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Mill Race Action and Effects

Rearranging the landscape has consequences that are still hard to predict. In 1850 they were understood even less than now.

What was done (date)	Effects
Beavers were virtually extirpated across much of Willamette valley, including the confluence area by French trappers who paid native Americans to do the work (early 1800s)	Channel became incised for the first time and habitat was disrupted.
Land was cleared of timber, burnt, tilled and ditched to convert it to agriculture (early to mid 1800s)	Channel incision was accelerated as was the disappearance of habitat.
A deep channel was dug where before there had been only wetland with likely an ill-defined channel that flowed only during the wet season (ca. 1850).	Further Loss of habitat especially since the two new outflows to the Willamette were probably not navigable by fish.
A diversion dam was built on the Marys, presumably also ca. 1850, rebuilt a few years later, then again at least one more time in 1946.	Fish migration upstream was largely stopped
The Marys River was straightened for a distance of about 470 yd upstream and 200 yd downstream eliminating flow through two successive channel meanders (date unknown but almost certainly pre-1900, probably contemporaneous with either construction of the initial or second dam).	Loss of habitat in the two bends.
The broad path that overbank flow from the Marys followed to the Willamette was blocked by the railroad berm (1908), except for trestles over the Mill Race and the original wetland drainage path.	Unclear but may have caused diversion of overbank flood water into what is now the Allen St. neighborhood.
The spillway (overflow channel downstream from the sluice gate) was rebuilt (ca. 1920) as a concrete box culvert. The current sluice gate (now abandoned but still visible) may have been built at this time or perhaps earlier but almost certainly does not date to the 1850s.	Loss of habitat.

At least two tributary surface flow paths into the main wetland were obliterated by residential (and some commercial) development between 1950 and 1980 (check dates again).	Loss of habitat.
The Mill Race outflow was blocked possibly at the time the hardboard plant was built. The downstream part of the channel was redug with a 90o turn to the north at a point about yds from the original outflow. Undersized culverts (36" diameter) were installed under both the railroad spur and Crystal Lake Dr (sometime between 1965 and 1969).	At this point the Mill Race became more of a liability than an asset, the only justification for its size (and depth of incision) being as a path for rapid conveyance of floodwater from Marys River. But even that role was greatly impaired by the sharp left turn to the N, the small size of the surface ditch to the Marys, and the presence of at least one vastly under-sized culvert at the railroad spur and likely an equally undersized one at Crystal Lake Drive. Also, the culvert under Allen St. was also undersized for this role and is now almost completely blocked. Overall, the enormous size and depth of the channel was way out of synch with the normal water flow, even during the rainy season, which made management of streamside vegetation and continuous water flow very difficult and greatly lessened its value as habitat.
The diversion dam began to deteriorate in the 1950s and was washed away completely in the 1973 flood. The Mill Race inlet may have been backfilled at this time, or perhaps later.	Removing the dam greatly improved movement of fish and other fauna up the Marys but it also greatly accelerated bank erosion downstream as the channel adjusted to the increased water flow along the path created by the river straightening. .
The sharp bend to the N was eased, and the entire channel from Bridgeway downstream to the railroad spur was regarded and perhaps deepened (1984).	This helped somewhat to improve its role as a rapid water transport system (RWTS) but the culvert problems remained. In addition the deepening and regrading if anything exacerbated the vegetation management problems and further lessened habitat value.
A 20' x 12' metal culvert was installed under Evanite and the channel regraded and perhaps deepened north of Evanite (1985). The 36" culvert under the railroad spur was left unchanged.	This removed one of the two remaining obstacles to its role as a rapid transport system, the last being the 36" culvert under the railroad spur. It also brought to the public eye the issue of the Evanite TCE leakage. This had been known by many for some time but the culvert construction made it impossible to ignore. Effects of the 1996 flood were almost certainly worsened by the presence of the remaining under-sized culvert.

In 1997, the culvert under the railroad spur was replaced with a piece of 20’ x 12’ culvert left over from the 1985 project.	This removed the last obstacle to its role as a rapid transport system and probably facilitated transit upstream by fish and other aquatic fauna. The problems due to its width and depth remain today.
Trash removal from the Mill Race was stopped, possibly as a misguided response to change in management policy that called for leaving coarse woody debris in and along the channel (1997).	Trash has been allowed to accumulate in and along channel since 1997.

Fig. . The Marys River is rapidly eroding this neck of land remaining in this horseshoe bend. The original channel followed the line to the left but the river was straightened during the construction of one of the several diversion dams supplying water to the Mill Race. This straightening has probably greatly accelerated the erosion rate. The neck was completely submerged at the high point of the 1996 flood and almost certainly again in the 2012 flood (which crested higher than the 1996 flood). It is thus very likely that the neck will be breached during the next couple of floods.