

Monthly Operating Report
March, 2010
Concord Wastewater Treatment Plant
Operated by Woodard & Curran

Date: April 9, 2010

To: Alan Cathcart, Concord Water & Sewer Superintendent
cc: Chris Whelan, Town Manager
Richard Reine, Director Concord Public Works

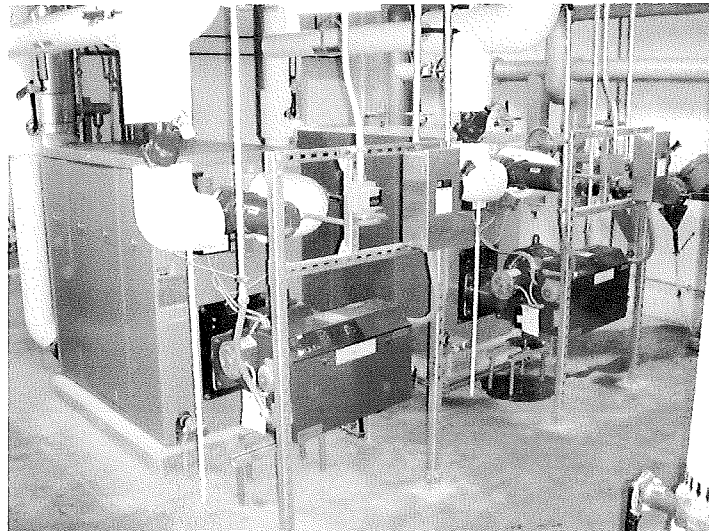
From: Michael Thompson and Staff

Key Activities This Month/Capital Program

During March all treatment processes were either operational or in ready standby. Flow through the facility in March averaged 2.4 million gallons per day (MGD) and the permit critical 12-month average flow increased slightly to 1.09 MGD from the February 12-month average of 1.00 MGD. Of course, the high flow in March can be attributed to the extraordinary rainfall/snowmelt at the end of February and through March. In March the WWTF had software issues with it's weather station but we are pretty certain we received somewhere close to the 15.04 inches of rainfall measured by the National Weather Service Hanscom Airfield office approximately 2 miles southeast of the plant. The 2.4 MGD average daily flow in March is the highest monthly average flow observed at least since Woodard & Curran began operating the facility in 1995, and it is likely the highest average monthly flow since the facility came on line in 1987. Improvements made to the facility's intermediate pump station in 2005 and the broader facility upgrade in 2007 provided the vital pump capacity and reliability to keep this prolonged high flow moving through the facility while meeting all NPDES permit requirements. The CoMag process held up well even as hydraulic loading hovered near the maximum design flow for the process. We can claim to have real world operating experience under the full range of possible facility flow rates and know that good treatment performance is attainable across all flows.

More notable events or tasks accomplished in March include:

- 1.) The project to resolve chronic boiler performance issues got underway in March. Kirkland and Shaw mechanical contractors out of Burlington were at the facility for several days to re-plumb fuel supply lines to the two boilers located in the WWTF basement. This project's goal is to correct boiler faults apparently brought on by unreliable fuel supply at the boiler burners. Focus is on the fuel transfer pump skid and how this system moves fuel both to and from the burners and the above ground fuel tank located just outside the north end of the Control Building. We hope to complete this project in early April so we can confidently enter next heating season.



View of twin boilers installed in 2007 and located in the WWTF basement

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- 2) The CPW crewmember assigned for the month of February rotated out and a new crewmember reported to the facility on a daily basis for the month of March. These CPW personnel are now responsible for a number of daily or weekly assignments/rounds in addition to a wide-range of maintenance projects and housekeeping chores. Specifically in March, the CPW crew began the installation of handrails around the grating and diamond plate installed over the CoMag reaction tanks. We were able to reclaim aluminum handrail formerly installed at the chlorine contact chamber that underwent demolition in the 2007 facility upgrade. This railing install now protects workers from falls from the tank surface to surrounding concrete floors yet we still need to install additional rails that protect worker falls from the tank platforms into the water-filled tanks.

Maintenance Management

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

- begin installation of safety railing around recently installed grating over the CoMag reaction tanks to provide a working surface for personnel to perform tank mixer maintenance.
- lab equipment underwent annual preventive maintenance inspection and calibration/certification by an outside service provider.
- mechanical contractors re-plumb the facility boilers fuel supply lines and heating service contractors clean and adjust both boilers..
- install and calibrate new hydrogen sulfide and oxygen sensors in the grit room gas monitoring system.

Environmental Compliance

Parameter	Monthly Avg.	Permit Limit	Notes
Flow, MGD	1.09 MGD (12month avg)	1.2 MGD	March avg. =2.40 MGD
BOD5 (mg/l)	6 mg/l	30 mg/l	94% average BOD removal in March
TSS (mg/l)	12 mg/l	30 mg/l	87 % average TSS removal in March
Coliform, Geo.Mean #/100ml	2 cfu*/100ml	200 cfu/100ml	Daily max. of 9 cfu/100ml on Thu. 3/18
Phosphorus	0.66 mg/l	1.0 mg/l Nov. '09 – Mar. '10	0.99 mg/l daily max. on Wed. 3/17
Total Ammonia Nitrogen	1.36 mg/l	Report Only	1.81 mg/l daily max. on Tue. 3/30

*cfu =coliform forming unit or colony.

During March, the Concord WWTP performed continuous two-stage total phosphorus (TP) removal using aluminum sulfate. First stage chemical TP treatment occurred in the secondary clarifiers and second stage TP treatment took place within the CoMag® advanced treatment process. The monthly average effluent TP concentration in March is 0.66 mg/l, thereby meeting the CWWTP's winter permit limit not to exceed 1.0 mg/l TP.

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

Finally, over the week of March 8 the Concord WWTP conducted the 2010, first-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 100%. Monitoring of chronic toxicity is a permit requirement; however there are currently no chronic toxicity limitations. A copy of the WET test report prepared by our contracted lab is enclosed for your review.

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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
01/18/10	12:50 pm	Power Failure	Brief power bump resulted in a handful of drive and panel faults. The on call operator responded on site and reset equipment without incident.
2/10	NA	None	NA
3/10	NA	None	NA

Septage Receiving

WWTP Septage Receipts in gallons

	2010	2009	2008
January	32,500	10,500	22,750
February	25,750	41,250	60,300
March	171,750	83,250	55,550
April		168,250	152,300
May		150,900	135,150
June		151,450	126,450
July		138,500	117,000
August		137,750	142,400
September		203,750	219,950
October		172,400	262,900
November		155,400	165,300
December		109,600	104,050
Annual Totals:	230,000	1,523,000	1,636,000

Sludge Production

During March, 90,000 gallons of liquid sludge, equivalent to 15.65 dry tons, was transported to Upper Blackstone Water Pollution Abatement District (UBWPAD) in Millbury, Massachusetts.

WWTP Sludge Production in gallons /dry tons

	2010	2009	2008
January	89,000/15.61	107,500/16.71	112,227/20.15
February	90,000/16.81	86,000/14.13	107,124/18.35
March	90,000/15.65	99,000/17.56	98,500/17.97
April		153,000/23.94	90,000/17.98
May		170,670/24.27	107,000/19.74
June		153,000/20.83	98,500/17.76
July		126,000/20.57	117,000/20.98
August		76,376/11.81	99,000/16.51
September		126,000/21.65	98,000/16.82
October		99,000/16.03	108,000/18.54
November		99,000/16.51	80,500/12.62
December		117,000/17.79	126,000/18.46
Annual Totals:	269,000/48.07	1,421,546/223.58	1,241,851/215.88