

HENRY

Hydraulic Engineering Repository

Ein Service der Bundesanstalt für Wasserbau

Conference Paper, Published Version

Elledge, Jeffrey; Madani, Kaveh

The Evolution of the Upper St. Johns River Restoration Project

Zur Verfügung gestellt in Kooperation mit/Provided in Cooperation with:
Kuratorium für Forschung im Küsteningenieurwesen (KFKI)

Verfügbar unter/Available at: <https://hdl.handle.net/20.500.11970/109764>

Vorgeschlagene Zitierweise/Suggested citation:

Elledge, Jeffrey; Madani, Kaveh (2012): The Evolution of the Upper St. Johns River Restoration Project. In: Hagen, S.; Chopra, M.; Madani, K.; Medeiros, S.; Wang, D. (Hg.): ICHE 2012. Proceedings of the 10th International Conference on Hydroscience & Engineering, November 4-8, 2012, Orlando, USA.

Standardnutzungsbedingungen/Terms of Use:

Die Dokumente in HENRY stehen unter der Creative Commons Lizenz CC BY 4.0, sofern keine abweichenden Nutzungsbedingungen getroffen wurden. Damit ist sowohl die kommerzielle Nutzung als auch das Teilen, die Weiterbearbeitung und Speicherung erlaubt. Das Verwenden und das Bearbeiten stehen unter der Bedingung der Namensnennung. Im Einzelfall kann eine restriktivere Lizenz gelten; dann gelten abweichend von den obigen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Documents in HENRY are made available under the Creative Commons License CC BY 4.0, if no other license is applicable. Under CC BY 4.0 commercial use and sharing, remixing, transforming, and building upon the material of the work is permitted. In some cases a different, more restrictive license may apply; if applicable the terms of the restrictive license will be binding.



THE EVOLUTION OF THE UPPER ST. JOHNS RIVER RESTORATION PROJECT

Jeffrey Elledge¹ and Kaveh Madani²

The upstream 100-mile segment of the St. Johns River in Florida is known as the Upper St. Johns River. It originates in marshes and swamps in Indian River and Okeechobee Counties and flows north to Lake Harney, in Seminole and Volusia Counties. Agricultural development of the floodplain of the Upper St. Johns River during the first three quarters of the twentieth century resulted in significant drainage of floodplain wetlands. The loss of floodplain water storage resulted in both increasing flooding damages in wet years and water supply problems in dry years. In the late 1940s flooding associated with hurricanes caused extensive damage in the region. This disaster resulted in action by the U.S. Congress, which in 1949 directed the U.S. Army Corps of Engineers (Corps) to initiate a project to address water resource issues within the Florida peninsula, including the Upper St. Johns River basin. This paper will discuss the planning and implementation of a restoration project designed to provide multiple benefits including flood control, water supply, maintenance of minimum stream flows, water quality improvement, public recreation and improved wildlife habitat and document how these plans evolved as man's understanding of the ecological consequences of hydrologic manipulation has improved. The paper will also discuss the importance of interdisciplinary planning and implementation, and adaptive management relying on improving scientific knowledge and methods to ensure that restoration activities accomplish the public objectives of the project.

In the 1960s the Corps developed detailed plans for the Upper St. Johns River, focusing primarily upon flood control and water supply issues (Corps, 1962). The Corps plans called for a series of reservoirs to store flood waters and a diversion canal known as C-54 which was designed to convey excess flood waters to the Indian River Lagoon, a coastal estuary. Construction of these plans commenced and several components, such as C-54, were completed. However, these plans failed to consider environmental consequences and when the National Environmental Policy Act was enacted by the Congress, an Environmental Impact Statement (EIS) was required for the project. The EIS established that the project would cause significant adverse environmental damage. Specifically, the plan would result in significant losses of forested wetlands, converting those wetlands to open water reservoirs. Moreover, the plan was to divert large volumes of fresh water to the Indian River Lagoon estuary, harming the flora and fauna in the estuary by causing rapid swings in the salinity. As a result of these findings construction of the project was halted in 1973.

In 1977 the St. Johns River Water Management District (District) became Florida's sponsor of the Upper St. Johns River basin project. The District began a major planning effort, including a

¹ Research Information Coordinator, Department of Civil, Environmental, and Construction Engineering, University of Central Florida, Orlando, FL 32816, USA (Jeffrey.elledge@ucf.edu)

² Assistant Professor, Department of Civil, Environmental, and Construction Engineering, University of Central Florida, Orlando, FL 32816, USA (kaveh.madani@ucf.edu)



multidisciplinary approach to address a wide range of environmental issues, including flood control, water quality, wetland habitat restoration, public recreation access and maintenance of suitable hydrologic regime in lakes, wetlands and the river. The District also created both a technical advisory committee, made up of scientists from other agencies and interested parties, and a citizens advisory committee made up of a wide range of stakeholders to assist the District with the planning of the project. In the early 1980s the Florida Legislature created a funding program known as “Save Our Rivers” that allowed the District to acquire portions of the river floodplain.

In 1985, after this extensive planning effort the District and the Corps developed the Upper St. Johns River Basin Plan (Corps, 1985). The plan called for creation of two reservoirs, known as “water management areas,” where agricultural stormwater would be collected and treated before discharge to the river system. Other areas along the river were designated as “marsh conservation areas” and were restored as natural wetland floodplain areas. This plan has resulted in the restoration of more than 150,000 acres of floodplain wetlands and associated improvement in flood protection, water supply, water quality, and wildlife habitat in the region (Miller, et.al., 1993). In 2008, the Upper St. Johns River Restoration Project received international acclaim when the District and Corps were awarded the Thiess International Riverprize for outstanding river restoration.

After construction of the project, the District has utilized adaptive management methods to closely monitor the results of the project and make needed adjustments in order to ensure that the project is accomplishing the District’s objectives. For example, the management of water levels in the Blue Cypress Water Management Area was modified in an agreement with the U.S. Fish and Wildlife Service in order to maintain optimal conditions for nesting of the Everglades Kite, an endangered bird species. In addition, the District has added additional restoration areas in the basin in order to enhance the overall improvement in water quality and wetland habitat restoration. The latest such addition is the Fellsmere Water Management Area, a 10,000 acre reservoir that, when completed, will provide sufficient storage to provide needed water supply and to enable the District to eliminate the need for discharges of flood waters to the Indian River Lagoon.

In conclusion, unregulated development of floodplains resulted in catastrophic damage and the initial response involved plans that caused additional damage due to a failure to consider environmental consequences. Interdisciplinary planning and adaptive management have resulted in a restoration plan that successfully addressed the the flooding problems created by the earlier development, as well as the environmental problems caused by the earlier flood control projects.

REFERENCES

- Miller, S.J., Lee, M.A. , Borah, A.K. and Lowe E.F. (1993) Environmental Water Management Plan for the Upper St. Johns River Basin Project. St. Johns River Water Management District, Palatka, FL.
- U.S. Army Corps of Engineers (1962) Central and Southern Florida Flood Control Project - General Design Memorandum. Jacksonville, FL.
- U.S. Army Corps of Engineers (1985) Upper St Johns River Basin and related areas - General Design Memorandum. Jacksonville, FL.