CASE STUDY

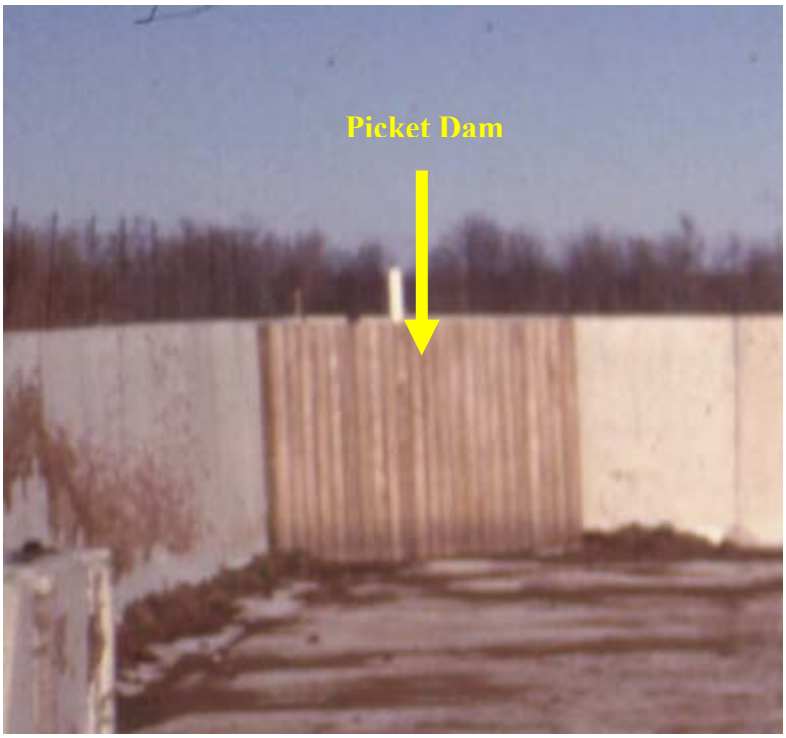
Conservation Practice Standard: Waste Storage Facility Code 313
Slotted Dewatering Fence in Corner of Pit, Albion, Kennebec County.

Darrell and Sarah McKeen manage a 100-head dairy operation in Albion. The McKeens are high-level managers and place a high value on overall farm aesthetics. Prior to the development of a conservation plan in 2000, on-farm manure storage consisted of an older 3-wall concrete pit loaded by a gutter cleaner. The semi-solid manure was then bucketed into a scavenger type box spreader and land applied. It was found that when the manure reached a height of 3.5 feet in the pit, it would begin to flow out of the pit and on to adjacent hay and pasture ground. A 2000-foot, 8% slope was between the pit and Fifteen Mile Stream, a nonpoint source priority watershed. Darrell and Sarah worked with NRCS to obtain EQIP funding and technical assistance to protect water quality, maintain a semi-solid manure situation, and sustain a high-level of aesthetics on their farm.

The McKeens' decision to enclose the existing pit presented another choice – how to maintain the consistency of the manure coming out of the barn in order to continue to handle the manure as a semi-solid. The addition of any rainwater would require that the manure be handled as a liquid. The objective became how to eliminate or remove an average of 1.5 feet of precipitation (after subtracting annual evaporation) each year from a pit totaling 80,000 gallons. A roof was decided against due to cost ($4 per square foot for a 7,200 square foot pit), thus a situation presented itself to remove the excess water using the old technology of picket dams in a new way. Working with the McKeens, NRCS designed an expansion to the existing pit and two picket dams to remove accumulated liquids. Each of the 8'x12' picket dams cost $1,000 at time of construction – a considerable difference from the cost of a roof.

Picket dams have long been used to drain runoff from manure storage areas while retaining the solid manure and bedding within the storage area, enabling manure to be handled as a solid. The two dams in the McKeen pit were situated behind one stabilizing wall on the existing pit, adjacent to the ramp, and at the far corner of the newly constructed pit. The dam adjacent to the ramp keeps liquids away from the bottom of the ramp, which would interfere with the bucketing of the manure. The picket dams are 12 feet long by 8 feet high. Each are made with 4 pressure treated lumber beams, and decked with 1-inch thick hemlock boards, ¾-inch apart. The bottom beam, set one-foot off the floor is 10"x10", 2 feet above is the next beam (10"x10"), and the next succeeding two-foot intervals are an 8"x8" and a 6"x6" beam, respectively. The dams are engineered to withstand loads of a full pit of manure and the worst case scenario of the dam plugging up. Behind each of the dams is a 4-inch diameter PVC Schedule 40 elbow placed at the floor surface, connected to the same diameter and schedule pipe, sloping at 1% out to the filter area. During the winter months a 4-inch diameter, 10-foot long removable riser sits in the elbow, working as a stopper. Two weeks prior to unloading the pit in the spring the solid riser will be removed, draining the liquids accumulated in the pit and into the filter area, capturing the peak nutrient-uptake of the filter area grasses. Each of the dams is removable to allow for ease of cleaning.


Picket Dam


Picket Dam