

Protecting Our Water Environment



Metropolitan Water Reclamation District of Greater Chicago

***MONITORING AND RESEARCH
DEPARTMENT***

REPORT NO. 09-62

***REPORTING REQUIREMENTS FOR SITE-SPECIFIC
EQUIVALENCY TO PROCESS TO FURTHER REDUCE
PATHOGENS DESIGNATION OF THE METROPOLITAN WATER
RECLAMATION DISTRICT OF GREATER CHICAGO
BIOSOLIDS PROCESSING TRAINS AT THE
STICKNEY AND CALUMET WATER RECLAMATION PLANTS
JANUARY – JULY, 2009***

OCTOBER 2009

Protecting Our Water Environment

Board of Commissioners

Terrence J. O'Brien
President
Kathleen Therese Meany
Vice President
Gloria Alitto Majewski
Chairman of Finance
Frank Avila
Patricia Horton
Barbara J. McGowan
Cynthia M. Santos
Debra Shore
Mariyana T. Spyropoulos

Metropolitan Water Reclamation District of Greater Chicago

100 East Erie Street

Chicago, Illinois 60611-3154

312.751.5190

Louis Kollias, P.E., BCEE

Director of Monitoring and Research

louis.kollias@mwr.org

October 22, 2009

Mr. Valdis Aistars
United States Environmental
Protection Agency
Region 5
77 West Jackson Boulevard, WC-15J
Chicago, IL 60604-3590

Dear Mr. Aistars:

Subject: Letter WN-16J Reporting Requirements for Site-Specific Equivalency to Process to Further Reduce Pathogens Designation of the Metropolitan Water Reclamation District of Greater Chicago Biosolids Processing Trains at the Stickney and Calumet Water Reclamation Plants – January to July 2009

In your letter dated June 20, 2002 (Reference Number WN-16J), you informed us that the low and high solids biosolids processing trains at the Stickney and Calumet Water Reclamation Plants (WRPs) were designated on a site-specific basis, as being equivalent to Process to Further Reduce Pathogens (PFRP). In a letter dated July 14, 2008, you informed us that this certification was renewed for another two years, effective August 1, 2008 to August 1, 2010. The terms of the site-specific designation require us to operate the designated biosolids processing trains in full compliance with the codified operating parameters outlined in our approved petition, and to collect and analyze twelve samples for enteric viruses and helminth ova during the first year of operation (August 1, 2008 to August 1, 2009) and six samples during the second year of operation (August 1, 2009 to August 1, 2010).

We are required to submit monitoring data for 12 samples for the period August 1, 2008 through August 1, 2009, for both the Stickney and Calumet WRPs. Monitoring data for three samples were submitted in a report dated March 25, 2009 for the Calumet WRP. The monitoring data for the remaining nine samples for this period for the Calumet WRP are reported in Table 1. All of the samples in the Table 1 meet the Part 503 analytical standards for the Class A pathogens, including those for enteric viruses and helminth ova.

For the Stickney WRP, no monitoring data are presented in this report. The biosolids generated at the Stickney WRP during this period were not PFRP-compliant with the digester

Subject: Letter WN-16J Reporting Requirements for Site-Specific Equivalency to Process to Further Reduce Pathogens Designation of the Metropolitan Water Reclamation District of Greater Chicago Biosolids Processing Trains at the Stickney and Calumet Water Reclamation Plants – January to July 2009

holding time criteria specified in the codified operating parameters. Failure to meet the holding time criteria was due to the reduction in digester capacity because some of the digesters were removed from service for cleaning and repairs. Therefore, all biosolids generated by the Stickney WRP during the period were tested for pathogen compliance according to 40 CFR Part 503.32a5 before being utilized as Class A, or were managed as specified in Item 10 of the certification. The pathogen analysis data for the Stickney WRP biosolids in 2007 and 2008, which demonstrates compliance for both years, are presented in Table 2. These data also show that, although the biosolids generated in both years at the Stickney WRP were not PFRP-compliant with respect to digester detention time, the biosolids met the Class A pathogen standard.

We conducted an internal audit of the Metropolitan Water Reclamation District of Greater Chicago's Analytical Microbiology Laboratory on June 22, 2009, and it was found to be in full compliance with all USEPA requirements for analysis to determine compliance with the Part 503 Class A pathogen standards. In addition, the operation of the high and low solids biosolids processing trains were subjected to internal audits on June 25, 2009, at the Calumet WRP, and on June 22, 2009, for the Stickney WRP. Attached is a signed certification that the processing trains were operated in full compliance with the codified parameters.

If you have any questions, please contact Dr. Catherine O'Connor, Assistant Director of Monitoring and Research, at 708-588-4059.

Very truly yours,

Louis Kollias
Director
Monitoring and Research

LK:AC:kq

Attachments

cc: Lanyon/Jamjun/Garelli
Sharma/Conway/Granato
O'Connor/Cox/Rijal/Lindo

TABLE 1: MICROBIOLOGICAL ANALYSIS OF BIOSOLIDS GENERATED BY THE CALUMET WATER RECLAMATION PLANT SOLIDS PROCESSING TRAINS IN COMPLIANCE WITH PART 503 PROCESS TO FURTHER REDUCE PATHOGENS - EQUIVALENT REQUIREMENTS JANUARY THROUGH JULY 2009 MONITORING PERIOD

Date Sampled	Location	Fecal Coliform	Viable Helminth Ova	Enteric Virus
		- No./g -	- No./4g -	- PFU/4g -
3/24/09	Calumet West	9	<0.080	<0.8000
3/24/09	Calumet East	200	<0.080	<0.8000
3/24/09	Calumet East	110	<0.080	<0.8000
3/24/09	Calumet East ¹	73	<0.0133	<0.8000
4/07/09	Calumet West	93	<0.080	<0.7936
4/21/09	Calumet West	40	<0.080	<0.8000
5/12/09	Calumet West	5	<0.080	<0.8000
6/18/09	Calumet East ¹	520	<0.0133	<0.8000
6/18/09	Calumet East	740	<0.080	<0.8000

¹For helminth ova analysis, sample weight = 300g. For other samples, sample weight = 50g.

TABLE 2: MICROBIOLOGICAL ANALYSIS OF BIOSOLIDS GENERATED BY THE STICKNEY WATER RECLAMATION PLANT SOLIDS PROCESSING TRAINS IN COMPLIANCE WITH PART 503.32a5 FOR BIOSOLIDS UTILIZED AS CLASS A DURING 2007 AND 2008

Date Sampled	Location	Fecal Coliform	Viable Helminth Ova	Enteric Virus
		- No./g -	- No./4g -	- PFU/4g -
6/05/07	LASMA ¹	-	0.2400	<0.8000
7/10/07	LASMA ²	130	-	-
7/03/07	LASMA ¹	-	<0.0800	<0.8000
7/10/07	Vulcan ²	5	-	-
4/17/08	LASMA	560	<0.0800	<0.8000
4/29/08	Marathon	250	<0.0800	<0.8000
5/27/08	Vulcan	95	<0.0800	<0.8000
5/27/08	HASMA	8	<0.0800	<0.8000
6/10/08	LASMA	72	<0.0800	<0.8000
6/17/08	Marathon	41	<0.0800	<0.8000
7/31/08	HASMA	1	<0.0800	<0.8000
7/31/08	Vulcan	36	<0.0800	<0.8000

¹Samples for helminth ova and enteric virus analyses collected at <60% solids content.

²Samples for fecal coliform analysis collected at >60% solids content. Biosolids from LASMA and Vulcan are from the same lagoon.

CERTIFICATION

I do hereby certify that for the period from January 1, 2009 through July 31, 2009, the Low Solids Sludge Processing Train (LSSPT) and the High Solids Sludge Processing Train (HSSPT) at the Metropolitan Water Reclamation District of Greater Chicago's Stickney and Calumet Water Reclamation Plants (WRPs) were operated in full compliance with the following codified protocol, as required by the USEPA's site specific designation of equivalency to PFRPs:

1. An average detention time of 20 days at a temperature of $35 \pm 2^{\circ}\text{C}$ ($95 \pm 3.6^{\circ}\text{F}$) is maintained in the anaerobic digesters.
2. In the case of the HSSPT system, anaerobically digested sludge (at 3 to 5 percent solids), which is withdrawn daily from the digesters, is then dewatered using Sharples Model 76000 centrifuges from 20 to 30 percent solids.
3. In the case of the LSSPT system, digested sludge (at 3 to 5 percent solids) withdrawn daily from the digesters, and which is not subjected to centrifugal dewatering, is pumped into a LSSPT lagoon to achieve further stabilization, dewatering, and inactivation of pathogens.
4. The minimum sludge holding time for both the HSSPT and LSSPT lagoons is 1.5 years to ensure the aging and stabilization of sludge solids, and inactivation of pathogens.
5. Air-drying of sludge solids taken out of the HSSPT and LSSPT lagoons is carried out seasonally from April through November.
6. Air-drying is conducted such that any batch of sludge applied onto the drying areas is held without any further additions of sludge, until 60 percent total solids content is achieved.
7. Loading of drying cells is conducted such that air-drying of the sludge solids taken out of the HSSPT and LSSPT lagoons is done at no more than 410 and 230 dry tons per acre of the paved drying cells, respectively. Sludge solids taken out of the HSSPT and LSSPT lagoons are applied on the drying cells at depths of no more than 18 and 15 inches of sludge, respectively, to be consistent with the loadings of 410 and 230 dry tons per acre.
8. Agitation drying is conducted such that complete turning, aeration, and agitation of solids withdrawn from the LSSPT and HSSPT is accomplished at an

average of three times a week using equipment such as a tractor with a horizontal auger or a tiller.

9. The short circuiting of sludge through the SPTs was eliminated by ensuring that,
 - (a) No additional batches of sludge are added to the field lagoons, where sludge is undergoing aging, dewatering, and inactivation, and
 - (b) A batch of sludge undergoing air drying on the paved drying beds is not mixed with any other batches of sludge during the drying process.

10. Sludge generated by unit processes not meeting the PFRP codified parameters listed above was segregated from the certified processing trains and managed according to the appropriate requirements of 40 CFR Parts 503 or 257.

Osoth Jamjun
Director of Maintenance & Operations

Date