Dumps Creek
Implementation Plan Summary
Executive Summary

Prepared for:
Virginia Department of Environmental Quality
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Introduction

The Clean Water Act (CWA) that became law in 1972 requires that all U.S. streams, rivers, and lakes meet certain water quality standards. The CWA also requires that states conduct monitoring to identify waters that are polluted and/or do not meet standards. Through this required program, the state of Virginia has found that many stream segments do not meet state water quality standards for protection of the six beneficial uses: recreation/swimming, aquatic life, wildlife, fish consumption, shellfish consumption, and public water supply (drinking).

When streams fail to meet standards, the stream is listed as impaired on the CWA's Section 303(d) list. Dumps Creek was first listed as impaired in 1994 due to violations of the State's General Standard (benthic). It appeared on Virginia's *1996 303(d) Total Maximum Daily Load Priority List* (Virginia Department of Environmental Quality,VADEQ, 1997) and the *1998 303(d) Total Maximum Daily Load Priority List and Report* (VADEQ, 1998) for the aquatic life use partially supporting. The impairment source noted was resource extraction. The impaired stream segment, initially identified as having a length of 3.40 miles, extends from the Hurricane Fork confluence to the mouth where Dumps Creek flows into Clinch River in Carbo, Virginia.

Dumps Creek is located in Russell County, Virginia, northwest of the town of Cleveland and close to the Appalachian Power Plant that discharges to Clinch River. See Figure 1 for the location of the watershed. It flows into the Clinch River, which is part of the

Tennessee/Big Sandy River Drainage Basin, and drains via the Mississippi River to the Gulf of Mexico. Dumps Creek is located within USGS hydrologic unit code 06010205 and carries an agency watershed ID of VAS-P08R. See Figure 2 for the location of the impaired stream segment in the Dumps Creek watershed.

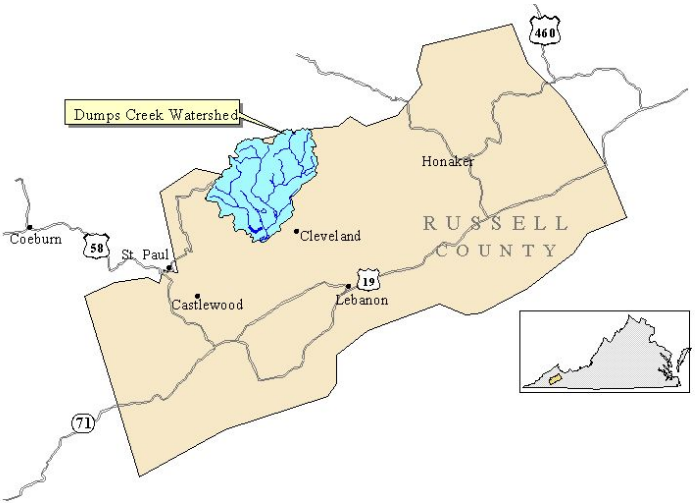

Figure 1 Location of the Dumps Creek watershed.

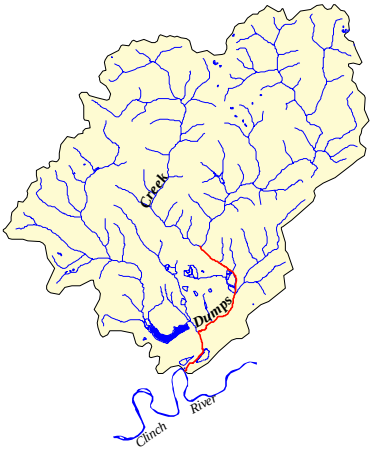

Figure 2 The impaired stream segment in the Dumps Creek watershed.

The land area of the Dumps Creek Watershed is approximately 20,300 acres, with forest and mining as the primary land uses (Figure 3). Approximate proportions of specific land uses as of 1997 were 71% forest, 14% permitted for mining operations (highly transitional area, including various amounts of forest, active mining, and reclaimed areas depending on the timeframe considered), 4% benches (abandoned surface mine sites leaving exposed high walls), 4% spoils/tailings (mine waste discarded in fills, ponds, or piles), 3% reclaimed mine lands, 1% disturbed lands (areas disturbed by previous mining operations through removal of vegetation and/or grading), 1% agriculture, 1% water/wetlands, and 1% urban/industrial development.

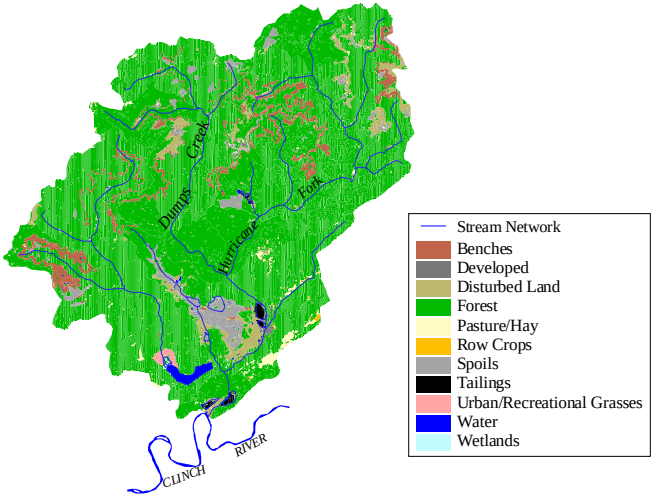

Figure 3 Land uses in the Dumps Creek watershed.

For every stream on the Section 303(d) List, the CWA and the U.S. Environmental Protection Agency (EPA) both require that states develop a Total Maximum Daily Load (TMDL) for each pollutant (40 CFR Part 130). A TMDL is a "pollution budget" for a stream. That is, it sets limits on the amount of pollution that a stream can tolerate and still maintain water quality standards. The TMDL results are explained in the Review of the TMDL Development Study section of this booklet. Once a TMDL is developed and approved by the EPA and the State Water Control Board (SWCB), measures must be taken to reduce pollution levels in the stream. The next step in the process is the development of an Implementation Plan (IP). This plan dictates how the TMDL goals can be accomplished in the watersheds (drainage areas) with the impaired streams. The IP describes control measures, which can include the use of better treatment technology and the installation of best management practices (BMPs), to be implemented

in a staged process. This booklet is a summary of the Dumps Creek Total Daily Maximum Load Implementation Plan Technical Report.

The General Standard is meant to protect the health of aquatic life. The health of the aquatic life is measured through assessment of the benthic macroinvertebrate community, which is integral to the food chain that supports higher-level organisms (fish). It also serves as a fallback monitoring program to identify problems that are not detected by the ambient monitoring system (for example: pollutant discharges that occur intermittently or isolated incidents of pollutant discharge, etc).

The overall goal of this project was to begin the process of restoring water quality to Dumps Creek. The key components of the Dumps Creek Total Daily Maximum Load Implementation Plan Technical Report are discussed in detail in the following sections: State and Federal Requirements for Implementation Plans, Review of TMDL Development, Public Participation, Assessment of Implementation Action Needs, Measurable Goals and Milestones for Attaining Water Quality Standards, and Stakeholders and Their Role in Implementation.

With successful completion of the IP, Virginia will be well on the way to restoring this impaired water body and enhancing the value of this important resource. Additionally, development of an approved IP will improve the localities' chances for obtaining monetary assistance during implementation.

This booklet is an abbreviated version of the full Implementation Plan Technical Report, which can be obtained by contacting the VADEQ or the Virginia Department of Conservation and Recreation (VADCR)

offices. Agency contact information can be found on the back of this pamphlet.

Key components of the implementation plan are:

- Review of the TMDL Development Study
- Process for Public Participation
- Assessment of Needs
- Implementation
- Cost andBenefits
- Stakeholders' Roles and Responsibilities.

Review of the Total Maximum Daily Load (TMDL) Study

MapTech, Inc. was contracted by the VADEQ to develop TMDLs for the Dumps Creek watersheds in Russell County, Virginia. The EPA-ap proved TMDL document can be obtained at the website. Water quality monitoring, water quality modeling, and allocated reduc tions were reviewed to determine the implications of TMDL and mode ling procedures for IP development.

TMDL development typically relies on monitored data collected prior to the TMDL study (historical data); however, supplemental data is often collected during the TMDL study. In the case of the General Standard TMDL on Dumps Creek, the Virginia Department of Mines, Minerals and Energy (DMME) had two sweeps of benthic surveys and ambient water quality data collected during TMDL development to supplement the historical data. As a review, the historical benthic survey results are shown in this report. The quantity of historical ambient water quality data is great and can be found in the TMDL document. Generally, Total Dissolved Solids (TDS) measurements were moderately high with sporadic large spikes. Total Suspended

Solids (TSS) measurements were generally low, with sporadic large spikes.

The sampling stations were selected to provide an overall view of the watershed (Table 1 and Figure 4). As reported by ES&C, the samples were collected following the USEPA RBP II (family level) survey. Macroinvertebrates were identified to either the lowest practical taxonomic level or family-level, whichever was higher.

Table 1 DMME water chemistry and biological sampling stations.

Station ID	Description	Chem Date	Bio Date
1	Upstream Hurricane Fork	1/28/02	2/1/02
2	Hurricane above pile	1/28/02	2/2/02
3	Hurricane below pile	1/28/02	2/2/02
4	Dumps above Hurricane Fork	1/28/02	2/2/02
5	Dumps below pond 1101607	1/28/02	2/1/02
6	Dumps Below pond 1101681	1/28/02	2/1/02
7	Above confluence with Chaney Creek	1/28/02	2/1/02
8	Dumps at confluence with Clinch River	1/28/02	2/1/02
9	Chaney Creek downstream	1/28/02	1/31/02
10	Chaney Creek upstream	1/28/02	1/31/02

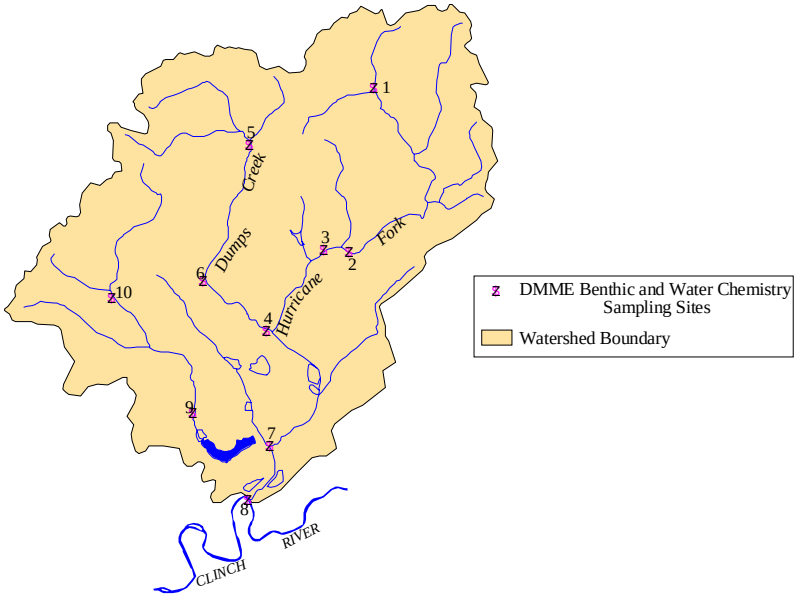

Figure 4 **Benthic Macroinvertebrate and Water Chemistry Sampling Conducted by DMME.**

A sensitivity analysis was performed to determine which stressor reductions were most effective in improving the bioassessment condition. The bioassessment condition was found to be most sensitive to reductions in TSS and TDS. Multiple runs were performed to investigate the reductions necessary to achieve a non-impaired status. Table 2 shows some of the scenarios investigated including the final allocation scenario (Scenario C). The major implication in the development of these TMDLs is that moderate reductions are required to achieve the water quality standard. No reductions to existing loads from permitted discharges were indicated. However, implicit in the lack of reduction in the permitted discharges is the need to maintain loads at or below existing conditions. Any increase in this waste load would have to be offset by reductions elsewhere in the watershed.

According to the Division of Mine Land Reclamation's (DMLR's) Guidance Memorandum 14-05, mining permit applications that involve NPDES discharge points within TMDL watersheds with TDS Waste Load Allocations (WLAs) shall include a plan to monitor TDS and conductivity at designated outfalls. The monitoring should be designed to assess TDS loading, but shall not include the assignment of effluent limits. The TMDL coordinator and Water Quality staff will use the monitoring to track loadings and evaluate conformity with the adopted TMDL. Loadings for other WLAs (*e.g.*, sediment) will be tracked using results of routine NPDES monitoring. When tracking indicates that WLAs are being exceeded, the Division will request the permittee to revise the BMPs to reduce waste loads.

Table 2 Average bioassessment score for various allocation scenarios in the Dumps Creek impairment.

Scenario Description	Average Bioassessment	Impairment Condition
Existing conditions	73%	Moderately Impaired
Scenario A: 50% of TSS from nonpoint sources	80%	Moderately Impaired
Scenario B: 50% of TSS from nonpoint sources 20% of TDS from nonpoint sources	85%	Non-Impaired
Scenario C: 40% of TSS from nonpoint sources 34% of TDS from nonpoint sources	85%	Non-Impaired

Process for Public Participation

Public participation was an integral part of the TMDL Implementation Plan development in the Dumps Creek watershed, and it is also critical to promote reasonable assurances that the implementation activities will occur. Public participation took place on three levels.

First, public meetings were held to provide an opportunity for informing the public as to the end goals and status of the project, as well as for soliciting participation in the smaller, more-targeted meetings. Second, working groups (WG) for industrial, and environmental/governmental issues were formed from communities of people with common concerns regarding the TMDL process, and were the primary arena for seeking public input. A representative from VADEQ attended each working group meeting in order to facilitate the process and integrate information collected from the various communities. Third, a Steering Committee was formed with representation from the working groups, VADEQ, VADMME, Russell County government agencies, and MapTech.

Many inputs and opinions were voiced throughout the public participation meetings regarding the IP process. Most members of the working groups agreed that the IP should focus on targeting resources toward reclamation of the most obvious AML features, such as the Hurricane Fork gob pile. This work should be combined with education, regarding the placement and maintenance of gas wells, as well as proper installation and maintenance of both mining and forestry BMPs. Additional work would include efforts to identify additional Abandoned Mine Land (AML) features and funding mechanisms for reclaimation.

Assessment of Needs

An important element of the TMDL IP is the encouragement of voluntary compliance with implementation actions by local, state, and federal government agencies, business owners, and private citizens. In order to encourage voluntary implementation, information was obtained on the types of actions and program options that can achieve the goals practically and cost-effectively. This section outlines the methods used to identify practical and effective BMPs, or control measures, and quantify the BMPs needed to meet water quality goals.

Control Measures include:

- Reclamation of Abandoned Mine Land (AML)
- Dirt Road Stabilization
- Vegetated Buffer
- Streambank Stabilization.

The final set of control measures identified, and the estimated needs are listed in Table 3.

Table 3 Control Measures required to meet the Dumps Creek TMDL.

Control Measure	Units	Installed	Needed
Reclamation of Abandoned Mine Land	Acre	0	273
Dirt Road Stabilization	Acre	1	123
Vegetated Buffer	Acre	11	5
Streambank Stabilization	Feet	2,500	2,640

Implementation

Potential Funds

It is anticipated that most of the remediation efforts outlined in this proposal will be funded by industry interested in re-mining or remediating AML sites, in order to gain mitigation credits to offset

disturbances elsewhere in the watershed. However, the following examples of funding opportunities are presented as possible alternative funding sources:

- **Federal Clean Water Act 319 Incremental Funds**

  Through Section 319 of the Federal Clean Water Act, Virginia is awarded grant funds to implement the nonpoint source programs. VADCR administers the money in coordination with the Nonpoint Source Advisory Committee (NASAC) to fund watershed projects, demonstration and education programs, nonpoint source pollution control program development, and technical staff. VADCR reports annually to the EPA on the progress made in nonpoint source pollution prevention and control. The funding that is currently available this program is committed. At this time, VADCR cannot foresee the possibility of these funds being available to meet additional commitments for implementation in the foreseeable future.

- **Virginia Small Business Environmental Assistance Fund Loan Program**

  The Fund, administered through VADEQ, is used to make loans or to guarantee loans to small businesses for the purchase and installation of environmental pollution control equipment, equipment to implement voluntary pollution prevention measures, or equipment and structures to implement agricultural BMPs.

- **National Fish and Wildlife Foundation**-

  Projects are funded in the U.S. and any international areas that host migratory wildlife from the U.S. Grants are awarded for

the purpose of conserving fish, wildlife, plants, and their habitats.

- **Clean Water State Revolving Fund**
  EPA awards grants to states to capitalize their Clean Water State Revolving Funds (CWSRFs).

Timeline and Milestones

The end goals of implementation are restored water quality of the impaired waters and subsequent de-listing of Dumps Creek from the Commonwealth of Virginia's Section 303(d) list within 15 years. Progress toward end goals will be assessed during implementation through tracking of control measure installations and continued water quality monitoring.

Table 4 Stage I and Stage II implementation goals for Dumps Creek.

Control Measure	Unit	Stage I (#)	Stage II (#)
Reclamation of Abandoned Mine Lands	(ac)	100	173
Haul Road Stabilization	(ac)	50	73
Vegetated Buffer:	(ac)	0	5
Streambank Stabilization	(ft)	500	2,140

A ten-year implementation plan timeline was formulated for the Dumps Creek watershed (Figures 5). This timeline describes the need for implementation, in terms of completion of the control measures.

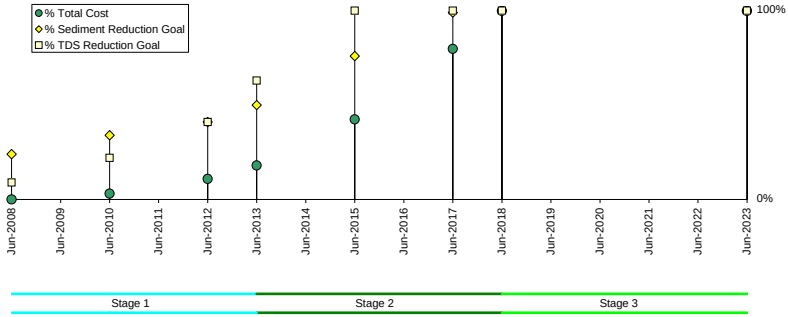

Figure 5 **Timeline for implementation in the Dumps Creek watershed.**

Targeting

Implicit in the process of a staged implementation is targeting of control measures: this ensures optimum utilization of resources. In the case of Dumps Creek, the most obvious AML features have been identified and remediation of these sites is being pursued.

Cost and Benefits

Cost

The cost, determined through review of available literature and discussion with stakeholders, is the anticipated average cost, the best estimate available at this time. The cost of each of the land-based and in-stream control measures selected for this IP is highly variable, depending on the specific conditions where the control measure is implemented. The estimated cost of implementing all control measures in the Dumps Creek watershed is $3.35 million, shown in Table 5.

Table 5 Control measure cost and needs.

BMP	Unit	Cost per Unit	In place since TMDL (#)	Needed (#)	Cost ($)
Reclamation of Abandoned Mine Lands	(ac)	$10,000	0	273	$2,730,000
Haul Road Stabilization	(ac)	$700	1	123	$86,100
Vegetated Buffer:	(ac)	$700	11	5	$3,500
Streambank Stabilization	(ft)	$200	2,500	2,640	$528,000
Total Estimated BMP Cost					**$3,347,600**

The total estimated cost for the implementation of BMPs in the Dumps Creek watershed is shown in Table 6. The technical assistance cost assumes a need of 1 VISTA volunteer for the first 5 years, with the remaining technical assistance needs being provided by existing agency personnel. The total cost to implement the BMPs needed in this watershed is estimated at $3.36 million.

Table 6 Total estimated costs to meet the Dumps Creek TMDL.

Cost Item	Cost ($)
Reclamation of Abandoned Mine Lands	$2,730,000
Haul Road Stabilization	$86,100
Vegetated Buffer:	$3,500
Streambank Stabilization	$528,000
Technical Assistance	$15,000
Total Estimated BMP Cost	**$3,362,600**

Benefits

The primary benefit of implementation is cleaner waters in Virginia. Specifically, the aquatic community in this stream will be restored. In addition to allowing the aquatic community to thrive, the control measures that will be implemented to control sediment and TDS will also serve to reduce delivery of other pollutants to the stream from upland locations.

An important objective of the implementation plan is to foster continued economic vitality and strength. This objective is based on the recognition that healthy waters improve economic opportunities for Virginians, and a healthy economic base provides the resources and funding necessary to pursue restoration and enhancement activities

Stakeholders' Roles and Responsibilities

Stakeholders are individuals or entities who live or have land management responsibilities in the watershed, including private individuals, businesses, government agencies, and special interest groups. Stakeholder participation and support is essential for achieving the goals of this effort (*i.e.*, improving water quality and removing Dumps Creek from the impaired waters list). The purpose of this chapter is to identify and define the roles of the stakeholders who will work together to implement the IP. The roles and responsibilities of some of the major stakeholders are described in the following list.

Monitoring

The VADEQ will continue monitoring the existing station in the Dumps Creek watershed (Figure 6). The two stations identified represent ambient monitoring (DUM000.04) and biological monitoring (DUM001.09). In addition, DMME will continue to require monitoring in support of permitting activities. This monitoring effort will vary as permits change.

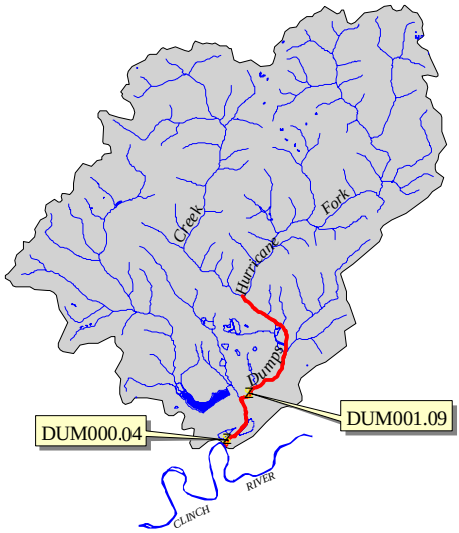

Figure 6 Location of monitoring stations in the Dumps Creek watershed.

Education

Educational outreaches will be available through the following.

- **Virginia Cooperative Extension**

  VCE is an educational outreach program of Virginia's land grant universities (Virginia Tech and Virginia State University), and a part of the national Cooperative State Research, Education, and Extension Service, an agency of the United States Department of Agriculture.

- **County/City Government Departments**

  City and county government staff work may also help to promote education and outreach to citizens, businesses and developers to introduce the importance of the TMDL process.

Governmental Responsibilities

Federal Government agencies include the following:

- **The United States Environmental Protection Agency**
  The EPA has the responsibility of overseeing the various programs necessary for the success of the Clean Water Act.
- **The United States Office of Surface Mining**
  The OSM is responsible for balancing the nation's need for continued domestic coal production with protection of the environment.
- **The United States Army Corps of Engineers**
  The Corps' primary responsibility, with regard to this IP, is in permitting activities in "wetlands and waterways."
- **The United States Department of Agriculture, Natural Resources Conservation Service (NRCS)**
  The NRCS is the federal agency that works hand-in-hand with the American people to conserve natural resources on private lands.

State of Virginia agencies and programs include the following:

- **Virginia Department of Environmental Quality**
  The VADEQ is the lead agency in the TMDL process. The VADEQ is also responsible for implementing point source WLAs, assessing water quality across the state, and conducting water quality standard related actions.
- **Department of Mines, Minerals, and Energy – Division of Mined Land Reclamation**
  The DMLR presently regulates all of the land-disturbing, mining, and reclamation activities from coal-mining

operations by issuing Coal Surface Mining Operation (CSMO) permits.

- **Department of Mines, Minerals, and Energy – Division of Gas and Oil**

  The DGO's responsibilities include the regulation of the effects of gas and oil operations (both on and below the surface), issuance of permits, administration of client assistance programs, inspection of well sites and gathering pipelines, reclamation of abandoned well sites, protection of correlative rights, and promotion of resource conservation practices.

- **Virginia Department of Conservation and Recreation**

  The VADCR is authorized to administer Virginia's NPS pollution reduction programs in accordance with §10.1-104.1 of the Code of Virginia and §319 of the Clean Water Act.

- **The Virginia Department of Forestry**

  The VDOF inspects logging jobs to ensure that BMPs are being installed by loggers, because there is a zero tolerance for sedimentation in nearby streams.

- **Soil and Water Conservation Districts**

  SWCDs are local units of government responsible for the soil and water conservation work within their boundaries.

- **Planning District Commissions (PDC)**

  PDCs were organized to promote the efficient development of the environment by assisting and encouraging local governmental agencies to plan for the future.

- **County/City Government Departments**

  City and county government staff work closely with PDCs and state agencies to develop and implement TMDLs.

Local Groups include the following:

- **Community Civic Groups**

  Community civic groups take on a wide range of community service including environmental projects. These groups include Ruritan, farm clubs, homeowners' associations, and youth organizations, such as 4-H and Future Farmers of America.

Notes

List of Acronyms

AML	Abandoned Mine Land
BMP	Best Management Practice
CREP	Conservation Reserve and Enhancement Program
CWA	Clean Water Act
DMME	Department of Mines, Minerals, and Energy
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentive Program
FTE	Full Time Equivalent
IP	Implementation Plan
Kg	Kilogram
NPS	Non Point Source
NRCS	Natural Resources Conservation Service
Section 303(d) List	Dirty Waters List
SE/R-CAP	Southeast Rural Community Assistance Project
SWCB	Soil and Water Conservation Board
SWCD	Soil and Water Conservation District
t/yr	Metric tons per year
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
VADCR	Virginia Department of Conservation and Recreation
VADEQ	Virginia Department of Environmental Quality
VCE	Virginia Cooperative Extension
VDOF	Virginia Department of Forestry
WQIA	Water Quality Improvement Fund

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