp
<u>mm Hall #1</u>	<u>7.16</u>	<u>20.8</u>
<u>mm Hall #2</u>	<u>6.83</u>	<u>20.1</u>
<u>EWALT</u>	<u>6.76</u>	<u>19.9</u>

Comments: _____

AMMONIA NITROGEN TEST PROCEDURE: NESSLER METHOD

Read the 1200 Colorimeter Manual before proceeding. Carefully wipe tubes dry before inserting into the colorimeter chamber.

AMMONIA NITROGEN



1. Fill the Water Sample Collecting Bottle (0688) with sample water. This will be used to dispense sample water for the tests.

2. Rinse and fill a colorimeter tube (0290) to the 10 mL line with sample water. Cap and wipe dry.

3. Insert the tube into the chamber, being sure to align the index line with the arrow on the meter. Close the lid. This tube is the blank or zero.

4. Push the **READ** button 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).

5. Remove tube from colorimeter. Add 8 drops of Ammonia Nitrogen Reagent #1 (V-4797). Cap and mix.

6. Use 1.0 mL pipet (0354) to add 1.0 mL of *Ammonia Nitrogen Reagent #2 (V-4798).

7. Cap and invert to mix. Wait 5 minutes for full

8. Align the index line with the arrow on the meter, insert tube into chamber. Close the lid. Push the **READ** button. Record results as ppm Ammonia.

AMMONIA NITROGEN TEST

WORKSHEET

Stormwaters

Sample Date 9/6/11 Time 8:20 By SL

Sample Location MM Hall #1 MM Hall #2 Temp 20 C

24 Hour Compost Sample Grab Other _____

Analysis Date 9/6/11 Time 10:05 By SL

Test Results MM Hall #1 0.24 Duplicate Results _____
MM Hall #2 0.21
Event 0.30

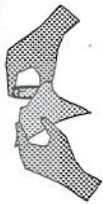
Comments: _____

Volume Used: 1.0 mL

Calculations (no adjustments)

PHOSPHATE PROCEDURE - ASCORBIC ACID METHOD

Read the 1200 Colorimeter Manual before proceeding. Carefully wipe tubes dry before inserting into the colorimeter chamber.



PHOSPHATE

1. Fill the Water Sample Collecting Bottle (0688) with sample water. This will be used to dispense sample water for the tests.

2. Rinse and fill a colorimeter tube (0290) to the 10 mL line with sample water. Cap and wipe dry.

3. Insert the tube into the chamber, being sure to align the index line with the arrow on the meter. Close the lid. This tube is the sample blank or zero.

4. Push the **READ** button 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).

5. Remove tube from colorimeter. Use 1.0 mL pipet (0354) to add 1.0 mL of *Phosphate Acid Reagent (V-6282). Cap and mix.

6. Use the 0.1 g spoon (0699) to add one measure of *Phosphate Reducing Reagent (V-6283).

7. Cap and shake until powder dissolves. Wait 5 minutes for full color development. Solution will turn blue if phosphates are present. Wipe tube dry.

8. Align the index line with the arrow on the meter, insert tube into chamber. Close the lid. Push the **READ** button. Record results as ppm Orthophosphate.

PHOSPHATE TEST

WORKSHEET

STORM WATER

Sample Date 9/8/11 Time 8:20 By SL

Sample Location MM Hall #1 MM Hall #2 E-V-11 Temp 20°C

24 Hour Compost Sample Grab Other _____

Analysis Date 9/8/11 Time 10:30 By SL

Test Results MM Hall #1 = 03 Duplicate Results _____
MM Hall #2 = 14
E-V-11 = 06

Comments: _____

Volume Used: 10 mL

Calculations: _____

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 5 mL 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 ($\text{NO}_3\text{-N}$) results to ppm Nitrate (NO_3), multiply by 4.4.

WORK SHEET

NITRATE

Sample Date 9/8/11

Time 8:30

By SL

Sample Location MM Hall #1
MM Hall #2
E-WAIT 20

24 Hour Compost Sample Grab

Other

Analysis Date 9/8/11

Time 10:55

By RB

Test Results MM Hall #1 0.04
MM Hall #2 0.0
E-WAIT 0.12

Duplicate Results

Comments:

Volume Used: 10 mL

Calculations