AQUATIC RESOURCES MANAGEMENT, LLC

2003 - 1428

December 19, 2011

United States Army Corps of Engineers
Louisville District
845 Sassafras Creek Road
Sassafras, KY 41759-8806

Re: DNR# 813-0359, 813-0360

Dear Reviewer,

Please find enclosed one (1) original copy of the First Year Monitoring report for the Big Caney Creek, Deep Ford Branch Reach 08 Mitigation site.

Should you require any more information upon your review of this package or require a site visit feel free to contact me at 859-388-9595 or by e-mail at nbaker@aquaticresources.us.

Sincerely,

Nick Baker
Vice President and Environmental Scientist

2265 Harrodsburg Road • Suite 210 • Lexington • Kentucky • 40504
Office 859.388.9595 • Fax 859.381.1005 • Web www.aquaticresources.us

YEAR ONE MONITORING REPORT
UNITED STATES CORPS OF ENGINEERS
Big Caney Creek, Deep Ford Branch Reach 08
KDNR PERMIT NO. 813-0359 & 813-0360

Laurel Mountain Resources, LLC.

Prepared:
December 19, 2011

Prepared by:

Aquatic Resources Management

2265 Harrodsburg Rd., Suite 200
Lexington, KY 40504
(859) 388-9595

Laurel Mountain Resources, LLC Big Caney Creek, Deep Ford Branch Reach 08 Mitigation Year One Monitoring Report

Project Overview

This report is to notify the United States Army Corps of Engineers (USACE) of the completion of one full growing season for the Laurel Mountain Resources, LLC (LMR) Big Caney Creek, Deep Ford Branch Reach 08 mitigation site. This USACE permit (ID # 200301428) is an Individual Permit associated with LMR KDSMRE Permit # 813-0359 (previously 813-0309) and USACE permit (ID # 200400882) associated with LMR KDSMRE Permit # 860-0518 (previously 860-0435). Aquatic Resources Management is the agent responsible for conducting the monitoring reports on behalf of LMR. The inspection date of the field visit was conducted on 10 November 2011.

Purpose of the Approved Project

This mitigation project was conducted in order to offset stream impacts associated with LMR's 813-0359 and 860-0518 mining projects. Stream impacts occurred from the surface mining method of extraction of coal reserves. Four sediment structures and two hollow fills at these projects were necessitated to control sediment runoff. Restoration performed under permit 813-0359 at Deep Ford Branch, partially mitigates losses of 3,090 linear feet from four sediment structures. The mitigation provided for the associated impacts to this permitting action equates to 4,470 linear feet of perennial stream mitigation. Restoration performed under permit 860-0518 partially mitigates losses of 3,001 linear feet from two hollow fills. The mitigation provided at Deep Ford Branch for this permitting action equates to 3,216 linear feet of perennial stream mitigation and

2,256 linear feet of intermittent stream mitigation. Total length of off-site stream mitigation at Deep Ford Branch is 9,942 linear feet.

Site Location

Deep Ford Branch is located approximately 2.5 miles east of Highway 30 in Breathitt County Kentucky. The latitude and longitude of the project is 37° 35' 52.36" and -83° 7' 57.79" respectively. Deep Ford Branch is located on Big Caney Creek of Quicksand Creek in the North Fork of the Kentucky River watershed Hydrologic Unit Code (HUC) 05100201.

Mitigation Commencement and Completion Dates

Construction on Reach 08 was started in the fall of 2010 and was completed in the winter 2010.

Performance Standards

After one full growing season of construction completion all performance standards are being met. The restoration activities have decreased the amount of sediment entering the stream from the past impacts, improved bank stability, created macroinvertebrate habitat, as well as achieved vertical and lateral channel stability. Further tree plantings are necessary along the riparian corridor, maintenance along stream enhancement structures, and stabilize eroding banks to achieve full potential of the mitigation reach. These problems will be corrected in the dormant season of the following year. After transplanting trees and completing the described maintenance, LMR will be meeting all of their performance standards.

Requirements

The requirements as stated in the approved Clean Water Act Section 404 permit are as follows; Mitigation efforts were implemented by the applicant using their own qualified equipment operators to conduct the mitigation plan under Best Management Practices. The stream morphology will be determined successful when the proposed structures are constructed in the approximate location proposed in this mitigation plan. Stream stability will be examined for successful erosion controls. The erosion controls will be considered successful if the stream and proposed stream structures are stable laterally and vertically. The limits of the mitigation sites will be delineated and flagged with surveyor's stake to indicate restored reaches.

The vegetation will be maintained at an 80% success rate for native species in the riparian corridors. It is also anticipated that natural succession of native species will occur on-site in the riparian zones. Non-native and invasive species will be kept to less than 20% overall on the project restoration area.

After stream restoration standards have been met for all areas, the applicant or consultant will be responsible for conducting annual monitoring reports to inform the Louisville District of the United States Army Corps of Engineers of progress. The applicant is obligated to maintain the project area mitigation by following requirements set forth by DSMRE and USACE. Monitoring and maintenance of the mitigation site will continue until final mitigation approval is achieved.
The compensatory mitigation project site is successfully achieving the standards set forth in the approved USACE permit. As stated, the aforementioned tree plantings and maintenance will be performed by LMR to meet performance standards. The Rapid Bioassessment Protocol demonstrates trends toward the stated mitigation goals in table 1.

Table 1.

Deep Ford Branch Mitigation Monitoring						
Deep Ford Branch Segment 43 - Perennial						
RPB Habitat Parameters	Pre-mitigation	Year One	Year Two	Year Three	Year Four	Predicted Five Year
Epifaunal Substrate	9	15				13
Embeddedness	9	14				13
Velocity/Depth Regime	8	10				13
Sediment Deposition	6	13				14
Channel Flow Status	7	15				11
Channel Alteration	10	14				15
Frequency of Riffles	6	14				13
Bank Stability (both)	8	12				14
Veg. Protection (both)	16	16				16
Riparian Width (both)	18	14				18
Total Habitat Score	97	137				140
Deep Ford Branch Segment 44 - Perennial						
RPB Habitat Parameters	Pre-mitigation	Year One	Year Two	Year Three	Year Four	Predicted Five Year
Epifaunal Substrate	9	15				13
Embeddedness	9	14				13
Velocity/Depth Regime	8	10				13
Sediment Deposition	6	13				14
Channel Flow Status	7	15				11
Channel Alteration	10	14				15
Frequency of Riffles	6	14				13
Bank Stability (both)	8	12				14
Veg. Protection (both)	16	16				16
Riparian Width (both)	18	14				18
Total Habitat Score	97	137				140

Deep Ford Branch Segment 45 - Perennial						
RPB Habitat Parameters	Pre-mitigation	Year One	Year Two	Year Three	Year Four	Predicted Year Five
Epifaunal Substrate	10	15				13
Embeddedness	8	14				13
Velocity/Depth Regime	8	10				13
Sediment Deposition	7	13				13
Channel Flow Status	7	15				10
Channel Alteration	10	14				15
Frequency of Riffles	8	14				13
Bank Stability (both)	14	12				16
Veg. Protection (both)	16	16				16
Riparian Width (both)	18	14				18
Total Habitat Score	106	137				140

Deep Ford Branch Segment 46 - Intermittent						
RPB Habitat Parameters	Pre-mitigation	Year One	Year Two	Year Three	Year Four	Predicted Year Five
Epifaunal Substrate	7	15				11
Embeddedness	6	14				14
Velocity/Depth Regime	6	10				14
Sediment Deposition	8	13				12
Channel Flow Status	7	15				11
Channel Alteration	9	14				15
Frequency of Riffles	6	14				13
Bank Stability (both)	10	12				14
Veg. Protection (both)	18	16				18
Riparian Width (both)	18	14				18
Total Habitat Score	95	137				140

Deep Ford Branch Segment 47 - Intermittent						
RPB Habitat Parameters	Pre-mitigation	Year One	Year Two	Year Three	Year Four	Predicted Year Five
Epifaunal Substrate	0	15				14
Embeddedness	0	14				14
Velocity/Depth Regime	2	10				14
Sediment Deposition	0	13				15
Channel Flow Status	3	15				11

Channel Alteration	0	14				17
Frequency of Riffles	0	14				13
Bank Stability (both)	10	12				16
Veg. Protection (both)	4	16				14
Riparian Width (both)	6	14				12
Total Habitat Score	25	137				140

Deep Ford Branch Segment 48 - Intermittent						
RPB Habitat Parameters	Pre-mitigation	Year One	Year Two	Year Three	Year Four	Predicted Year Five
Epifaunal Substrate	7	15				14
Embeddedness	8	14				14
Velocity/Depth Regime	8	10				14
Sediment Deposition	8	13				15
Channel Flow Status	7	15				11
Channel Alteration	10	14				17
Frequency of Riffles	6	14				13
Bank Stability (both)	6	12				16
Veg. Protection (both)	4	16				14
Riparian Width (both)	6	14				12
Total Habitat Score	70	137				140

Summary Data

The success of the project is based on the stabilization of the stream as well as the creation of macroinvertebrate habitat. The Pre-mitigation vs. year one post mitigation scores are listed in table 1 above. The table shows the general trend toward the stated goals in the compensatory mitigation plan.

The Deep Ford Branch restoration project had various challenges to overcome to ensure its success. The entrenched stream bed was causing unstable banks and the introduction of excess sediment. LMR was able to remedy impacts by dredging, re-grading, planting native riparian species, and improving habitat to a

minimum width of 50 feet beyond stream banks to create a continuous corridor along the channel. Rock cross vanes were installed at the beginning and end of each segment to increase sediment transport and create macroinvertebrate habitat. Natural stream enhancement structures including boulder clusters and log sills were added to provide additional stability and habitat.

Pictures of the mitigation site are illustrating the current condition (figures 1-12), as well as the map showing the locations of the photos (figure 13) and site location map (figure 14). Mitigation that is not meeting the stated standards is the riparian survival rate, damaged stream enhancement structures, and eroding banks as aforementioned.

Figure 1. Deep Ford Branch Reach 08 11/10/11
Pic. 884 Facing Upstream, 37.59829, -83.13310

Figure 2. Deep Ford Branch Reach 08 11/10/11
Pic. 880 Facing Upstream, 37.60013, -83.13439

Figure 3. Deep Ford Branch Reach 08 11/10/11
Pic. 878 Facing Upstream, 37.60131, -83.13460

Figure 4. Deep Ford Branch Reach 08 11/10/11
Pic. 875 Facing Upstream, 37.60316, -83.13505

Figure 5. Deep Ford Branch Reach 08 11/10/11
Pic. 873 Facing Upstream, 37.60445, -83.13544

Figure 6. Deep Ford Branch Reach 08 11/10/11
Pic. 871 Facing Upstream, 37.60589, -83.13655

Figure 7. Deep Ford Branch Reach 08 11/10/11
Pic. 869 Facing Upstream, 37.60649, -83.13760

Figure 8. Deep Ford Branch Reach 08 11/10/11
Pic. 866 Facing Upstream, 37.60775, -83.13878

Figure 9. Deep Ford Branch Reach 08 11/10/11
Pic. 864 Facing Upstream, 37.60871, -83.13957

Figure 10. Deep Ford Branch Reach 08 11/10/11
Pic. 863 Facing Upstream, 37.60910, -83.13978

Figure 11. Deep Ford Branch Reach 08 11/10/11
Pic. 861 Facing Upstream, 37.61041, -83.14039

Figure 12. Deep Ford Branch Reach 08 11/10/11
Pic. 846 Facing Upstream, 37.61697, -83.14228

Conclusions

The Deep Ford Branch mitigation site is meeting all performance standards with the exception of tree survival rate, damage to stream enhancement structures, and aforementioned bank erosion. LMR will return to the site and transplant more trees and perform necessary maintenance during the dormant season of 2012. Once these conditions are corrected the LMR mitigation site will continue to trend toward the stated mitigation performance standards in the Clean Water Act 404 permit.