WEST PALM BEACH CANAL/STORMWATER TREATMENT AREA –1 EAST | STA-1E

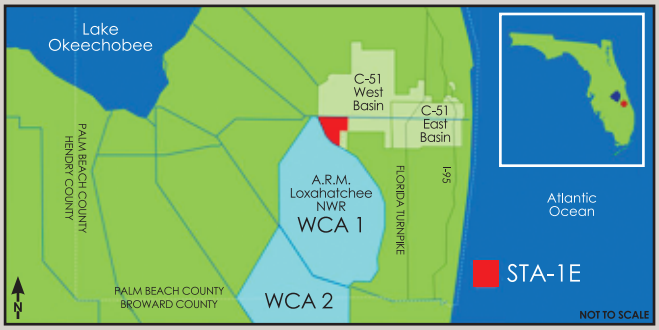
FACTS & INFORMATION

MAY 2015

West Palm Beach Canal/Stormwater Treatment Area-1 East (STA-1E) detains and treats stormwater runoff from the western portion of the C-51 basin that is collected in the West Palm Beach (C-51) Canal. The treated water is discharged into Water Conservation Area 1 (WCA-1), also known as the Arthur R. Marshall Loxahatchee National Wildlife Refuge.

PROJECT LOCATION

The C-51 canal is a component of the Central and Southern Florida Project. The C-51 basin is located in Palm Beach County, Fla., and extends from the edge of WCA-1 on the west, almost to the Atlantic Ocean on the east. The drainage area of the basin is approximately 164 square miles. STA-1E is located between WCA-1 and the western end of the C-51 canal.

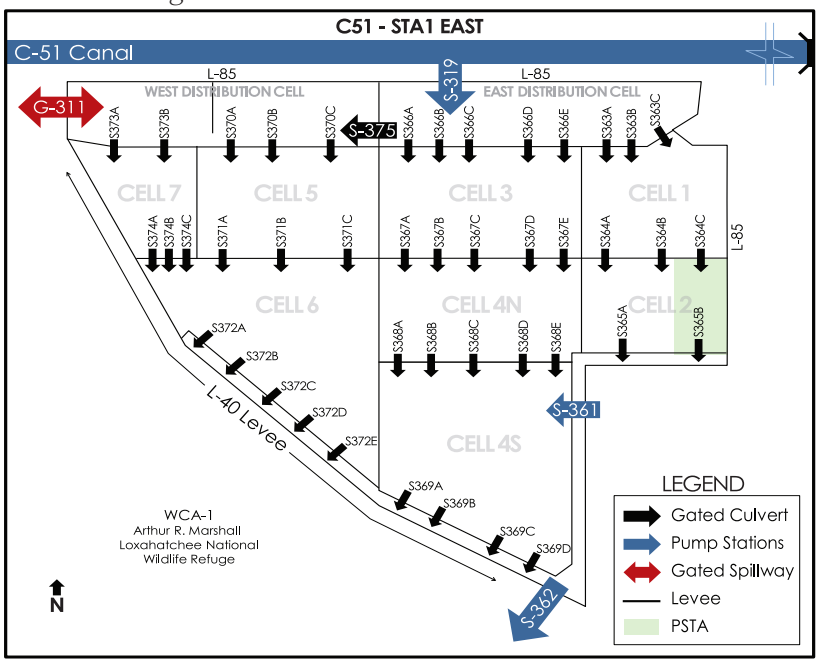


PROJECT OVERVIEW

In 1996, Congress authorized the U.S. Army Corps of Engineers to modify the C-51 flood control project to additionally act as a stormwater treatment area, by building an STA that would reduce phosphorous discharge levels to 50 parts per billion (ppb). The Corps began construction in June 2000. STA-1E was turned over to the South Florida Water Management District (SFWMD) for operation and maintenance in October 2005. However, the Corps retained control of the eastern flowway (Cells 1 and 2) to operate the Periphyton Stormwater Treatment Area (PSTA) demonstration project.

PROJECT COMPONENTS

STA-1E encompasses approximately 6,000 acres divided into 10 cells. Eight of the 10 cells (Cells 1 though 7) comprise the overall treatment area of STA-1E. The STA cells are divided by levees, and water levels and flows are controlled in parallel flow paths by a series of gated culverts through the levees.



Two distribution cells that run along the north side of the STA are not considered treatment cells. Their purpose is to allow some operator flexibility in sending water to different cells.

- There are a total of three pump stations within STA-1E:
  - S-319 is 3,980 cubic feet per second (cfs) pump station and the major entry point for water into the STA from the C-51 Canal.

  - S-362 is the primary discharge structure and consists of a 4,200 cfs pump station at the southernmost point of STA-1E, discharging treated water to the Loxahatchee National Wildlife Refuge.
  - S-361 is a smaller, secondary inflow pump station (75 cfs) that discharges water directly into Cell 4S of STA-1E. This pump station also returns to the STA seepage water in the eastern perimeter seepage canal.
- STA-1E contains 44 culverts:
  - The S-375 is a 1,580 cfs 3-barrel culvert that allows water to flow from the East Distribution Cell to the West Distribution Cell.
  - The other 43 culverts are single barrel culverts located within the internal levees. These structures facilitate the distribution of water through the treatment cells and allow flexibility in the operation of the STA.
- The gated spillway, G-311, was constructed by SFWMD. It allows bi-directional movement of water between STA-1E and the STA-1 Inflow Basin at 3,200 cfs. G-311 and the STA-1 Inflow Basin allow SFWMD operators flexibility to use both STA-1E and STA-1W to treat runoff from the C-51 West Basin and other locations prior to discharge to WCA-1. G-311 can also be used to send water supply releases from STA-1E to the L-8 canal.

PSTA

The Everglades ecosystem is unique in that its levels of nutrients, such as phosphorous, are unusually low. Phosphorous is a pollutant that typically comes from farms and urban areas. Nutrient levels dramatically alter the delicate balance of the Everglades ecosystem.

A Periphyton Stormwater Treatment Area demonstration project was conducted within the eastern portion of Cell 2 of STA-1E. The PSTA was used to test a methodology to reduce phosphorous concentrations to levels lower than expected for emergent vegetation. The PSTA project was operated under a cooperative agreement through Dec. 31, 2010. Work began in May 2012 to remove the demonstration project and restore the cell floor. PSTA deconstruction was completed in June 2014.

PROJECT STATUS

Currently, the Corps is working on repairs to the culverts and trash rake system at STA-1E and will take approximately three years to complete. STA-1E will remain operational throughout the duration of these repairs,

- The culvert joint repairs are being done under a Multiple Award Task Order Contract (MATOC) with eight separate task orders being used to accomplish the work for the 41 culverts. Repairs have been completed on 25 culverts. Only one structure per cell can be off-line at any one time, so each culvert repair must be completed and the culvert placed back into service before another structure within that cell can be removed from operation.
- Repairs have been completed on the trash rakes at pump station 362 to improve their effectiveness at removing debris during high winds. The system functioned as designed during calm weather conditions, but the repairs to the trash rake system will allow it to perform better during storms. The same type of repairs are being performed on pump station S-319 and are scheduled to be complete in Juune 2015.
- Now that PSTA deconstruction has been completed, SFWMD can begin their re-vegetation process, which is expected to take approximately 18 months. At that time, Cell 2 will be restored to operational condition and will be brought back on-line to continue the removal of phosphorus from the water.

FOR MORE INFORMATION

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