Wyoming Michigan

Utilities Department

Quarterly Report

2011

January
through
March

Grand Valley Regional Biosolids Authority

GRAND VALLEY REGIONAL BIOSOLIDS AUTHORITY

The GVRBA is a cooperative effort between the Cities of Grand Rapids and Wyoming to manage wastewater and biosolids on a regional basis.

Segment 2, Pump Room

Pump Station Performance

Wyoming staff provide operations and maintenance services for the GVRBA Biosolids Pump Station (Segment 2). Several repair items identified during the 2010 pumping season were completed this quarter, including repair and recalibration of pump discharge pressure sensing equipment and the installation of one full voltage motor starter.

Pumping capacity was restored in at least one pump and operational performance was significantly improved, reducing energy demand to start and run biosolids transfer pumps. Depending on weather and soil conditions, land application was expected to begin in mid-March.

Budget Adjustments

Greater than anticipated labor and repair expenses at the Pump Station (Segment 2) resulted in a $13,000 budget amendment to cover costs this quarter.

LEAN Value Stream Implementation

Authority team members attended a series of LEAN management workshops this quarter. Various LEAN Process Goals were established to help staff develop operations and maintenance system improvements, provide for equipment optimization, increase storage capacity, clarify team members' roles and responsibilities and to reduce overall costs.

The Technical and Operations Team evaluated various options to resolve odor control operability and ventilation safety, and identified cost responsibility for necessary improvements to the facilities.

The Authority Board is expected to review the team's ongoing performance in meeting LEAN Process goals over the next 12 months.

De-watering and Storage Facility, GR-WWTP

Professional Development and Training Events:

MWEA/MI-AWWA Joint Expo, Lansing

Borchardt Conf., Ann Arbor

AWWA—Water Treatment Short Course I, Gull Lake

WMWWA Spring Meeting, Holland

Wastewater Administrator's Conference

MWEA-Ultraviolet Seminar

SARA Title III Workshop

Hazardous Waste Management

Utility Department Staff

New Clean Water Plant Employee

Dennis Junghans,
Utility Maintenance II

Dennis most recently worked as a journeyman electrician for Feyen-Zylstra, Inc. He spent the last three years as project foreman assigned to the plant expansion project at Wyoming's Drinking Water Treatment Plant.

Katie Erickson, CWP
promoted to Laboratory Tech II

The Michigan Chapter of the American Public Works Association (APWA) announced the

Donald K. Shine Water Treatment Plant Phase 1B Expansion

"2011 Project of the Year

in the category of

Medium Size Structures"

Utility staff will attend the annual conference in May to receive the award which is shared by the City and Black & Veatch.

Jaime Halm, WTP
was a Laboratory Tech II; assigned to WTP Laboratory Supervisor

Dave Bartz, CWP
promoted to Utility Maintenance II

Utility Staff Presentations at State Conferences

CWP Superintendent Craig Smith was a co-presenter on the "Bio-P Plant Process" at the Wastewater Admin. Conference.

Environmental Services Supervisor Dave Oostindie and Inspector Aaron Vis presented "Developing an Effective Medicinal Drug Take-Back Program" at the Borchardt Conference.

Community Outreach Activities

Utilities Staff Spread Message of Environmental Stewardship

Students in WTP laboratory

Student viewing microorganisms

Utility Tours:

Water Treatment Plant
102 visitors from:

Lakeshore Elementary, Grand Valley University and Calvin Christian High School

Clean Water Plant
120 visitors from:

Calvin and Hope Colleges, Grand Valley State University, Breton Downs Elementary, Plymouth Christian school and one Cub Scout Troop

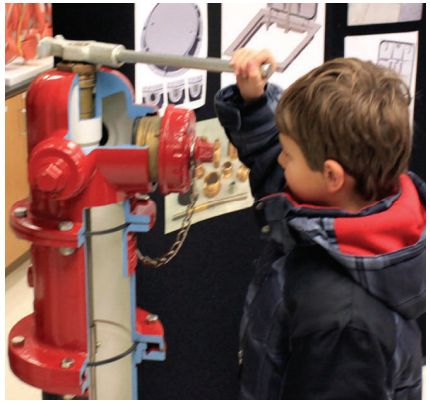
Engineering Week

Utility staff provided hands-on demonstrations and information about water services at the annual Engineering Week event at the Grand Rapids Public Museum. Throughout this week-long event, operations staff and laboratory personnel demonstrated various water testing procedures and the operation of a working model of an elevated storage tank. Students, parents and other visitors to the museum also viewed living microorganisms through a microscope at the Utility demonstration table. Wyoming has been present at this event since 2001.

Water Treatment Plant Hosted Training Events

West Michigan Water Works Association held their spring training event at the plant in February. Meeting attendees heard updates from the MDEQ on preparation of annual water quality reports and a review of the Phase IB plant expansion.

The West Michigan Water Security Consortium took place at the Drinking Water Treatment Plant on March 2nd. The meeting was organized by Mike Moll of the U.S. Department of Homeland Security. Wyoming treatment plant staff and 22 visitors from other municipal water systems, Kent County Health Department, law enforcement agencies and the U.S. Coast Guard, were provided with updates on recent suspicious incidents, cyber-security, preparedness exercises, and other Utility security issues.



Grand Valley State University, "Super Science Saturday"

Utility program material was shared with more than 2000 attendees at this day-long event on the Allendale campus. Hands-on demonstrations included education about protecting the Wyoming water and sewer system, groundwater movement, and a working fire hydrant model (courtesy of East Jordan Iron Works).

Clean Water Plant

Service area

Approximately 140,000 residents in the City of Wyoming, Byron and Gaines Townships, and portions of the Cities of Kentwood and Grandville.

Capacity

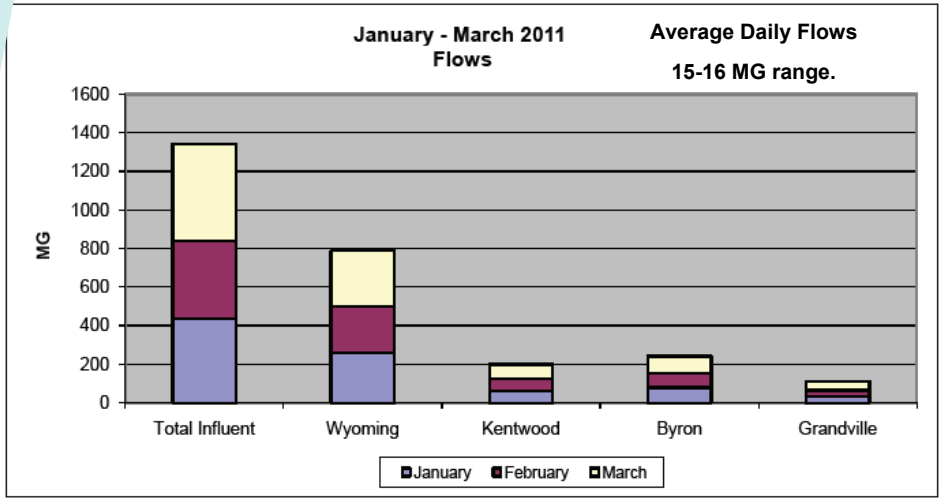
24 million gallons per day advanced secondary treatment using extended aeration, biological phosphorus removal, and chlorine disinfection.

Collection system

11 pump stations
3 metering stations
1 mile of force main
273 miles of gravity main
5,671 sanitary sewer manholes

Stormwater System

248 miles of storm sewer



Sewer Lift and Metering Stations

Utility staff met throughout the quarter to address equipment and operating needs at various sewer lift stations. Problems resulting from increased sewer grease and oil, as well as the ongoing clogging from "rags" or flushable wipe products in the sewer continued to require frequent attention out in the field. UMI Aaron Rice crafted a "rag catch basket" which was used successfully to help staff systematically check sewer lines in an effort to discover the source of these problems. Flooding at the lift stations serving Michigan Turkey Producers resulted in extensive consultations with pump suppliers, engineers and staff to develop a plan to maximize the capacity of this station for the industrial customer. Michigan Turkey Producers is expected to increase sewage flow to the Clean Water Plant as the company continues to grow.

Operating Procedures

So that staff have access to the most current guidance documents for operating and maintaining plant facilities, the Standard Operating Procedures (SOP) for various plant processes were updated this quarter. These documents were made available electronically at numerous locations throughout the plant.

Visitors Learn from Wyoming

Leoni Township officials met with plant staff and toured the Clean Water Plant to learn more about Wyoming's award winning management practices. Township officials were considering the formation of an Authority to manage their wastewater treatment facility located in Grass Lake, Michigan.

Utilities staff were pleased to share information on funding, operations and the formation of the Grand Valley Regional Biosolids

Clean Water Plant cont.

Air Quality

Maintenance staff worked quickly to repair the head-works building odor control system. Over time, the water softening effect from the chemicals used in the scrubber system caused extensive calcium and magnesium scaling on the filter media, greatly reducing the effectiveness of the system.

Maintenance staff opened the media vessel to remove large clumps of media, thoroughly cleaned and then replaced approximately 90 cubic feet of media. Hard man- hole covers on the system (at right) were replaced with clear plexi-glass access hatch covers to better monitor operation of the system. Maintenance staff also replaced tubing, gauges and chemical flushing ports.

Before

After

Clockwise from lower left:
Headworks air scrubber system,
odor control piping,
interior of media vessel,
media prior to acid wash,
clean media as seen through new,
clear hatch cover.

Clean Water Plant cont.

Disposable wipes make a big mess when flushed.

Collection System Challenges

Wyoming's sewer system, like many elsewhere in the nation, continues to experience problems with flushable wipes and similar materials that do not degrade when flushed.

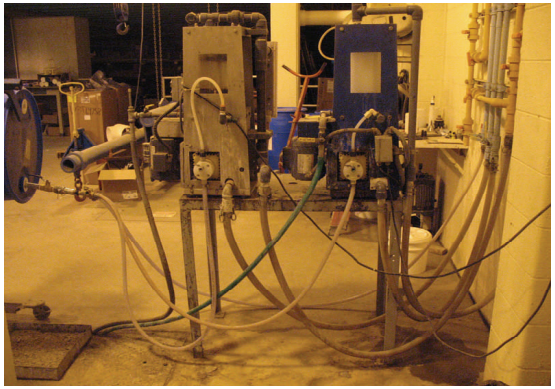
Maintenance and Public Works staff were kept busy again this quarter untangling the durable, non-woven fabrics from equipment and removing 50-60 lbs of the material each week from wet wells, lift stations and manhole structures. Jet flushing pipelines, repairing and replacing equipment add to disposal costs of this material.

Staff have conducted sewer investigations to systematically locate the source of the most intense volume of wipes in the sewers. Ongoing and intensified community education efforts through the City newsletter, bill stuffers, press articles and door-to-door communication have failed to improve the situation.

The shaft and motors on this tank mixing system were badly damaged from the accumulated "disposable" wipes. The CWP will spend in excess of $2,500 on this repair. In the future, the Utility is considering installation of chopper pumps and grinders to deal with wipes flushed into the sewer system.

30 Street Lift Station

The station with the most frequent and heaviest accumulations of disposable wipes, causing high water alarms and equipment malfunctions.



Polyblend System, Before

In March, Maintenance staff completed installation and start-up of a new polymer blending system in the sludge thickening building. The old system, pictured above, was more than 20 years old and had been repaired beyond its useful life. The new devices, below, allow for more precise polymer feed rates, critical to centrifuge performance and solids thickening.

Polyblend System, After

Environmental Services

Safe Drug Disposal

Dave Oostindie, Environmental Services Supervisor, traveled to Washington, D.C. in January to provide testimony in support of new federal rules which would make multiple collection and disposal options available to the design and implementation of drug take-back programs.

At the invitation of groups such as the Product Stewardship Institute and King County, Washington Drug Take-Back Program (which has been working since 2005 to promote responsible drug disposal), Dave was able to share Wyoming's progress in developing a local program and its successful growth county-wide.

The desired outcome of the testimony in Washington was to advocate for a change to regulations which now limit or discourage the sustainable collection and disposal of unused and expired pharmaceutical products. Instead, agencies hope to be allowed to collect, transport and destroy unwanted drugs under one set of security protocols. Procedures now vary regionally depending on the category of drug and type of agency conducting the collections.

In March, Dave also reviewed the "West Michigan Take Back Meds" program with approximately 200 attendees from the Area Agency on Aging of West Michigan at a gathering at Frederik Meijer Gardens.

Sewer Ordinance Changes for Industries

With new sewer pretreatment effluent limits in place, industrial sewer users received permit revisions with the new sewer use ordinance limits this quarter. Industrial sewer users pay surcharges for discharges containing compatible pollutants in excess of baseline concentrations specified in the ordinance.

Michigan Turkey Producers (MTP), a large industrial sewer user in Wyoming, discussed plans to expand production at several locations in the City which may result in increased sewer flow to the Clean Water Plant. Staff worked closely with MTP to accommodate reasonable pretreatment and sewer usage needs. Maintenance and Environmental Services staff continued to monitor conditions at the lift station and wet wells serving MTP's facilities, which receive higher than designed sewage flow.

Discussions with other industries planning to move or expand within the City included Gordon Food Service and Reliance Finishing Company, Inc.

A transfer of the sewer use permit for the former General Motors plant followed completion of the agreement between the City and Lormax Stern, to prepare the 36th Street site for demolition and re-development. It was expected that limited water and sewer usage would be necessary throughout the 14-month process.

Drinking Water Treatment Plant

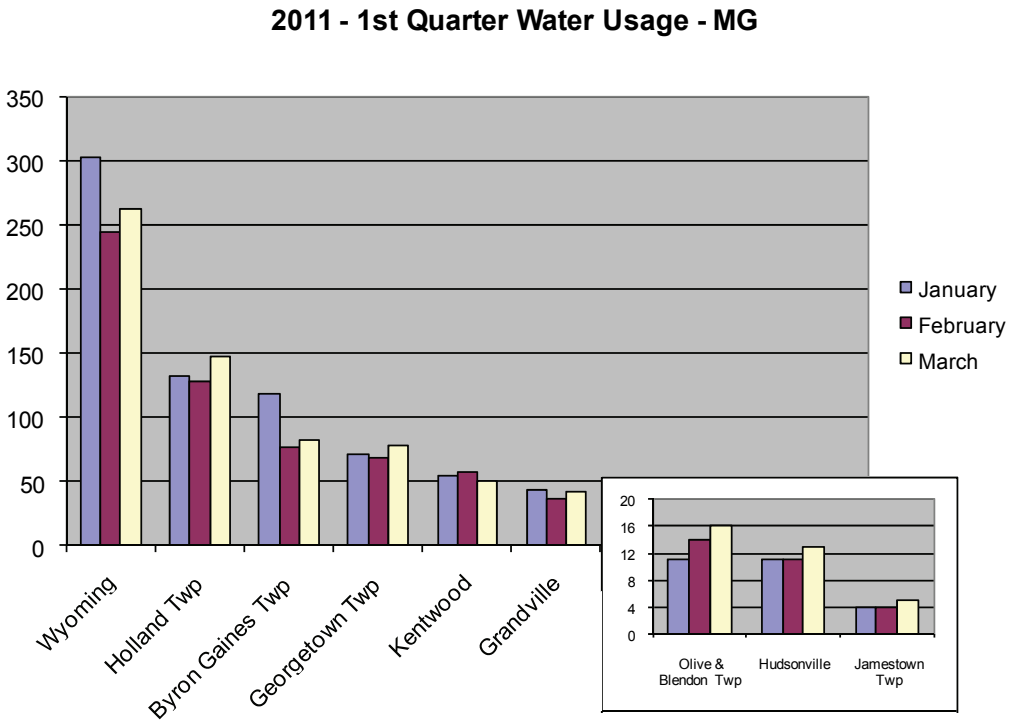
The Water Treatment Plant hosted a Fluoride Advisory Committee Meeting in January.

Visitors representing the Michigan Department of Community Health, the Michigan Dental Association, the City of Muskegon, and Ferris State University, met with several plant staff to discuss new US Environmental Protection Agency (EPA) guidelines for water fluoridation.

New EPA assessments of fluoride were undertaken in response to the National Academies of Science (NAS) 2006 findings which looked at bone and dental effects from all sources of fluoride.

Community water fluoridation is still considered safe and effective.

Chemist Jim Tardani at plant sample taps



Water Treatment

Raw water characteristics changed considerably this quarter due to storms and temperature fluctuations in Lake Michigan. These seasonable changes, while not uncommon, often pose challenges to proper chemical dosage at the Water Treatment Plant.

Staff were able to stabilize chlorine residual levels with an additional chlorine feed system at the low service pump station. A new sample tap in the laboratory was also installed for future chlorine residuals monitoring. Chlorine residual samplers throughout the plant provide online disinfection water monitoring data electronically and enable Operations staff to respond with precise disinfection dosage.

Water Treatment Plant cont.

Original Roll-Off Dumpster Bins

New Trailer-Mounted Bins

Improved Solids Handling

As a result of the water treatment process, settled solids, or sludge, is discharged from the various basins in the treatment plant and stored briefly in an equalization basin in the STF. When necessary, plant operators transfer the residuals through a thickening and de-watering process prior to final disposal at a landfill.

Even as staff and contractors worked through process refinements, sludge loading at the dumpster was a particular challenge due to extensive splashing each time the centrifuges were run. Staff spent significant time to clean the area after each de-watering run. However, after replacing the roll-off dumpsters with trailer-mounted bins in the solids handling bay, staff reported much improved sludge containment and reduced time spent on clean-up.

Additionally, the larger disposal bins better accommodate longer centrifuge runs, which produced a maximum of 37 tons of sludge removal at 14% solids.

Waste Management of Michigan provided the new bins through their hauling contract with the Water Treatment Plant.

Cross-Connection Inspection Activity

	Last Quarter	This Quarter
Onsite Surveys	181	249
Non-compliance sites	19	24
Corrected Sites	17	19
Notices Sent	0	90
Test Forms Rcvd	0	63

Meter Replacement and Installations

	Meter Replacement	New Installs
January	157	4
February	170	5
March	99	3

Pump Repair and Chemical Feed Systems

Throughout the quarter, Maintenance and Operations staff gained experience isolating and de-watering various plant processes necessary for the re-installation of one of the high service pumps. This project called for de-watering certain portions of process piping and isolation of various other transfer and wash water pumps. Complete re-installation of high service pump Number 10 was delayed briefly while the repair service provider rectified shaft and impellor work.

Maintenance staff installed sensors in the chemical loading containment area for improved monitoring and safety at the site. They also spent time trouble-shooting the polymer feed system and assisted with repairs to the fluoride day-tank.