

November 7, 2014

## **Restoration and Spending Plan Marks Farm Natural Resource Damages Settlement**

**DEC Case# R6-20051021-44**

### **Introduction**

Marks Dairy Farm Inc. owns and operates a Concentrated Animal Feeding Operation (CAFO) in the town of Martinsburg, Lewis County, NY. A major fish kill on the Black River, beginning 10 August 2005, resulted from a collapsed manure lagoon at the farm near Lowville, NY. Several million gallons of manure slurry were released, which caused lethal levels of ammonia and very low dissolved oxygen along 24 miles of the Black River in Lewis and Jefferson Counties. The resulting fish kill continued for about four days as the toxic water gradually moved downstream. The farm also lacked a Comprehensive Nutrient Management Plan to deal with animal waste required under their general permit. The farm was cited for violation of ECL Article 17 and its associated regulations.

As a result of the discharge and subsequent fish kill, the New York State Department of Environmental Conservation (the “Department”) brought a natural resource damages (NRD) claim against Marks Dairy Farm, Inc. seeking damages for the destruction of the state’s natural resources and the lost use of those resources by the public. The Commissioner of the Department is the trustee for the state’s natural resources pursuant to: Subpart G of the National Contingency Plan, 40 CFR §300.605; Section 107(f)(2) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. §9607(f)(2), Article 12 of the New York Navigation Law, and other federal and state law. As trustee, the Commissioner may make a claim acting on behalf of the public. An Order on Consent between the Department and Marks Dairy Farm, Inc. settled the NRD claim for the amount of three hundred ninety thousand nine hundred sixty-three dollars (\$390,963.00) to compensate for the natural resource damages caused by the discharge. A copy of the NYSDEC Order on Consent, including settlement of other claims and violations not discussed in this Plan, is attached as Appendix A.

This Restoration and Spending Plan has been prepared to present results of post-spill monitoring of the subsequent recovery of the resource, and to present information on the intended use of settlement funds received from Marks Dairy Farm in settlement of the NRD claim. The Draft version of this Restoration and Spending Plan was published in the NYSDEC Environmental Notice Bulletin (ENB) on October 1, 2014. The public comment period ran from September 29, 2014 through October 29, 2014. No comments were received during the public comment period and this Restoration and Spending Plan has accordingly been finalized.

## **Resource and Injury Description**

Liquefied manure, spilled from a failed manure lagoon, entered the Black River through a drainage ditch on Marks Farm (43°46.16' N 75°25.36' W). High ammonia and low oxygen levels killed fish from that point downstream to the rapids at Carthage (43° 58.79' N 75° 36.98' W), a distance of 24.2 miles (Figure 1). The Black River in this area has a low gradient (0.04%) and meanders through alluvial sediment, largely silt, sand and clay. Major tributaries in this stretch are the Moose River, entering from the east and the Deer River, entering from the west.

### Use of the Resource

The river here supports a warm-water/cool-water fishery, with smallmouth bass and walleye as the most prominent, and chain pickerel as the most abundant gamefish. The 2007 New York Statewide Angler Survey estimated that the Black River received 107,090 angler days. A major portion of this effort (68%) was contributed by anglers fishing for the warmwater species like Black Bass, Pickerel, Northern Pike, Yellow Perch, Crappie, Sunfish, Bullheads and Walleye. It is estimated that 64 miles of the Black River have this warmwater fishery. The fishkill covered just over 24 miles but an additional 8 miles were affected by health concerns resulting in a potential loss of 34,269 angler days annually.

### Estimating Fish Mortality

Standardized 100 ft and 200 ft carcass counts were conducted on 12 and 13 August 2005. Ten standard 200 ft shoreline counts of fish carcasses were conducted between the mouth of the Beaver River and the Route 812 bridge (Castorland to Rt. 812 Reach). Eleven standard 100 ft shoreline counts of fish carcasses were conducted between Carthage and the mouth of the Beaver River (Carthage to Castorland Reach). No standard counts were conducted in the reach from the Route 812 bridge to the site of the spill due to rapid loss and deterioration of carcasses. Non-standard counts were conducted but were not included in mortality calculations.

Count sites were chosen at random by each team leader, without regard to shoreline type (or likelihood of concentrating fish carcasses), by visually locating a landmark approximately 0.5 miles (in the Castorland to Route 812 reach) or 1.0 mile (in the Carthage to Castorland Reach) upstream or downstream of a starting point and then traveling to that landmark to begin the count. A 100 ft or 200 ft line was affixed at the landmark, the line was stretched along shore, and counts progressed to the end of that line. Fish carcasses on shore or caught in shoreline vegetation or debris (within 5-20 ft of shore) were counted. These carcasses were identified to the lowest taxonomic group practical. Carcasses floating beyond the shoreline zone were not counted.

An estimate of total mortality in a river reach was calculated by expanding the mean count per standard shoreline transect by the length of the reach. Standard error of the mean was calculated

using the Mean Square Successive Difference method which provides a more conservative (larger) estimate than a parametric method would. Distance was measured along the centerline of the river, shoreline irregularities were not considered. Distance was not doubled to consider two banks, thus providing a very conservative estimate.

The lengths of river reaches were determined using Map Tech: Terrain Navigator 3.1 software. The Carthage to Castorland reach was measured from the upper dam in Carthage to the mouth of the Beaver River (10.6 miles). The Castorland to Route 812 reach was measured from the mouth of the Beaver River to the Rt. 812 bridge (5.8 miles). The Route 812 to source reach was measured from the Route 812 bridge to the mouth of the drainage ditch upstream of Watson through which the spilled manure entered the river (7.8 miles).

### Fish Killed

Over 4,400 fish carcasses were counted in stratified random standard counts, resulting in a conservative mean estimate of about 280,000 mortalities. Extrapolating the per transect count data from the Castorland to Route 812 reach to the Route 812 to spill reach, which contained no standardized counts, would provide an estimate of about 370,000 total fish mortalities. Minnows and darters were the most commonly encountered carcasses (33% and 20% of total). Smallmouth bass, yellow perch and rock bass, each made up about 11 % of the total. Walleye made up 4%, and northern pike and chain pickerel each made up 1% of all carcasses counted. There were many northern pike over 38 inches (965 mm), walleye over 24 inches (610 mm), smallmouth bass over 16 inches (406 mm) and burbot over 17 inches (432 mm). Standard 15 minute boat electrofishing conducted during the week after the kill ended showed that substantial numbers of live fish, including some of significance to the recreational fishery, were present, indicating that they had avoided, or somehow survived, exposure to high ammonia and low oxygen levels. Potential refugia include backwaters, which received little river flow, and tributaries. The most abundant recreational fish sampled after the fish kill were chain pickerel and yellow perch which may well have survived in vegetated backwaters.

### **Recovery and Restoration**

Due to the river conditions at the location of the spill, it was not feasible to undertake any cleanup of the manure and no primary restoration was proposed to be implemented. The Department estimated that the reach of the Black River affected by the manure slurry would remain essentially unavailable, or severely limited, for fishing for two years, with gradual improvement thereafter.

### Stocking and Monitoring

Due to the high level of smallmouth bass mortality and concern about remaining spawning stock, 133 adult smallmouth bass (127 Floy-tagged) were transferred to the Black River from the St.

Lawrence River in September 2005 approximately one month after the fish kill. They were stocked in the impacted area at Carthage (lower part of area), Castorland (middle of area) and Beaches Landing (upper part of area).

In June 2006, approximately 20,000 Oneida strain walleye fry (1.5 inch) were stocked in the Carthage to Beaches Landing reach. Beginning in 2007 through 2011, 18,000 to 22,000 ventral (right or left) fin clipped walleye fingerlings (4-5 inch) were stocked annually each September. Boat electrofishing occurred in August 2006-2008 and again in 2010. In 2006, one year after the fish kill, those species which seemed to have survived the incident most successfully, chain pickerel and yellow perch, also showed the most significant improvement in catch rate,  $\alpha = 0.02$  and  $0.002$  respectively. Rock bass abundance also increased at a moderate level of significance,  $\alpha = 0.20$ . There was no significant change in northern pike or walleye, and smallmouth bass abundance declined,  $\alpha = 0.20$ . Paired sampling in 2010, five years after the fish kill, revealed a more clearly positive situation. Of 12 common Black River fish species, 11 showed increased abundance relative to 2005, nine significantly with  $\alpha \leq 0.20$ ; only northern hog sucker showed reduced abundance. Among the more important recreational species, walleye and yellow perch catch rates increased over 500% and 400% respectively, which were highly significant at  $\alpha \leq 0.01$ . Smallmouth bass catch rate almost doubled and rock bass increased 145%; these were significant at  $\alpha = 0.004$  and  $\alpha = 0.05$ . Chain pickerel, which had remained relatively abundant immediately after the spill, increased 67% and northern pike increased 75%, significant at  $\alpha = 0.06$  and  $\alpha = 0.13$ .

Harvest of several recreational species is regulated by minimum size limits (legal sizes: northern pike-18 inches/457 mm, chain pickerel-15 inches/381 mm, smallmouth bass-10 inches/254 mm, walleye-15 inches/381 mm). Chain pickerel were the most common sublegal gamefish in the 2005 sample and remained so in 2010. Sublegal northern pike were uncommon in 2005 and were still uncommon in 2010. Few sublegal walleye were sampled in 2005 but they were much more common five years later. All legal size gamefish were uncommon in 2005 and all were substantially more common in 2010. The sublegal component of all gamefish populations, except northern pike, showed increased abundance significant at  $\alpha = 0.20$  level or better. Walleye showed the greatest percentage increase at 839%. Increased abundance of the legal size components of all gamefish populations were highly significant at  $\alpha = 0.04$  level or better. For species where percentage increases could be calculated (catch of legal size walleye was zero in 2005) increases ranged from 295% for northern pike to greater than 2800% for smallmouth bass.

### Conclusion

Although there have been previous fishery surveys of the middle Black River (Carlson 1996, Panek 1978), they are not recent and did not use the same sampling techniques. Without recent, comparable baseline data, the Department cannot determine if the Black River fish community has fully recovered to pre-fish kill levels. There have been substantial increases in the abundance

of many species, including gamefish, particularly in the legal size components. This suggests that if full recovery has not been achieved, at least a very robust recovery is underway. The relatively limited recovery of northern pike is a notable exception which may be related to gradual habitat changes in the middle Black River favoring chain pickerel (Carlson 1996).

**Restoration Projects**

Public Outreach

The people that were most affected by this manure spill were the anglers that fished this section of the Black River. A public meeting was held at the Department’s Region 6 Headquarters in Watertown, NY on November 30, 2006 to evaluate the emergency response and to obtain input on potential restoration projects. Staff from the following entities were invited in addition to the general public:

Cornell Cooperative Extension of Lewis County
Cornell Cooperative Extension of Jefferson County
Jefferson County Soil & Water Conservation District
Lewis County Soil & Water Conservation District
Lewis County USDA NRCS
Jefferson County USDA NRCS
Jefferson County Agricultural Coordinator
NYS Department of Health
NYS Department of Environmental Conservation – Water, Fisheries, Spill Response, Law Enforcement
Carthage Waste Water Treatment Plant
Watertown Waste Water Treatment Plant
Watertown Water Treatment Plant
Fort Drum Regional Liaison Organization
Jefferson County Emergency Management
Lewis County Emergency Management
Town of Martinsburg
Town of Lowville
Lewis County Sheriff
Hudson River/Black River Regulating District
Lewis County Public Health & Manager
State Environmental Management Office

Anglers, towns, villages, counties, emergency response organizations and state agencies were present. Some of the proposed projects were incorporated in Article III of the Consent Order as Environmental Benefit Projects. Others were rejected due to lack of nexus to the injury such as not being in the fish kill area or not directly benefiting the anglers and people that use the waterway for recreational purposes. Projects retained for cost estimates were those providing access to fishing as replacement for the services lost during the time when the River was degraded and no fishing could occur.

### Access Projects

In the fall of 2010, Department staff visited all of the existing and undeveloped access sites on the Black River in or just upstream of the location of the fish kill, and identified seven fishing access sites needing improvement and one location where a new access site can be constructed. Title II of the Americans with Disabilities Act requires government agencies to comply with the guidelines for new construction or renovations of existing facilities.

Existing fishing access sites are typically not accessible and do not meet ADA outdoor recreation standards or general guidelines. For a feature to be accessible, each component must be accessible, from parking to engaging in the program being offered. This means that each site must have at least one reserved parking space (signed, at least 8' in width with an 8' wide access aisle, a firm stable surface, no more than 1:48 slope in any direction, etc). An accessible connecting route must be established from the parking space to the fishing pier, dock, boat launch, privy, picnic table or other feature located on site. The route must have a firm stable surface, be least 36" in width with a grade not to exceed 10% and ideally, not to exceed 5%. There are specific standards for fishing piers, docks, privies, picnic tables and the features listed above.

The existing sites identified by staff are inaccessible to many members of the public and require upgrades to make them compliant and support the Department's goal of providing access to a broad cross section of the public. Costs were estimated for upgrades to make the seven existing sites ADA compliant and to develop a new fishing access site at one of the undeveloped sites already in the state ownership. A list of these eight sites and cost estimates from 2010 are presented in Table 1 below. A complete breakdown of costs for each site is included in Appendix B. See Figure 2 for locations of the eight sites.

Table 1. Proposed Access Projects-See updated estimates, attached.

#### **Black River Universally Accessible Boat Launch Sites**

<b>Site</b>	<b>Type of Project</b>	<b>Project Cost (rounded)</b>	<b>Project Cost w/Options</b>
Deer River	New Construction	\$86,835	\$92,675
Castorland	ADA Upgrade	\$57,928	
Beeches Bridge	ADA Upgrade	\$64,607	
Watson	ADA Upgrade	\$12,226	
Blue Street	ADA Upgrade	\$582	
Glendale	ADA Upgrade	\$1,570	
Burdick's Crossing	ADA Upgrade	\$60,623	

Denley Dam	ADA Upgrade	\$30,982	\$31,989
Total Project Costs		\$315,353	\$322,200

Since the above costs were estimated in 2010, it is anticipated that some increase in the cost of materials will have occurred by the time of construction. There are sufficient funds between the estimated \$322,200 and the total settlement of \$390,963 to absorb any increase in costs. Costs for two sites (Deer River and Denley Dam) include supplies, materials and manpower for optional components (portable restroom fence enclosure and concrete launch, respectively). Final determination on adding these options will depend on 2014 materials costs and whether the settlement funds are sufficient to include them. Any funds not used for actual construction will be used to construct signage and/or information kiosks for the access sites. Costs for these items will be detailed when 2014 materials costs are determined.

### **Preferred Restoration Alternative**

The Department has determined that the Preferred Restoration Alternative for natural resource injury due to the Marks Dairy Farm manure spill is to construct one new fishing access site and to upgrade seven existing access sites to compensate for the lost fishing opportunity to the public during and after the spill. These projects have a direct nexus to the injury and will benefit the public who were affected by the spill. They are cost effective because they will be constructed by the Department's Division of Operations thus obviating the need to develop costly and time consuming contracts with outside entities. The costs listed in Appendix B include costs for labor in addition to materials. It is contemplated that a portion of the settlement funds will be used to pay for Department seasonal laborers to do some of the work. This will also allow the Department to develop these fishing access sites during the 2014 construction season, with the exception of the new site at Deer River. Due to the new construction and need for an engineering design, this site will take longer to construct.

Following the construction or upgrade to a facility, a report with specifications and pictures of the completed work and a summary of the actual costs will be prepared. All of the reports from the eight sites will be compiled into a Restoration Completion Report. The facilities will be maintained as part of the Region's annual operations for access facilities.

### **References**

Carlson, D.M. 1996. Black River fisheries survey, 1992-1993. New York State Department of Environmental Conservation, Region 6, Watertown, New York, 77 pp.

Panek, F.M. 1978. Summary of 1976-77 biological surveys and cooperative angler census of the Black River. New York State Department of Environmental Conservation, Region 6, Watertown, New York.

Figure 1. Area of Black River Fish Kill

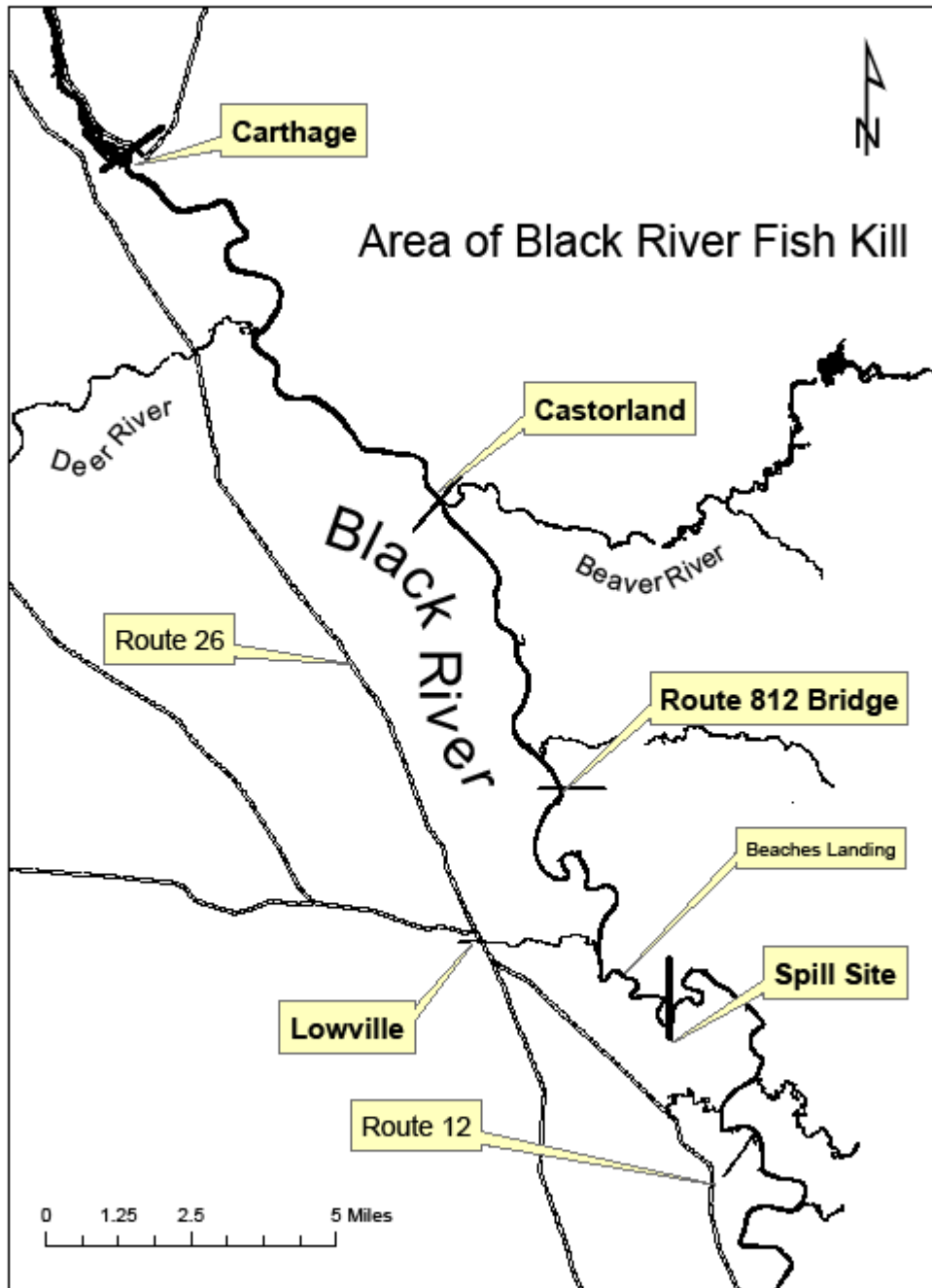




Figure 2. Locations of the Proposed Access Projects

