

AGRICULTURAL FLOOD DAMAGE IN THE PORTAGE RIVER WATERSHED

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The Portage River Watershed (PRW) includes 106,432 acres of northeast Jackson County, southeastern Ingham County and northwestern Washtenaw County. About 69,000 acres are in Jackson County. The outlet of the Portage River is north of the City of Jackson where it enters the Grand River.

Extensive wetlands occurred in the watershed prior to European settlement. Emergent marshes, wet prairie, fens, bogs, conifer swamps, lowland hardwoods and shrub/scrub were the most common wetlands (Comer 1995). They stored and retained floodwater, allowing the water to be slowly released, evaporate or percolate into the ground thereby recharging groundwater.

Between 1917 and 1920 the Portage River was straightened and deepened and renamed the Portage River Drain. The Portage Drain is 20 miles long with a grade of about 0.02% per 100 feet (USDA 1963b). Because of the flat stream gradient throughout the area, floodwater in the Grand River often backs up into the PRW. Numerous ditches and tiling drained adjacent wetlands creating some of the most productive farmland in Jackson County. It was designated an inter-county drain during the 1900's. Since its construction, it has been cleaned several times. The lower portion was last cleaned in 1944 (Ibid). An USDA 1972 study concluded that a solution to the flooding problems would require channel improvements to 11.5 miles of the Portage River and Orchard Creek and 10 miles of the Grand River.

Flooding and inadequate drainage have plagued 8,360 acres of the watershed for many years (US Army Corps Engineer report 1972:188). Early reports of flooding in 1937 and 1945 contained no estimates of damage (USDA 1963a). The next reported flood in 1954 was probably one of the worst, when more than 150 farms affecting 7,000 acres received damage in excess of \$3,500,000.00 (Abbey 1954, USDA 1963b). An USDA 1976 report describes a Grand River flood that reached the 100-year flood elevation in Jackson after a 6.36" rainfall on June 20-21, but it does include information about the extent of damage in PRW. These reported flood events are summarized in Table 1, but certainly there were additional years with less severe damage. Many of these farmers used pumps to help their drainage problems (USDA 1958:4). Much of the flooded area was highly productive cropland, especially 4,940 acres of organic soils (US Army Corps Engineer report 1972:188). Because many specialty crops such as onions, potatoes, carrots, cabbage, radishes, peppermint, spearmint, sod and lettuce have been grown, the cost per acre of flood damage is high.

METHODS

Records from the USDA Farm Service Agency (FSA) were searched for crop damage due to flooding. Farmers reported their crop losses to the FSA for determination if they are eligible for compensation. Farmers who believe they would not qualify for compensation often not report

their losses. Only reports of crop damage caused by excessive moisture within the 8,260-acre Portage floodplain were analyzed for this report.

RESULTS

Flooding caused damage to crops at least 5 times during the 1990-2001 period based on FSA records from 1990 – 2001 in Jackson County (Table 1). Crops were probably affected by flooding between 1969 and 1989, but FSA no longer has those records. The Jackson County Emergency Board minutes for June 6, 1989 mention a 5” rainfall that caused flash flooding, but it is not certain if there was crop damage because the county had been experiencing a drought. The last flooding occurred in the fall of 2001 when high water prevented the harvest of some crops (Fig. 1) and restricted use of pasture (Fig. 2).

It appears that flooding was more frequent in the 1990-2001 period than in previous years, but affected few farmers. Many farmers along the Portage Drain went bankrupt in the late 1970s and their land was taken out of cultivation. Sedimentation and other geomorphologic changes resulting from log jams and channel restrictions along the Portage Drain (Hubbell, Roth & Clark, Inc. 1999) restrict the flood carrying capacity. Now, much of the former cropland lies idle because of flooding, low crop prices, and wildlife damage. Only 3 larger farming operations exist in 2002 where once there were many.

CONCLUSIONS

Flooding of cropland along the Portage Drain will get worse. The last study of the Portage Drain determined that the benefit-cost ratio did not justify making improvements (USDA 1972). As a result, more land will be taken out of cultivation and revert back to degraded wetlands. Restoring these degraded wetlands by plugging ditches and breaking tile will decrease flooding downstream on the Grand River and improve wildlife habitat.

REFERENCES

- Abbey, H. 1954. Report made by Jackson County Drain Commissioner as of July 9, 1954 in the matter of flood damage in the Portage River Area. 2 pp.
- Comer, P.J. et al. 1995. Michigan’s presettlement vegetation as interpreted from the General Land Office Surveys 1816-1856. Michigan Natural Features Inventory, Lansing MI. digital map.
- Hubbel, Roth & Clark, Inc. 1999. Portage River Inter-County Drain Drainage District evaluation and corridor study. 54 pp.
- US Army Corps Engineer. 1972. Grand River Basin Michigan comprehensive water resources study, main report. 190 pp. Vol. I-XI.
- USDA. Soil Cons. Ser. 1958. Survey report on major and local drainage for Portage River, Michigan. 35 pp.
- _____. 1963a Portage River Drain Watershed Jackson County by George Salsbury, Soil Conservation Service. 2 pp
- _____. 1963b. Letter to Russell G. Hill by George Salsbury, Soil Conservation Service. 2 pp.
- _____. 1968. Portage River Watershed investigation report evaluation Unit P-1, 2, 3, 4; UG-5, 6. 18 pp.
- _____. 1972. Technical report: Portage River and Upper Grand River Watersheds.

_____. 1976. Flood hazard analyses: upper Grand River Jackson County, Michigan. 14 pp.

Table 1. Summary of flood damage to crops in the Portage River Watershed.

Flood Year	Number of Farms	Acres Flooded	Crops Affected/Description	Amount of Damage	Source
Literature					
1937			June 20-21, 6.36" rainfall	*	USDA 1963
1945				*	USDA 1963
1954	150	7,000	beets, corn, cabbage, onions, mint, potatoes, radishes, wheat	\$3,500,000.00	Abbey 1954
1968			June 23-26 4.8" rainfall	*	USDA 1976
1989			May 30-31, 5" rainfall	*	Jackson Co. Emergency Bd.
This study					
1992	2	821	corn, onions, peppermint, spearmint	\$ 266,701.00	FSA files
1993	1	147	carrots, onions	\$ 260,939.00	FSA files
1998	1	46	carrots	\$ 100,829.00	FSA files
2000	3	1014	carrots, corn, soybeans	\$ 440,757.00	FSA files
2001			October flooding prevented harvest	*	
			This study total	\$ 1,069,226.00	

* These records were not available.