STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENT
JENNIFER M. GRANHOLM
GOVERNOR
LANSING
REBECCA A. HUMPHRIES
DIRECTOR

May 11, 2010

Mr. Gary Flannigan, Superintendent
Village of Lexington Wastewater Treatment Plant
V7227 Huron Avenue, Suite 100
Lexington, MI 48450

Dear Mr. Flannigan:

SUBJECT: Septage Receiving Facility Operating Plan Conditional Approval
Village of Lexington Septage Waste Receiving Facility

Review of the Village of Lexington Septage Waste Receiving Facility (Lexington SWRF) operating plan, received on March 22, 2010, is complete. The purpose of the review was to ensure that the plan addressed all of the required elements of Part 117, Septage Waste Servicers, Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The Lexington SWRF operating plan and its intention to accept and treat septage waste is approved conditionally and shall meet the following requirements:

- The plant shall only accept domestic holding tank waste for treatment;
- The plant may accept domestic holding tank waste effective April 21, 2010, through August 1, 2010;
- Sampling will be completed as agreed upon between the Department of Natural Resources and Environment (DNRE), Saginaw Bay District Office, and the Village of Lexington (see enclosed);
- The sample data will be submitted to DNRE, Saginaw Bay District Office, for review on the date agreed upon.

Please be advised that the Lexington SWRF, depending on the results of the sample data, may make another request to the DNRE, Septage Waste Program, for approval to accept and treat holding tank waste on a permanent basis.

Please be advised that the interim operating plan will be posted on the Septage Waste Program website and can be viewed at www.michigan.gov/deqseptage and clicking on the "Approved Septage Waste Receiving Facility Operating Plans" link.

The Lexington SWRF must operate in accordance with the approved plan. If a change in operations or conditions is anticipated, please file an amendment to the plan at least thirty days prior to the proposed date for implementation and mail to the DNRE for review and written approval.

If you have any questions regarding this matter, please feel to contact me at the number below.

Sincerely,

Matthew Campbell
Septage Waste Program Coordinator
On-Site Wastewater Unit
Drinking Water and Environmental Health Section
Water Bureau
517-335-4178

Enclosure
cc: Mr. Jon Kosht, Village of Lexington Business Manager
Mr. Thomas McDowell, DNRE
Sanilac County Health Department
Mr. Jon Bloemker, DNRE

Attachment: 4-19-10 Lexington WWSL Septage Receiving Station Conference Call

Campbell, Matthew (DNRE)

From: Suuppi, Gene (DNRE)
Sent: Monday, April 19, 2010 4:07 PM
To: 'water@greatlakes.net'
Cc: McDowell, Thomas (DNRE); Campbell, Matthew (DNRE)
Subject: 4 -19-10 Lexington WWSL Septage Receiving Station Conference Call

4-19-10 Lexington WWSL Septage Receiving Station Conference Call notes.

Tom McDowell expressed concerns regarding the low strength septage and influent raw wastewater data supplied by the permittee in their septage receiving plan. Also Tom would like to see influent data during peak seasonal flows and additional septage analytical data.

Gary Flanagan reported that the raw wastewater influent was sampled just prior to the cell #1. Flanagan reported that 90% of the septage received is from Worth Township pump and hauls and is mostly water.

Gary Flanagan on behalf of the Village of Lexington agreed to provide the following additional analytical data:

1. **Three individual influent grab samples collected in one day in May.**
2. **Three individual influent grab samples collected in one day in June.**
3. **Three individual influent grab samples collected in one day in July.**
4. **The statistical mean of the samples collected in No. 1, 2, and 3. will be reported.**
5. **One septage sample in May, 2010.**
6. **One septage sample in June, 2010.**
7. **One septage sample in July, 2010.**

Tom Mc Dowell will talk to Matt Campbell to see if Lexington can accept septage on an interim basis as the village has no way to acquire septage samples as they are not permitted to receive it.

Any questions or comments please call me at 989 894-6276. Fax: 989 891-9213

VILLAGE OF LEXINGTON
7227 HURON AVENUE, SUITE 100
LEXINGTON, MICHIGAN 48450
810-359-8631
FAX: 810-359-5622

3/15/2010

To: Matt Campbell

From: Gary Flannigan

Subject: Septage Receiving Plan

I think we may have it "right" this time around! Included in the pack are the answer to all your questions.

Operating plan service area:

1 No service area, contract only.

Public notice:

1 Names and addresses are included.

2 Public officials and addresses are included.

3 The plan has been posted on our website. www.villageoflexington.com

Facility capacity:

1 Hydraulic and organic capacity figures are included. Study was done by Spicer Eng., Jean Inman.

2 We don't have any combined storm / sanitary sewers in the Village of Lexington.

Etc.:

As of the time of this letter, we haven't received any comments (pro or con) after posing the plan on our website or printing in our local newspaper.

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7227 HURON AVENUE, SUITE 100
LEXINGTON, MICHIGAN 48450
810-359-8631
FAX: 810-359-5622

2/10/2010

Septage Receiving Plan

Discharge locations: Denissen Street wastewater lagoons or other predetermined locations inside the village.

Operating hours: 7:00am to 3:30pm Monday thru Friday, hours on weekends are limited to availability of on duty personnel and shall be by scheduled call ins only.

Types of Material: Septage and holding tank waste from domestic homes and similar treatment works or storage devices. The Village will not accept grease trap, industrial or hazardous waste!

Fee rate: Septage haulers will be charged at the rate of $112.50 per thousand gallons of septage. The amount charged per truck load will be based upon the maximum capacity of the tank. There will be no discount for partial loads.

Registration: All septage haulers will need to provide a copy of their "State of Michigan" license, with the Village listed as a accepted receiving facility, liability insurance along with a signed contract and will need to be on file before discharge is accepted.

Service availability: An annual contract with the Village of Lexington must be place. Contracts will be limited to treatment capability and be at the discretion of the Village.

Plant loading: The Village will discontinue all hauling when over-loading, odors or other issues occur.

Conditions: The Village of Lexington reserves the right to stop all outside service if it causes any detriment to our "wastewater lagoons".

Misuse: Any hauler that is found disposing of any substance other than septage or holding tank waste shall lose their dumping privilege, and be responsible for all possible damages.

Public Notice

Village of Lexington
Wastewater Treatment Lagoons
Septage Receiving Operating Plan

The State of Michigan under House Bills 5771 and 5772, which were signed into law on October 12, 2004, requires all septage facilities to publicly post their proposed operating plans. These bills amend Part 117, Septage Waste Services.

The Village of Lexington Wastewater Treatment operating plan and associated information is provided below for your review. We welcome your comments on the proposed plan. Please send any written comments to:

Village of Lexington
Christopher Heiden
DPW/Sewer Manager
7227 Huron Ave.
Lexington, Mi.48450

Phone: 810-359-5901
Fax: 810-359-5890

All requests and comments must be postmarked by March 22, 2010.

Thank you for your cooperation and comments.

CC:
D.N.R.E.
Sanilac County Health Department
Buel Township Board
Burtchville Township Board
Fremont Township Board
Lexington Township Board
Sanilac Township Board
Washington Township Board
Worth Township Board

Recipient List

DNRE
Saginaw Bay District Office
401 Ketchum St.
Bay City, Mi 48708
Attn: Gene Suuppi

Sanilac County Health Dept.
171 Dawson St.
Sandusky, Mi. 48471
Attn: Sue VanDyke

Buel Township
2565 Hall Rd.
Croswell, Mi. 48422
Attn: Thomas Durand

Burtchville Township
4000 Burtch Rd.
Lakeport, Mi. 48059
Attn: Mike Apple

Fremont Township
2512 E. Galbraith Line Rd.
Yale, Mi. 48097
Attn: James Wilson

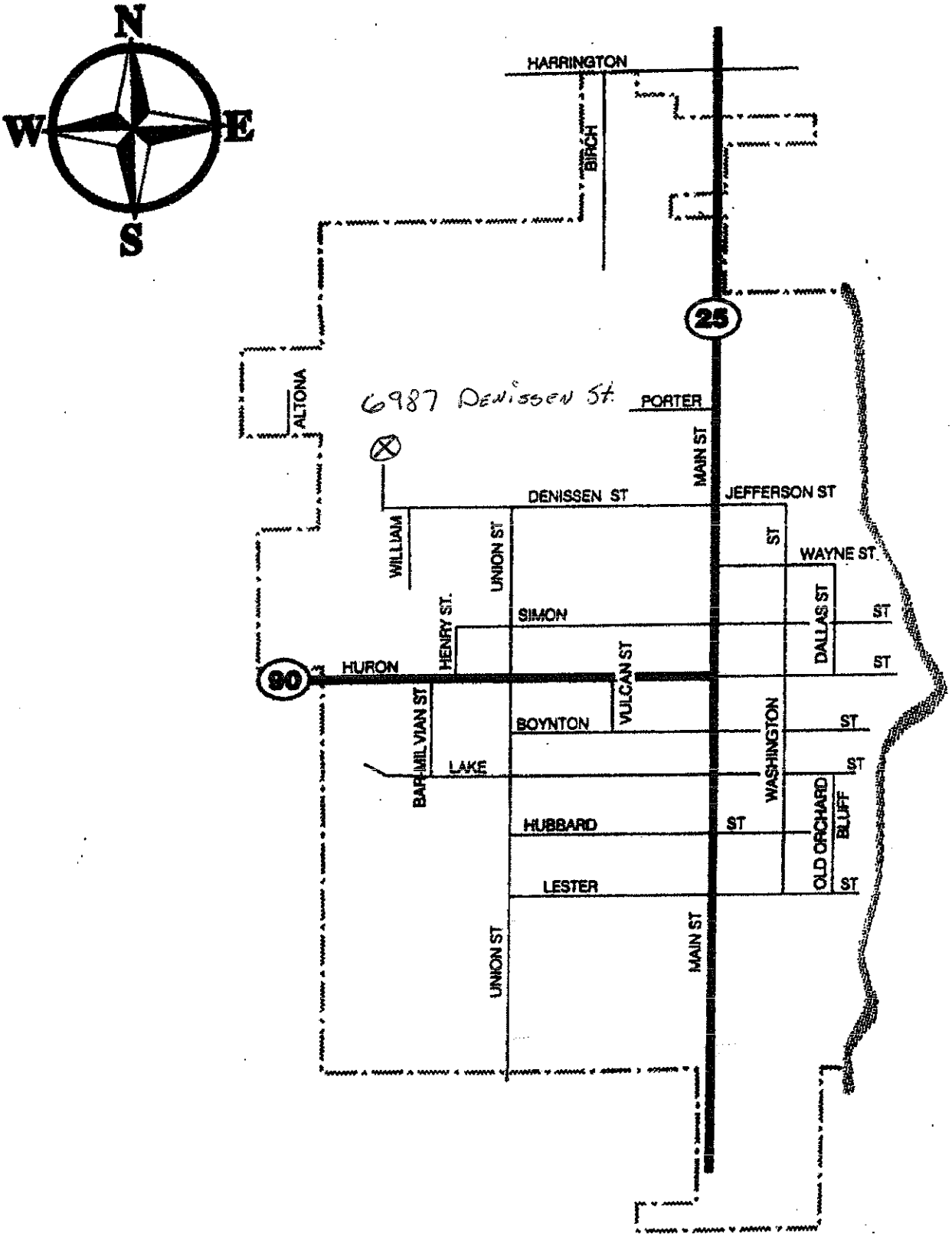
Lexington Township
7227 Huron Ave.
Suite 200
Lexington, Mi. 48450
Attn: Chad Partaka

Sanilac Township
20 N. Ridge Rd.
Port Sanilac, Mi. 48469
Attn: William Noelke

Washington Township
2520 Hyde Rd.
Carsonville, Mi.
Attn: Shirley Feier

Worth Township
6903 S. Lakeshore Rd.
Lexington, Mi. 48450
Attn: Doug Soule

VILLAGE OF
LEXINGTON



Village of Lexington Lagoon Loading Capacity Summary

The Village of Lexington collected samples from the influent flows (Cell 1) and the effluent flows from the Holding Pond (Cell 4) from their wastewater treatment facility. In addition, samples of septage from the haulers that they normally receive wastes from were collected and tested. All of the samples were tested for BOD, phosphorus, ammonia, total suspended solids, pH and dissolved oxygen. Samples were collected on three or more dates. See attached data.

Flow and analytical sampling data for the lagoon influent and discharge along with septage received has been reviewed and summarized on the attached sheets in order to calculate the remaining capacity available at the plant. We have used two different methods to evaluate the remaining capacity and will discuss in detail below. Due to some legal agreements, the Village of Lexington is required to provide sanitary sewer service to several homes in the Village that do not have sanitary sewers. This is accomplished with pump and haul arrangements. The septage volume received at the plant is 90% pump and haul and only 10% actual septage. Therefore, the use of the actual analytical data is more representative for this specific site than using the published USEPA septage waste data.

The 2009 flow data showed that the average domestic flow of 0.300 million gallons per day (MGD). The maximum amount of septage received at the facility is six loads per day at 2,000 gallons each or 12,000 gallons per day (gpd). This total flow and loading goes through the aerated lagoon system and is ultimately discharged during the seasonal discharge periods in spring and fall per the NPDES permit requirements.

Using the system basis of design data prepared for the 2006 aeration system upgrades, the current organic design loading capacity of the system is 0.4 MGD and equates to a loading of 667.2 lbs/day for BOD and 100.1 lbs/day for ammonia. Using actual domestic and septage flows and sampling data, these current loading results in a remaining capacity of 334 lbs/day for BOD and 67.3 lbs/day for ammonia (see attached calculations). Therefore, additional septage can be accepted at this facility. It should also be noted that the lagoon's aeration system is capable of being expanded to a 0.8 MGD capacity with the addition of another blower and aeration chains.

The Allowable Headwork's Loading (AHL) method from the published EPA Local Limit Development Guidance documents is another method to calculate the remaining capacity based on actual flow rates, current removal rates the system is obtaining and the NPDES discharge permit limits. Using the "Worst Case Event" data regarding removal rates calculated from both average and maximum event data, the remaining capacity is 5,050.4 lbs/day for BOD; 8.8 lbs/day for Phosphorus; 42.2 lbs/day for Ammonia and 10,793 lbs/day for Total Suspended Solids (TSS) per the attached calculations.

Therefore the most limiting parameters are phosphorus and ammonia using the AHL method. This results in a smaller remaining capacity than the basis of design data.

In conclusion, the lagoon system can adequately treat the current loading with the ability to increase either domestic or septage loading by the minimum remaining capacity loading of 8.8 lbs/day for phosphorus and 42.2 lbs/day for ammonia. For example, if septage flows remained constant, domestic flows at similar concentrations could increase two times the current rate and still remain within their permitted discharge limit. If domestic flows remained constant, then septage flows at similar concentrations could be increased two times the current rate and remain in compliance with the discharge permit.

Village of Lexington Sampling Data for Septage Plan

Lagoon Influent

Date	Location	BOD	Phosphorus	Ammonia	Suspended Solids	pH	DO
12/15/2009	Intake Cell #1	120	2.627	8.24	49	7.15	4.75
1/28/2010	Intake Cell #1	45	2.87	9.18	68	7.16	3.91
2/4/2010	Intake Cell #1	92	1.95	9.84	114	7.09	5.3
	Average	85.67	2.48	9.09	77	7.13	4.65
	Max Event	120	2.87	9.84	114		

Septage Received

Date	Location	BOD	Phosphorus	Ammonia	Suspended Solids	pH	DO
12/15/2009	Septic Truck	2.4	36.49	81.7	2350	7.02	2.2
1/28/2010	Septic Truck	329	7.59	54.7	82	7.23	2.87
2/4/2010	Septic Truck	315	6.76	52.5	66	6.86	0.72
	Average	322	16.95	62.97	832.67	7.04	1.93

Note: Average BOD does not include the 2.4 mg/L result

	Max Event	329	36.49	81.7	2350		

Lagoon Discharge

Date	Location	BOD	Phosphorus	Ammonia	Suspended Solids	pH	DO
12/15/2009	Cell #4	3.98	2.32	1.78	6	8.05	12.8
12/17/2009	Cell #4	4.07	2.673	1.77	7	8.1	12.2
12/18/2009	Cell #4	4.44	2.495	2.01	12	7.95	11.6
12/22/2009	Cell #4	5.97	2.797	3.11	9	7.98	12
12/23/2009	Cell #4	6.51	2.629	3.18	8	7.91	11.4
	Average	4.99	2.58	2.37	8.40	8.00	12.00
	Max Event	6.51	2.797	3.18	12		

Village of Lexington Lagoon Flows for Septage Plan

Design Hydraulic Capacity:
Design Average Flow = 0.22 MGD
Design Peak Flow = 0.40 MGD

Actual Flows -	Average - MGD	Max Day- MGD	Monthly Total Flow - MG
Jan-09	0.252	0.38	7.81
Feb-09	0.372	0.99	10.42
Mar-09	0.390	0.79	12.09
Apr-09	0.416	0.76	12.48
May-09	0.358	0.69	11.09
Jun-09	0.331	0.71	9.94
Jul-09	0.355	0.8	11.02
Aug-09	0.259	0.41	8.02
Sep-09	0.204	0.29	6.12
Oct-09	0.215	0.43	6.67
Nov-09	0.201	0.39	6.04
Dec-09	0.252	0.38	7.8
Average	0.300	0.585	9.125

Septage Flow Data from Owner

2,000 gallons per load from Septage Hauler

Maximum amount = 12,000 gallons per day (from max of 6 loads per day)
Typical amount = 2,000 to 4,000 gallons per day (from 1 to 2 loads per day)

Flow split since 90% is from pump and haul and 10 % septage

Septage -
Maximum amount = 12,000 x 10% = 1200 gallons per day
Typical amount = 4000 x 10% = 400 gallons per day

Pump and Haul-
Maximum amount = 12000 x 90%= 10800 gallons per day
Typical amount = 4000 x 90% = 3600 gallons per day

Village of Lexington Lagoon Removal Rates for Septage Plan

Average Data using Dec 09, Jan and Feb 2010 Sampling events

	Intake Cell #1	Septage truck	Total Influent (Intake + Septage)	Average Discharge (Cell 4)	Removal Rate Final Effl
Average BOD in mg/L	85.67	322	407.67	4.99	98.78%
Average Phosphorus in mg/L	2.48	16.95	19.43	2.58	86.72%
Average Ammonia in mg/L	9.09	62.97	72.06	2.37	96.71%
Average TSS in mg/L	77	832.67	909.67	8.4	99.08%

Maximum Event Data using Dec 09, Jan and Feb 2010 Sampling events

	Intake Cell #1	Septage truck	Total Influent (Intake + Septage)	Max. Discharge (Cell 4)	Removal Rate Final Effl
Max. BOD in mg/L	120	329	449	6.51	98.55%
Max. Phosphorus in mg/L	2.87	36.49	39.36	2.797	92.89%
Max. Ammonia in mg/L	9.84	81.7	91.54	3.18	96.53%
Max. TSS in mg/L	114	2350	2464	12	99.51%

= Worst Case Event

Village of Lexington Lagoon Loading Calcs for Septage Plan

A. **Lagoon Organic Loading from Basis of Design prepared in 2006 for Aeration System upgrades**
Existing Organic Design Loading is 0.4 MGD with current aeration system
and is capable of being expanded to 0.8 MGD with additional blower and aeration train

Basis of Design Data:

Design Flow =	0.4 MGD Organic Capacity	
Influent BOD =	200 mgl	
Est. Ammonia =	30 mg/l	
Therefore Design Organic Loading is:		
BOD, lbs/day =	0.4 MGD x 200 mg/l x 8.34 lb/gal =	667.2 lbs/day
Ammonia, lbs/day =	0.4 MGD x 30 mg/l x 8.34 lb/gal =	100.1 lbs/day

B. **Current Influent Loading**
Actual Domestic Loading - using 'Maximum' sampling event data and Average Influent flow to Lagoon
Loading, Lbs/day = (Average flow rate, MGD) x (Concetration, mg/l) x(8.34 lbs/gal)

BOD , lbs/day =	0.300 MGD x 120 mg/l x 8.34 lb/gal =	300.2 lbs/day
Phosphorus, lb/day =	0.300 MGD x 2.87 mg/l x 8.34 lb/gal =	7.2 lbs/day
Ammonia, lb/day =	0.300 MGD x 9.84 mg/l x 8.34 lb/gal =	24.6 lbs/day
TSS, lb/day =	0.300 MGD x 114 mg/l x 8.34 lb/gal =	285.2 lbs/day

C. **Actual Septage Loading - using Maximum sampling event data and Maximum Septage accepted per day**
This uses 12,000 gpd volume of septage even though typically 90% is Pump & Haul and 10% actual septage

BOD , lbs/day =	0.012 MGD x 329 mg/l x 8.34 lb/gal =	32.9 lbs/day
Phosphorus, lb/day =	0.012 MGD x 36.49 mg/l x 8.34 lb/gal =	3.7 lbs/day
Ammonia, lb/day =	0.012 MGD x 81.7 mg/l x 8.34 lb/gal =	8.2 lbs/day
TSS, lb/day =	0.012 MGD x 2350 mg/l x 8.34 lb/gal =	235.2 lbs/day

D. **Allowable Headworks Loading (AHL) based on NPDES Permit Limits**
Using equation 5.5 from EPA Local Limit Development Guidance (July 2004)
AHL, lb/day = [(8.34 x Permit Limit, mg/l x Average flow rate, MGD)/ (1-removal rate from headworks to effluent discharge)]

Actual Domestic Average + Septage Maximum flows = 0.300 MGD + 0.012 MGD = **0.312 MGD total Influent flows**
NPDES Permit limits (Based on Permit # MIG589000 - Wastewater Stabilization Lagoon Effluent general permit)

BOD	30 mg/l
Phosphorus	1 mg/l (use most stringent limit)
Ammonia	report (use 1 mg/l)
TSS	40 mg/l (use most stringent limit)

AHL Calcs using "Worst Case Event" Data for Removal Rates:

BOD , lbs/day =	[8.34 lb/gal x 30 mg/l x 0.312]/ 1-0.9855)] =	5383.6 lbs/day
Phosphorus, lb/day =	[8.34 lb/gal x 1 mg/l x 0.312]/ 1-0.8672)] =	19.6 lbs/day
Ammonia, lb/day =	[8.34 lb/gal x 1 mg/l x 0.312]/ 1-0.9653)] =	75.0 lbs/day
TSS, lb/day =	[8.34 lb/gal x 40 mg/l x 0.312]/ 1-0.9908)] =	11313.4 lbs/day

Therefore using Influent Loading, Plant can treat and meet NPDES limits based on existing removal rates using Worst Case Event" Data

E. **Available Capacity for additional flows :**
Available Capacity = AHL loading - (Domestic loading + Septage Loading)

Based on AHL & using "Worst Case Event" data	
Removal Rates with NPDES Permit Limits:	
BOD , lbs/day =	5050.4 lbs/day
Phosphorus, lb/day =	8.8 lbs/day
Ammonia, lb/day =	42.2 lbs/day
TSS, lb/day =	10793.0 lbs/day

Based on 0.4 MGD Design Organic Capacity:	Organic Capacity =Design loading - (Domestic loading +Septage Loading)
BOD, lbs/day =	334.0 lbs/day
Ammonia, lbs/day =	67.3 lbs/day

Legal and Public Notices

PUBLIC NOTICE
Village of Lexington
Wastewater Treatment Lagoons
Septage Receiving Operating Plan

The State of Michigan under House Bills 5771 and 5772, which were signed into law on October 12, 2004, requires all septage facilities to publicly post their proposed operating plans. These bills amend Part 117, Septage Waste Services.

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Village of Lexington
Christopher Heiden, DPW, Sewer Manager
7227 Huron Avenue, Lexington, MI 48450
Phone: 810-359-5901 Fax: 810-359-5890

All requests and comments must be postmarked by March 22, 2010.

Thank you for your cooperation and comments.

2/10/2010

Septage Receiving Plan

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Plant loading:	The Village will discontinue all hauling when overloading, odors or other issues occur.
Conditions:	The Village of Lexington reserves the right to stop all outside service if it causes any detriment to our "wastewater lagoons".
Misuse:	Any hauler that is found disposing of any substance other than septage or holding tank waste shall lose their dumping privilege, and be responsible for all possible damages.