

Tailwater Recovery and On-Farm Storage Reservoir: System Overview

Tailwater recovery (TWR) systems are a combination of financially assisted (by Natural Resources Conservation Service) conservation practices aimed at collecting runoff and storing that water for irrigation. As freshwater resources for irrigation decline, this surface water storage structure is a viable option for capturing and recycling precipitation and irrigation runoff.

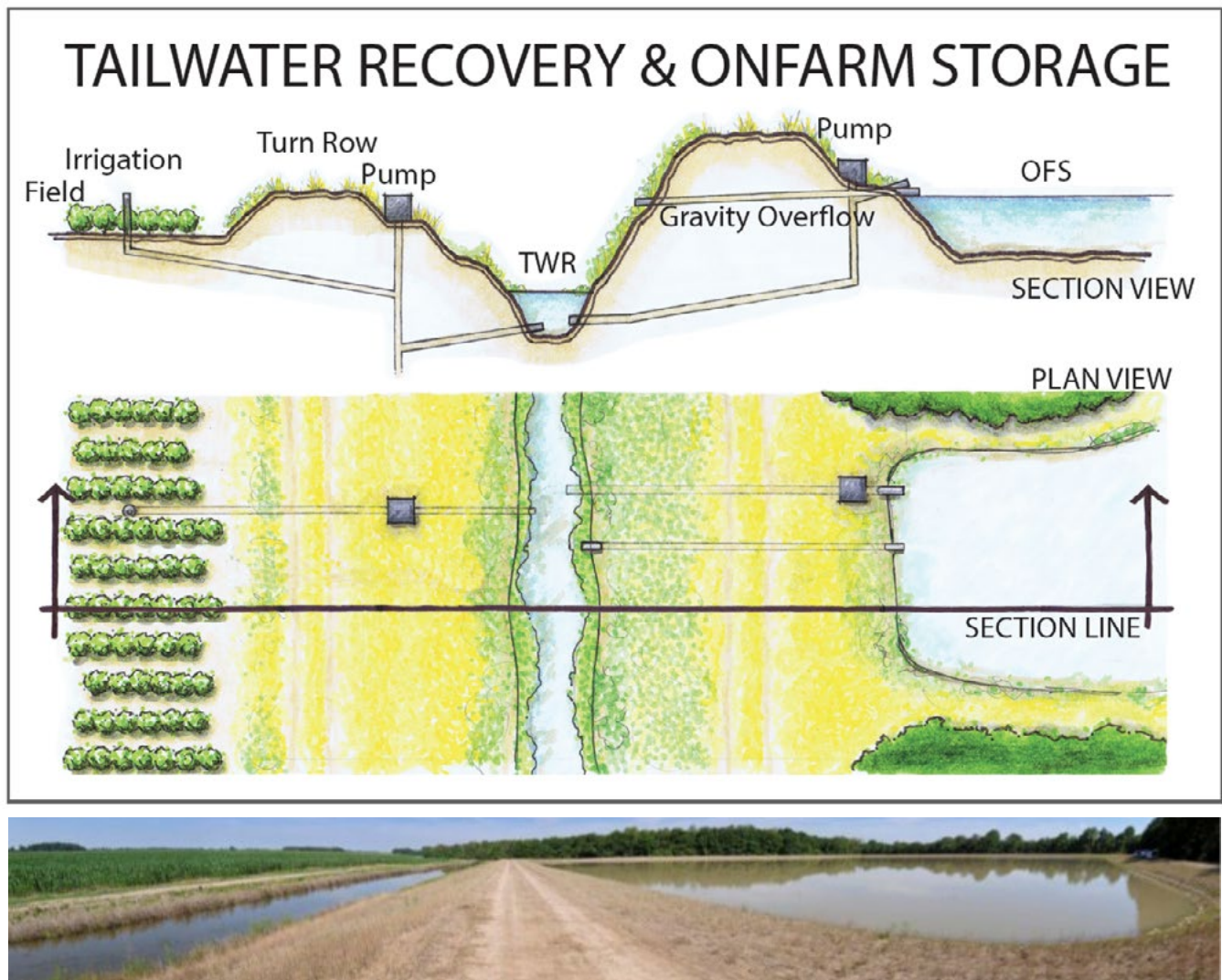


Figure 1. Top: Section view diagram of a TWR system installed in Mississippi’s Delta region. Middle: Plan view diagram of the same TWR system. Bottom: The TWR system shown in diagrams.

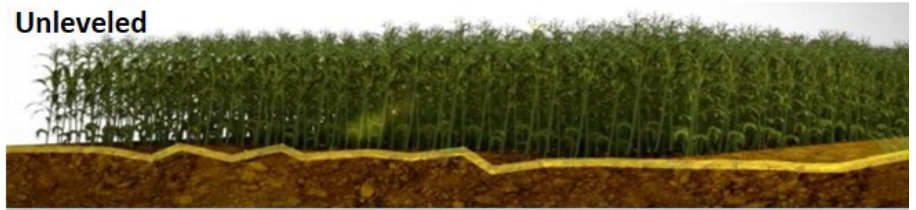
Potential practices in TWR systems (NRCS practice codes):

- Irrigation reservoir (436)
- Tailwater recovery (437)
- Critical area stabilization (342)
- Irrigation water conveyance (430)
- Irrigation water management (449)
- Precision land forming (462)
- Pumping plant water control (533)
- Access road (560)
- Water control structures (587)
- Dikes (356)

In-Field TWR System Practices

Precision land forming (land leveling, land grading) is used to direct water to one end of the field by grading the field with a slope of 0–0.1 inches per 100 feet run for rice and 0.1–0.2 inches per 100 feet run for cotton, corn, and soybeans.

Unleveled



Leveled



Figure 2. Depiction of precision land forming impact on landscape grade. Top: Diagram of unlevelled corn field. Middle: Tractors and scrapers for precision land forming. Bottom: Diagram of precision graded field.

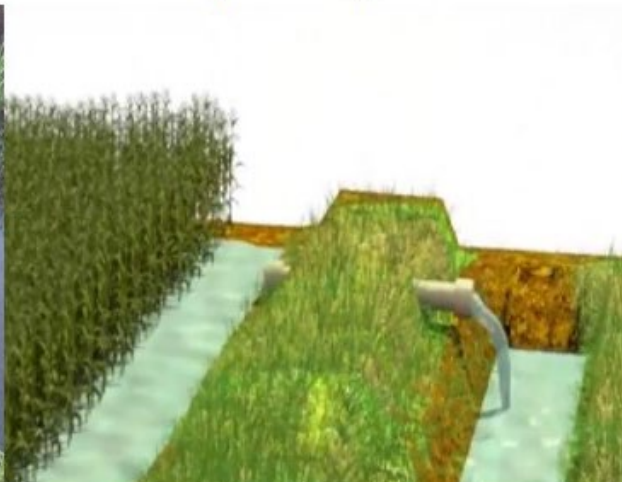
Edge-of-Field TWR System Practices

Water control structures (riser or slotted board pipes) are used to convey water from the field through the dikes (pads) on the perimeter of the field and into the TWR ditch. These pipes allow fields to be flooded by inserting boards.

Riser Board Pipe



Pipe Through Dike



TWR Ditch



Figure 3. Left: Receiving end of a riser board pipe. The boards slide along the grooves in the front of the pipe, which keeps water from entering the pipe. Middle: Diagram of water flowing from a corn field on the left through a riser board pipe and into a TWR ditch. Notice the pipe is installed underneath a dike (pad). Right: Water flowing from a riser board pipe into a TWR ditch.

TWR Ditches

TWR ditches are used to store water runoff from the field until it can be irrigated or re-lifted into the on-farm storage reservoir (OFS). TWR ditches are fit into the landscape, reducing the amount of acreage taken out of production.



Figure 4. Left: TWR ditch collecting runoff after a recent precipitation event. Right: Newly constructed TWR ditch.

Pumping plants are used to re-lift water from the TWR ditch to the OFS, as well as irrigate water.



Figure 5. Pump to move water from tailwater recovery ditch to OFS.

On-Farm Storage Reservoirs

On-farm storage reservoirs are used as additional storage areas. They are usually much larger than TWR ditches. OFS are installed near TWR ditches on less productive land or made from vacant catfish ponds.



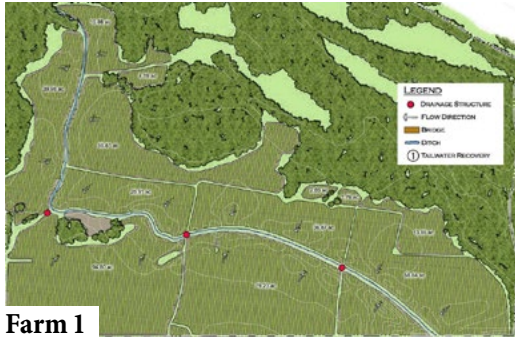
Figure 6. Bottom of an on-farm storage reservoir (approximately 10-acre surface area).

TWR System Design Examples

TWR systems should be designed to remove as little production land as possible. TWR systems can be used to store water not only for irrigation, but also for livestock, fish, and/or wildlife. Below are some examples of how producers in the Mississippi Delta region are fitting TWR systems into their landscapes.

Before TWR system installation

After TWR system installation



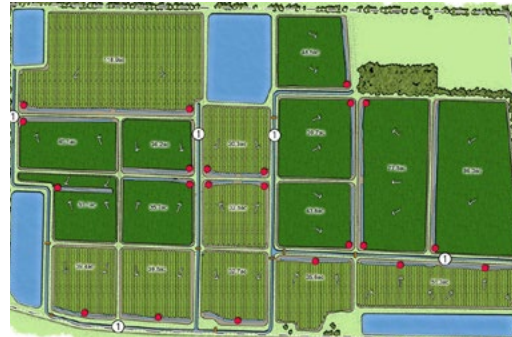
Farm 1

Farm 1. Re-land formed fields with a TWR ditch along the tree line and an OFS reservoir replacing a small field in the trees.



Farm 2

Farm 2. Re-land formed fields and expanded an existing ditch into a large TWR ditch.



Farm 3

Farm 3. Re-land formed fields, added a TWR ditch, and used existing retired catfish ponds as OFS reservoirs.

For more information

Consult your county USDA Natural Resources Conservation Service agent for more details on conservation practices.

Publication 3125 (POD-09-24)

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Extension Service of Mississippi State University, cooperating with U.S. Department of Agriculture. Published in furtherance of Acts of Congress, May 8 and June 30, 1914. ANGUS L. CATCHOT JR., Director