

Phosphorus removal under way

Plant manager Bill Burks said that the new total phosphorus (TP) clarifier expansion was basically completed and he had initiated phosphorus chemical removal operations on Dec. 27. He is gradually adjusting the amount of chemicals needed to reduce the TP level to be able to comply with the state's Nutrient Monitoring Control Regulation 85 (Reg. 85) TP discharge effluent limit of a rolling annual median of 1 milligram per liter (mg/l) in accordance with the compliance schedule in the facility's May 1, 2015 five-year discharge permit. Burks' staff will formally begin recording data on Nov. 1, 2019 per this discharge permit. After a year of data has been collected and recorded, rolling annual median results will be reported to the state and EPA beginning with the facility's submittal of its Nov. 1, 2020 discharge monitoring report.

Since this is a technical/chemical treatment, he wants to add only as much hydrated potassium aluminum sulfate (alum), polymer, and sodium hydroxide as it will take to meet the 1 mg/l TP permit limit. Burks said that the EPA has stated that it would prefer that facilities install biological nutrient removal treatment (BNR) equipment instead. However, no such reliable or affordable BNR treatment processes or equipment currently exist. Burks said, "Biological phosphorus removal is a challenge even for an experienced operator. No matter what the conditions are, you can always add chemicals to remove the phosphorus, but temperature swings like we have here would affect live organisms so much."

Burks said a bit of painting, landscaping, and the fire panel installation to monitor and report automatic operations of the sprinkler system were still not complete, and that \$31,000 was on retainer to pay for finishing those up in 2017, but otherwise the \$3 million project is complete. The facility already meets the Control Regulation 85 total nitrogen (TN) November 2019 limit of 15 mg/l.

MSD and Upper Monument Water Quality Management Association environmental compliance coordinator Jim Kendrick pointed out that it was extraordinarily expensive to focus on a hundred pounds of phosphorus a month when the facility handles 4,400 pounds of sludge every day. He said the Colorado Department of Public Health and Environment (CDPHE) Water Quality Control Division's direction continues to be ambiguous and uncertain, making it difficult for treatment facilities to decide how to commit capital funds for new nutrient treatments that take years to plan, design, and build.

Burks said TLWWTF was in good shape as far as options for the plant in the future, and they could add filtration to remove phosphorus down to 0.2 mg/l if needed. Wicklund men-

tioned water reuse possibilities the town is discussing, saying, "Once you put filters on the end of this, the quality of the (discharged) water will be incredible."

The consensus of the group was that it would be better if plant operators got to make more of the states' regulatory decisions, because they are out in the field and understand the real-world difficulties of types of treatment. Kendrick said decisions are made by state engineers and "lawyers sitting in cubicles ... throwing darts to choose new limits" that will have to be met if and when new treatment technology is created that may comply with these new limits.

New pumps working well

Burks said the new return activated sludge pumps had been installed and were working smoothly. He said the facility got its money's worth out of the old pumps, one of which has pumped 3 billion gallons over its 129,000 hours of operation.

Baseline radium sampling plan made

Wicklund said no date had been set yet to meet with the town of Monument Water Department, water engineers Forsgren Associates, and Roger Sams of GMS Engineering to discuss the town's plans for dealing with the naturally occurring radium in its drinking water. If the town could use dilution to get all of its drinking water below 5 picocuries per liter by the time it gets to the town's distribution system for delivery to Monument water customers, it would be acceptable to the state. Then TLWWTF would not have to do anything about naturally occurring radioactive material (NORM) that is already in the influent coming from the town through the MSD collection system.

But if the town has to implement direct drinking water treatment to remove the radium, which would create federally-regulated technologically enhanced naturally occurring radioactive material (TENORM) as a byproduct of this direct treatment, then MSD, TLWWTF staff, and the JUC would have many questions for the town before they decide whether or not to accept that town TENORM into its separately-owned and operated collection and wastewater treatment system. See www.ocn.me/v16n9.htm#water; www.ocn.me/v16n12.htm#tljuc1108.

Strom said, "Not knowing makes me uncomfortable. We want to stay engaged on what their plan is."

Burks said he had consulted the staff at Donala Water and Sanitation District for some tips on testing for NORM radium levels in biosolids. The board consensus was that Burks should do an annual radium sample of the facility's treated biosolids in its sludge lagoon this spring when sludge hauling for regular biannual agricultural land application. That would give a baseline indication of the concentration of the last two years'

worth of radium from currently produced TLWWTF NORM influent.

The JUC confirmed its previous December direction to Burks to collect a 24-hour composite sample of the combined influent from all three districts for the TLWWTF's baseline radium information. Also, the consensus was that Burks should find out when the town was actually pumping backwash water from the town's Well 9 sand filter where the radium gets partially removed and becomes more highly concentrated than in the well 9 raw water. Well 9 has the highest naturally occurring radium levels of all the town's active groundwater wells. A few years ago, town well 6 was turned off indefinitely due to radium levels that exceed federal standards.

District manager reports

Gillette and Orcutt did not have anything to report to the JUC. Wicklund said MSD had just completed its annual sewer line cleaning, and Burks said his staff had noted a spike in biochemical oxygen demand (BOD) in December that correlated with this operation, which flushes any lingering trapped solid wastes in the collection lines down to the facility.

The town had a drinking water main leak on Second Street on Jan. 4 and 5, Wicklund said. He wondered why the town did not use specialized emergency contractors for that size repair, since it would be safer and more affordable. See related photo in the Jan. 3 and Jan. 17 Monument Board of Trustees articles on page 8 and 11.

Plant manager's report

Burks summarized the facility's discharge monitoring report required by the state for effluent discharge into Monument Creek and said all parameters were easily within permit limits. "What we are discharging to the

stream is very, very good water," Wicklund said.

Kendrick said a lot of other plants would have difficulty meeting a Reg. 85 10 mg/l total inorganic nitrogen (TIN) limit, a state-proposed reduction from the current 15 mg/l limit for TIN, and it was not clear, despite all the state Water Quality Control Division briefings he has attended, when or if that lower TIN limit might be imposed by the Colorado Water Quality Control Commission. He pointed out that the if the state did decide to lower the limit on TIN from 15 to 10 mg/l, merely to show progress on nutrient reductions to the EPA despite the enormous costs for the other 360 state wastewater facilities, that the lower TIN limit would be easy for TLWWTF to meet since its effluent is consistently well below 10 mg/l TIN.

Reg. 31.17 still in state's plans, apparently

Kendrick gave more examples of the unpredictable nature of government regulations. He said that in July and September, the EPA, after a four-year delay, "took no action" on a proposed Regulation 31.17 "interim value" for a rivers and streams water quality TP and TN standards set by the Water Quality Control Commission (WQCC) in June 2012 for implementation in May 2022. Despite EPA's "no action" decisions, the state still announced at the Jan. 9, 2017 WQCC meeting that those 2012 interim values would still take effect in May 2022 and perhaps sooner than originally planned.

Kendrick reviewed by saying the July EPA decision applied to Regulation 31.17 state-wide interim TP/TN values and

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