

Toledo Collins Park WTP

Blue Ribbon Panel

Major Recommendations

Presented below is a listing of the panel's major recommendations developed upon review and discussion of the General Plan Draft Report evaluating options for control of microcystin toxins and long term improvements at the Collins Park Water Treatment Plant.

- 1) City should have a clearly defined and documented plan for their approach in monitoring for and treating during harmful algal bloom (HAB) events. Action set points for water quality conditions should be defined along with treatment procedures for adjusting the plant chemical feeds.
- 2) The panel endorsed the City's interim strategy of controlling HAB by constructing improvements to the potassium permanganate and powder activated carbon (PAC) chemical feed systems at the Low Service Pump Station and providing additional PAC feed capability at the plant. Updated information and direction on the feed approach with these systems should be established and communicated clearly to the plant operations staff.
- 3) The panel recommended the City schedule a conference call with the panel members to discuss the City's SOP for HAB treatment and measures being taken by the City to avoid exceeding toxicity concentration levels expected to be released by US EPA prior to this summer.
- 4) The panel recommended that the City have a defined communication plan in place for emergency response situations including HAB events. The plan should define clear lines of communications and procedural practices for communications with various entities by the City staff. The panel recommended inviting City Council members along with their constituents to tour the plant.
- 5) From a system-wide planning perspective, it was suggested that additional investigation be performed looking at the viability of some type of river bank filtration or infiltration gallery approach providing further protection during HAB events. This could potentially be looked at from a supplemental flow basis and not necessarily from a total flow perspective.
- 6) The panel thought that some type of baffling arrangement around the intake crib could be beneficial in serving as a barrier against algae entering the intake, and that it merited further investigation. The baffle would enable water to be drawn toward the intake from a greater depth and presumably result in lower levels of algal counts, and microcystin toxins. The additional planning effort would include an investigation into various commercially available baffling approaches, a conceptual layout, and possibly computer modeling to confirm the pattern of flow.

- 7) The panel recommended implementation of an asset management program that includes routine inspection and maintenance of all facilities from the raw water source to the consumer (intake, low service, raw water mains, water treatment, high service, pumping stations, storage, and distribution system). Specifically, the panel recommended a specialized structural integrity analysis of the raw water mains from the Low Service Pump Station to the water treatment plant.
- 8) The panel recommends that present method of rapid mix of chemicals using a hydraulic jump be replaced with mechanical mixing and discharging of coagulant below the water surface.
- 9) The panel recommended proceeding with the 40 mgd redundant capacity improvements. This is based on ensuring adequate plant reliability when facilities are removed from service for performing periodic maintenance/replacement of equipment and repair to structures, and to facilitate the upcoming major facility modifications that must be performed. The panel recommended conventional (flocculation, sedimentation basins, filtration) over the solids contact clarifier alternative and recommended Arcadis clarify the section as discussed in the workshop. The panel recommended clarifying the general plan to indicate the purpose of the 40 mgd capacity improvements is for redundancy, not to meet demand for increased population or gallons per day per capita water use. To further clarify the purpose and need of the 40 mgd capacity, the panel recommended adding a column to the "List of CIP Projects Dependent Upon the East Plant Water Quality and Redundancy Improvements Project (Basins 7 & 8)" to show that the work needed to the existing flocculation and sedimentation basins cannot be completed during seasonal low flow periods.
- 10) From a system-wide planning perspective, the panel recommended that the City re-consider the need for softening as is currently practiced. It was suggested that the City reach out to industries and share information related to rate impacts attributed to meet a long-standing obligation to soften water, particularly considering the sophistication of industries today and whether they have additional process in place to further treat the water.
- 11) It is important for plant operations to understand purpose for the various chemical feeds as treatment tools and the interactions of chemicals at the different application points. The panel recommended training and clear written information be provided on the approach to chemical feeds at the plant. Information should include the treatment reason for the chemical use, feed capabilities and limitations for the various systems, and directions concerning the decision making process for the chemical to be applied and the selection of the dosage level. The plant staff should look at chemical addition and plant optimization on a routine basis, looking at such things as the need to feed chlorine dioxide or if another coagulant such as an alum-polymer blend may perform better and produce less sludge.
- 12) The panel concurred with the general plan recommendation that ozone is the long term and best available treatment barrier for algal toxins. Ozonation has the added benefit of addressing other water quality challenges such as tastes and odors, disinfection by-products, trace organics, and microbial agents of concern. The City should move forward to implement ozone as soon as possible, understanding that the earliest possible time frame would be with the completion of the plant wide power improvements scheduled for completion in 2017. The panel recommended moving on a parallel path with ozone and construction of the 40 mgd redundant capacity

improvements. The panel also recommended that the City proceed with the approach of using the external settled water ozone contactor over the approach for the settled water flume contactor due to uncertainties of the utilizing the existing settled water flume and associated safety concerns. The panel recommended additional ozone pilot testing be performed to confirm design assumptions and preparing a protocol for ozone bench scale testing throughout the summer when an algal bloom is likely to occur. The panel also recommended testing settled water during a colloidal event with ozone to determine affect on ozone dosage. The panel recommended the City prepare educational material regarding the benefits of ozone treatment and provide a breakdown of the cost per household unit. The panel recommended communicating the City is taking steps to provide a multi-barrier approach to microcystin treatment.

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