

**Monthly Operating Report
December, 2011
Concord Wastewater Treatment Plant
Operated by Woodard & Curran**

Date: January 17, 2012

To: Alan Cathcart, Concord Water & Sewer Superintendent

cc: Chris Whelan, Town Manager

Richard Reine, Director Concord Public Works

From: Michael Thompson and Staff

Key Activities This Month/Capital Program

During December all treatment processes were either operational or in ready standby. Flow through the facility in December averaged 1.388 million gallons per day (MGD) and the permit critical 12-month average flow settled at 1.2 MGD. The permit upper limit for the 12-month average flow is 1.2 MGD.

More notable events or tasks accomplished in December include:

1.) On December 14, the hydrogeologic investigation into the feasibility of groundwater disposal of treated effluent within the existing sand filter beds at the WWTF began. CPW personnel installed a system of plumbing whereby water from a nearby fire hydrant can be directed into a percolation test pit. Currently, a continuous flow of 50 gallons per minute will be maintained for at least 30 days. Monitoring near the test pit will be ongoing to determine the impact this water feed rate has on groundwater level. On December 16, the Concord's Wastewater Planning Task Force held a morning meeting at the WWTF to review the goals of this groundwater investigation and to take a tour of the sand filter test site.



Hydrogeologic evaluation test pit in former intermittent sand filter #5 with 50 gpm flow distributor.

2.) From December 6 through the end of December two odalogs were installed at the WWTF. Siemens provided these battery operated devices to take measurements of hydrogen sulfide levels at the headworks influent channel and the splitter box upstream from the trickling filters. This no-cost monitoring will conclude in early January at which time Siemens will download the recorders and provide data to us along with their thoughts/recommendations on what the readings mean and what steps might be taken dependent on hydrogen sulfide levels detected. This effort is part of an ongoing effort to address chronic odor complaints coming into the WWTF from a residence on Great Meadows Road.

December '11 WWTP MOR

Maintenance Management

Following is a brief list of a portion of maintenance items completed in December:

- Began disassembly of the #2 septage pump in preparation to replacing a failed mechanical seal on this pump.
- Painted both the men's bathroom and the kitchen/lunch room.
- Performed monthly cleaning of the trickling filter nozzles and distributor arms and lubricated the center bearings.
- Troubleshoot weather station roof cables and applied latex caulking to two cracked roof vents weather seals.
- Installed fiberglass insulation above the ceiling panels in the Chief Operator's office.

Environmental Compliance

Parameter	Monthly Avg.	Permit Limit	Notes
Flow, MGD	1.23 MGD (12month avg)	1.2 MGD	Dec. avg. = 1.388 MGD Max. Daily Flow = 1.637MG
BOD5 (mg/l)	2 mg/l	30 mg/l	99% average BOD removal in December
TSS (mg/l)	2 mg/l	30 mg/l	99% average TSS removal in December
Coliform, Geo.Mean #/100ml	1 cfu*/100ml	200 cfu/100ml	All daily f-coliform counts were actually 0 colonies/100 throughout December
Phosphorus	0.46 mg/l	1.0 mg/l Nov '11– Mar '12	0.75 mg/l daily max. occurred on Mon. 12/12
Total Ammonia Nitrogen	0.37 mg/l	Report Only	.72 mg/l daily max. on Wed. 12/7

*cfu = coliform forming unit or colony.

During December, the Concord WWTF performed continuous two-stage total phosphorus (TP) removal using aluminum sulfate. First stage chemical TP treatment occurred in the two secondary clarifiers, while second stage TP treatment took place within the CoMag® advanced treatment process. The monthly average effluent TP concentration in December is 0.5 mg/l, thereby meeting the CWWTF's winter permit limit not to exceed 1.0 mg/l TP as a monthly average.

Additionally, during December all effluent disinfection was performed using ultra violet light.

Finally, over the week of December 11^h the Concord WWTF conducted the 2011, fourth-quarter Whole Effluent Toxicity (WET) sampling event. The 48-hour LC50, a.k.a. acute toxicity test, for *Ceriodaphnia* is >100% and permit complying. The 7-day NOEC, a.k.a. chronic toxicity test, is 25%. Monitoring of chronic toxicity is a permit requirement; however there are currently no chronic toxicity limitations.

Septage Receiving

The Concord WWTP receives septage only from in-Town sources. A total of 117,250 gallons of septage was received at the Concord WWTP in December.

WWTP Septage Receipts in gallons

	2011	2010	2009
January	44,050	32,500	10,500
February	31,750	25,750	41,250
March	102,950	171,750	83,250
April	139,750	211,500	168,250
May	113,500	125,950	150,900
June	130,000	184,950	151,450
July	73,750	90,800	138,500
August	69,500	173,250	137,750
September	98,750	182,250	203,750
October	82,250	210,250	172,400
November	90,250	194,100	155,400
December	117,250	132,750	109,600
Annual Totals:	1,093,500	1,735,800	1,523,000

December '11 WWTP MOR

Sludge Production

During December, 105,573 gallons of liquid sludge, equivalent to 18.56 dry tons, was transported to Upper Blackstone Water Pollution Abatement District (UBWPAD) in Millbury, Massachusetts.

	2011	2010	2009
January	98,309/16.78	89,000/15.61	107,500/16.71
February	72,916/13.5	90,000/16.81	86,000/14.13
March	72,617/13.89	90,000/15.65	99,000/17.56
April	81,000/14.90	135,000/23.57	153,000/23.94
May	108,000/27.85	97,980/15.76	170,670/24.27
June	108,000/19.67	99,000/18.28	153,000/20.83
July	106,060/17.69	99,000/16.81	126,000/20.57
August	135,224/18.83	108,000/18.61	76,376/11.81
September	108,008/15.10	106,160/17.88	126,000/21.65
October	141,003/23.05	107,558/17.31	99,000/16.03
November	114,905/20.28	142,500/21.18	99,000/16.51
December	105,573/18.56	134,750/21.73	117,000/17.79
Annual Totals:	1,251,615/205.18	1,298,945/219.20	1,421,546/223.58

Alarm Activity

This section provides the Town information on events that activate the facility's alarm response system. These events occur while the plant is unmanned and while both the plant's SCADA system and *Lexington Alarm* are monitoring the facility's alarm system. This report identifies alarm activity from the start of the calendar year to the present.

Concord WWTP Off-Hours Alarm Log

Date	Time	Alarm Source	Observations/Corrective Action/Comments
Jan. '11	NA	NA	
Feb. '11	3:00 am	Hi-Effluent turbidity	Links in process monitoring data/trends reveal an inaccurate caustic feed to CoMag effluent. Operations staff ultimately performs hotwater flush of the caustic feed system to remove solidified caustic and restore accurate caustic pumping.
Mar. '11	NA	NA	
Apr. '11	NA	NA	
May '11	NA	NA	
June 26-Sunday	9:30 am	Intrusion	South Clarifier Rm. dbl. door not fully engaged in closed position – wind rocked door.
July '11	NA	NA	
Aug. '11	Scattered	Intrusion	South Clarifier Rm. single door triggered several nuisance intrusion alarms in mid-August. Plant personnel were finally able to stop the trouble by firming up an apparent loose/wet wire connection within the door frame.
Sep. '11	NA	NA	
Oct. '11	NA	NA	
Nov. '11	NA	NA	
Dec. '11	5:15 am	Intrusion	Maintenance shop internal motion sensor briefly activated –Police and staff found nothing.