PROJECT DEFINITION REPORT

RS – L-8 FLOW EQUALIZATION BASIN RESERVOIR INFRASTRUCTURE IMPROVEMENTS (CHILD PROJECT TO 100801)

PS ID 100813

SEPTEMBER 12, 2012

REVISION #0

sfwmd.gov

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Approvals

The signatures in this section of the project definition report should be revised to represent the various areas providing significant resources to the project.

Temperince Morgan, State Policy Chief, Office of Everglades Policy and Coordination — Date: 8/17/12

Jeffery R. Kivett, P.E., Bureau Chief, Engineering and Construction — Date: 9/12/12

Joel Arrieta, Bureau Chief Field Operations North — Date: 8-17-12

Document prepared by: Jennifer Leeds, Extension: 6088

Project Location

The L-8 Flow Equalization Basin is located in central Palm Beach County, adjacent to and west of the L-8 Canal. It is north of State Road 80 and is strategically located proximate to both the S5A and C-51 West basins.

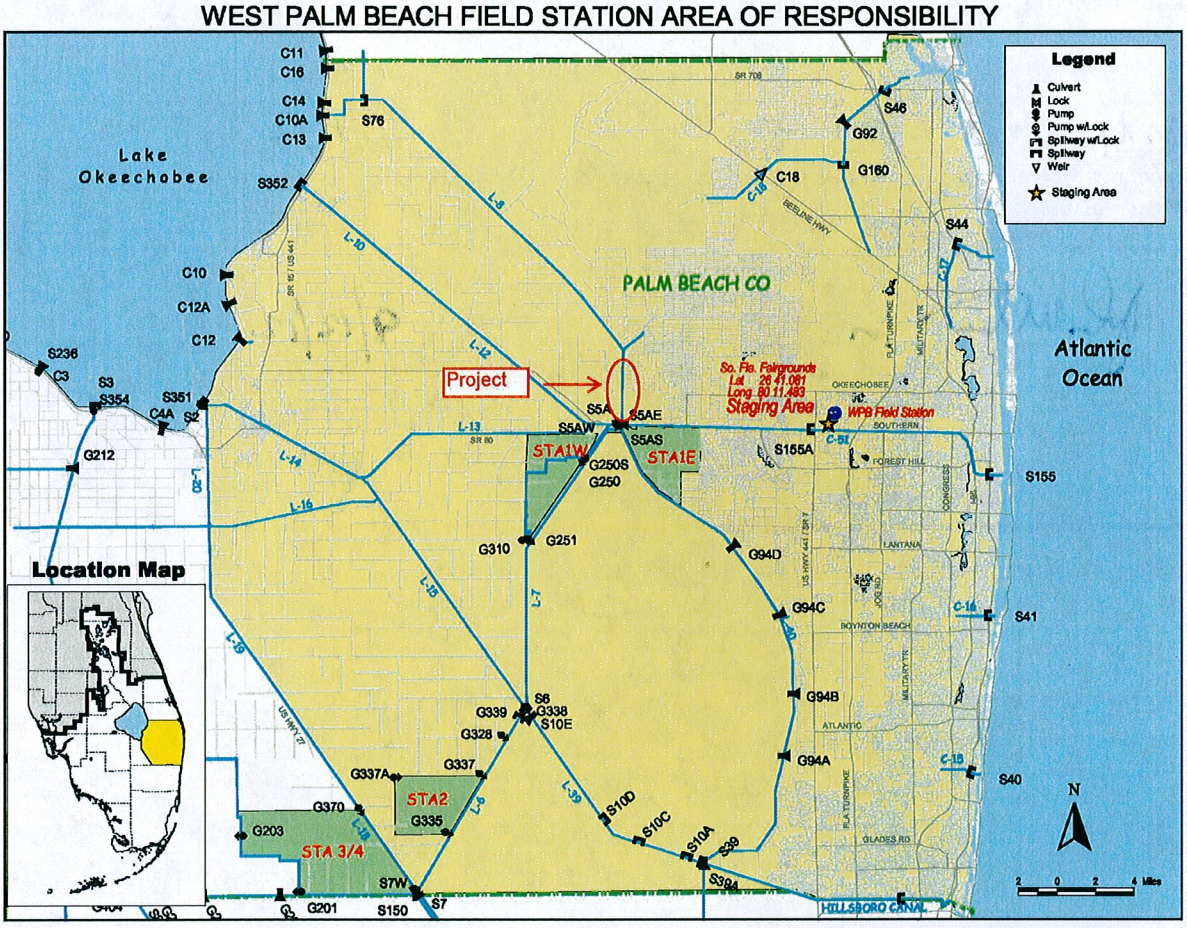


Figure 1: General Location Map

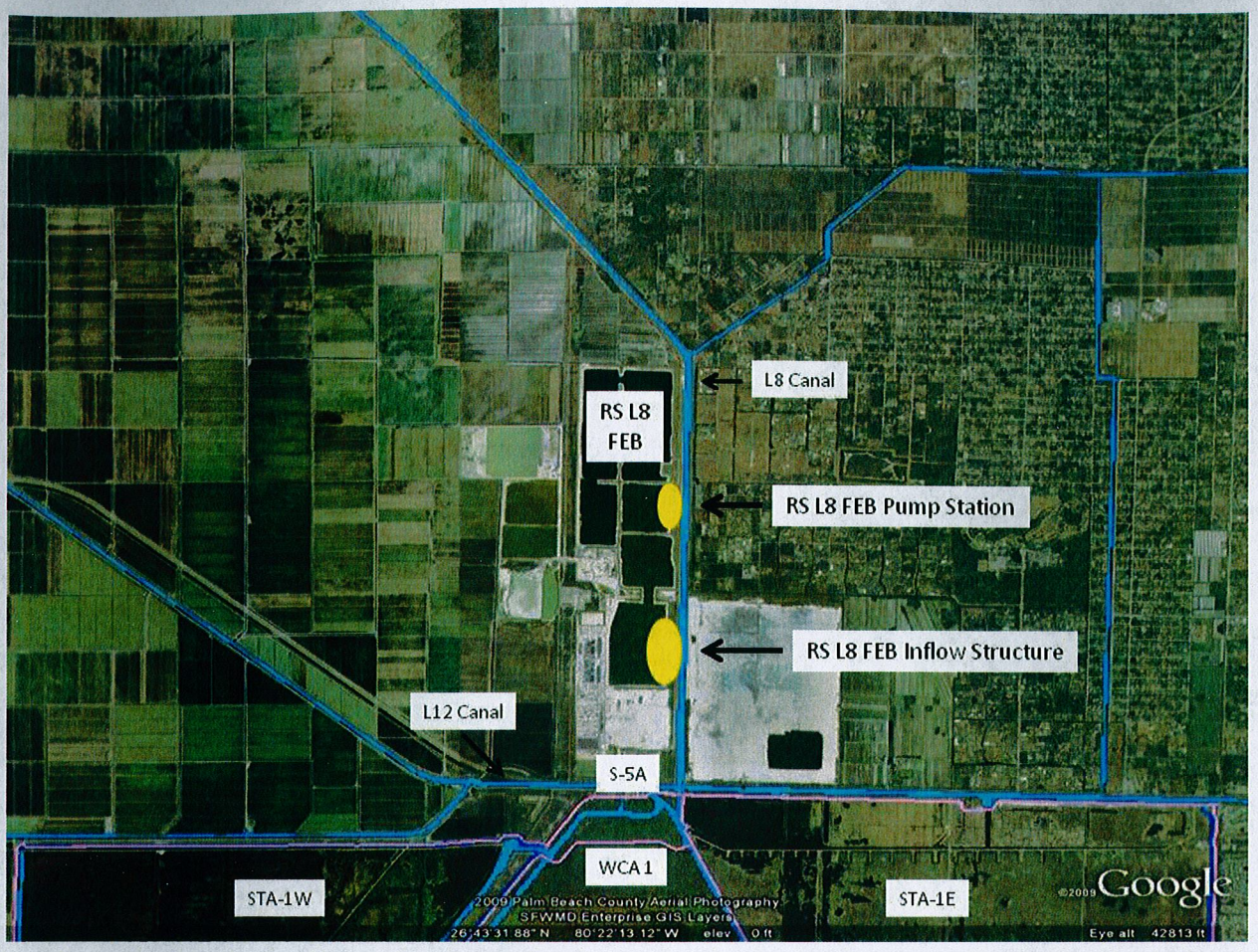


Figure 2: RS L-8 FEB Pump Station and Reservoir

Project Description

The Restoration Strategies (RS) L-8 Flow Equalization Basin (FEB) is a 950-acre former rock mine in central Palm Beach County with unique geology (**Figure 2**). The project is capable of storing approximately 45,000 ac-ft of water and will be used to attenuate peak flows and optimize STA-1E and STA-1W inflow volumes. In order to fully utilize the L-8 FEB, additional project features are required. These features include an inlet structure, discharge pump station, embankment protection measures and strategic dredging to fully interconnect the cells.

Project Scope

In order to utilize the full storage capacity of the L-8 FEB for flow attenuation of water redirected from the STA-1 Inflow basin, the new inlet structure will have a capacity of 3,000 cfs and will be able to fill the reservoir to its intended maximum operational pool stage of +16.5 NAVD (+18.0 NGVD).

The discharge pump station will have a capacity of approximately 450 cfs for delivery of flows from the L-8 FEB to the STA-1 Inflow Basin via the L-8 Canal. The discharge pump station will be able to draw the FEB down to an elevation of -37.0 NAVD (-35.5 NGVD), which is approximately 5 feet above the bottom elevation of the reservoir.

The design and construction of the project will be completed using a Design/Build contract. The selected Design/Build contractor will be responsible for designing and constructing the FEB infrastructure, which will include an inlet structure and outflow pump station, as well as revetment protection features for the surrounding levees.

The Design/Build contract will include a requirement to provide additional connections between the cells that will yield a configuration that is intended to maximize the exchange of water between cells. The Design/Build contract will include a requirement for the contractor to empty the reservoir to the expected low operational level and to refill the reservoir with surface water runoff prior to the time at which the District accepts the completed project. This will allow the District to begin operations of the enhanced delivery system to the existing STAs at FEB completion with water discharged from the reservoir which is expected to meet Class III water quality requirements (refer to the following Background section for additional discussion).

Background

The L-8 Reservoir is a mined site that was acquired by the SFWMD from Palm Beach Aggregates through a condemnation agreement (Circuit Court of the 15th Judicial Circuit Court for Palm Beach County, Florida, 2003 and 2004). The reservoir was included in the Comprehensive Everglades Restoration Project Study as a component to be used for attenuating and redistributing L-8 and C-51 basin flows for environmental and public water supply purposes. Specific requirements relative to the improvement of the site for use as a storage reservoir were incorporated into the acquisition agreement. These included dredging limits, levee embankment design criteria, seepage standards, and interior slope criteria that were to be met prior to the SFWMD final acceptance of the facility. Additional requirements relative to the minimum volume of storage required and provision of temporary inflow and outflow capacity were also included. After testing and confirmations were completed, SFWMD accepted the facility and made final payment in 2009 for a reservoir with a certified storage capacity of 45,857 acre feet.

As the L-8 Reservoir site was mined, the mining developer was required to keep the process water on site. This was done by recycling the water within the pits used for dredging the lower portion of the reservoir. This process water was deposited in cell 7 (process cell), which was isolated from the other cells during the dredging operation to allow for settling of fine particles (rock flour), prior to reusing the water in the dredging of the other cells. In addition, as material was removed for further processing and eventual disposal to contracting firms for building infrastructure, the material required washing. The same water utilized for dredging was also utilized for washing the rock obtained from the reservoir. This wash water was also then placed in the process cell where fine particles resulting from the washing process were allowed to settle out.

The process to excavate and clean the rock material that was the product of the mining operation took many years, and resulted in elevated chloride concentrations in the process water. When the process cell was reconnected with the remaining reservoir cells the higher chloride concentrations of the process water were blended with the remaining water in the reservoir, resulting in higher chloride concentrations throughout the reservoir. The reservoir has been used to a very limited degree, since the SFWMD accepted ownership of the facility, to supplement environmental deliveries to the Loxahatchee River and to meet urban water supply demand in drought years. Each time the reservoir use has been monitored. Although the overall volume of water exchanged within the reservoir has been limited, there has been a substantial decrease in the chloride concentrations in the cells that are fully interconnected. However, the two most southerly cells still have a limited hydrologic connection to the remaining cells and therefore still have higher chloride concentrations.

The L-8 Reservoir (and the infrastructure proposed in this project) have been incorporated into the Restoration Strategies Regional Water Quality Plan for use as a Flow Equalization Basin (FEB) for the Eastern Flow Path. The Eastern Flow Path consists primarily of the C-51 West and S-5A Basins. The flows from these drainage basins are currently routed to STA-1W and STA-1E for treatment prior to discharging into Water Conservation Area (WCA) 1 (**Figure** 2). The S-5A and S-319 Pump Stations will continue to provide the existing level of flood protection to the S-5A Basin and the C-51 West Basin.

The Eastern Flow Path projects, including the L-8 FEB, are intended to manage basin runoff in a more advantageous manner by reducing the impacts of storm event driven inflows on the existing STAs, as well as providing for an expansion of the effective stormwater treatment area. This will be accomplished by: redirecting a portion of the STA inflows to the L-8 FEB for flow attenuation prior to conveyance to STAs for treatment; increasing the spatial extent of STA-1W by approximately 6,500 acres (5,900 acres of effective treatment area) for additional phosphorus treatment capacity; and modifying the system to allow the G-341 structure to function as a divide between the S-5A and S-6 Basins, consistent with its design intent.

Permitting

The RS L-8 FEB project features are authorized as part of the flow path corrective actions under the Florida Department Environmental Protection (FDEP) National Pollutant Discharge Elimination System (NPDES) Consent Order No. 12-1148 with the accompanying NPDES permit FL0778451 and EFA Consent Order No. 12-1149 with the accompanying EFA permit 0311207. The pump station may alter or change the Central and Southern Florida (CS&F) project. A US Army Corps of Engineers 408 approval may be necessary prior to obtaining authorization under Section 10 Rivers and Harbor Act and Section 404 Clean Water Act (CWA) permit authorizations. Local building permits may be also be required.

It is the contractor's responsibility to apply for and obtain any dewatering permits from the South Florida Water Management District (SFWMD) and any applicable local permits from Palm Beach County.

SFWMD is responsible for obtaining the EFA (or CERPRA) permits with the cooperation of the contractor. Coordination with the SFWMD Permit Acquisition and Compliance Section staff will be required prior to and during permit acquisition.

Right of Way

The project will be required to accommodate the existing Palm Beach County Reuse line, and specific access easements that are located adjacent to the L-8 FEB and the L-8 Canal. The Design/Build contract will include requirements regarding coordination of right-of-way and easement issues.

Real Estate

The SFWMD owns the underlying land for these project locations and no additional land purchase is required, however, coordination with adjacent landowners and easement holders consistent with construction boundaries will be required. Coordination with Palm Beach Aggregates and with FP&L to obtain appropriate easements will be required. Coordination with the SFWMD real estate section will be required.

Public Use

There is no public use associated with this project.

Stakeholder Considerations

The project lies within the West Palm Beach (WPB) Field Station's area of responsibility. Public stakeholders may include but are not limited to Palm Beach County, USACE, and Department of Interior.

Public Outreach

There are no specific public outreach requirements for this project.

Operations

Coordination with Operations is required and will be ongoing. Preliminary planning discussions occurred with operations during the initial modeling when formulating the Restoration Strategies projects but detailed discussions have not yet taken place. Close coordination between the project team and Operations need to occur to ensure that modeled operations and real time operations match and that hydraulic capacity of adjacent canals and structures is sufficient. An interim operational plan will be required and updated as other components of the Eastern Flow path are designed and constructed.

Operations and Maintenance

The RS L-8 FEB is located within the WPB Field Station area of responsibility. Coordination with the Field Station will be required to ensure appropriate resources are provided for this project.

SCADA, Instrumentation, Telemetry

The pump station and inflow structure will require SCADA, instrumentation and telemetry and power

The L-8 FEB is located near the following towers:

Primary: S-5A

Secondary: S-319

SCADA communication equipment will be installed by SFWMD staff and will require funding outside of the Design/Build contract for the L-8 FEB. The necessary funding will be included as part of this L-8 FEB Reservoir Infrastructure Improvements Project.

Information Technology

IT Communication equipment will be installed by SFWMD staff and will require funding outside of the Design/Build contract for the L-8 FEB. The necessary funding will be included as part of this L-8 FEB Reservoir Infrastructure Improvements Project.

Environmental

It is not anticipated these project features will impact existing wetlands or sensitive areas. The project is not located on Tribal Lands.

Monitoring

Turbidity monitoring will be required for the project during and post construction. Monitoring of the flow path(s) will likely be required as part of any authorization for off-site dewatering (to empty the reservoir)

Organochlorine pesticide, dieldrin, will likely be included as part of startup surface water sampling plan for the L-8 Reservoir Project. Additionally, periodic selenium concentrations monitoring of periphyton, fish, invertebrates within the L-8 attenuation cells, and bird egg obtained from within the L-8 cells and surrounding area may also be required.

Commissioning

Commissioning will be required for the new L-8 FEB pump station and inflow structure.

Lessons Learned

No lessons learned on other projects have been identified that can be implemented on this project.

Conceptual Alternative Options

Three proposers submitted conceptual designs for evaluation and selection by committee under the Design/Build Request for Proposals.

Cash Flow, Project Delivery Schedule and Milestones

The following are the milestone compliance dates for the L-8 FEB as included in the Restoration Strategies Regional Water Quality Preliminary Plan and estimated cash flow by fiscal year:

L-8 FEB	
Milestone	**Compliance date**
Submit state and federal permits	1/31/2014
Construction status report	3/31/2014
Construction status report	3/31/2015
Completion of construction	12/31/2016
Long term operations	12/31/2022
Planning activity by fiscal year	**Capital Cash flow**
FY12	$2,520,000
FY13	$41,074,992
FY14	$26,846,400
FY15	$1,680,000
Total Capital Expenditures	$72,121,392

Recommendations

The project described in this document is conceptual and includes the preferred project features. The Design/Build contract will incorporate the preferred project features and provide the final solution and cost for the project.

Project Milestones

- Design/Build Proposals are to include a schedule for project. Specific design and construction milestones will be included and approved with the award of the design/build contract.

Resource Requirements

List Functions	Skill of Functional Employees	Identify Employees	Total FTEs Required for Complete Project
Engineering	Civil, Geotech, CADD	Internal Reviewers (Millares, Creswell, Cantelo, Urban, Gao, Jocelyn, Ismalon, McKernan, Snell, Kusnir	2
Operations	Pump Station Operation	Doug Kessler, Lesra Harris, Shane LaCroix	0.1
Permitting	Scientist	Laura Reilly/Holly Andreotta	0.3
Project/Construction Manager	PM/CM, CI	Greg Coffelt. Kevin Snell, Owner's Advisor Project Engineer, and construction inspectors	5
Survey	Surveyor	Rick Barnes	.1
Network Infrastructure (IT and SCADA)		Steve Burns, Aaron Read, Dale Vestrum	.5
Total Resource Requirements			**8.0**

Project Deliverable and Schedule

Fiscal Year	Deliverable	Schedule
2012	Issue Design/Build RFP	April 2012 (complete)
2012	Award Design/Build Contract	Septembe 2012
	R/W Coordination	Ongoing
	Land Coordination	N/A
	Public Outreach	N/A
2012/2013	Permitting	January 2012
2013	D/B Construction Start	October 2012
2013-2015	D/B Construction Complete	September 2015

Project Funding Sources

Funding for this project will be from multiple funds within the B199 functional area. The new L-8 Pump Station and Inlet structure will be new capital assets requiring coordination with asset accounting. Modifications to improve internal flow within the reservoir and to harden reservoir levees will be asset improvements also requiring coordination with asset accounting.

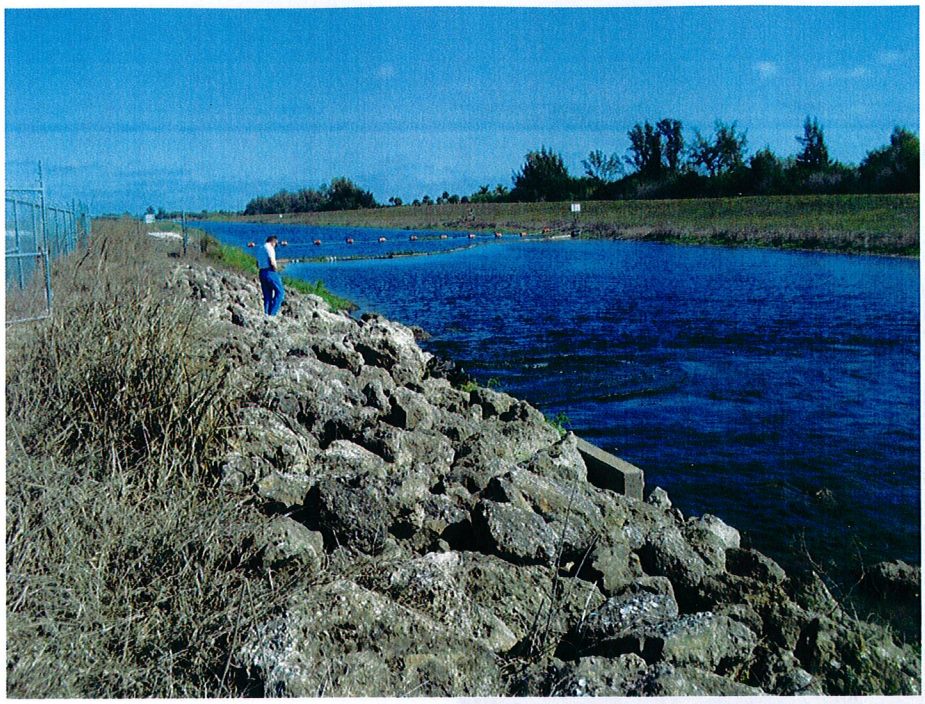
References

Preliminary information relative to the Design/Build criteria can be found on Documentum at the following link:

Photographs

L-8 Reservoir, looking south

Erosion of internal L-8 Reservoir Embankment



L-8 Canal at Cell 1/2, temporary discharge location

Existing temporary pump station at cell 1/2

Project Schematic Diagram