

Menti & Zoom Questions and Responses
C-43 West Basin Storage Reservoir Water Quality Feasibility Study Public Meeting #5
December 2, 2020

Questions	Responses
Please type in any questions you have related to the technologies that were evaluated for the Study.	
Will the recommended treatment methods remove humic compounds and clarify the water?	This depends on which technology. Some technologies would do a better job than others in terms of making a change in water color. If the water clarity is due more to algae or suspended solids, then all the technologies would do a good job of addressing those or they would not have made it this far in the process.
How will the use of Bold & Gold® be affected by intermittent flows in or out of the reservoir. Is this still a viable solution for this application?	We do expect dynamic flows from the reservoir to the treatment system. The bulk of the Bold & Gold® applications are stormwater related so its typical application is in a dynamic system. From the early results of the pilot study, we learned that it is important that the system become established and then the performance should be stabilized with biological treatment. There is some control on how much water is discharged from the reservoir to the treatment component. Bold & Gold® is being proposed as complimentary to a treatment wetland or sand filter so the operations would be balanced with the other treatment.
Is there a plan to provide continuous/routine water quality monitoring of final alternatives to verify the criteria are being met?	Water quality monitoring will be part of any water quality treatment project that is implemented at the site.
Why is cost not in the same ranking table with the other factors? It seems more weighted than the other things.	As we went through the ranking process, we first pared down the list of technologies using the attributes and then went to a strictly cost-benefit analysis of the costs for the project and the nutrient removal benefits. We had received feedback from past public meetings that cost should not be the sole discriminator, which is why the attribute ranking was included. The goal was to evaluate the technologies to ensure they meet basic requirements and then use cost as an additional factor. Final Score = (Attribute Score x 50%) + (Cost-effectiveness Score x 50%)
Why Bold & Gold®? Who brought it up?	This technology was on the DEP website of approved technologies. The Feasibility Study used technologies from the DEP database, as well as input from experts and the public.
Please type in any questions you have related to the C-43 West Basin Storage Reservoir Project.	
Will the treated water be commingled with water being used for water supply in the Townsend Canal?	Opportunities to decouple the treated water from water supply withdrawals will be analyzed as part of the Siting Evaluation.

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Please type in any additional questions you may have about the Study.	
Do you anticipate the treatment component will be completed by December 2023, and in time for the operations and testing phase for the reservoir?	The goal is to have the treatment component online concurrently with reservoir operations.
Questions from Zoom Participants	
Is the PowerPoint and recording available online?	Both will be available after the meeting.
Are there water depth limitations to the alternative treatment technologies? What is the depth of overlaying water column?	For the media bed treatment technologies, like Bold & Gold®, the media is 3–5 feet deep. For this technology, water is placed at grade or a few inches to spread the water over the media for filtration. In the alum settling ponds, the water can be 9–10 feet deep to accumulate solids.
Have you considered solar energy for the alum facilities?	We are currently assuming that power from the local grid will be used. We have not looked specifically at solar power but this can be evaluated moving forward. Power will be needed to operate the dosing equipment and pumps. The power source will be determined during detailed design.
What is the proposed alum dosage concentration?	The dosage is on the order of 10–12 milligrams per liter (mg/L). This dosage is being tested by SFWMD now and this will be discussed later in the presentation.
Have affects of hurricanes been taken into account when reviewing these technologies, i.e., no electricity, flooding, wind?	This will be considered during detailed design as well.
What is the most ideal water depth for sand filtration?	This is similar to Bold & Gold® where there just needs to be enough water to spread out across the sand bed so that water can infiltrate.
I may have missed it. What's the ideal location of HWTT, i.e. upstream or downstream, of an STAs?	Based on the chart that was shown in the presentation, HWTT would be upstream of the treatment wetland/STA. The HWTT would provide the primary treatment with an STA helping to polish the water.

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Are there any concerns with alum toxicity in the receiving waterbody?	Alum technology has been implemented over the last 30 years in Florida. Studies by Harvey Harper from projects in central Florida are cited in our report and are available on the SFWMD project website. The HWTT technology also has reports summarized from Watershed Technologies as they have implemented this technology for SFWMD over the last several years. Additional details are posted on the C-43 website. The water chemistry for the C-43 will minimize the toxicity potential, and the project will be managed so that toxic concentrations do not occur.
In your experience, how long do treatment wetlands effectively remove nutrients? With age, can't they become a nutrient source?	With respect to nitrogen, the predominant processes are microbial, which are associated with biofilms or microorganism communities that grow on the roots and stems. These biological processes will run indefinitely. For phosphorus, the underlying soils will have some absorption capacity that could reach a maximum point. Phosphorus is also taken up by plants that then die and decompose to create new soils. In our experience, life expectancy is not an issue when the wetlands are appropriately designed, sited, and constructed. There will be a slow accretion of new solids in the wetlands over time.
Do these options remove chemicals used on Lake Okeechobee in Aquatic Plant Management?	The focus of the Feasibility Study is to identify technologies that effectively reduce nutrients. Other chemical removal has not been evaluated.
Are the new treatment systems going to be within the same footprint of the existing C-43 project or did the costs assume the acquisition of land to accommodate the treatment systems?	Additional lands were not evaluated as part of the Feasibility Study although SFWMD does own lands in the area. The costs in the Study did include land acquisition. Additional evaluations will be conducted, and details on these evaluations will be provided later in the presentation.
Will the alternatives be evaluated for effectiveness at flow levels beyond 457 cfs?	Operationally, we are looking to treat flows up to 600 cfs. The flow dictates the size of the treatment system so it is an important factor. The flow of 457 cfs was selected based on the long-term expectation for the reservoir. There will be periods with high flows but the focus is on treating flows in the range of 457–600 cfs.
For ElectroCoagulation, is the bulk of the cost in equipment or power usage?	Most of the cost is the equipment. The power cost is higher than other technologies, like alum treatment, but the equipment is pretty expensive. J-Tech spoke to the vendor and discussed alternatives to reduce the number of units; however, there are still substantial capital costs to meet the flow requirements.

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What micron size is the geo fabric?	The pore size is not known, but it is small enough to allow the water through but not the sand. Unfortunately, the manufacturer does report the size on their specifications. They only state that the fabric exceeds industry standards for separating gravel from "soil." It does not specify down to what particle size.
Given that the pilot study was only performed for 30 days, would you consider the results for the Bold & Gold® and sand study inconclusive thus far? If not, is it your opinion that the performance reported by the vendor isn't as effective as stated?	The results presented here are just a first flush after the technology was installed. It has not reached the 90 day point to achieve optimum performance. Therefore, this part of the study is not conclusive and not representative of removal capabilities.
Would hydraulic residence time be a better metric than flow rate for evaluating performance?	The flows presented are essentially hydraulic loading rates with the rates of gallons per minute over square feet of surface area.
Have you considered pilot testing of polyaluminum chloride as well?	The pilot study only tested the technologies recommended in the Feasibility Study. While this type of alum was not included as part of the pilot study, its nutrient/particulate removing capabilities do warrant a look. This particular type of alum seems to produce less of a pH reduction effect and can be used in a broader range of water pH conditions. Given that Lake Okeechobee water has relatively low alkalinity, this may be an important factor when considering types of alum.
Were there problems with the fabric clogging?	There have not been problems with clogging and water has been moving quickly through the system. After they turned the flow on, they had a pretty healthy flow out of the tanks within a day. There have been no problems with clogging about three months into the pilot study.