



June 23, 2006

Via U.S. Mail

U.S. Environmental Protection Agency
New England
RGP-NOC Processing Municipal Assistance Unit (CMU)
1 Congress Street, Suite 1100
Boston, Massachusetts 02114-2023

**Re: Notice of Intent (NOI) for
Remediation General Permit (RGP)
North Carver Landfill Groundwater Treatment
Response Action Remediation System
Off Green Street at Route 44
North Carver, Massachusetts
DEP RTN 4-0000268
Norfolk Ref. No. 656.6.1, Task 1**

To the Agency:

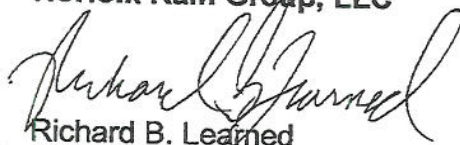
On behalf of the Town of Carver, Massachusetts, Norfolk Ram Group, LLC (Norfolk) has prepared this *Notice of Intent (NOI) for Remediation General Permit (RGP)* for the North Carver Landfill Groundwater Treatment Response Action Remediation System (GWTS) attached in Attachment A. The NOI was prepared consistent with Appendix V of the U.S. Environmental Protection Agency's (EPA) *Final Remediation General Permit Under the National Pollutant Discharge Elimination System (NPDES) for Discharges in Massachusetts, Massachusetts General Permit, Permit No. MAG910000*. The Town of Carver owns and operates this treatment system for which a NPDES temporary permit exclusion letter was submitted to EPA. The Town requests authorization for continued discharge under the provisions of the RGP.

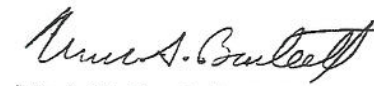
Pursuant to Section B(1)(a) of Appendix V, since the GWTS is subject to 310 CMR 40.0000, the Massachusetts Contingency Plan (MCP), there is no requirement to submit state application form BWPWM12 to the Massachusetts Department of Environmental Protection (DEP). However, a copy of the NOI will be provided to the DEP.

Norfolk has attached a Locus Map, Wetlands Map and Treatment System Schematic as Figures 1, 2 and 3, respectively in Attachment B. Copies of applicable Material Safety Data Sheets (MSDS) are also provided in Attachment B.

If you have any questions or comments concerning this NOI, please contact Richard Learned or Mark Bartlett at (508) 747-7900, extensions 151 and 131, respectively.

Very truly yours,
Norfolk Ram Group, LLC


Richard B. Learned
Project Manager


Mark S. Bartlett, P.E.
President

N:\Projects\656 Carver Board of Selectmen\656.5 o&m\005.01\RGP\NOI_RGP_EPA.doc

Attachments

cc: Mr. Richard LaFond, Carver Town Manager
Massachusetts Department of Environmental Protection (MADEP), Division of Watershed
Management (627 Main Street, 2nd floor Worcester, MA 01608), Attn. Robert Kubit
MADEP Southeast Regional Office, Attn., Gerard Martin
Brian V. Moran, P.E., LSP, Norfolk Ram Group, LLC

B. Suggested Form for Notice of Intent (NOD) for the Remediation General Permit

1. General site information. Please provide the following information about the site:

a) Name of facility/site: North Carver Landfill Groundwater Treatment Response Action Remediation System		Facility/site address: off Green Street at Plymouth Street (aka Old Rte. 44), North Carver, MA	
Location of facility/site: longitude: 41d55 latitude: 70d47	Facility SIC code(s): 4953	Street: off Green Street	
b) Name of facility/site owner: Town of Carver		Town: Carver	
Email address of owner: richard.lafond@carverma.org (Richard J. LaFond, Town Administrator)		State: MA	County: Plymouth
Telephone no. of facility/site owner: (508) 866-3400		Zip: 02330	
Fax no. of facility/site owner: (508) 866-4213		Owner is (check one): 1. Federal 2. State/Tribal 3. Private 4. other, if so, describe: Town	
Address of owner (if different from site):			
Street: Town Hall, 108 Main Street			
Town: Carver	State: MA	Zip: 02330	County: Plymouth
c) Legal name of operator: Norfolk Ram Group, LLC and employee David B. Tanguay MA Grade 3 License No. 12412		Operator telephone no: (508) 747-7900	
		Operator fax no.: (508) 747-3658	Operator email: mbartlett@norfolkram.com
Operator contact name and title: Mark S. Bartlett, P.E., President			

APPENDIX A

NOTICE OF INTENT FOR REMEDIATION GENERAL PERMIT

Address of operator (if different from owner):		Street: One Roberts Road	
Town: Plymouth	State: MA	Zip: 02360	County: Plymouth

d) Check "yes" or "no" for the following:

- Has a prior NPDES permit exclusion been granted for the discharge? Yes ☒ No ☐ if "yes," number: One
- Has a prior NPDES application (Form 1 & 2C) ever been filed for the discharge? Yes ☐ No ☒ if "yes," date and tracking #:
- Is the discharge a "new discharge" as defined by 40 CFR 122.2? Yes ☒ No ☐
- For sites in Massachusetts, is the discharge covered under the MA Contingency Plan (MCP) and exempt from state permitting? Yes ☒ No ☐

e) Is site/facility subject to any State permitting or other action which is causing the generation of discharge? Yes ☒ No ☐ If "yes," please list:

- site identification # assigned by the state of NH or MA: 4-0000268
- permit or license # assigned: NA
- state agency contact information: name, location, and telephone number: Department of Environmental Protection, 20 Riverside Dr., Lakeville, MA

f) Is the site/facility covered by any other EPA permit, including:

- multi-sector storm water general permit? Y ☐ N ☒ if Y, number:
- phase I or II construction storm water general permit? Y ☐ N ☒ if Y, number:
- individual NPDES permit? Y ☐ N ☒ if Y, number:
- any other water quality related permit? Y ☐ N ☒ if Y, number:

2. Discharge information. Please provide information about the discharge, (attaching additional sheets as needed) including:

508-946-2700

a) Describe the discharge activities for which the owner/applicant is seeking coverage:

Discharge of treated groundwater from an air stripper remediation system to a surface water body. This work is being conducted under an Immediate Response Action as required by 310 CMR 40.0000 and an Administrative Consent Order from the Massachusetts Department of Environmental Protection, Bureau of Waste Site Cleanup.

b) Provide the following information about each discharge:	1) Number of discharge points: 1	2) What is the maximum and average flow rate of discharge (in cubic feet per second, ft ³ /s)? Max. flow 0.12 Average flow 0.07 Is maximum flow a design value? Y ☒ N ☐ For average flow, include the units and appropriate notation if this value is a design value or estimate if not available.
--	-------------------------------------	--

3) Latitude and longitude of each discharge within 100 feet: pt.1: long. 41d55 lat. 70d47 ; pt.2: long. lat. ; pt.3: long. lat. ; pt.4: long. lat. ; pt.5: long. lat. ; pt.6: long. lat. ; pt.7: long. lat. ; pt.8: long. lat. ; etc.

4) If hydrostatic testing, total volume of the discharge (gals): NA	5) Is the discharge intermittent or seasonal? Is discharge ongoing Yes ☒ No ☐ ?
c) Expected dates of discharge (mm/dd/yy): start 02/22/94 and unknown	
d) Please attach a line drawing or flow schematic showing water flow through the facility including: 1. sources of intake water, 2. contributing flow from the operation, 3. treatment units, and 4. discharge points and receiving waters(s). (See Figure 3)	

PARAMETER	Believe Absent	Believe Present	# of Samples (1 minimum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
43. Copper		✓	1*	grab	200.7	0.05	0.6		0.18	
44. Lead	✓		1*	grab	200.7	0.002	BRL		BRL	
45. Mercury	✓		1*	grab	200.7	0.0005	BRL		BRL	
46. Nickel	✓									
47. Selenium	✓		1*	grab	200.7	0.005	BRL		BRL	
48. Silver	✓		1*	grab	200.7	0.02	BRL		BRL	
49. Zinc		✓	1*	grab	200.7	0.02	0.1		0.05	
50. Iron		✓	1*	grab	200.7	0.05	12		3.53	
Other (describe):										

c) For discharges where metals are believed present, please fill out the following:

<i>Step 1:</i> Do any of the metals in the influent have a reasonable potential to exceed the effluent limits in Appendix III (i.e., the limits set at zero to five dilutions)? Y ___ N <u>✓</u>	If yes, which metals?
<i>Step 2:</i> For any metals which have reasonable potential to exceed the Appendix III limits, calculate the dilution factor (DF) using the formula in Part I.A.3.c) (step 2) of the NOI instructions or as determined by the State prior to the submission of this NOI. What is the dilution factor for applicable metals? Metals: NA DF: _____	Look up the limit calculated at the corresponding dilution factor in Appendix IV. Do any of the metals in the influent have the potential to exceed the corresponding effluent limits in Appendix IV (i.e., is the influent concentration above the limit set at the calculated dilution factor)? Y ___ N ___ If "Yes," list which metals:

4. Treatment system information. Please describe the treatment system using separate sheets as necessary, including:

a) A description of the treatment system, including a schematic of the proposed or existing treatment system:
The treatment system consists of five 6-inch recovery wells oriented in a line perpendicular to groundwater flow. The wells span 210 feet, are approximately 30 feet deep and screened over the bottom 25 feet. Extracted groundwater is piped from each well to a manifold inside a concrete building, through a bag filter and into a 1,000-gal equalization tank. From the tank, the water is pumped to the top of an air stripper tower filled with 50 cubic feet of plastic media. A blower forces air up through the media as the water cascades down stripping volatile compounds which are off-gassed into the atmosphere. The treated water is discharged to a surface water body.

b) Identify each applicable treatment unit (check all that apply):	Frac. tank	Air stripper	Oil/water separator	Equalization tanks	Bag filter	GAC filter
	Chlorination	Dechlorination	Other (please describe): mainfold, transfer pumps, blower, 1:1 phosphorus sequestering agent, programmable logic controller, pump controllers			

c) Proposed average and maximum flow rates (gallons per minute) for the discharge and the design flow rate(s) (gallons per minute) of the treatment system:
Average flow rate of discharge 30 Maximum flow rate of treatment system 50 +/- Design flow rate of treatment system 25-50 +/-

d) A description of chemical additives being used or planned to be used (attach MSDS sheets):
chlorine tablets added to recovery wells to control bacteria growth
1:1 phosphorus sequestering agent to reduce iron fouling

5. Receiving surface water(s). Please provide information about the receiving water(s), using separate sheets as necessary:

a) Identify the discharge pathway:	Direct	Within facility	Storm drain	River/brook	Wetlands	Other (describe):
					✓ Ditch	

b) Provide a narrative description of the discharge pathway, including the name(s) of the receiving waters:
Discharge from the air stripper tower is directly into a wetland ditch which flows west approximately 250 feet and converges with Muddy Pond Brook. Muddy Pond Brook has its source at Muddy Pond, flows north through cranberry bogs, past the treatment system recovery wells and into an unnamed pond north of Plymouth Street (aka, Old Route 44). The unnamed pond is the source for the Winnetuxet River which converges with the Taunton River at Bridgewater, Massachusetts.

8. Signature Requirements: The Notice of Intent must be signed by the operator in accordance with the signatory requirements of 40 CFR Section 122.22, including the following 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, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I certify that I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Facility/Site Name: North Carver Landfill Groundwater Treatment Response Action Remediation System

Operator signature:



Wm J Burdett, President

Title:

Dawn Administrator

Harbork Ram Group LLC

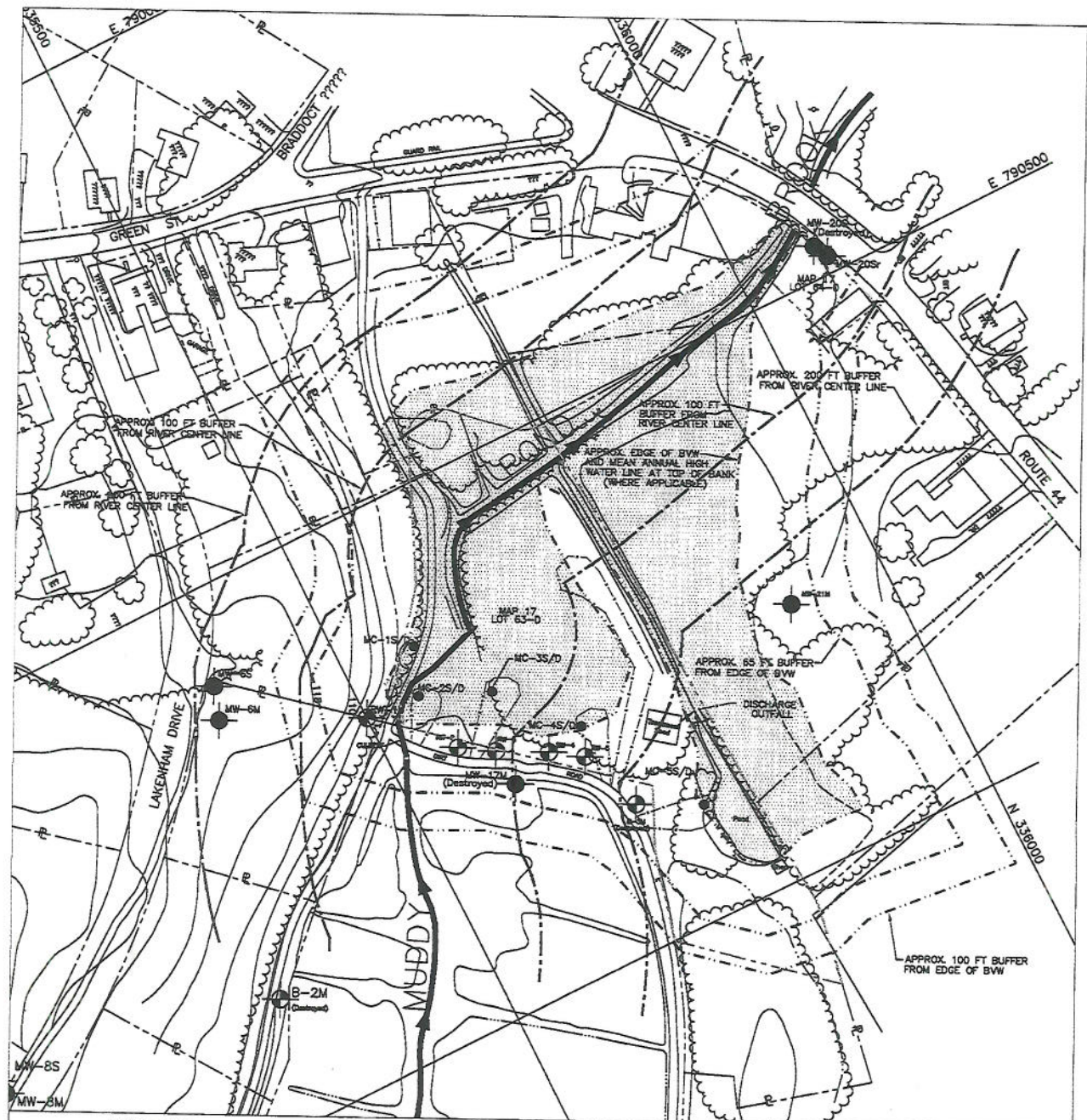
Date:

6/22/06

6/22/06

APPENDIX B

FIGURES AND MSDS



LEGEND

- PROPOSED MW LOCATION
- EXISTING MW LOCATION
- EXISTING SMALL DIAMETER MW LOCATION
- EXISTING RECOVERY WELL
- APPROX. AFFECTED PROPERTY BOUNDARY
- EDGE OF BORDERING VEGETATED WETLAND (BVW) AND MEAN ANNUAL HIGH WATER MARK AT TOP OF BANK (WHERE APPLICABLE)
- 65 FOOT BVW BUFFER
- 100 FOOT BVW BUFFER
- 100 AND 200 FOOT RIVERFRONT AREAS AS INDICATED ON PLAN



**NORFOLK
RAM GROUP**
ENGINEERING THE ENVIRONMENT

ONE ROBERTS ROAD
PLYMOUTH, MA 02260

SOURCE

VEHMAN ENVIRTECH
SITE MAP
AND
2002 SURVEY DATA FROM
SNB LAND SURVEYORS

TITLE

FIGURE 2
WETLANDS MAP

PREPARED FOR

TOWN OF CARVER
CARVER, MASSACHUSETTS

CHECKED BY: R.B.L.

EDITED BY: L.K.H.

DATE: Feb 2003

DWG SCALE: 1" = 100'

RAM REF NUMBER

656.52

CADD FILE: N:\NRG\CADD\656.5\WETLAND.DWG

SHEET NO: 1 OF 1

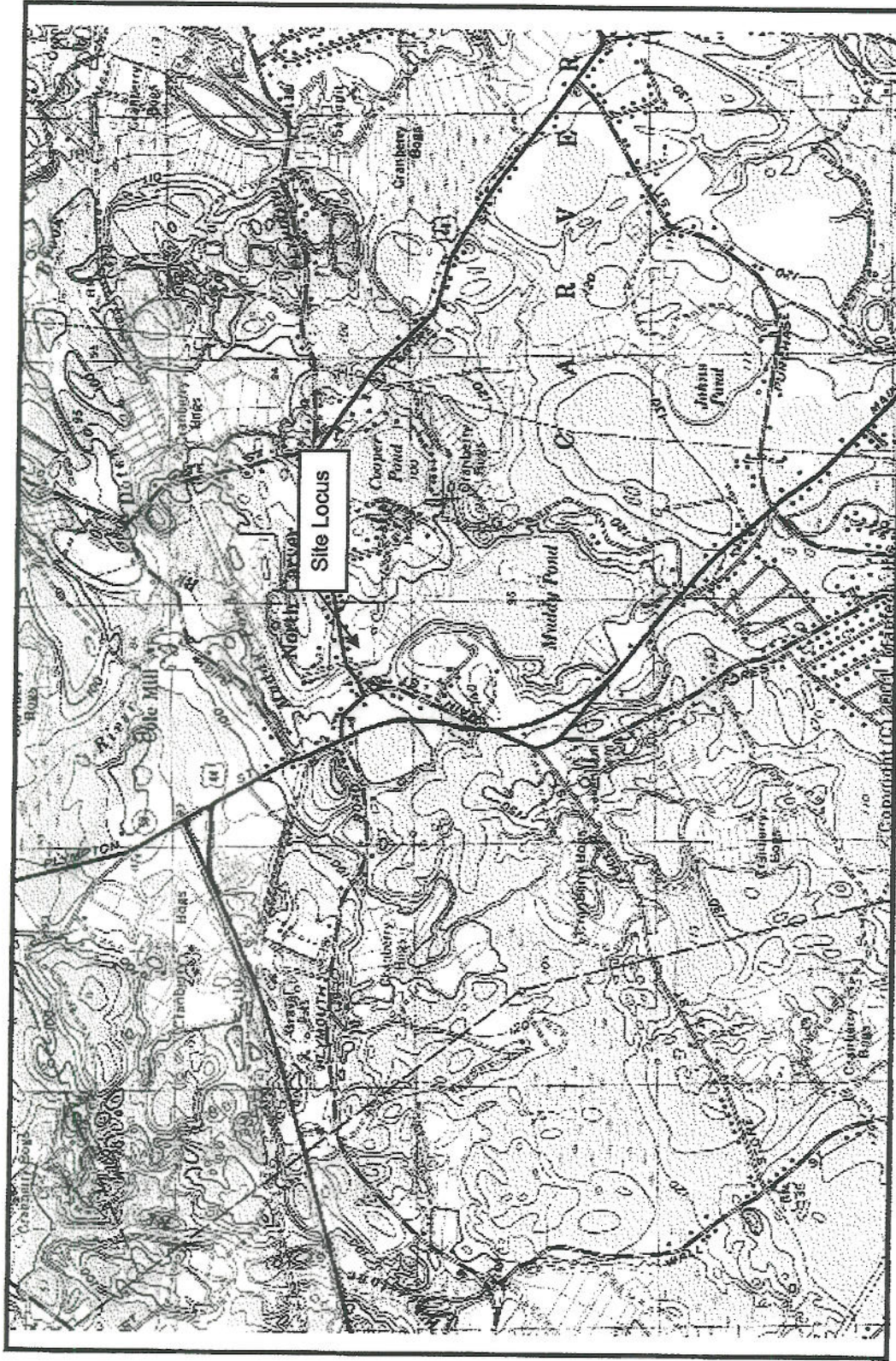


Figure 1
Site Locus
North Carver Landfill Treatment System
North Carver, Massachusetts
Source: U.S.G.S. Quadrangle, Plympton, MA
Contour Interval 10 feet (1:25,000)

3. Contaminant information. In order to complete this section, the applicant will need to take a minimum of one sample of the untreated water and have it analyzed for all of the parameters listed in Appendix III. Historical data, (i.e., data taken no more than 2 years prior to the effective date of the permit) may be used if obtained pursuant to: i. Massachusetts' regulations 310 CMR 40.0000, the Massachusetts Contingency Plan ("Chapter 21E"); ii. New Hampshire's Title 50 RSA 485-A: Water Pollution and Waste Disposal or Title 50 RSA 485-C: Groundwater Protection Act; or iii. an EPA permit exclusion letter issued pursuant to 40 CFR 122.3, provided the data was analyzed with test methods that meet the requirements of this permit. Otherwise, a new sample shall be taken and analyzed.

a) Based on the analysis of the sample(s) of the untreated influent, the applicant must check the box of the sub-categories that the potential discharge falls within.

Gasoline Only	VOC Only	Primarily Metals	Urban Fill Sites	Contaminated Sumps	Mixed Contaminants	Aquifer Testing
Fuel Oils (and Other Oils) only	VOC with Other Contaminants	Petroleum with Other Contaminants	Listed Contaminated Sites	Contaminated Dredge Condensates	Hydrostatic Testing of Pipelines/Tanks	Well Development or Rehabilitation

b) Based on the analysis of the untreated influent, the applicant must indicate whether each listed chemical is believed present or believed absent in the potential discharge. Attach additional sheets as needed.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 minimum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
1. Total Suspended Solids		✓	1*	grab	160.1	10	210		140.2	
2. Total Residual Chlorine		✓	1*	grab	4500	5	27		20.6	
3. Total Petroleum Hydrocarbons	✓									
4. Cyanide		✓	1*	grab	335.2	0.01	BRL		BRL	
5. Benzene		✓	25	grab	8260	0.5	0.8		0.7	
6. Toluene	✓		1	grab	8260	0.5	BRL		BRL	
7. Ethylbenzene	✓		1	grab	8260	0.5	BRL		BRL	
8. (m,p,o) Xylenes	✓		1	grab	8260	0.5	BRL		BRL	
9. Total BTEX ⁴	✓					0.5	BRL		BRL	

⁴BTEX = Sum of Benzene, Toluene, Ethylbenzene, total Xylenes.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 minimum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
10. Ethylene Dibromide (1,2-Dibromo-methane)	✓									
11. Methyl-tert-Butyl Ether (MtBE)	✓		1	grab	8260	0.5	BRL		BRL	
12. tert-Butyl Alcohol (TBA)	✓									
13. tert-Amyl Methyl Ether (TAME)	✓									
14. Naphthalene	✓		1*	grab	8260	1	BRL		BRL	
15. Carbon Tetra-chloride	✓		1	grab	8260	0.5	BRL		BRL	
16. 1,4 Dichlorobenzene	✓		1*	grab	8260	1	BRL		BRL	
17. 1,2 Dichlorobenzene	✓		1*	grab	8260	2	BRL		BRL	
18. 1,3 Dichlorobenzene	✓		1*	grab	8260	1	BRL		BRL	
19. 1,1 Dichloroethane		✓	25	grab	8260	0.5	2		0.8	
20. 1,2 Dichloroethane	✓		1	grab	8260	0.5	BRL		BRL	
21. 1,1 Dichloroethylene	✓		1	grab	8260	0.5	BRL		BRL	
22. cis-1,2 Dichloro-ethylene		✓	25	grab	8260	0.5	16		7.7	
23. Dichloromethane (Methylene Chloride)	✓		1	grab	8260	2.5	BRL		BRL	
24. Tetrachloroethylene		✓	25	grab	8260	0.5	7		3.7	

PARAMETER	Believe Absent	Believe Present	# of Samples (1 minimum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Average daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
f. Dibenzo(a,h)anthracene	✓									
g. Indeno(1,2,3-cd)Pyrene	✓									
36. Total Group II Polycyclic Aromatic Hydrocarbons (PAH)	✓									
h. Acenaphthene	✓									
i. Acenaphthylene	✓									
j. Anthracene	✓									
k. Benzo(ghi) Perylene	✓									
l. Fluoranthene	✓									
m. Fluorene	✓									
n. Naphthalene-	✓		1	grab	8260	1	BRL		BRL	
o. Phenanthrene	✓									
p. Pyrene	✓									
37. Total Polychlorinated Biphenyls (PCBs)	✓									
38. Antimony	✓									
39. Arsenic		✓	1*	grab	200.7	0.05	0.009		0.007	
40. Cadmium	✓		1*	grab	200.7	0.005	BRL		BRL	
41. Chromium III	✓									
42. Chromium VI	✓									

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily Value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
25. 1,1,1 Trichloroethane	✓		1	grab	8260	0.5	BRL		BRL	
26. 1,1,2 Trichloroethane	✓		1	grab	8260	0.5	BRL		BRL	
27. Trichloroethylene		✓	25	grab	8260	0.5	2			
28. Vinyl Chloride		✓	25	grab	8260	0.5	5		0.9	
29. Acetone	✓		1	grab	8260	0.5	BRL		2.5	
30. 1,4 Dioxane	✓								BRL	
31. Total Phenols	✓									
32. Pentachlorophenol	✓									
33. Total Phthalates ⁵ (Phthalate esters)	✓									
34. Bis (2-Ethylhexyl) Phthalate [Di-(ethylhexyl) Phthalate]	✓									
35. Total Group I Polycyclic Aromatic Hydrocarbons (PAH)	✓									
a. Benzo(a) Anthracene	✓									
b. Benzo(a) Pyrene	✓									
c. Benzo(b) Fluoranthene	✓									
d. Benzo(k) Fluoranthene	✓									
e. Chrysene	✓									

⁵ The sum of individual phthalate compounds.

7. Supplemental Information. :

Please provide any supplemental information. Attach any analytical data used to support the application. Attach any certification(s) required by the general permit.

Analytical data monitoring influent and effluent conditions are collected monthly at the North Carver Landfill Groundwater Treatment Response Action Remediation System. Reports containing copies of these data are submitted regularly to Michael O'Brien, U.S. Environmental Protection Agency, Region I, Office of ECO Systems Protection (CPE) located at Suite 1100 (HRB), One Congress Street, Boston, Massachusetts 02114-2023. Therefore, EPA has copies of all analytical data used to support this application.

The * next to some of the numbers in column 4 of the table in Section 3b indicates the "maximum daily value" and the "average daily value" concentrations are based upon the detected concentrations in samples collected from the five recovery wells (RW-1 through RW-5 on attached Figures 2 and 3). Groundwater from these wells make up the influent stream via a manifold inside the remediation system building. The samples were collected during a single sampling event in the fall of 2005. The maximum detected concentrations for all of the wells was used for the maximum daily value, and the average daily value was based upon the average of the detected concentrations in the five samples.

No streamflow data is available for the discharge wetland ditch or Muddy Pond Brook. Norfolk estimated a 7Q10 for the Muddy Pond Brook based upon the 7Q10 for the Winnetuxet River as reported by the USGS in WRIR 84-4283. The watershed for the brook was estimated to be 32.5 million square feet (1.165 square miles). An average volume of 0.153 million gallons per day per square mile was calculated for the Winnetuxet River subbasin from data published in the USGS report HA-460. Using these data, the estimated 7Q10 for the Muddy Pond Brook is 0.276 cubic feet per second as indicated in 5e above.

c) Attach a detailed map(s) indicating the site location and location of the outfall to the receiving water: 1. For multiple discharges, number the discharges sequentially. 2. For indirect discharges, indicate the location of the discharge to the indirect conveyance and the discharge to surface water The map should also include the location and distance to the nearest sanitary sewer as well as the locus of nearby sensitive receptors (based on USGS topographical mapping), such as surface waters, drinking water supplies, and wetland areas.	
d) Provide the state water quality classification of the receiving water	B
e) Provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water	0.276 cfs
Please attach any calculation sheets used to support stream flow and dilution calculations.	
f) Is the receiving water a listed 303(d) water quality impaired or limited water?	Yes ☐ No ☒ If yes, for which pollutant(s)?
Is there a TMDL? Yes ☒ No ☐ If yes, for which pollutant(s)?	

6. Results of Consultation with Federal Services: Please provide the following information according to requirements of Part I.B.4 and Appendices II and VII.	
a) Are any listed threatened or endangered species, or designated critical habitat, in proximity to the discharge? Yes ☐ No ☒ Has any consultation with the federal services been completed? No ☒ or is consultation underway? Yes ☐ No ☒ What were the results of the consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service (check one): a "no jeopardy" opinion? ☐ or written concurrence ☐ on a finding that the discharges are not likely to adversely affect any endangered species or critical habitat?	
b) Are any historic properties listed or eligible for listing on the National Register of Historic Places located on the facility or site or in proximity to the discharge? Yes ☐ No ☒ Have any state or tribal historic preservation officer been consulted in this determination (Massachusetts only)? Yes ☐ No ☒	

GROUNDWATER ANALYTICAL

Groundwater Analytical, Inc.
P.O. Box 1200
228 Main Street
Buzzards Bay, MA 02532

Telephone (508) 759-4441
FAX (508) 759-4475
www.groundwateranalytical.com

February 12, 2010

Mr. Dave Tanguay
Norfolk RAM Group
1 Roberts Road
Plymouth, MA 02360

LABORATORY REPORT

Project: **North Carver Landfill/656.5.1**
Lab ID: **130976**
Received: **01-29-10**

Dear Dave:

Enclosed are the analytical results for the above referenced project. The project was processed for Standard turnaround.

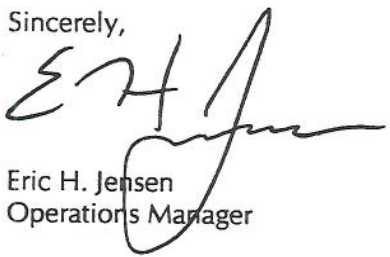
This letter authorizes the release of the analytical results, and should be considered a part of this report. This report contains a sample receipt report detailing the samples received, a project narrative indicating project changes and non-conformances, a quality control report, and a statement of our state certifications.

The analytical results contained in this report meet all applicable NELAC or NVLAP standards, except as may be specifically noted, or described in the project narrative. The analytical results relate only to the samples received. This report may only be used or reproduced in its entirety.

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Should you have any questions concerning this report, please do not hesitate to contact me.

Sincerely,



Eric H. Jensen
Operations Manager

EHJ/elm
Enclosures

EPA Method 8260B TCL Volatile Organics by GC/MS

Field ID: Influent
Project: North Carver Landfill/656.5.1
Client: Norfolk RAM Group

Laboratory ID: 130976-1
Sampled: 01-29-10 08:00
Received: 01-29-10 16:40
Analyzed: 02-05-10 07:31
Analyst: LMG

Matrix: Aqueous
Container: 40 mL VOA Vial
Preservation: HCl/ Cool

QC Batch ID: VM10-1063-W
Instrument ID: MS-10 HP 6890
Sample Volume: 5 mL
Dilution Factor: 1

CAS Number	Analyte	Concentration	Notes	Units	Reporting Limit
74-87-3	Chloromethane	BRL		ug/L	0.5
75-01-4	Vinyl Chloride	2		ug/L	0.5
74-83-9	Bromomethane	BRL		ug/L	0.5
75-00-3	Chloroethane	BRL		ug/L	0.5
75-35-4	1,1-Dichloroethene	BRL		ug/L	0.5
67-64-1	Acetone	BRL		ug/L	10
75-15-0	Carbon Disulfide	BRL		ug/L	5
75-09-2	Methylene Chloride	BRL		ug/L	3
156-60-5	trans- 1,2-Dichloroethene	BRL		ug/L	0.5
1634-04-4	Methyl tert- butyl Ether (MTBE)	7		ug/L	0.5
75-34-3	1,1-Dichloroethane	BRL		ug/L	0.5
156-59-2	cis- 1,2-Dichloroethene	4		ug/L	0.5
78-93-3	2-Butanone (MEK)	BRL		ug/L	5
67-66-3	Chloroform	BRL		ug/L	0.5
71-55-6	1,1,1-Trichloroethane	BRL		ug/L	0.5
56-23-5	Carbon Tetrachloride	BRL		ug/L	0.5
71-43-2	Benzene	BRL		ug/L	0.5
107-06-2	1,2-Dichloroethane	BRL		ug/L	0.5
79-01-6	Trichloroethene	BRL		ug/L	0.5
78-87-5	1,2-Dichloropropane	BRL		ug/L	0.5
75-27-4	Bromodichloromethane	BRL		ug/L	0.5
10061-01-5	cis- 1,3-Dichloropropene	BRL		ug/L	0.4
108-10-1	4-Methyl-2-Pentanone (MIBK)	BRL		ug/L	5
108-88-3	Toluene	BRL		ug/L	0.5
10061-02-6	trans- 1,3-Dichloropropene	BRL		ug/L	0.4
79-00-5	1,1,2-Trichloroethane	BRL		ug/L	0.5
127-18-4	Tetrachloroethene	2		ug/L	0.5
591-78-6	2-Hexanone	BRL		ug/L	5
124-48-1	Dibromochloromethane	BRL		ug/L	0.5
108-90-7	Chlorobenzene	BRL		ug/L	0.5
100-41-4	Ethylbenzene	BRL		ug/L	0.5
108-38-3/106-42-3	meta- Xylene and para- Xylene	BRL		ug/L	0.5
95-47-6	ortho- Xylene	BRL		ug/L	0.5
100-42-5	Styrene	BRL		ug/L	0.5
75-25-2	Bromoform	BRL		ug/L	0.5
79-34-5	1,1,2,2-Tetrachloroethane	BRL		ug/L	0.5

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
Dibromofluoromethane	10	9	92 %	70 - 130 %
1,2-Dichloroethane-d ₄	10	9	87 %	70 - 130 %
Toluene-d ₈	10	10	96 %	70 - 130 %
4-Bromofluorobenzene	10	9	93 %	70 - 130 %

Method Reference: Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).
Sample preparation performed by EPA Method 5030B.

Report Notations: BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

**EPA Method 8260B
TCL Volatile Organics by GC/MS**

Field ID: Effluent
Project: North Carver Landfill/656.5.1
Client: Norfolk RAM Group

Laboratory ID: 130976-2
Sampled: 01-29-10 08:30
Received: 01-29-10 16:40
Analyzed: 02-05-10 08:17
Analyst: LMG

Matrix: Aqueous
Container: 40 mL VOA Vial
Preservation: HCl/ Cool

QC Batch ID: VM10-1063-W
Instrument ID: MS-10 HP 6890
Sample Volume: 5 mL
Dilution Factor: 1

CAS Number	Analyte	Concentration	Notes	Units	Reporting Limit
74-87-3	Chloromethane	BRL		ug/L	0.5
75-01-4	Vinyl Chloride	BRL		ug/L	0.5
74-83-9	Bromomethane	BRL		ug/L	0.5
75-00-3	Chloroethane	BRL		ug/L	0.5
75-35-4	1,1-Dichloroethene	BRL		ug/L	0.5
67-64-1	Acetone	BRL		ug/L	10
75-15-0	Carbon Disulfide	BRL		ug/L	5
75-09-2	Methylene Chloride	BRL		ug/L	3
156-60-5	trans-1,2-Dichloroethene	BRL		ug/L	0.5
1634-04-4	Methyl tert-butyl Ether (MTBE)	6		ug/L	0.5
75-34-3	1,1-Dichloroethane	BRL		ug/L	0.5
156-59-2	cis-1,2-Dichloroethene	1		ug/L	0.5
78-93-3	2-Butanone (MEK)	BRL		ug/L	5
67-66-3	Chloroform	BRL		ug/L	0.5
71-55-6	1,1,1-Trichloroethane	BRL		ug/L	0.5
56-23-5	Carbon Tetrachloride	BRL		ug/L	0.5
71-43-2	Benzene	BRL		ug/L	0.5
107-06-2	1,2-Dichloroethane	BRL		ug/L	0.5
79-01-6	Trichloroethene	BRL		ug/L	0.5
78-87-5	1,2-Dichloropropane	BRL		ug/L	0.5
75-27-4	Bromodichloromethane	BRL		ug/L	0.5
10061-01-5	cis-1,3-Dichloropropene	BRL		ug/L	0.4
108-10-1	4-Methyl-2-Pentanone (MIBK)	BRL		ug/L	5
108-88-3	Toluene	BRL		ug/L	0.5
10061-02-6	trans-1,3-Dichloropropene	BRL		ug/L	0.4
79-00-5	1,1,2-Trichloroethane	BRL		ug/L	0.5
127-18-4	Tetrachloroethene	BRL		ug/L	0.5
591-78-6	2-Hexanone	BRL		ug/L	5
124-48-1	Dibromochloromethane	BRL		ug/L	0.5
108-90-7	Chlorobenzene	BRL		ug/L	0.5
100-41-4	Ethylbenzene	BRL		ug/L	0.5
108-38-3/106-42-3	meta-Xylene and para-Xylene	BRL		ug/L	0.5
95-47-6	ortho-Xylene	BRL		ug/L	0.5
100-42-5	Styrene	BRL		ug/L	0.5
75-25-2	Bromoform	BRL		ug/L	0.5
79-34-5	1,1,2,2-Tetrachloroethane	BRL		ug/L	0.5

QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
Dibromofluoromethane	10	9	95 %	70 - 130 %
1,2-Dichloroethane-d ₄	10	9	89 %	70 - 130 %
Toluene-d ₈	10	10	95 %	70 - 130 %
4-Bromofluorobenzene	10	9	93 %	70 - 130 %

Method Reference: Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).
Sample preparation performed by EPA Method 5030B.

Report Notations: BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

**ASTM Method D3328-00 (Modified)
Hydrocarbon Fingerprint by GC/FID**

Field ID: Effluent
Project: North Carver Landfill/656.5.1
Client: Norfolk RAM Group

Laboratory ID: 130976-3
Sampled: 01-29-10 08:30
Received: 01-29-10 16:40
Extracted: 02-03-10 10:00
Analyzed: 02-03-10 20:22
Analyst: MB

Matrix: Aqueous
Container: 1 L Amber Glass
Preservation: H2SO4/ Cool

QC Batch ID: HF-2186-F
Instrument ID: GC4 HP 5890
Sample Volume: 890 mL
Final Volume: 1 mL
Dilution Factor: 1

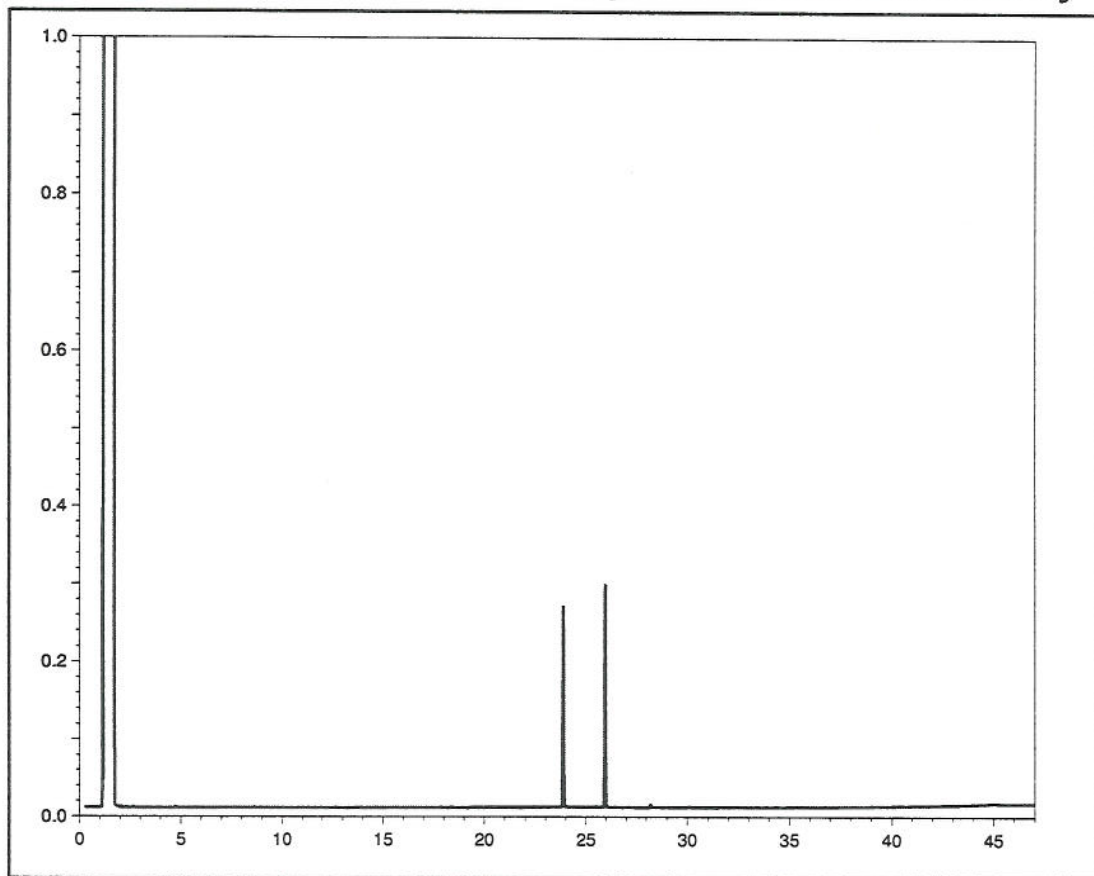
Qualitative Identification				
No petroleum product was identified for this sample.				
Analyte	Concentration		Notes	Reporting Limit
Total Petroleum Hydrocarbons	BRL			0.2
QC Surrogate Compound	Spiked	Measured	Recovery	QC Limits
ortho-Terphenyl	0.045	0.041	92 %	60 - 140 %

Method Reference: Comparison of Waterborne Petroleum Oils by Gas Chromatography, Annual Book of ASTM Standards, Volume 11.02, American Society for Testing and Materials (2000).
Method modified to quantify total petroleum hydrocarbons in the range n-C 9 through n-C 36. Results are quantified on the basis of a series of aromatic and aliphatic hydrocarbons, using 5-alpha-androstane as an internal standard.
Sample extraction performed by separatory funnel technique.

Report Notations: BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.

Lab ID: 130976-03

Hydrocarbons Laboratory



Retention Time (Minutes)

Inorganic Chemistry

Field ID: Effluent
Project: North Carver Landfill/656.5.1
Client: Norfolk RAM Group

Matrix: Aqueous
Received: 01-29-10 16:40

Lab ID: 130976-04 Sampled: 01-29-10 08:30 Container: 250 mL Plastic Preservation: H2SO4/Cool

Analyte	Result	Units	RL	DF	Volume	Analyzed	QC Batch	Method	Inst	Analyst
Phosphorus, Total	BRL	mg/L	0.5	1	20 mL	02-03-10 14:16	TP-2729-W	Lachat 10-115-01-1-C (EPA 365.4)	1	JR

Method Reference: Methods for Chemical Analysis of Water and Wastes, US EPA, EPA-600/4-790-020 (Revised 1983), and Methods for the Determination of Inorganic Substances in Environmental Samples, US EPA, EPA/600/R-93/100 (1993), and Standard Methods for the Examination of Water and Wastewater, APHA, Twentieth Edition (1998), and Test Methods for Evaluating Solid Waste, US EPA, SW-846, Third Edition, Update III (1996).

Report Notations:

- BRL Indicates concentration, if any, is below reporting limit for analyte. Reporting limit is the lowest concentration that can be reliably quantified under routine laboratory operating conditions. Reporting limits are adjusted for sample size and dilution.
- RL Reporting Limit.
- DF Dilution Factor.
- 1 Instrument ID: Lachat 8000 Autoanalyzer

Project Narrative

Project: North Carver Landfill/656.5.1
Client: Norfolk RAM Group

Lab ID: 130976
Received: 01-29-10 16:40

A. Documentation and Client Communication

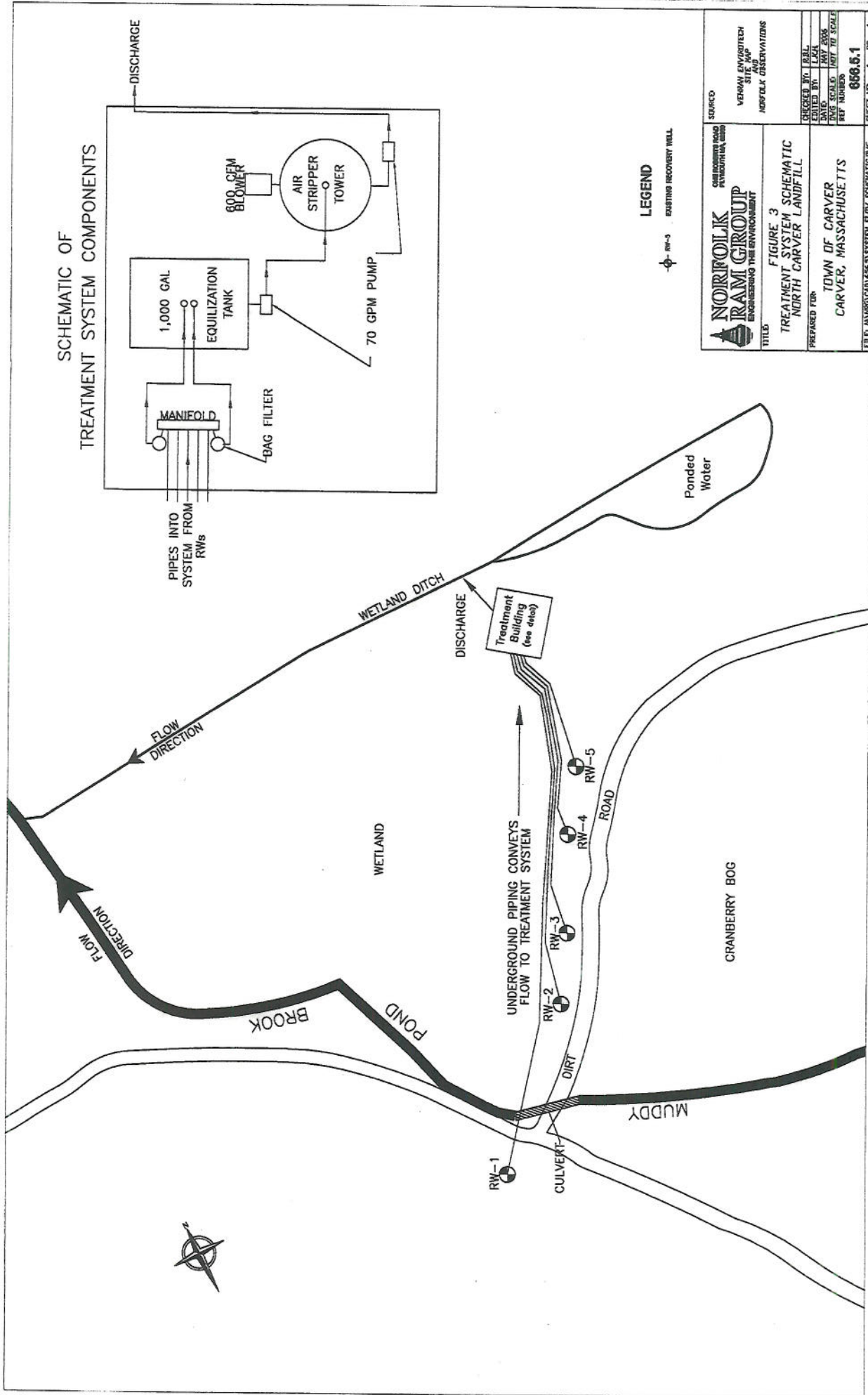
The following documentation discrepancies, and client changes or amendments were noted for this project:

1. No documentation discrepancies, changes, or amendments were noted.

B. Method Modifications, Non-Conformances and Observations

The sample(s) in this project were analyzed by the references analytical method(s), and no method modifications, non-conformances or analytical issues were noted, except as indicated below:

1. EPA 8260B Note: Samples 130976-1 and -2. Samples were analyzed for only selected target analytes, as requested by client.



SOURCE		NORFOLK GROUP	
VERMONT UNIVERSITY		ENGINEERING THE ENVIRONMENT	
SITE MAP		FIGURE 3	
NORFOLK OBSERVATIONS		TREATMENT SYSTEM SCHEMATIC	
		NORTH CARVER LANDFILL	
		PREPARED FOR:	
		TOWN OF CARVER	
		CARVER, MASSACHUSETTS	
		SHEET NO. 1 OF 1	

AQUA MAG[®] blended phosphate

MATERIAL SAFETY DATA SHEET

Information: 815-223-1500

Emergency: 800-435-6856

CHEMTREC: 800-424-9300

I. IDENTIFICATION

PRODUCT NAME:	AQUA MAG [®]	REVISION DATE:	30 October 2003
CHEMICAL NAME:	Blended Phosphate	FORMULA:	Proprietary
SYNONYMS:	Ortho/Polyphosphate Blend	PACKING GROUP:	NA
D.O.T. HAZARD CLASS:	Non-Hazardous	UN NO.	NA
D.O.T. SHIPPING NAME:	Not Regulated	CAS NO.	NA
		CAS NAME	NA

II. PHYSICAL DATA

PHYSICAL STATE: Clear liquid	SPECIFIC GRAVITY: 1.37	pH: 5.2
BOILING POINT, °C: > 100°C (212° F)	SOLUBILITY IN WATER: Soluble in all proportions.	
FREEZING POINT, °C: < 3°C (38° F)	VOLATILES VOLUME %: NA	
VAPOR PRESSURE AT 20° C./mm Hg: NA	EVAPORATION RATE: NA	

III. HAZARDOUS COMPONENTS

MATERIAL	PEL	TLV	CAS.NO.	%
Monosodium Phosphate	No Data	No Data	7558-80-7	5-15%
Sodium Acid Pyrophosphate	No Data	No Data	7758-16-9	1-10%
Other non-hazardous ingredients	No Data	No Data	No Data	80-90%
This product contains no toxic chemicals subject to the reporting requirements of Section 313 - Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.				
All the components in this product are generally considered to be safe and none could be classified as hazardous according to the WHMIS system.				
CARCINOGENICITY:	Not listed by NTP, IARC, or OSHA			

IV. FIRE AND EXPLOSIVE HAZARD DATA

FLAMMABILITY:	Non-flammable.
NORMAL EXTINGUISHING AGENT:	Suitable for surrounding materials.
SPECIAL FIRE FIGHTING PROCEDURES:	Not Applicable.
USUAL FIRE AND EXPLOSION HAZARDS:	None known.

V. REACTIVITY DATA

STABILITY:	Stable	CONDITIONS TO AVOID:	Heat and freezing.
INCOMPATIBILITY (materials to avoid):	No specific data.		
HAZARDOUS COMBUSTION / DECOMPOSITION PRODUCTS:	May liberate oxides of sodium or phosphorus if involved in fire.		



CARUS CHEMICAL COMPANY

DIVISION OF CARUS CORPORATION

Chronic Exposure.

Irritancy of product:	Irritating
Sensitizing Capacity:	N/A
Mutagenic effect:	N/A
Teratogenic effect:	N/A
Carcinogenic effect:	N/A
Reproductive toxicity:	N/A
Synergistic products:	N/A

Emergency and First Aid Procedure.

Eyes:	In case of contact, immediately flush eyes of plenty of water for at least 15 minutes. Call a physician immediately.
Skin:	In case of contact, remove contaminated clothing and flush skin thoroughly with soap and water. Wash clothing before reusing.
Inhalation:	If inhaled, remove to area of fresh air. If irritation persists, call a physician.
Ingestion:	If swallowed, call a physician immediately.

Section VI - Reactivity Data

Conditions Contributing to Instability:	This product is stable under normal conditions.
Incompatibility:	Avoid especially contact with oxidizing agents, excessive heat and strong alkaline products.
Decomposition Products:	Carbon Oxides (CO ₂ , CO), Nitrogen, Trichloroamine
Reactivity:	In contact with oxidizing agents, open flame, sparks or ignition sources, strong alkaline products, sodium and calcium hypochlorite, oil and grease.

Section VII - Spill Or Leak Procedures**Steps To Be Taken If Material Is Released Or Spilled**

Cleanup personnel must wear proper protective equipment.
That is rubber gloves, face shield, safety goggles, safety shoes and protective clothing.
Never collect the spilled product in containers to be reused.
Neutralize with sodium thiosulfate and thoroughly wash area with water.

Waste Disposal Method.

Dispose according to Local, Provincial and Federal by-laws.

Section VIII - Special Protection Information.**Ventilation requirements**

Local ventilation absolutely necessary.

Section III - Physical Data

Appearance	White tablets.
Boiling Point	Decompose at 225°C
Freezing Point	N/A
Odor	N/A
pH (1%)	2,3
Specific Gravity (Water = 1)	2.09
Vapor Density (Air = 1)	N/A
Vapor Pressure (mm Hg)	N/A
Evaporation Rate	N/A
Water Solubility	1g / 100 ml
% Volatile	N/A
Coefficient water/oil distribution	N/A
Odor Threshold	N/A

Section IV - Fire And Explosion Data

Flash Point (°C , Test Method):	None
Auto-Ignition Temperature:	None
Flammable Limits In Air: (g/l):	LFL: None UFL: None
Extinguishing Media:	Dry Chemical (Sodium Bicarbonate), Foam, CO ₂ , Water
Special Fire Fighting Procedure:	Fight fires from a safe distance. DO NOT approach container because of danger of rupturing. Use water spray to cool containers exposed to fire.
Personal Protective Equipment:	Wear self-contained breathing apparatus (pressure-demand MSHA/NIOSH approved or equivalent) and full protective gear.
Conditions of flammability:	N/A
Hazardous combustion products:	N/A
Explosion Data:	N/A
Sensitivity Impact:	N/A
Sensitivity to static discharge:	N/A
Mechanical Impact:	N/A

Section V - Health Hazard Information Of Product

Routes of Exposure and Acute Effects.

Inhalation:	May cause irritations.
Skin Contact:	May cause irritations.
Skin Absorption:	May cause irritations.
Eye Contact:	May cause stinging or burning.
Ingestion:	Poison. See a physician immediately.

Specific Personal Protective Information.

Skin Protection: Chemical resistant gloves and other body protection (rubber apron, boots, body covering clothes) to minimize skin contact.
Eye Protection: Chemical splash goggles and/or face shield.
Respiratory protection: Use an approved self-contained breathing apparatus (MSHA/NIOSH or equivalent).
Other: Eye wash station and safety shower in area.
Do not wear contact lens when working with this compound.

Section IX - Special Precaution.**Precaution To Be Taken In Handling.**

Avoid inhalation of dust.
Avoid eye or skin contact. Do not take internally. Wash clothing before reuse.
Practice good personal hygiene.

Proper Storage, Handling and Disposal Requirements..

Store in tightly closed containers in a cool, dry, well-ventilated area.
Keep away from incompatible materials (oxidizing agents).
NO SMOKING in areas of storage, handling or use.

Section X - Transport And Regulatory Information.

TDG DESIGNATION:	Trichloroisocyanuric acid, dry.
UN NUMBER:	2468
TDG CLASSIFICATION:	5.1
WHMIS CLASSIFICATION:	Scheduled under the Pest Control Product Act
PACKING GROUP	II

Material Safety Data Sheet:

Prepared By: R. Ioanin
Verified By: G. Radu

Date Issued: 11/11/04

The information herein is given in good faith but no warranty, expressed or implied is made. The persons receiving this information are urged to make their own determination as to the information's suitability and completeness for their particular application.

05/24/2006 WED 09:58 FAX 815 224 8592

CUSTOMER SUPPORT

continued

PRODUCT NAME: AQUA MAG®

VI. HEALTH HAZARD DATA

ACUTE EFFECTS OF EXPOSURE	
INGESTION:	May cause irritation to mouth and throat, or nausea and vomiting.
SKIN CONTACT:	May cause skin irritation.
INHALATION:	May cause irritation to the respiratory tract.
EYE CONTACT:	May cause eye injury.
CHRONIC EFFECTS OF EXPOSURE:	No specific information.
OTHER HEALTH DATA:	No specific information. Maximum use level per NSF Standard 60: 23mg/L

EMERGENCY AND FIRST AID PROCEDURES

INGESTION:	Burning of mouth area may be reduced or eliminated through continued rinsing with water. Do not induce vomiting. Drink large quantities of water. Consult a physician.
SKIN:	Flush exposed area with water. Rinse thoroughly. Consult a physician.
INHALATION:	Remove to fresh air. Consult a physician.
EYES:	Flush eyes with copious amounts of water for at least 15 minutes. Consult a physician.

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:	Contain all spills. Absorb with inert media and dispose of properly. Flush area with large amounts of water.
WASTE DISPOSAL METHOD:	Disposal of all materials shall be in full and strict compliance with all federal, state, and local regulations pertaining to phosphates.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:	Approved NIOSH/MSHA mist respirator.		
PROTECTIVE GLOVES:	Chemical resistant.	EYE PROTECTION:	Chemical safety goggles.
VENTILATION:	Well ventilated area.	SPECIAL EQUIPMENT:	Impervious apron, eyewash fountain, safety shower.

IX. SPECIAL PRECAUTIONS

HANDLING AND STORAGE:	Store in cool, dry place. Protect container from physical damage.
OTHER:	None known.
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulation (CPR, Canada) and the MSDS contains all of the information required by the CPR.	

Chithambaratharu Pillai (S.O.F.)



Division of Carus Corporation
315 Fifth Street
PO Box 599
Peru, IL 61354
Tel (815) 223-1500
Fax (815) 224-6697

The information contained herein is accurate to the best of our knowledge. However, data, safety standards and government regulations are subject to change, and the conditions of handling, use or misuse of the product are beyond our control. Carus Chemical Company makes no warranty, either express or implied, including any warranties of merchantability and fitness for a particular purpose. Carus also disclaims all liability for reliance on the completeness or confirming accuracy of any information included herein. Users should satisfy themselves that they are aware of all current data relevant to their particular users.

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2770 - 24 Avenue N.E.
Calgary, Alberta, T1Y 6V7

CL MARKETING

Tel.: (403) 250-2494
Fax.: (403) 250-8767

TABEX®

Material Safety Data Sheet

Section I - Identification

CHLORINATING TABLETS

MANUFACTURER / SUPPLIER:

CL MARKETING INC.

2770 - 24 Avenue N.E.,

Calgary, Alberta, T1Y 6V7

Phone: (403) 250-2494

Toll Free Order Line: 1-800-661-8179

EMERGENCY PHONE (CANUTEC): 613 - 996 - 6666

Chemical Name: Trichloro-s-triazine-trione

Product Use: Sanitizer to control bacteria and algae in swimming pool water.

<u>Hazard Rating</u>	<u>Designation</u>	
4 Extreme	Health	2
3 High	Fire	0
2 Moderate	Reactivity	1
1 Slight	Personal Protection	D
0 None		

Section II - Hazardous Ingredients

<u>Material</u>	<u>% By Weight</u>	<u>CAS Nr</u>	<u>Exposure Limits</u>	<u>LD₅₀ (Oral-Rat)</u>
Trichloro-s-triazinetriene	99-100	87-90-1	6375 ppm	10.000 mg/Kg