

Cobbossee Lake Restoration: Reduction of Phosphorus in the Jock Stream Watershed

#99R-29

Waterbody Name: Cobbossee Lake, Jock Stream

Location: Monmouth, Wales, Litchfield
Kennebec County

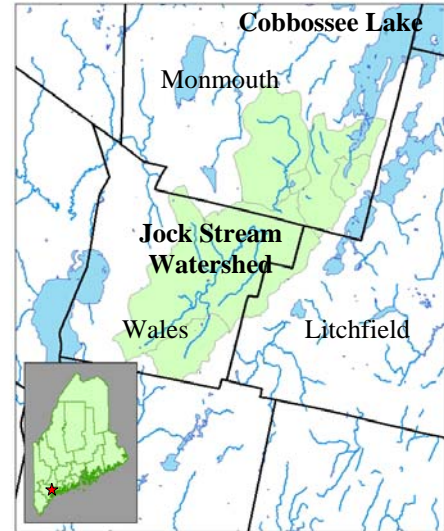
Waterbody Status: Impaired, NPS Priority Watershed

Project Sponsor: Kennebec County SWCD

Project Duration: July 1999 – December 2004

319 Grant Amount: \$220,040

Local Match: \$152,117



PROBLEM:

Cobbossee Lake is one of Maine’s premier bass fishing lakes and a source of drinking water supply for Augusta. The lake has a surface area of 5200 acres and a watershed of 32 square miles located in Winthrop, Manchester, and Monmouth about 5 miles from the state capitol - Augusta. The lake has a long history of nuisance algal blooms during summer months. Nonpoint source pollution is the primary cause of the impaired water quality.

The Total Maximum Daily Load (TMDL) water quality assessment reported that elevated levels of phosphorus in Jock Stream accounted for about one-third of the phosphorus load to Cobbossee Lake. The report found that agriculture, primarily dairy farms, was a significant phosphorus source and recommended conservation practices to improve existing conditions. A subsequent survey found that many roads and road ditches were also phosphorus and sediment sources.

PROJECT DESCRIPTION:

The project goal was to help restore Cobbossee Lake water quality by reducing annual total phosphorus entering the lake from the Jock Stream watershed. This was accomplished by reducing sediment and associated phosphorus export from roadways and farms - via the installation of improved roadside drainage and agricultural (livestock) BMPs. The SWCD and NRCS worked with farmers to install winter manure storage facilities, write nutrient management plans, install livestock exclusion fencing & alternative water systems, and install heavy use areas in barnyards. The SWCD collaborated with 3 towns and MDOT to identify, design, and fix many roadside runoff problems that were sediment and phosphorus sources.

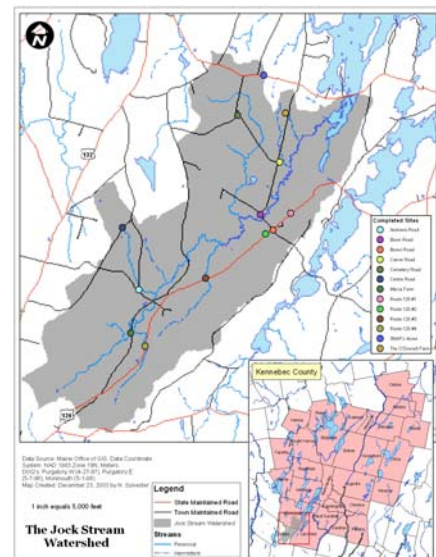
Cobbossee Watershed District conducted a water quality monitoring program in Jock Stream and Cobbossee Lake to evaluate the restoration project. The lake was monitored to assess attainment of water quality goals. Jock Stream monitoring stations were sampled bi-monthly from spring to fall for phosphorous, dissolved oxygen and bacteria.



PROJECT OUTCOMES:

- The project’s Water Quality Report (11/04) evaluated historical and new data collected during this project. The report finds Cobbossee Lake & Jock Stream water quality has improved.
 - o The water clarity of Cobbossee lake from 1976 to 1996 was relatively poor (average 2.0 meters) compared to significantly improved conditions over the past 7+ years (average 2.6 meters). Notably, the minimum annual water transparency during the summer of 2004 was 2.8 meters. Some of the water quality improvement over the last decade can be attributed to a reduction in the total phosphorus loading from Jock Stream.
 - o Phosphorus levels in Jock Stream are meeting the goal set in the TMDL report.
- 13 road projects were completed with 3 towns and MDOT including 45 BMPs installed to reduce erosion and sediment. Construction costs totaled \$177,534 (\$98,437 grant; \$79,097 local match). Monmouth received an award from the American Public Works Association for one of the projects.
- Agricultural BMPs were installed at 3 farms. At a beef farm 2 livestock exclusion and watering systems, a manure storage system, and a heavy use area (a hardened area that animals use often) were designed and installed. At a dairy farm, 1 livestock exclusion and watering system and a heavy use area were designed and installed. The owners of a third farm agreed to set aside land to let filter strip grow in naturally. Construction costs totaled \$84,510 (\$55,410 grant; \$29,100 local match). Nutrient management plans were adopted for 3 farms. Also, 3 farming operations were discontinued during the study period.
- Nonpoint Source Road Erosion Survey of the 30 miles of roads in the Jock Stream watershed was completed. The report documented 32 problem sites in 3 towns.

Map of BMP Locations



PROJECT PARTNERS:

Town of Monmouth

Town of Wales

Town of Litchfield

Cobbossee Watershed District

USDA - Natural Resources Conservation Service

Maine Department of Transportation

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Suggested Citation:

Maine Department of Environmental Protection (2005) “Nonpoint Source Management Program Annual Report 2004,” Document # DEPLW0701 2005. Augusta: MDEP.