Executive Summary

MILBURNIE DAM: A CASE STUDY FOR MANAGEMENT IMPLICATIONS OF DAM REMOVAL MITIGATION BANKS

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April 30, 2021

Dam removal is becoming increasingly popular in the United States as river advocates seek to promote water quality improvements through nature-based techniques. To offset unavoidable environmental impacts from development projects, dam removal can be used as a mitigation bank. However, the success of dam removal and mitigation banks are not measured the same, and no specific metrics for dam removal mitigation banks have been established.

While dam removals have been occuring for a while, more recently State and federal policies have streamlined removal processes and clarified mitigation guidelines. Federal mitigation policies for compliance are issued under the authority of the U.S. Army Corps of Engineers under the 2008 Compensatory Mitigation Losses of Aquatic Resources. However, following this rule, additional clarification on the Army Corps regulations were released through Regulatory Guidance Letters (RGL). Relevant RGLs identify minimum monitoring criteria and promote the removal of obsolete dams. As evidence from the Corps releasing multiple RGLs, mitigation policies are constantly being tested and recreated. With new mitigation policies, it is unclear whether the metrics of success identified within them are actually reflective of river ecosystem responses to dam removal.

The removal of Milburnie Dam along the Neuse River in Raleigh, North Carolina in 2017 serves as a case study to analyze the metrics of success for a dam removal mitigation bank project. While this project is meeting the minimum requirements for monitoring plans as described by Army Corps regulation, a closer look at the response of water quality and wetlands to dam removal is needed to ensure the Milburnie Dam removal mitigation bank project is improving the impaired waterway. Current wetland community monitoring relies on groundwater wells, and current water quality monitoring is performed using macroinvertebrate bio classification methods. Assessing water quality through a chemical analysis, and wetland communities using a 3-pronged wetland determination approach, are used to show a deeper analysis to the response of the aquatic ecosystem at the former Milburnie Dam site to dam removal. Analyses of dissolved oxygen revealed a more subtle response of the metric to dam removal than anticipated. Wetland habitat analyses concluded that extensive in person pre and post removal delineation, with supplemental geospatial analyses, is needed to determine how wetlands have changed over time.

While these metrics go beyond the minimum monitoring requirements issued by the U.S. Army Corps of Engineers, the Milburnie Dam removal analysis reveals implications for use of dissolved oxygen and wetland habitat monitoring metrics. The impacts by dam removal on dissolved oxygen are still more subtle than expected. It is recommended that additional test cases are compiled demonstrating the sensitivity of DO to dam removal before it is used as a success metric. The geospatial data accessible for wetland habitat response analysis do not allow for an

effective judgement call on how habitats changed. Use of field acquired data is invaluable, therefore remote sensing for evaluating wetland changes associated with dam removal should be supplementary to field-based approaches. With these challenges in mind, project managers or river advocacy groups overseeing mitigation bank projects should carefully choose their metrics when determining success of the project.

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Master's Project submitted in partial fulfillment of the requirements for the Master of Environmental Management degree in the Nicholas School of the Environment, Duke University
April 2021