

**Monthly Operating Report**  
**September, 2009**  
**Concord Wastewater Treatment Plant**  
**Operated by Woodard & Curran**

**Date:** October 14, 2009

**To:** Alan Cathcart, Concord Water & Sewer Superintendent

**cc:** Chris Whelan, Town Manager

Richard Reine, Director Concord Public Works

Elena Proakis Ellis, Water & Sewer Operations Engineer

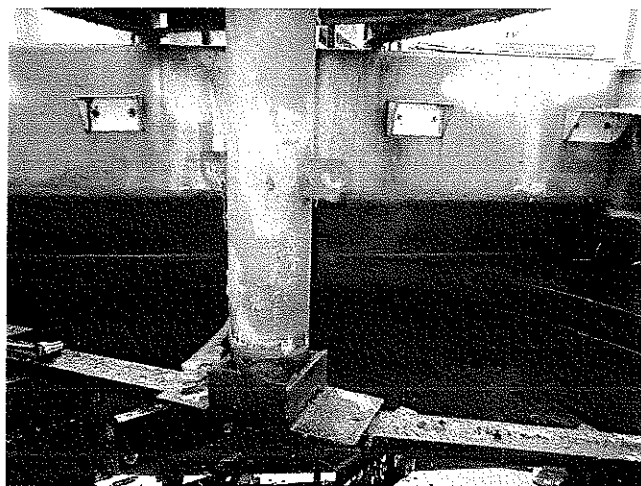
**From:** Michael Thompson and Staff

*Key Activities This Month/Capital Program*

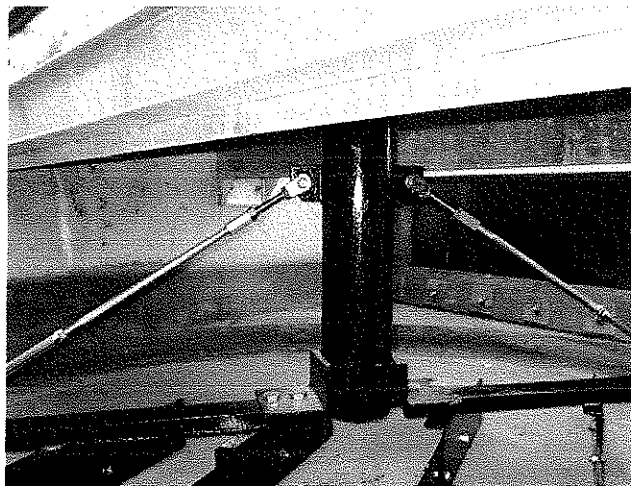
During September all treatment processes were either operational or in ready standby excluding the #2 primary clari-thickener which was offline until 9/14/09 for sandblasting/painting and hardware rehabilitation and the headworks detritor that was offline until 9/4 for the same work. Flow through the facility in September averaged 0.84 million gallons per day (MGD) and the permit critical 12-month average flow has fallen slightly to 1.06 MGD. The 12-month average daily flow permit limit is 1.2 MGD. This 1.06 MGD 12-month rolling average flow is the lowest since September 2008. If historical trends hold, I would expect this rolling average flow rate to start a slow creep upward to peak again in the spring of 2010.

More notable events or tasks accomplished in September included:

- 1) The capital improvement project to provide sandblasting, painting, and hardware rehabilitation on both primary clari-thickeners and the grit detritor reached majority completion in September. Contractors Hemi Enterprises and Lydon Millwrights completed the painting on the #2 primary and the detritor so that by mid-September all process tanks were back on line and providing normal treatment capability. Both primary clari-thickeners still require replacement of a select group of scum skimmer components pending parts delivery from the equipment manufacturer. In the meantime, the existing skimmer components, while worn, are still functional.



*Detritor before repairs.*



*Detritor after rehab including installation of stainless steel hardware*

## September '09 WWTP MOR

- 2) On September 24, the WWTP hosted an optional tour for those attending an EPA Technology Transfer Seminar on *Nutrient Control at Municipal Wastewater Treatment Plants*. Approximately 20 individuals, some from various plants throughout New England, and a number of DEP and EPA personnel, received an hour long tour of the facility with particular focus on the CoMag® treatment process. CoMag® continues to generate a lot of interest in the world of wastewater treatment and those attending this tour provided very positive impressions on seeing the CoMag® process with their own eyes, and had a favorable impression of the facility overall.



*Alan Cathcart and Elena Proakis Ellis provide a facility tour on 9/24*

- 3) During September Chief Operator Mike Thompson received training on the implementation of *NetDMR*, EPA's electronic Discharge Monitoring Report submittal program. Approximately 5 hours of training was conducted at the EPA lab in North Chelmsford and online. EPA has setup a test site where individuals can navigate the various data entry pages and practice data entry before committing to the move from paper DMR submittal to electronic DMR submittal. Mike now has EPA authorization to use the official site as a designated signatory. Individuals within Concord Water and Sewer are receiving an introduction to the program and are to receive signatory designation as well.

### *Maintenance Management*

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

- a) painting and rigging contractors in regularly over the first two weeks of September to work on the capital project to sandblast, paint, and rehab select mechanical/structural components in both primary clarifiers and the grit detritor.
- b) clean nozzles, flush distributor arms, clean debris from media surface, and lubricate center bearings on both trickling filters.
- c) change-out air filters in most (those in regular use) air handlers.
- d) clean air chiller condensing coils and air filters on all three UV banks.
- e) install new limit switches on the #1 primary clari-thickener gear drive.

*Environmental Compliance*

Parameter	Monthly Avg.	Permit Limit	Notes
Flow, MGD	1.06 MGD (12-month. Avg.)	1.2 MGD	Sept. avg. = 0.839 MGD
BOD5 (mg/l)	3 mg/l	30 mg/l	99% average BOD removal in Sept.
TSS (mg/l)	2 mg/l	30 mg/l	99 % average TSS removal in Sept.
Coliform, Geo.Mean #/100ml	1 cfu*/100ml	200 cfu/100ml	All f-coliform tests in Sept. showed 0 colonies.
Phosphorus	0.20 mg/l	0.20 mg/l Apr.'09 – Oct. '09	0.25 mg/l daily max. on Wed. 9/2
Total Ammonia Nitrogen	1.05 mg/l	Report Only	1.21 mg/l daily max. on Thu. 9/17

\*cfu = coliform forming unit or colony.

There were no NPDES permit exceedances during September at the Concord WWTP.

During September, 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 September is 0.20 mg/l, thereby meeting the CWWTP's permit limit not to exceed 0.20 mg/l TP.

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

*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 Alarm Log**

Date	Time	Alarm Source	Observations/Corrective Action/Comments
01/03/09	11:21 am	Intrusion	Headworks building door not properly latching following installation of new weather security strip by facility upgrade contractor. High wind rocked door – setting off alarm. Plant staff worked on weather strip to improve door latching.
01/07/09	7:45 pm	Hi Effluent Turbidity	Recent M2 backwash cycles producing very brief jump in turbidity as forward flow resumes. Solution is to shorten time between backwash cycles until overall treatment performance improves with slight operational adjustments over coming days.
02/08/09	10:26 am	Intrusion	High wind blew open addition door. Plant staff already on the way for normal weekend rounds, checked door and securely locked. Contractor made aware of need to rework this as well as other facility upgrade doors and locksets.
Various times in March		HVAC Common alarm	Faulty operation of plant boilers-particularly boiler #2-causing a brief dip in plant hot water loop temperature. Lag or backup boiler reliably responded and automatically brought hot water loop temp back above alarm setpoint. Boiler install vendor and others continue to monitor/troubleshoot plant heating system.
04/09	NA	NA	No after hours alarms in April
5/27/09	7-9pm	CoMag eff pH	pH meter inaccurately reading –required cleaning and calibration. Caustic pumps checked for normal operation.
6/20/09	2 pm	CoMag low eff pH	Both caustic feed pumps to CoMag effluent had become air bound. On call operator came on site and bled air from pump and restored normal auto feed of caustic based on pH input from SCADA.
07/09	NA	NA	No after hours alarms in July.
08/09	NA	NA	No after hours alarms in August.
9/3/09	10:00 PM	Intrusion	CoMag settling tank room – north motion sensor activated. No doors, windows, or other motion sensors activated. Police investigate – apparent false alarm.

*September '09 WWTP MOR*

*Septage Receiving*

During September, the facility received 203,750 gallons of septage from Concord residences and businesses.

WWTP Septage Receipts in gallons

	2009	2008	2007
January	10,500	22,750	61,850
February	41,250	60,300	55,000
March	83,250	55,550	48,550
April	168,250	152,300	127,000
May	150,900	135,150	153,800
June	151,450	126,450	128,750
July	138,500	117,000	159,050
August	137,750	142,400	140,250
September	203,750	219,950	112,250
October		262,900	199,700
November		165,300	179,950
December		104,050	42,000
Annual Totals:	1,085,600	1,636,000	1,408,150

*Sludge Production*

During September, 126,000 gallons of liquid sludge, equivalent to 21.65 dry tons, was transported to Upper Blackstone Water Pollution Abatement District (UBWPAD) in Millbury, Massachusetts.

WWTP Sludge Production in gallons / dry tons

	2009	2008	2007
January	107,500/16.71	112,227/20.15	97,500/12.83
February	86,000/14.13	107,124/18.35	89,500/11.94
March	99,000/17.56	98,500/17.97	99,000/12.91
April	153,000/23.94	90,000/17.98	143,500/21.55
May	170,670/24.27	107,000/19.74	170,200/26.40
June	153,000/20.83	98,500/17.76	152,000/21.29
July	126,000/20.57	117,000/20.98	161,500/23.60
August	76,376/11.81	99,000/16.51	143,500/21.31
September	126,000/21.65	98,000/16.82	126,000/15.27
October		108,000/18.54	230,614/30.28
November		80,500/12.62	128,669/21.13
December		126,000/18.46	140,555/22.69
Annual Totals:	1,097,546/171.47	1,241,851/215.88	1,682,535/241.2