C-43 West Basin Storage Reservoir Water Quality Feasibility Study

Public Meeting Minutes

September 27, 2019 2:00-4:00 PM

SW Florida Community Foundation Collaboratory

2031 Jackson Street, Suite 100, Fort Myers, FL 33901

Meeting Welcome

- The first of four public meetings for the C-43 West Basin Storage Reservoir (WBSR) Water Quality Feasibility Study (Study) began at 2:00 pm.
- Dave Fleming, Ingenuity Lab, gave a brief welcome and an overview of the meeting plan for the day.
- Drew Bartlett, Executive Director of the South Florida Water Management District (SFWMD), reviewed the importance of the Study that was the subject of the meeting and discussed how the Study is part of Governor Desantis' Executive Order issued in January 2019.
- Dave Fleming then discussed the format of the meeting and the plan for the day and introduced Georgia Vince, Project Manager for J-Tech, the consultant that is leading the Study efforts.

Understanding the Big Picture: Everglades Restoration and Scope of Feasibility Study

- Georgia Vince discussed the hydrologic changes that have historically occurred throughout south Florida and the greater Everglades and how those changes have affected the expansive mosaic of habitats.
- Georgia Vince discussed the graphic that shows the alteration of flows and the current system.
- Dave Fleming asked a question about the intent of Everglades restoration.
- Georgia Vince explained the graphic on the right of the slide shows the restoration targets for the quantity of flows. Everglades restoration also has targets for flow volume changes and water quality.
- Georgia Vince discussed the intent of the Comprehensive Everglades Restoration Plan (CERP) and that the plan outlined more than 60 individual projects to restore the timing, distribution, quantity, and quality of flows.
- Georgia Vince explained that the C-43 WBSR was one of the CERP projects and the purpose was to regulate the flow volumes to the Caloosahatchee Estuary by capturing and storing local basin runoff and Lake Okeechobee regulatory releases

during the wet season and releasing the stored freshwater to the Estuary during the dry season to help balance salinity levels.

- Georgia Vince reviewed subsequent efforts to CERP including SFWMD's Restoration Strategies and the Science Plan, Central Everglades Planning Project (CEPP), and CEPP Post Authorization Change Report (CEPP PACR), which was completed in 2018 and includes the A-2 Reservoir and stormwater treatment area (STA) components within the Everglades Agricultural Area. These storage and treatment facilities will also help to reduce flows to the northern estuaries.
- Georgia Vince reviewed some of the many other ongoing efforts led by the Florida Department of Environmental Protection (DEP) including the Red Tide Task Force, Blue-Green Algae Task Force, Agricultural Best Management Practices (BMP) regulations, basin management action plan (BMAP) update, and the DEP Library of Accepted Technologies for Water Issues.
- Georgia Vince also stated that DEP is participating in the Working Group that is providing input and feedback for the Study.

Meeting the Feasibility Study Working Group

- Dave Fleming asked the Working Group members to introduce themselves to the audience and indicated that they would be available to discuss the study and collect information in a networking session at the end of the presentation.
- Georgia Vince introduced Shawn Waldeck, J-Tech, who has been working on the C-43 WBSR since 2002 and is currently overseeing construction management of the reservoir.

Understanding the C-43 Reservoir Operations

- Shawn Waldeck provided an overview of the location of the C-43 WBSR including its location related to the Caloosahatchee River, Lake Okeechobee, Ortona and Franklin Locks, and Townsend Canal.
- Shawn Waldeck discussed the basic operation of the reservoir including the location of the inflow pump station on the Townsend Canal on the west side of the facility, and the interconnect between the two large cells.
- Shawn Waldeck then discussed how the reservoir will release water at two locations (one at each cell) into the outflow canal along the north boundary of the reservoir and west to the Townsend Canal, which ultimately will flow into the Caloosahatchee River.
- Dave Fleming asked how large the reservoir actually is and Shawn Waldeck replied that the reservoir is approximately 6 miles across and 3 miles tall. The storage capacity its 170,000 acre-feet.

- Shawn Waldeck reviewed the general operational plan which includes filling during the wet season, discharging during the dry season at a target rate of 400-450 cubic feet per second (cfs), which was identified as the minimum flows and levels (MFL) for the Caloosahatchee Estuary.
- Shawn Waldeck further described that the inflow pump station capacity is 1,500 cfs, and it would take about 2 to 4 months to fill the reservoir.

Understanding the C-43 Reservoir Study Constraints

- Dave Fleming described that all studies need to have clear goals and objectives and that the Study team has identified constraints to be aware of as they move forward to address the intent of the Executive Order.
- Georgia Vince reviewed several of the Study constraints including that the Study cannot affect the congressionally approved C-43 Reservoir project purposes, infrastructure, construction schedule, or operation. Project lands have not been specifically identified for the Study. The Study will focus on reviewed and accepted technologies included in the DEP Library of Accepted Technologies for Water Issues and that additional technologies would be discussed at the end of the meeting and at future meetings to capture input from the public.
- Georgia Vince also discussed that the C-43 Reservoir and the selected treatment component(s) alone are not intended to achieve compliance with the Caloosahatchee River and Estuary Total Maximum Daily Loads (TMDLs) and that there are other projects identified throughout the watershed related to that effort.
- Georgia Vince introduced two of the J-Tech team members, Jim Bays, of Jacobs Engineering, who will lead the alternative treatment technologies evaluation for the Study, and Chris Keller, with Wetland Solutions, Inc. who will lead the evaluation of wetland treatment systems.

Focusing on the Study: Technologies Presentations
Biological, Chemical, and Physical Treatment Technologies

- Jim Bays presented an overview of water quality technologies available for consideration in improving discharge water from the C-43 WBSR.
- Jim Bays discussed where in relation to the location to the reservoir and the Caloosahatchee River water quality treatment features could be implemented.
- Technologies reviewed included natural and conventional engineered technologies for treating water flowing into the reservoir, treatment

opportunities within the reservoir, and treatment opportunities for water leaving the reservoir.

- Jim Bays discussed that the broad spectrum of technologies allows tradeoffs in land area, performance, energy, waste products, and other factors to be compared. Physical (e.g., filtration, sedimentation), chemical (e.g., coagulation, flocculation, and adsorption), and biological (e.g., wetlands, floating wetland islands) technologies were briefly described.
- Jim Bays discussed the innovative technologies currently accepted by DEP and that these technologies will be reviewed and evaluated during the Study.
- Jim Bays explained that the technologies included in the Study will be evaluated based on performance, cost, physical and general requirements, and will be ranked during the project.

Wetland Treatment and STAs

- Chris Keller summarized the diverse array of water quality processes that occur in treatment wetland systems and related those back to the processes that occur in conventional biological, chemical, and physical treatment systems.
- Chris Keller described the wetland nitrogen and phosphorus cycles, highlighting the dominant pathways and processes responsible for net removal of nitrogen and phosphorus from surface waters.
- Chris Keller described the various types of wetland plant communities that have been used in wetland treatment systems: floating aquatic vegetation (FAV), emergent aquatic vegetation (EAV), submerged aquatic vegetation (SAV), and periphyton.
- Chris Keller noted that treatment wetlands, while they may not appear as such, are engineered to achieve specific outflow values based on known inflow values. The key differences between treatment wetlands and conventional systems are in land area requirements (larger for treatment wetlands), external energy and chemical inputs (lower for treatment wetlands), and cost-effectiveness (typically better for treatment wetlands).
- Chris Keller presented data from the 2007 C-43 WBSR Test Cell Water Quality Study showing that the total nitrogen concentration was reduced by 14% and total phosphorus by 74%. Natural processes (primarily microbial for nitrogen and physical settling for phosphorus) were responsible for the concentration decreases.
- Chris Keller summarized the recently completed C-43 Water Quality Treatment and Testing Project Phase 1 Mesocosm Study. The study focused on the use of EAV and SAV wetland systems to reduce dissolved organic nitrogen concentrations in water pumped from the Caloosahatchee River. The goals were

to evaluate performance differences attributable to plant community selection, antecedent soil nitrogen storages, and hydraulic loading rate. Overall, the mesocosms reduced total nitrogen by 23% on a concentration basis and 33% on a mass basis. More dissolved organic nitrogen was removed in the wet season (14%) than in the dry season (4%), while dissolved inorganic nitrogen was consistently and effectively removed (90%). Nitrogen performance was not different based on plant community type, but more phosphorus was removed by SAV than EAV.

- Chris Keller indicated that performance data from regional treatment wetland projects will be reviewed and incorporated into the Study. Members of the Working Group will be instrumental in locating and providing the regional data for review in the Study.

Engaging the Feasibility Study Working Group

- Following the presentations, the Working Group and the J-Tech team gathered with meeting attendees in the foyer of the Collaboratory to have an opportunity to discuss specific treatment technologies, and their potential to be included in the Study in a one-on-one format.
- Several informational sheets were available for the public including the C-43 WBSR fact sheet, the Caloosahatchee BMAP information sheet and the DEP Technology Database information sheet, which provided the details regarding submittal to the database for acceptance.
- AquaFiber, Phosphorus Free Solutions, and Powell Water Systems provided information and links useful to evaluating their potential as technologies to be applied to the WBSR Water Quality Feasibility Study.
- Other discussions and feedback from the audience included an overview of the project and potential solutions to a contingent of graduate students from the University of South Florida Graduate School of Engineering. Their class project will be to assess the effectiveness of different technologies for improving water quality in the C-43 and reservoir discharge.
- Other information exchanged included data compiled by the City of Sanibel regarding improved water quality in the Estuary and in wastewater and stormwater discharges, and with the Southwest Florida Clean Water Movement, which has been tracking water quality in the River and Estuary for over 30 years, and how that information can be incorporated into the Study.
- Valuable and important information and perspectives were shared between the Working Group and the public during this interactive one on one opportunity.