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Summer 2005

BEFORE AND AFTER

Precast plays a rehab role in restoring ailing wetland habitats that were overlooked for years.

By Daina Manning and Greg Snapper

Ducks Unlimited Inc. is committed to restoring wetland habitats for waterfowl and wildlife, but rarely does the public witness this organization's conservation achievements. Rather, people generally recognize the duck-loving group only by its mallard profile – not the thousands of wetland areas it has recovered nationwide.



Ducks Unlimited's dedication to preserving wetlands goes far beyond its mission statement and a simple duck logo. Brian Heck, regional engineer for Ducks Unlimited Inc., says a lot of hard work and resources must be pumped into fragile wetlands in order to achieve results – citing 15 different wetland sites in south central Washington state. Since 2002, the conservation group took these public and privately owned wetland areas – only a handful of habitats currently being restored by Ducks Unlimited in the upper Northwest – and transformed them into what are now thriving homes for waterfowl and wildlife. They did it all with precast concrete – a water control structure that manages the water levels in the restored wetlands.

Precast provides perfect solution

These debilitated wetlands didn't simply go from bad to good through quick-and-easy trash pickup and environmental petitions, the stereotypical means of fixing ecological messes. On the contrary, the projects are in remote locations, situated on public and privately owned land far from the public environmental eye, but are an integral part to the livelihood of Washington state's wildlife. Restoration took federal, state and privately funded dollars, the teamwork of Ducks Unlimited and precast concrete manufacturer Wilbert Precast in Spokane. Co-designers Heck and Darin Swan of Wilbert Precast found the best solution for the wetlands rehabilitation.



At first, three materials were considered for the water control structures: galvanized steel, cast-in-place concrete and precast concrete. Steel was ruled out for the water control structures because of the extensive welding required and need for long-term durability. Initially, Ducks Unlimited considered the use of

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cast-in-place concrete, but ran into problems with pouring concrete in remote locations and wet conditions. Additionally, permits necessary to work in the creeks and wetland areas generally restrict any use of cast-in-place pouring in the field for fear of contamination. So cast-in-place was rejected for future use. Precast won outright and now all 15 wetland locations in south-central Washington are being managed by precast concrete water control structures.

How it works

"Initially, there's quite a bit of earth work," says Joe Partney, owner of Joe Partney Construction, LaGrande, Ore. Enhancing the existing topography by making lowlands lower allows the wetlands to hold more water. The material removed from the lowlands is then placed in a levee from which the water control structure will operate. "By doing that, not only have we expanded the low water surface area within the wetland cell, we've also accomplished our levee to the elevation required," says Partney. "Then we install the precast water control structures to facilitate water control management in the wetland cells we've created."



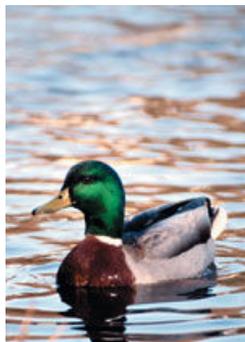
Installed within the preconstructed levee, the precast concrete structure, which weighs approximately 10 tons, is lowered into position. A culvert runs through the dike to provide an outlet for the water. Stop logs, consisting of oak boards that measure 5 feet wide by 3 inches thick and 6 inches tall, rest between the 6-inch-thick precast walls of the structure. Depending on the desired water level, stacked stop logs can be added and removed to control the amount of water that will be

transported through the outlet pipe and distributed to nearby wetland units.

Having the ability to manage precise water levels is key because it allows a wetland manager to promote aquatic plant communities and water depths that maximize benefits to wetland dependent wildlife species.

In the event of a flood or large spring runoff, that delicate level is threatened. In this event, the stop logs fail to manage the extreme water levels, which is when the overflow notch and the constructed emergency spillway save the day.

Cast into the water control structure is an opening that serves as this overflow notch. Water doesn't overwhelm surrounding wetland units because the excess water is channeled through the overflow notch and the emergency spillway located in the dikes and disaster is averted.



This improved infrastructure helps sustain a refuge for both migrating ducks and for wildlife that have established permanent residences in the south-central Washington wetlands.

"We try to restore outdated water control features or install new water control structures so that we may manage water levels in wetland areas," says Heck. "If you look back through history, America has lost about 50 percent of its wetlands. These habitats have been drained by various means

including excavation of ditches for agricultural reasons and draining water from the valuable habitats."

Ducks Unlimited was faced with two options to correct the environmental sins of our fathers: Either fill in the ditch or install a water control structure. The structures now serve as vital management tools to the wetlands they neighbor. "People believe wetlands should always be completely full of water, but

many critical wetlands are actually seasonal in nature, dependent on a season's rainfall and other factors." These precast water control structures help manage the unreliable nature of Mother Nature in south-central Washington.

Meant for rehab

"The precast is a better material," Heck says. "It's easier to install, and all the manufacturing is done at the precast concrete plant as opposed to forming and pouring it in the field, which is a big advantage."

Proven advantageous for Ducks Unlimited has been the guarantee Wilbert Precast places on the water control structure – a 100-year lifespan. "We have a thorough understanding of the long-lasting effects of concrete," says Swan. "The longevity of precast concrete outlasts many building materials, giving us the confidence to stand behind our product."



"It makes a good solution," says Heck. "We get an excellent quality product that's easy to install, and it saves us time and money in the field."

So far, between 50 and 70 precast concrete water control structures have been completed for

habitat restoration by Ducks Unlimited, mostly in the states of Oregon and Washington. During the 1980s, approximately 400,000 acres of wetland were lost each year, but conservation efforts such as those by Ducks Unlimited in the Pacific Northwest have cut that number dramatically. Presently, our nation experiences a net loss of 150,000 acres per year, but the loss of valuable habitat will only keep Duck Unlimited more firmly rooted in its mission to reclaim America's natural wetlands.

Project Profile

Project Name: Precast water control structures

Owner: Multiple private ownership

Engineer/Architect: Ducks Unlimited, Spokane, Wash.

Contractor: Joe Partney Construction, LaGrande, Ore.

Precast Manufacturer: Wilbert Precast, Spokane, Wash.*

* Wilbert Precast is a certified plant under NPCA's plant certification program.

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