NPDES Permit Coverage for Small Municipal Separate Storm Sewer Systems in Ohio

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There is an abundance of information available on the US EPA website such as examples of BMPs and measurable goals. See http://cfpub.epa.gov/npdes/stormwater/measurablegoals/part3.cfm.

Someone will need to be assigned to be responsible for the overall program including the annual reports to OEPA. The annual reports must contain a description of the actual achievements as compared to the goals and timetables contained in the plan. Some cities have used this program as a reason to establish a storm water utility charge in order to pay for the increased requirements.

Contact Dail Hollopeter at 419.473.9611 with any questions.

Congratulations...

The **City of Kalamazoo** on receiving, one of only 16 such awards given out nationally, the National Association of Clean Water Agencies' (NACWA) (formerly AMSA) Platinum Award for water quality excellence. To receive this honor a treatment facility must have been awarded the NACWA Gold Award for five consecutive years. A Gold Award is presented to treatment works that have achieved 100% compliance with their NPDES permit conditions in a calendar year.

Tim Lynch, Benton Harbor-St. Joseph Joint Plant, Michigan, on being inducted into the Select Society of Sanitary Sludge Shovelers at the 2006 Michigan Water Environment Association Annual meeting.

Mary Tule, Village of Archbold, on receiving the Laboratory Analyst Award at the Ohio Water Environment Association 80th Annual Conference. This award recognizes a laboratory analyst who has demonstrated excellence and professionalism in his/her daily laboratory work.

City of Painesville Water Pollution Control Plant on receiving the George W. Burke Award (WEF) at the Ohio Water Environment Association 80th Annual Conference. This award is presented to a municipality or industrial wastewater facility for an active and effective safety program.

J. Douglas Brookart, Senior Operations Specialist for Jones & Henry, for receiving the W.D. Sheets Award at the Ohio Water Environment Association 80th Annual Conference. The W.D. Sheets Award is presented to an individual who is active in the field of education, and demonstrated outstanding accomplishment and service in the field of training and education of students for the positions in the area of operation and design of wastewater facilities.

Dail Hollopeter, P.E., Senior Vice President for Jones & Henry for receiving the Lifetime Engineering Achievement Award at the Ohio Water Environment Association 80th Annual Conference. This award was established to honor a member who as an Ohio design engineer has consistently delivered good basic engineering design of wastewater facilities over a period of 20 or more years. The awardee must be an active, Lifetime, or Retired member of OWEA, recognized by his/her peers as having demonstrated a high level of competence in the design profession.

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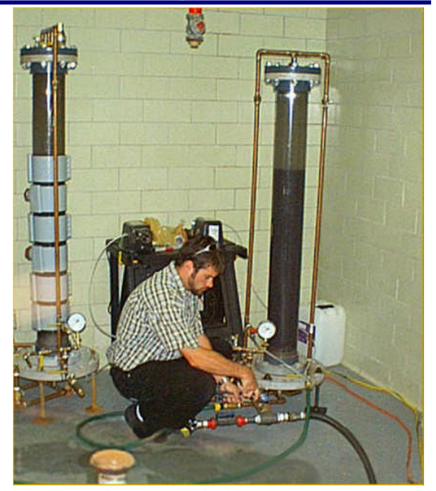
FORUM

Project Team to Design New Radium Removal WTP for the City of Mason, Michigan

by Paul S. Romano, P.E.



Pilot testing of selected process

Jones & Henry has partnered with Wolverine Engineers based in Mason, MI on a unique water treatment project for the City of Mason. For many years, Mason's wells have periodically been above the US EPA Primary Drinking Water Standards maximum contaminant level (MCL) of 5 picocuries per liter for radionuclides, a rare type of radioactive contaminant which is a combination of the radium 226 and radium 228 isotopes. However the City remained in compliance within their distribution system. In 2003 the USEPA revised the monitoring location to be the point of entry (POE) into the public water system (PWS) instead of within the distribution system. This revision required Mason to quickly develop a program to come into compliance with the revised regulation.

To alleviate this problem, the City hired a team of engineering firms - Wolverine Engineers & Surveyors, Inc., Jones & Henry Engineers, Ltd., and Layne Christensen Company. Working together with the City and the Michigan Department of Environmental Quality (MDEQ) this team of consultants developed a project plan in 2005-06 that, when implemented, will enable Mason to remove radium prior to the POE and allow the City to continue its history of excellent water service for its residents. A brief summary of the project plan that was developed by the project engineering team now follows:

The possible health risks associated with radionuclides are the primary driving force for this project. As stated, radionuclides are a rare contaminant and Mason is the first Michigan community known to have exceeded the federal MCL. However there are several nearby communities in Wisconsin and Illinois that have faced this issue for many years. The Layne Christensen Company was brought in as a team member due to their history with radium removal in the Midwest.

Radionuclides emit "ionizing radiation", a known human carcinogen, when they radioactively decay. Long-term exposure to radionuclides in drinking water may cause cancer. Naturally occurring radioactive materials from geological formations have been the primary cause of contamination. Because of their potential health effects and widespread

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Inside this issue:

Mission Statement:

"Jones & Henry is dedicated to providing quality engineering services. We are committed to meeting project requirements with exceptional service; to developing long-term relationships with our clients; and to providing continuing opportunities for our colleagues."

Project Team to Design New Radium Removal WTP for the City of Mason, Michigan

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occurrence, radionuclide concentrations (including radon, radium, and uranium) in public water systems are being increasingly limited by the US EPA.

The existing Mason water distribution system is fed by seven wells that each produce between 150 gallons per minute (gpm) and 500 gpm for a total capacity of 2,200 gpm. The wells range in iron concentration from 0.3-6.3 mg/L and contain levels of radium 226/228 that have periodically measured above the US EPA mandated MCL. The source water has a hardness level range of 17.5-29.3 grains (300-500 mg/L hardness as CaCO3), which is considerably higher than the target hardness range of 9 grains that is usually used for potable water in Michigan.

The City currently has an approximate average daily water system demand of 1.0 million gallons per day (MGD) and a peak demand of 1.5 MGD. As water demand increases over the next 20-years , the existing wells will become increasingly stressed to meet the added water use. With the increased pumping it is also anticipated that well water quality will correspondingly decrease. The Mason area has limited ground water supplies, and is correspondingly restricted in locating new well locations.

The water that the City currently pumps from its wells receives minor treatment before entering the distribution system. The water is treated with a poly-phosphate blend to control against iron oxidation, fluoride is added to promote adequate concentrations to protect against tooth decay, and chlorine is added to provide a residual measure of control against microbial activity.

At the onset of the development of the project plan, the idea of a water treatment system that would remove radium 226/228 and provide softening of the City's water was considered. In July 2005, the City conducted a survey of Mason residents. The survey explained the need for radionuclide removal and that municipal-wide softening would remove radionuclides and also eliminate the need for home water softeners. The results of this survey were mixed and based on its results and that of subsequent public hearings, the concept of citywide water softening was not selected.

As project plan development continued, the following options were evaluated in regards to their ability to alleviate the City's water quality issues:

No Action - This was not a viable alternative given the current situation; it was anticipated that well water quality would further decline in the future due to increased pumping rates.

Outside Source - The possibility of purchasing softened water from the Lansing Board of Water and Light (LBWL) was examined but was not selected.

Blending the Raw Water - This option would involve piping the raw water from the seven existing wells into a central storage facility, where the water would be blended together before entering the distribution network. This option however would not guarantee that POE water would be below the MCL 365 days per year, an MDEQ requirement.

Wellhead Treatment to Remove Radium & Iron - This option would install preformed hydrous manganese oxide (HMO) filtration units to remove radium and iron at the existing wellheads prior to distribution. Although determined to be very cost effective, the permitting and monitoring requirements of currently up to 7 wellheads (and any future wellheads) made this option non-feasible.

(**Selected**) *Centralized Treatment to Remove Radium & Iron* - There were three possible treatment options under this option, which are HMO filtration, Ion Exchange, and Reverse Osmosis (RO). Once it was determined that wellhead treatment was not feasible, the most viable option became to construct a water treatment plant and extend the raw water piping from the existing wells to the centralized WTP location. Based on the analysis of the available data, the results of several public hearing, and discussions with the City it was decided that of the three possible treatment alternatives, a centralized HMO water treatment plant would be the best alternative for the City to pursue.

The HMO Filtration system is cost efficient to construct due to the compact nature of the treatment units. The primary treatment components are pressurized steel tanks, which are pre-fabricated to fit a particular application. The steel tanks are cost effective to install and maintain, as the primary maintenance is the coating system that if properly maintained will last 20+ years. There will be no outdoor tanks or structures to maintain as the treatment equipment will be installed within the treatment facility.

Plan ranked first on State's FY 2007 Project Priority List.

Funding of this project was recently procured through the Drinking Water Revolving Fund (DWRF) as administered by the MDEQ. The project plan was submitted to the MDEQ in April 2006 and was subsequently ranked first on the State's FY 2007 Project Priority List. The DWRF has committed $8,015,000 to cover the design and construction of the new water treatment facility via a 2-1/8%, 20-year loan.

Carmel Continues to Combine Beauty with Function in Their Design

By Brian W. Houghton, P.E.

The City of Carmel, Indiana, a community that prides itself in fine architecture and beauty in its new structures, continues to build in that fashion with the recent construction of the City's latest water storage facility.

Carmel adds to its list of fine municipal buildings designs, a two million gallon composite style storage tank, which does not look at all like the tanks you are familiar seeing across the landscape. The water facility located on the community's far west side, mixes steel and concrete with color and windows to provide an attractive but totally functional structure.

In addition to holding two million gallons of treated water, the elevated storage tank was designed to contain area inside its concrete column that could house up to five floors of offices or storage space.

A unique feature of the new tank's design is the use of windows located in the recessed arches in the concrete support structure. These windows are positioned at each level of a future floor in the tank. The exterior concrete was stained with multiple colors.

The tank, which cost $2.8 million including engineering, was designed by Jones & Henry Engineers, Ltd., Fort Wayne, Indiana and erected by Landmark Structure I, LP. of Fort Worth, Texas.

For more information contact Brian W. Houghton, P.E., Jones & Henry Engineer, 260.482.1920.

NPDES Permit Coverage for Small Municipal Separate Storm Sewer Systems in Ohio

by Dail C. Hollopeter, P.E.

In January, Ohio EPA public noticed a list of communities which will be required to submit permit applications for coverage under a general NPDES Discharge Permit for their storm water systems. These communities are designated as small MS4s (municipal separate storm sewer systems). After the list is issued as a final action of the Ohio EPA Director, the communities will have 180 days in which to submit a permit application. The permit application consists of a Storm Water Management Plan and a Notice of Intent.

This program is a continuation of the Phase II Storm Water regulations issued by US EPA in December 1999. The purpose of the program is to preserve, protect, and improve the water resources of the State from polluted storm water. The intent is to further reduce adverse water quality impacts by regulating MS4s. Many governmental entities within urbanized areas have already submitted applications for coverage under a general storm water NPDES Permit. Jones & Henry prepared those application materials for two communities in Ohio; Huber Heights and Perrysburg. Those applications were due in March 2003. It is important to note that the coverage is only for the separate storm sewer systems and does not address combined sewer systems.

The Storm Water Management Plan is required to address each of six minimum control measures through implementation of best management practices (BMPs). The six minimum control measures are as follows:

1. Public Education and Outreach
2. Public Involvement and Participation
3. Program to Eliminate Illicit Discharges
4. Pollution Prevention Program
5. Construction Site Sediment Control Program
6. Post-Construction Storm Water Management Program

For each of the six minimum controls, the owners need to select best management practices, measurable goals, an implementation timetable, and responsible individuals for implementation.

Ohio has developed a model storm water management plan as a guide for preparing a customized plan for the community. People need to understand that this may take significant time commitments from the city administration to select the BMPs, measurable goals, and timetables to which the city is comfortable committing.

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