

Ferson-Otter Creek Fish Passage Project at Creek Bend Forest Preserve

Adaptive Management Plan

USACE Permit # LRC-2009-322



Prepared for: Kane County Department of Environmental Management



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Project Summary:

The Ferson-Otter Creek Watershed drains about 50 square miles of rapidly developing agricultural land. The two subject dams are located about three miles upstream of the stream's confluence with the Fox River near St. Charles, Illinois. The presence of these dams prevents fish migration between the 50 square mile Ferson-Otter Creek watershed and the Fox River.

The Forest Preserve District of Kane County (FPDKC) and the Kane County Department of Environmental Management (KCDEM) are cooperating on this project to restore fish passage to Ferson-Otter Creek. With funding supplied by the U.S. Fish and Wildlife Service and KCDEM, these two dams will be demolished in place. The total project budget, including engineering and construction is less than \$ 15,000.

Sediment transport of existing in-stream bedload following removal of the dams is expected to be minimal as the dam pool above the dam was scoured clean during the flood event of September 2008, leaving only sand, gravel, and cobbles. This condition, combined with the short construction window (2 to 3 days), greatly reduces the potential for sediment disturbance and mobilization. The work is also scheduled for early October, a low-flow period. The shallow water depth of the channel downstream of the project site precludes the use of any in-stream SESC measures, such as a turbidity curtain.

Due to the limited funding available, no riparian buffer is proposed at this time. However, the FPDKC is in the process of developing a Master Plan for this site, and they are very aware of the benefits of native stream buffers.

Similarly, due to the minimal impact of the project and its location on publicly owned property, no formal management and monitoring plan has been prepared. However, this adaptive management plan was developed to address any unexpected streambank erosion that may occur post dam modification.

Construction Sequencing:

The project is scheduled to be implemented in early October, when generally dry soil conditions will facilitate equipment movement with a minimal of soil disturbance or damage to the existing vegetation. The low flow conditions also experienced at this time of year will also minimize any in-stream sedimentation potential.

Equipment and materials will access the site coming up an existing ½ mile (+/-) long paved driveway extending north from Dean Street. At the end of the driveway, access will continue along a mowed lawn earthen berm that extends all the way to the downstream dam. Equipment will consist of a tracked excavator with a hydraulic breaker attachment. Approximately three semi-loads of rip-rap will be imported and temporarily stockpiled in a small area on the east side of the dam, and any disturbed lawn areas will be seeded and covered upon project completion.

The total project implementation time is estimated at three days or less.

The following is the schedule of proposed activities:

- Mobilization of equipment
- Begin gradually notching downstream dam to allow the upstream dam pool to be gradually drawn down
- Once the majority of the dam pool has been drained, the remaining grouted boulder dam will be dismantled. The rock rubble generated will be placed into the existing scour hole downstream of the dam, in a manner that will facilitate fish passage
- Approximately 40 tons of A-3 to A-4 sized limestone rip-rap will be imported and placed on top of the demolished dam to provide a stable gradient for fish passage, as well as to replicate a natural stream “riffle”, which will greatly reduce the potential for any post-project channel incision through the former dam pool.
- Based upon site conditions at the time of dam modification, an additional 50 (+/-) linear feet of streambank downstream of the dam may be stabilized using roughly 20 tons of A-3 to A-4 rip-rap at a rate of approximately 0.25 to 0.33 cubic yards per linear foot.
- If streambank stabilization at that, or other dam pool streambank locations, is not warranted, the 20 tons of rip-rap shall be incorporated into the fish passage structure.
- Minor streambank shaping and access route restoration shall also be performed as needed.
- A second existing dam, located approximately 500 feet upstream of the first dam, will also be dismantled to allow for improved fish passage. No additional rip-rap will be imported or placed for this dam. Construction access for the tracked excavator shall be gained by tracking across a low-quality wetland during a dry period. No wetland / upland site disturbance will result from this action.
- Volunteers will install approximately 500 Prairie Cord Grass (*Spartina pectinata*) plant plugs along the toe of the new streambank slope on the south side of the channel, as shown on the project plan sheet. Planting will occur Fall 2009 or Spring 2010.

Streambank Stability Monitoring:

Due to natural channel and streambank evolution that is expected following the restoration of Ferson-Otter Creek to a free-flowing condition, some adjustments in the former dam pool are expected. However, it is necessary to allow the stream to experience some varied flow conditions in the months following dam modification to determine the location, extent, and severity of any post-project streambank or channel adjustments.

Following completion of the project, permanent survey markers shall be installed at seven (7) locations along the stream bank upstream of the dam site to allow the project owner (KCFPD) to monitor the lateral movements of the streambanks. These survey markers shall be installed a minimum 36 inches into the soil and serve as permanent reference points from which the location of the adjacent streambank location can be measured.

The project owner or its designated representative shall measure and record the adjacent bank location at each survey marker a minimum of twice per year, as well as within 15 days of any flood event in excess of the 10 percent chance event (10 year flood) as defined by the FEMA Flood Insurance Study records and the USGS stream gage for Ferson-Otter Creek at Randall Road.

Streambank Stability Maintenance:

Lateral migration of the stream channel above the former dam site is expected to be negligible - less than 0.5 feet per year (channel has shifted less than 10 feet since 1939, the earliest point at which visual records are available for this location). However, the near-vertical streambanks present before construction may be reshaped in the years after construction as the cohesive soils that comprise the upper banks adjust to their angle of repose (between a 1:1 and 2:1 slope). This adjustment is natural and the project owner has the option to allow the banks to "self heal" under this scenario or to install spot bank stabilization, as any stabilization would only be needed for aesthetics.

If the streambank monitoring reveals a lateral migration of the south streambank (bank on the outside bend) in excess of one (1) foot per year over a two (2) year period following construction, the project owner will install a stone-toe bank stabilization practice (with bioengineered upper bank and native buffer) to minimize any further lateral migration of the channel.