

**Portneuf River Literature Review**  
***Flood Control Project***

***25 September 2015***

**PORTNEUF RIVER FLOOD CONTROL PROJECT**

Overall Conditions and Issues

- The Portneuf River Flood Control Project (project) was authorized under the Columbia River Basin Plan by the Flood Control Act approved 17 May 1950, Public Law 516.
- The purpose of the project was to reduce flood risk to the City of Pocatello. Significant flood events occurred in 1962 and 1963 that caused significant damage to residents, agriculture, and industry. Estimated damage caused by the 1962 flood was \$10 million.



**Figure 1 - Flood of 1963**

- The February 1962 flood peaked at 2,990 cfs and the February 1963 flood peaked at 2,470 cfs.
- After these two devastating floods, public opinion swayed to favor raising tax revenues to pay the local portion of flood control costs to protect its citizen's properties and the city's commercial and industrial assets.
- The 1962 and 1963 flood events also prompted the USACE to increase the design flood discharge from 2,200 cfs to 6,000 cfs. This changed certain design parameters of the project.
- Construction of the project occurred from July 1966 to November 1968.
- The project is along a 6.2-mile reach of the Portneuf River through the City of Pocatello. It consists of a 1.5-mile rectangular concrete channel and 4.7 miles of levee upstream and downstream of the concrete channel. The side walls of the concrete channel vary in height from 10 to 16 feet. The concrete channel width is 40 feet.
- Levee slopes are constructed at 2H:1V and armored with riprap.

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- The project is designed to handle a flow of 6,000 cfs with 3 feet of freeboard on the levees and 2 feet of freeboard on the concrete channel. The estimated average exceedance interval at the time of design was 110 years (0.9-percent annual chance flood).
- A 4-foot high non-climbable fence on the channel side walls was installed during the original construction as a safety measure.
- Certain sections of the old river channel were filled with excess excavation material generated during construction activities.



**Figure 2 - Concrete Channel Section**



**Figure 3 – Levee Section**

### Overall Opportunities for Improvement/Solutions

- Aerial photos taken prior to the project's construction indicate extensive meandering of the river existed before the project was constructed. Riparian vegetation and wetlands were evident along both banks.

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- Significant environmental impacts, including reduction in river meandering and a subsequent reduction of fish and wildlife habitat, were incurred as a direct result of construction of this project.
- The river meanders supported extensive riparian and vegetation areas. A total of nine major meanders were removed with the project, which resulted in the loss of most of these riparian areas. The below as-constructed drawing depicts how these meanders were straightened during project implementation.

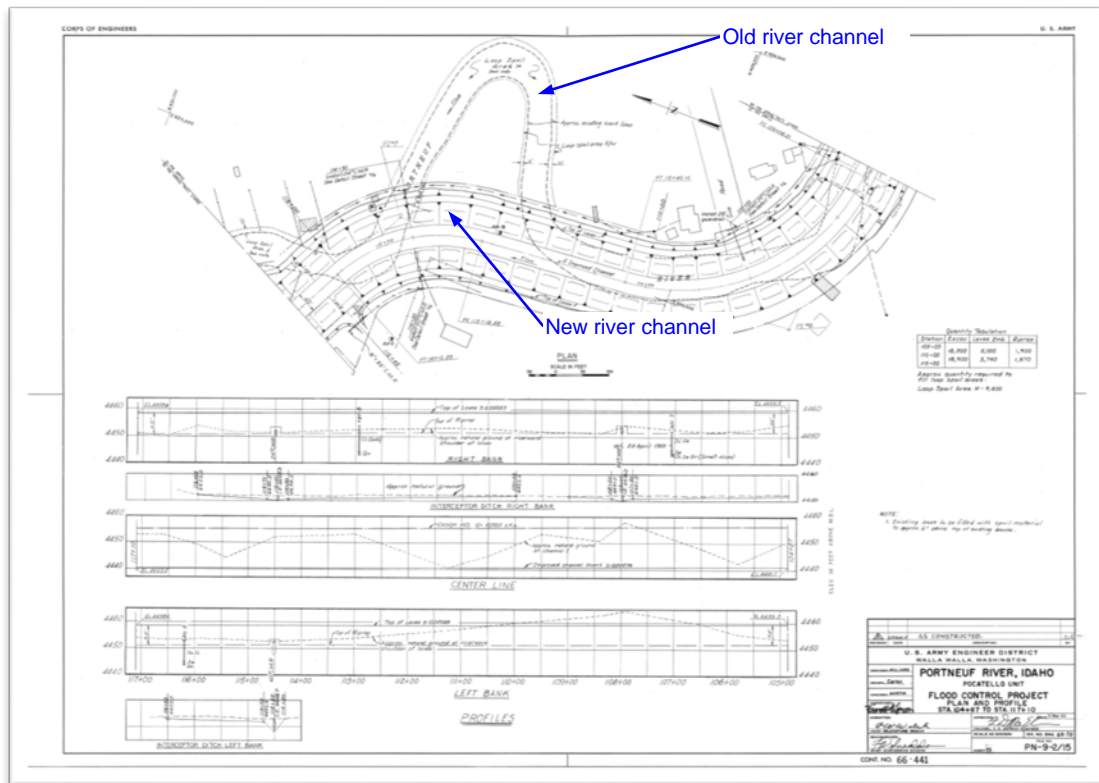


Figure 4 – River Meander

- Under current conditions, the project provides poor habitat for wildlife and fish. The degraded riparian corridor is confined to a narrow band and wetlands are absent from most of the project.
- The City of Pocatello's goal is to create a more natural and accessible river as it flows through the city. This would provide more green space and more recreational opportunities. Raymond Park has been one of the main focus areas for such a project.
- Several design concepts have been discussed and considered throughout the years that would involve modifications to the project. Some of these include:
  - Concrete channel wall modification: remove the concrete channel walls along a particular river section, and grade the earthen streambank to a flatter slope. This would create a more natural stream condition environment.
  - Restoration of river meanders: modify the channel wall or levee to allow the river to flow into the original river channel. Excavation of the original river channel would be required to accommodate this concept.

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- Set-back levees: Relocate levee alignments to create a wider river corridor. Construct wetland habitat areas within this new river corridor.

## Challenges

- Proposed project modifications would require engineering analysis during the planning and design phases to ensure they are feasible. A concept may prove impractical or unattainable upon further examination.
- The railroad embankment confined the river channel on the upstream end of the study reach, which disconnected river meanders and floodplain areas.
- Any project modification would require extensive USACE coordination/approval. (maybe Congressional authorization?)
- Project modifications would require additional real estate, i.e. more land would be needed. Land owned by the City of Pocatello is available in certain areas.
- The project’s flood risk reduction capabilities (6,000 cfs flow conveyance with freeboard) would have to be maintained with any project modification.

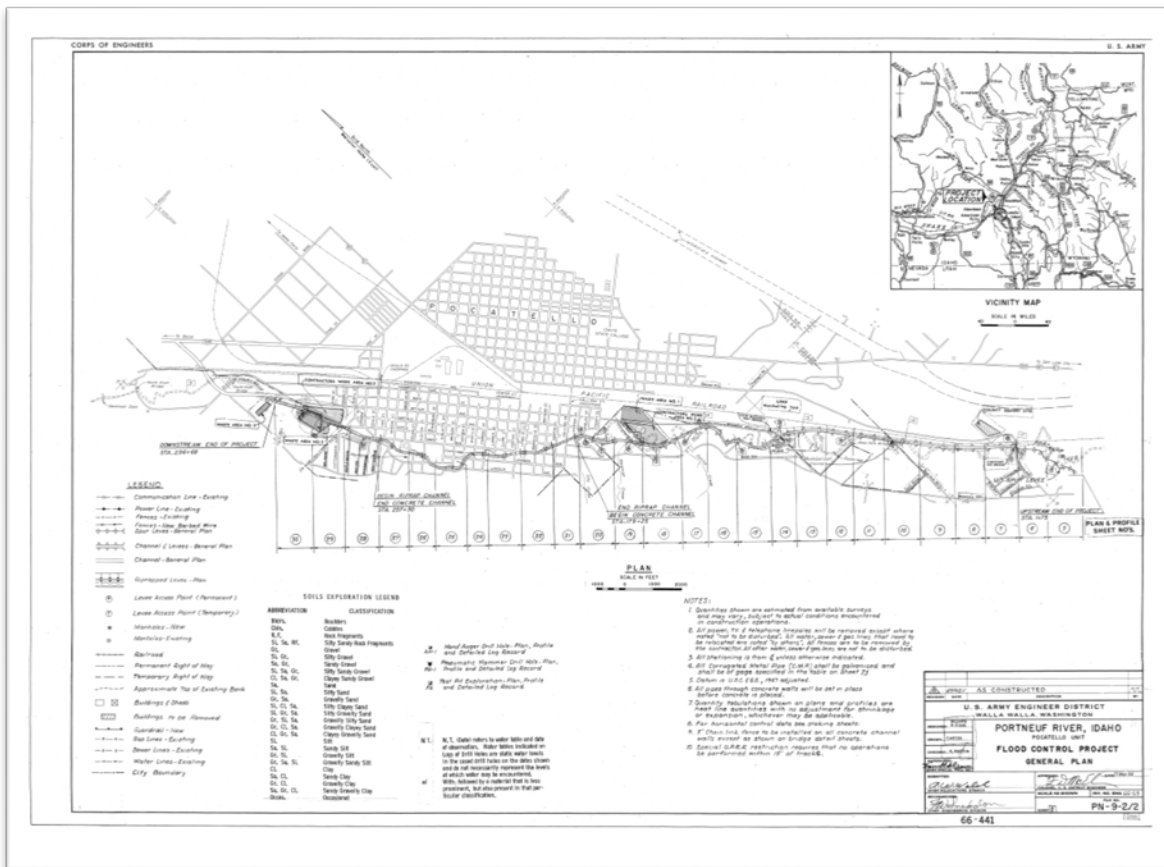


Figure 5 – Flood Control Project Site Plan (from design drawings)

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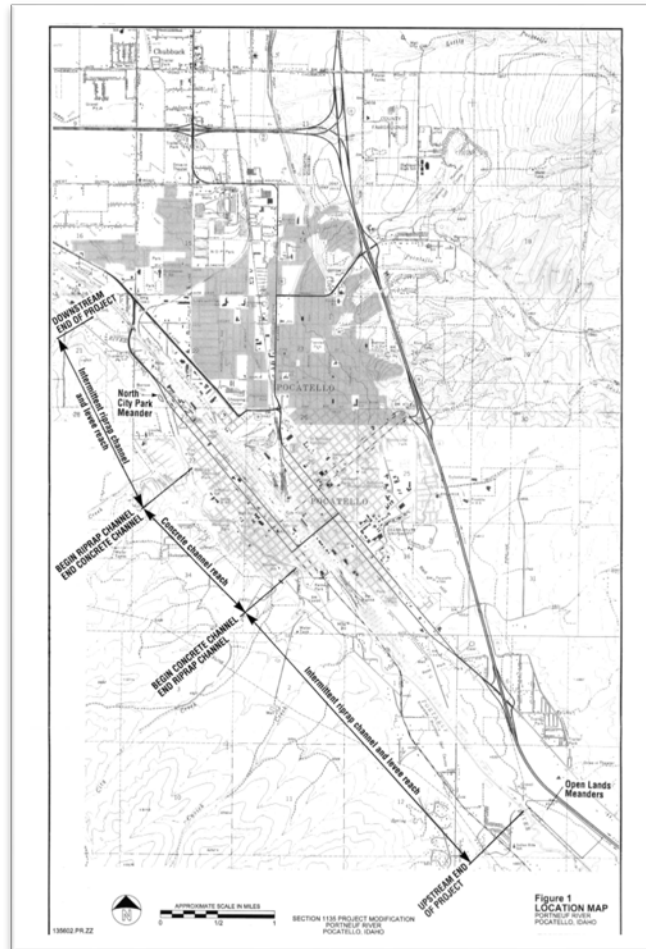


Figure 6 – Flood Control Project Site Plan (from 1135 report)

### REFERENCES

- Portneuf River, Idaho, Flood Control Construction Plans, U.S. Army Engineer District, Walla Walla, 11 Feb 1969
- Portneuf River Section 1135: Channel Restoration Plan, Project Modification Report, January 1997
- MILES website, Exploring the Portneuf River, Pocatello Flooding History
- Notes from conversation with John Sigler, City of Pocatello, 23 May 2011
- Operation and Maintenance Manual, Portneuf River Flood Control Project, U.S. Army Engineer District, Walla Walla, 1968
- General Design Memorandum, Flood Control Project, Portneuf River, Idaho, Pocatello Unit, U.S. Army Engineers District, Walla Walla, 22 July 1964