

ANNOTATED BIBLIOGRAPHY: DEEP CREEK LAKE DOCUMENTS

Board of Garrett County Commissioners. "Heritage Area Resolution." Oakland, MD: Board of Garrett County Commissioners, June 2011.

This document records the additions and revisions made to the "2008 Garrett County Comprehensive Plan." There are three amendments addressed that apply to the addition of the inclusion of the "Garrett County Heritage Area Management Plan" as a component of the comprehensive plan. They include the mention of the heritage plan, an introduction to define the plan and its purpose, then finally the inclusion of the plan itself. The document also proposes resolutions for these revisions that provide details of the exact edits to be made in the "2008 Garret County Comprehensive Plan."

Center for Watershed Protection. "A User's Guide to Watershed Planning in Maryland." Ellicott City, MD: Center for Watershed Protection, December 2005.

This guide presents a common watershed planning framework for Maryland communities, assembles planning resources, integrates regulatory drivers, and presents the methods necessary for completing a local watershed plan. Comprehensive interviews of state agency program managers, federal program managers, and county and city staff members involved in watershed planning provided much of the insight into this watershed planning framework. This guide explains the basic framework for developing an effective watershed plan and the methods used to do so, which include desktop analysis, field assessment, stakeholder involvement, and management methods. The Center for Watershed Protection affirms that watershed planning individuals may choose as much or as little of the advised suggestions to still progress towards optimal results.

Department of Legislative Services: Maryland General Assembly. "2000 Deep Creek Lake Fiscal Note." Department of Legislative Services: Maryland General Assembly, May 2000.

The purpose of this bill is to revise Senate Bill 788. The bill requires payments to Garrett County from the Deep Creek Lake Recreation Maintenance and Management Fund in the Department of Natural Resources (DNR), establishes a Deep Creek Lake Policy and Review Board, repeals the Deep Creek Lake Advisory and Review Committee, and provides for the development of a recreation and land use plan for Deep Creek Lake. This bill addresses the state, local, and small business effects. Also, it summarizes the bill, while presenting the current law, background for the bill, projected state revenues, projected state expenditures, and projected local revenues.

Dougherty, Rebecca: Research Manager, Maryland Office of Tourism Development

Department of Business and Economic Development. "2010 Maryland State Parks Economic Impact and Visitor Study." MD: Maryland Office of Tourism Development Department of Business and Economic Development, 2010.

This study illustrates the estimated economic impact state park visitors have on local communities, increases knowledge of state park visitor interests and measures visitor satisfaction with their state park experience. The study's findings are based on survey and study design, implementation, data analysis, and economic impact and returns on investment and objectives. State park visits contribute to job creation in parks and their surrounding areas and high consumer spending from both in and out of state visitors who commend the parks for being a "safe and affordable way to escape from stress, connect with nature, and offer a positive experience for their children." The findings conclude that Maryland State Park visitors overall enjoy their experience and contribute greatly to the state of Maryland's economy.

Environmental Resource Management. "Assessment of Water Quality Impacts from Potential Land Development: Deep Creek Lake: Garrett County, Maryland." Exton, PA: Environmental Resource Management, May 2007.

This is an assessment of the impact of potential land development in the Deep Creek Lake watershed on the water quality of Deep Creek Lake, by ERM's Surfacewater Modeling Group. The study consisted of examining water quality data, estimating current and projected nutrient loads into the lake, a Vollenweider analysis of the lake's trophic status, and two commonly used models, BATHTUB and CE-QUAL-W2. The study concluded that the potential land development in the Deep Creek Lake watershed is likely to have minor impacts in terms of degraded trophic status. In addition to that, the report advised that further water quality studies be performed to better understand existing water quality.

Environmental Resources Management. "Deep Creek Lake Watershed Economic Growth and Planning Analysis Study." Annapolis, MD: Environmental Resources Management, December 2004.

This study focuses on the continued growth and character preservation of the Deep Creek Lake Watershed in terms of its economic and planning opportunities. It is a collection of five reports that together provide basis for the ERM recommendations. The "Issues Summary" begins the study by composing a guide of the issues that will be examined and addressed throughout the following reports. The "Case Studies of Lakes and Resorts" report analyzes the growth of five thriving lakes/resorts across the U.S. to learn from and possibly emulate for Deep Creek Lake's planning. The "Evaluation of Plans, Programs, and Regulations" discusses extent to which current plans, programs, and regulations are adequate to address the planning issues for the Deep Creek Watershed. Following the first three sections of reports, the "Issues and Options" report identifies different strategies to address the previous identified issues for the Deep Creek Lake

Watershed. The final “Recommendations” report of this study are based upon the previous reports and are meant to provide a framework for continued, sustainable, environmentally sensitive growth and economic development for the Deep Creek Lake area.

ERM, Inc. “Deep Creek Lake Boating and Commercial Use Carrying Capacity Study.” Annapolis, MD: ERM, Inc., June 2004.

Deep Creek Lake, located in central Garrett County, is currently undergoing character distortions due to exponentially increasing recreational use. The Maryland Department of Natural resources, along with advisement from the Deep Creek Lake Policy and Review Board, has implemented several new boating regulations to preserve the environmental well being of Deep Creek Lake. Throughout the summer of 2003, data of recreational facility inventory and recreational usage was collected through a number of sources to better understand recreation at Deep Creek Lake. This study not only includes data in various sectors of Deep Creek Lake, but provides for future predictions of the Deep Creek Lake experience. Research concluded that there is little support from residents, visitors, and the commercial management for DNR to take any major immediate management actions.

F. X. Browne, Inc. “Lake Wallenpaupack Watershed Management Plan.” Lansdale, PA: F. X. Browne, Inc., December 2006.

This management plan is meant to complement existing plans and assist the Lake Wallenpaupack Watershed Management District on the topic of the Lake Wallenpaupack Watershed Management Plan and future undertakings. This plan provides the background of the Wallenpaupack Watershed Management District, how it was developed, and its significance to the lake and surrounding community. It then goes on to explain the many different parts of the management agenda. Areas of concern include the lake’s existing water quality, sources of pollution in Lake Wallenpaupack Watershed, a continually improved upon management plan, and the implementation of such a plan. This plan serves as a working document that should be updated regularly as lake and watershed conditions change.

Garrett County Commissioners. “Garrett County Official Tier Map.” Garrett County MD: Garrett County Commissioners, December 2012.

This official tier map references decisions laid out in Senate Bill 236. Senate Bill 236 is the septic law that “limits the spread of septic systems on large-lot residential development to reduce the last unchecked major source of nitrogen pollution into Chesapeake Bay and other waterways. By mapping future growth in “tiers,” the law seeks greater accountability and predictability (Maryland Department of Planning).” The tier map identifies four tiers of septic allowance. Tier one includes areas already served

by a sewer. Tier two includes future areas planned to have sewers. Tier three includes the only area where septic systems for major subdivisions can be developed. Tier four includes areas of agricultural and environmental importance that may not allow any major subdivisions on septic systems.

Source:

Maryland Department of Planning. Garrett County Government. Web. 30 May 2013.

Garrett County Department of Land Planning and Development. “2012 Land Preservation, Parks and Recreation Plan.” Garrett County, MD: Garrett County Department of Land Planning and Development, May 2012.

The purpose of this plan is to identify future needs and priorities for parks, recreation and open space acquisition, facility development and rehabilitation in Garrett County and its eight incorporated towns. The context focuses on establishing the purpose of the plan, describing the local agency preparation of the plan, and lastly identifying the plan’s relationship to the comprehensive planning process. This LPPRP achieves its purpose by describing progress made on these lands, addressing any recommendations, identifying the needs and priorities of residents and visitors, and evaluating future land preservation goals and objectives for the three land resource elements of concern.

Garrett County Department of Planning and Land Development. “Planning and Land Development Guidelines for Lake Front Lots.” Oakland, MD: Garrett County Department of Planning and Land Development, February 2011.

This guideline is intended to provide general information regarding Garrett County Planning & Land Development requirements for improvements in and around the “Buydown” and “Buffer” areas of Deep Creek Lake. It addresses how to go about private lot improvements and completely new construction. Specifics of guidelines for the “Buydown” and “Buffer” areas contain information regarding regulating bodies, building and zoning permit specifics, and any new developments that do not require a permit.

Garrett County Department of Planning and Land Development. “Deep Creek Watershed Zoning Ordinance.” Garrett County, MD: Garrett County Department of Planning and Land Development, May 2010.

This zoning ordinance properly zones the Deep Creek Watershed into agricultural, commercial, residential, rural, and town usage zones. The underlying purpose of the ordinance is to orderly appropriate land use, promote natural resource conservation, prevent pollution, conserve the value of land and buildings, and facilitate adequate provision of transportation, parking, water, sewage, parks and other public

facilities. The Deep Creek Watershed Zoning Ordinance covers the topics of general provisions, definitions, zoning districts and use regulations, overlay districts, lot area and yard regulations, general regulations, off-road parking and loading, sign regulations, nonconformities, administration, board of appeals and amendments, remedies and penalties.

Garrett County Planning Commission. "2008 Garrett County Comprehensive Plan."
Oakland, MD: Garrett County Planning Commission, October 2008.

This plan frameworks the future growth and development in Garrett County, Maryland through the year 2030. There is particular detail and planning for the area around Deep Creek Lake. It reviews the elements of land use, water resources, transportation, public facilities, economic development, housing, environmentally sensitive areas, mineral resources, and other natural resources. In each area of concern, the plan has set goals and objectives accompanied with planned actions and policies to reach them. The plan concludes by exploring how to implement these actions and policies for each Comprehensive Plan Element.

Griffin, John R.: Secretary, Maryland Department of Natural Resources. "The State of Deep Creep Lake, 2012." MD: Maryland Department of Natural Resources, November 2012.

The purpose of this presentation is to assess current water quality, aquatic vegetation, sedimentation, fisheries status, water levels, boating trends, and future lake/watershed management of Deep Creek Lake in November 2012. Most areas of the assessment have been maintained or improved since the previous study. In particular, Lake fisheries have recovered from the 2010 fish kill caused by heat stress and bacterial infection. A few areas of concern include distributions of sediment build up, warming temperatures, and findings of Eurasian watermilfoil throughout the lake's surface. Projects to resolve these concerns have been developed and are planned to take place in 2013. Deep Creek Lake continues to be a healthy reservoir meeting federal Clean Water Act and State standards

Maryland Department of Natural Resources. "Deep Creek Lake FAQs." Annapolis, MD: Maryland Department of Natural Resources, January 2013.

The purpose of this paper is to present the responses to comments and questions at, and following, the November 2012 State of the Lake meeting for Deep Creek Lake. Topics covered include funding, water quality, aquatic vegetation conditions, algal blooms, and miscellaneous topics. This paper provides for an organized recap of important questions and their detailed answers having to do with Deep Creek Lake concerns.

Maryland Department of Natural Resources. "Deep Creek Lake Recreation and Land Use Plan." Annapolis, MD: Maryland Department of Natural Resources, October 2001.

This plan serves to identify and manage necessary goals of Deep Creek Lake for PRB, Garrett County, and DNR to achieve. Deep Creek Lake is a premier tourist destination with abundant natural resources and recreational uses for visitors to enjoy. In order to preserve the lake's character, the Deep Creek Lake Recreation and Land Use Plan endeavors to complete major set goals. These goals include educating readers on natural resources, assessing current recreation and land use, providing a future framework for the use and protection of Deep Creek Lake's natural and recreational resources, and establishing policies and procedures for the Policy and Review Board. In addition to these, the plan will outline ways in which DNR, Garrett County, and the PBR can better collaborate on future efforts in relation to zoning and lake regulations, while keeping policies consistent with the overall goal of Deep Creek Lake preservation.

Maryland Department of Natural Resources. "Deep Creek Lake Submerged Aquatic Vegetation Survey Year 2." Maryland Department of Natural Resources, October 2011.

Maryland Department of Natural Resources (DNR) Resource Assessment Service (RAS) staff conducted a second season of Submerged Aquatic Vegetation (SAV) monitoring in Deep Creek Lake (DCL), Garrett County, Md, during summer 2011 as part of the lake's expanding water quality and aquatic habitat monitoring program. The project's goal was to define the distribution and relative abundance of SAV species present by sampling six areas throughout the lake using globally accepted methodology. This study concluded that because of Deep Creek Lake's environment, it is recommended that a long-term SAV monitoring program is maintained in DCL in order to characterize existing conditions and assess potential changes over time due to water quality improvements or declines related to population and land use changes. Also, DNR recommends implementing a species-specific SAV survey to determine the spatial extent, density and change over time of *Myriophyllum ssp.*

Maryland Department of Natural Resources. "Deep Creek Lake Submerged Aquatic Vegetation Survey Year 3." Maryland Department of Natural Resources, December 2012.

Maryland Department of Natural Resources (DNR) Resource Assessment Service (RAS) biologists conducted a third season of Submerged Aquatic Vegetation (SAV) monitoring in Deep Creek Lake (DCL), Garrett County, Md, during summer 2012 as part of the lake's expanding water quality and aquatic habitat monitoring program. The project's goal was to define the distribution and relative abundance of SAV species present by surveying transects in six areas throughout the lake using globally accepted

methodology. The areas were selected based on spatial distribution and the presence of SAV. DNR's results indicate that DCL supports a healthy and diverse population of SAV, including 9 genera of vascular plants and 2 species of macroalgae. The majority of observed species, as well as the physical characteristics of each survey site, showed no significant change in density or distribution from 2010 to 2012.

Maryland Department of Natural Resources. "Deep Creek Lake Phase II Sediment Study: Progress Report." Maryland Department of Natural Resources. July 2012.

This document discusses the completed work to better understand sediment data in Deep Creek Lake, from the months of April through June. Research included testing sub bottom seismic and bathymetry survey coverage, side scan imagery, and GIS/historical maps. This document also provides for a future plan of the following months from July through October. The plan consists of continuing to process data, monitoring current tests, developing future sediment management practices, collecting new sediment cores from various lake locations, and analyzing their findings to draw up to date conclusions.

Maryland Department of Natural Resources. "MDNR's Current Stream Monitoring Specific to Marcellus Shale Natural Gas Development." Maryland Department of Natural Resources, 2011.

This document serves as a visual aid to assist in the monitoring of streams in relation to Marcellus Shale natural gas development. As of 2011, there were 12 stream reaches being monitored by DNR. The locations of the stream reaches are identified and the conductivity data is addressed.

Maryland Department of the Environment. "Water Quality Analysis of Eutrophication for Deep Creek Lake and the Deep Creek Watershed." Baltimore, MD: Maryland Department of the Environment, September 2010.

The purpose of this document is to identify the process of the water quality analysis of eutrophication for Deep Creek Lake and the Deep Creek Watershed. Section 303(d) of the federal Clean Water Act (CWA) and the U.S. Environmental Protection Agency's (EPA) implementing regulations direct each state to identify and list waters, known as water quality limited segments (WQLSs), in which current required controls of a specified substance are inadequate to achieve water quality standards. An analysis using the BSID methodology performed on Round 3 Maryland Biological Stream Survey (MBSS) data found no evidence that nutrients are potential stressors associated with biological impairments. The BSID analysis for the Deep Creek Lake watershed (MDE, 2010) identifies sediment and pH as possible biological stressors. An analysis of dissolved oxygen and chlorophyll *a* monitoring data from the Deep Creek Lake watershed shows that there is no indication that nutrient over-enrichment is causing of impairments to designated uses in the Deep Creek Lake watershed. Deep Creek Lake

impoundment is meeting water quality standards at the scale of its listing in the 2008 Integrated Report. This report supports a revision of the phosphorus listing for: 1) the Deep Creek Lake impoundment and 2) the Deep Creek Lake watershed; from Category 5 (“waterbody is impaired, does not attain the water quality standard, and a TMDL is required”) to Category 2 (“waterbodies meeting some [in this case nutrients-related] water quality standards, but with insufficient data to assess all impairments”). [Note: EPA supported that decision in their response letter dated September 9, 2011]

Maryland Department of the Environment. “Cherry Creek Acid Mine Drainage Mitigation Cuts Pollutant Loads.” Baltimore, MD: Maryland Department of the Environment, February 2013.

For many years, abandoned coal mines in the Cherry Creek watershed caused low pH and high metals loads in the stream, which flowed into Deep Creek Lake in Garrett County, Maryland. This document tells the success story of Cherry Creek watershed thanks to the Maryland Department of the Environment (MDE). Over 15 years and a half million dollars, MDE created a series of treatment wetlands and treatment systems to increase alkalinity and decrease pollutants. This has allowed for increased fish population and species variation. Although the Benthic Index of Biological Integrity continues to be poor overall, this may be attributed to Acid Mine Drainage (AMD) inputs from one tributary, naturally acid conditions, and poor physical habitat.

Maryland Department of the Environment. “Maryland Biological Stressor Indicator Process.” Baltimore, MD: Maryland Department of the Environment, June 2009.

The purpose of this document is to identify the necessary biological stressor indicator process in Maryland. Section 303(d) of the federal Clean Water Act (CWA) and the U.S. Environmental Protection Agency’s (USEPA) implementing regulations direct each state to identify and list waters, known as water quality limited segments (WQLSs), in which current required controls of a specified substance are inadequate to achieve water quality standards. For each WQLS listed on the 303(d) List in the *Integrated Report of Surface Water Quality in Maryland* (Integrated Report), the State is to either establish a Total Maximum Daily Load (TMDL) of the specified substance that the waterbody can receive without violating water quality standards, or demonstrate via a Water Quality Analysis (WQA) that water quality standards are being met. This document addresses in detail the Current Integrated Report listing categories and the process of determining a waterbody’s water quality standing.

Maryland Department of the Environment. “Watershed Report for Biological Impairment of the Deep Creek Lake Watershed in Garrett County, Maryland Biological Stressor Identification Analysis Results and Interpretation.” Baltimore, MD: Maryland Department of the Environment, January 2012.

The purpose of this report is to characterize the Deep Creek Lake Watershed, to characterize the quality of the water, and to discover the pollutants that are causing the

biological impairment of this watershed. This report describes the current Maryland Department of the Environment (MDE) biological stressor identification (BSID) used to analyze and identify potential causes/stressors of poor biological conditions within the Deep Creek Lake Watershed. The MDE findings are presented as thorough data within the report. Through the BSID process, the report concludes that low pH and stream morphology is the underlying causes of observed biological community degradation in the Deep Creek Lake watershed.

Maryland Department of the Environment: Water Management Administration. "Water Appropriation and Use Permit." State of Maryland. June 2011.

This document states that the permittee is authorized by the administration pursuant to the provisions of title 5 of the environment article, annotated code of Maryland as amended, to appropriate and use waters of the state subject to a specific set of conditions held within the document. These conditions touch on many areas of concern including allocation, use, source, location, right of entry, permit review, renewal, suspension, and other permit conditions, change of operations, flow measurement, withdrawal reports, rule band and operation protocols, lake level monitoring and reporting, temperature enhancement in Youghiogheny River, minimum flow releases, dissolved oxygen mitigation, releases for whitewater recreation, announcement of expected releases, zebra mussel monitoring, notice of generation releases, annual report, and permit supersession.

Michael, Bruce. "Maryland's Current and Proposed Stream Monitoring Plan in the Marcellus Shale Region." Maryland Department of Natural Resources, July 2012.

First off, this plan establishes the need for a stream monitoring plan in the Marcellus Shale region due to possible risks and future concerns. The plan consists of presenting existing stream data, 2011/2012 limited stream monitoring efforts, volunteer monitoring efforts, a proposed stream monitoring design (BACI Model), the stream monitoring itself, which would include many miscellaneous associated tasks. The plan lays out a detailed plan for monitoring strategies that could be successfully executed to protect stream condition in the Marcellus Shale Region.

Peter Johnston & Associates, LLC and the Garrett County Heritage Area Management Plan Steering Committee. "Heritage Area Management Plan." Garrett County, MD: Peter Johnston & Associates, LLC and the Garrett County Heritage Area Management Plan Steering Committee, June 2011.

This management plan is meant to complement existing plans and better inform Garrett officials, organizations, and private citizens about the Heritage Plan and Program. This plan provides the background of the Heritage Plan, how it was developed, and its significance. It then goes on to explain the many different parts of the management agenda. These elements include Development and Land Use, Economic and Tourism

Overview, Heritage Area Management, Heritage Area Boundaries, Heritage Area Stewardship, Heritage Area Interpretation, and Heritage Area Marketing. These sections are followed by the implementation plan to achieve the various goals of each management element.

Urban Research and Development Corporation. "Garrett County Heritage Plan." Garrett County, MD: Urban Research and Development Corporation, March 2003.

The Garrett County Heritage Plan provides basis to preserve the county's rich heritage and establish a program to do so in the future. The plan designates Garrett County as a heritage area by defining what classifies an area as a heritage area, then proving Garret County's accordance with these standards through historical background of the heritage of Garrett County and the county's heritage assets and themes. This is followed by the development strategies that will be utilized in the future and a detailed action program. The plan notes that once this plan is accepted, the heritage area is formally recognized by the authority and becomes eligible for matching state grant funds to prepare a detailed management plan.