



## Roots Against Erosion: A Proposal for Erosion Control and Habitat Enhancement at Skalkaho Bend Park

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The Bitter Root Water Forum and the City of Hamilton are developing a proposal, *Roots Against Erosion*, a project to address the potential erosional loss of park land at Skalkaho Bend Park, while simultaneously enhancing riparian habitat.

Over the past 25 years, the Bitterroot River at Skalkaho Bend Park has been migrating eastward, taking with it roughly one acre of park land every five years. The Bitterroot River is a dynamic system, making it difficult to predict its future migration. However, the river is projected to continue migrating eastward, and hydrologists estimate that by 2040 the river could intercept the C&C ditch. Should this scenario occur, the park would effectively be broken into two segments, and public access would be severely disrupted. Thus, the Water Forum and the City of Hamilton Public Works Director believe it is imperative to address this situation proactively.

*Roots Against Erosion* was developed by working with scientists for over two years to determine the optimal solution to the erosion issue. The project was designed by Geum Environmental Consulting, a Hamilton firm specializing in ecological planning and restoration, following an analysis of the site by Applied Geomorphology, a Bozeman firm specializing in geomorphic assessments. Applied Geomorphology's report concludes that "this site does not require imminent, aggressive bank armor but would benefit from perhaps softer vegetative measures and careful monitoring." *Roots Against Erosion* complies fully with this recommendation.

The proposal entails excavating a long, shallow depression ("swale") at the park, planting the excavated area with native woody riparian plants, directing a small amount of irrigation water through the planted area, and surrounding the plants with temporary wildlife fencing. The plantings will be 97% willows, as their combination of low height at maturity and complex root systems accomplish multiple project objectives including maintaining the viewshed and providing erosion control. Dogwood, cottonwood, aspen, and serviceberry will also be planted to add species and habitat diversity. All of these species are commonly found among Bitterroot river bottomlands, and comprise a mix that will thrive in both wetter and drier areas of the planted area.

Willows typically need about 10 years to grow a strong root web; thus, the swale is set back from the bank to give the plants time to establish a strong root network before the river is predicted to intercept the planted area. For this reason, it is imperative that the *Roots Against Erosion* project be constructed at the earliest opportunity; if we wait too long there will not be sufficient time for roots to establish. If we delay and the C&C ditch were to face an imminent threat, that would require more expensive and invasive procedures such as riprap, soil lifts, and brush banks – typically last-resort measures to stop a river in its tracks. Thus, we propose to address the situation proactively and in a more ecologically friendly manner by implementing *Roots Against Erosion* in 2021. This approach will save money, while simultaneously providing other resource benefits. If the river chooses another path and Skalkaho Bend Park receives a temporary respite

from erosion, the presence of a planted area at the park will simply serve as a swath of enhanced riparian habitat for birds and wildlife.

The Project: An excavator will dig a shallow swale or depression, roughly 1,500 feet long and less than 2 feet deep, into which irrigation water will be diverted via a small ditch from the south end of the park. Nursery plants and willow cuttings will be planted densely throughout this swale. At the north end of the swale, woody debris will be partially buried to encourage irrigation water infiltration, and to prevent flooding in case of heavy rain. The planted area will be surrounded by temporary 8-foot tall wildlife fencing, with openings to allow wildlife and park visitors to cross through the planted area. All disturbed areas will be re-seeded with a native seed mix. The entire project footprint covers a total of only 1.5 acres, or roughly 2% of the park. The planted area itself covers 0.7 acres, or 1% of the park.

Within a few years, the plants will grow into a lush green swath; when the river eventually reaches the planted area, their roots will provide strength against the forces of flowing water. This planted area will also offer habitat diversity for wildlife within the grassy field.

The wildlife fence will be removed after approximately five years. Weed management will be an ongoing necessity at the park. The project will otherwise require relatively little maintenance, as it will not need to be irrigated manually. The Water Forum will monitor the project for plant survival and develop adaptive management strategies in conjunction with the City to ensure the project's success.

This proposal is especially exciting both for its public benefits and for its natural resource benefits. Skalkaho Bend Park has quickly become a beloved spot for people to jog, bike, swim, fish, walk their dogs, or just sit and enjoy the river; we want to keep it that way, and do everything we can to preserve the park land for the next generation to enjoy.

## References

- Boyd, Karin. "Technical Memorandum Regarding Skalkaho Bend, Bitterroot River at Hamilton MT." Applied Geomorphology: 29 Jul 2019; revised edition, 28 Oct 2020.
- Sowles, Marisa and Tom Parker. "Skalkaho Bend Park Restoration Approach." Geum Environmental Consulting: 9 Oct 2019.