

**CITIZEN MONITORING MANUAL**  
*Protecting Our Local Waterways*  
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SITE REPORT CARD  
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## HOW TO USE THIS MANUAL

The best way to get started is to gather friends and family and take the AWW training class, provided by a community partner organization. You will join other like-minded and caring individuals who are willing to protect the irreplaceable biodiversity of Appalachian streams and the mountain communities.

### **1 Take the AWW Training**

- Learn how the law applies to Appalachian watersheds and how to review permits for violations
- Review coal mine discharge monitoring reports (DMRs) to identify violations, inconsistencies and other problems
- Identify areas where water monitoring is needed
- Get equipped with a water testing toolkit
- Learn how to put the results online and show the world what coal does to waterways and communities in Appalachia
- Require government accountability to the people

### **2 Take Action in Your Watershed**

- Find the hot spots and visit the nearest downstream location that is publicly accessible
  - Do not trespass on private property!
  - Use public roads and waterways to fully observe the site
- Measure conductivity, pH, temperature, and total dissolved solids, and take pictures and/or video
- File an online report card, upload data, pictures and/or video
- Keep copies of photographs for your records, in case the local authority loses them

### **3 Follow-up**

- Continue monitoring the site to track ongoing problems and find new concerns
- Be aware of new mine permit applications and permit renewals
- Follow the legal action of Appalachian Voices and other groups against coal mine permit violations

## Appalachian Voices Contact Information

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Appalachian Voices is a proud member of the Waterkeeper Alliance



# 1 Introduction, Objectives, and Mission

PROJECT OVERVIEW  
PROJECT OBJECTIVES  
PROJECT BENEFITS

## **PROJECT OVERVIEW**

The Appalachian Water Watch program is sponsored by Appalachian Voices, which is responsible for training community partners (both organizations and individuals) on how to use the manual and providing the supporting equipment. These trainers are then able to instruct volunteers on manual and equipment use.

Appalachian Water Watch was created to protect the region's waterways from damage caused by the coal industry and to empower citizens to monitor permits and waterways, and to enforce clean water laws. Citizen monitoring provides an important first step in identifying possible water contamination and the sources of contamination.

Coal mining operations can damage Appalachian waterways by discharging acid mine drainage, heavy metals, other toxic chemicals, and sediment. The regulations meant to protect these waterways are not consistently or effectively enforced. Because of this, government agencies and citizens are often unaware of the pollutant types or amounts discharged from coal mines. We hope that with citizen monitoring and pressure for coal company accountability, the existing local, state and federal policies will be implemented more effectively and new policies will be created for the improved protection of Appalachian waterways.

## **PROJECT OBJECTIVES**

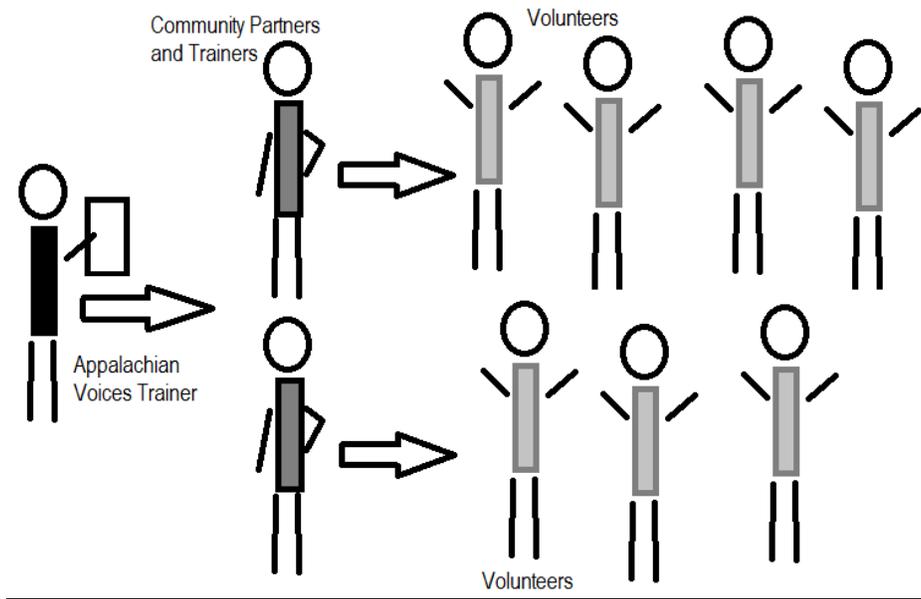
The purpose of this citizen monitoring program is to educate and engage local volunteers to:

1. Understand and enforce Clean Water Act permitting and enforcement in their state
2. Identify areas of contamination concern within their local watersheds
3. Monitor mining "hot spots" by testing local water quality to identify possible Clean Water Act permit violations
4. Make the information they collect regarding local watershed health publicly available
5. Understand how their work is used to increase both coal company and government agency accountability

**PROJECT BENEFITS**

This project’s potential benefits range from local impacts to federal influences. As a volunteer, you will become more connected with the local waterways, your drinking water supply, the surrounding ecosystem, and your community. Protecting watersheds benefits the water quality, aquatic communities, and the surrounding biodiversity. Independent citizen monitoring and review of pollutant discharge permits and reports puts pressure on state agencies to monitor, review, and enforce pollutant regulations. Furthermore, in the most extreme cases, data collected may be used to pursue legal action against non-compliant coal companies, bringing national attention to the devastation that surface mining can perpetuate within Central Appalachia.

Power in numbers: the expanding work structure of Appalachian Water Watch



## 2 The Clean Water Act

SECTION 402 OF THE CLEAN WATER ACT: NATIONAL POLLUTANT DISCHARGE  
ELIMINATION SYSTEM (NPDES)  
DELEGATED PROGRAMS  
UNDERSTANDING COAL INDUSTRY PERMITS  
    GENERAL PERMITS  
    INDIVIDUAL PERMITS  
TAKING ACTION WITHIN THE NPDES SYSTEM  
    MONITORING WATER QUALITY AND PERMIT COMPLIANCE  
    REVIEWING DISCHARGE MONITORING REPORTS (DMRs) AND PERMITS

The Clean Water Act (CWA) is the federal law used to control water pollution throughout the country. Its main goal is, “to restore and maintain the chemical, physical and biological integrity of the Nation’s waters.” There is on-going debate over the CWA definition of the “Nation’s waters,” but it is generally agreed that navigable and interstate streams, rivers and lakes, as well as tributaries and associated wetlands, are included in the definition. The CWA states “it is the national goal that the discharge of pollutants into navigable waters be eliminated by 1985.” Clearly, this did not happen. Nevertheless, the CWA remains an invaluable tool in controlling pollution from coal mining. The CWA gives the federal Environmental Protection Agency (EPA) the authority to establish and enforce regulations in order to achieve the goals of the CWA. In turn, the EPA often delegates enforcement responsibilities to state agencies. Citizens can be an important part of enforcing the CWA.

### **SECTION 402 OF THE CLEAN WATER ACT: NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)**

The CWA provides control for water pollution through authorization of the National Pollutant Discharge Elimination System (NPDES). This regulates point source discharges of pollution into the Nation’s waters. “Discharge” is a technical term for the released water from an unnatural source. The NPDES program requires all point source discharges (such as outfalls from coal mines or chemical plants) to have a pollution permit. This basic principle is the foundation of water pollution prevention and control in the United States. Generally, anyone who releases pollutants from a point source *without* a Clean Water Act permit is breaking the law; however, it is legal to discharge pollutants if you have a valid permit and comply with its terms. **Citizen involvement is important in all phases of the permit process. You don’t have to be a lawyer to make a difference, but understanding the system’s basics is a valuable skill.**

The system defines point source pollution as “any discernible, confined, and discrete conveyance” of pollutants to a waterway. The definition of discrete conveyance can mean “any pipe, ditch, channel, tunnel, conduit, well, [or]

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container.” In the Appalachian coalfields, a point source can be an outlet from a slurry pond, valley fill, or processing plant pipe.

The NPDES has greatly reduced the impact of many existing discharges, but it certainly has not eliminated point source water pollution. In fact, while most pollution discharges have come under greater control since the act was passed (with a few approaching “zero impact”) very few have actually been phased out. Moreover, thousands upon thousands of new discharges—including many with significant impacts—have been permitted. This is especially true in the coal producing regions of West Virginia, Kentucky, Virginia, and Tennessee.



Pipe discharge from a surface coal mine

The NPDES is most effective when citizens:

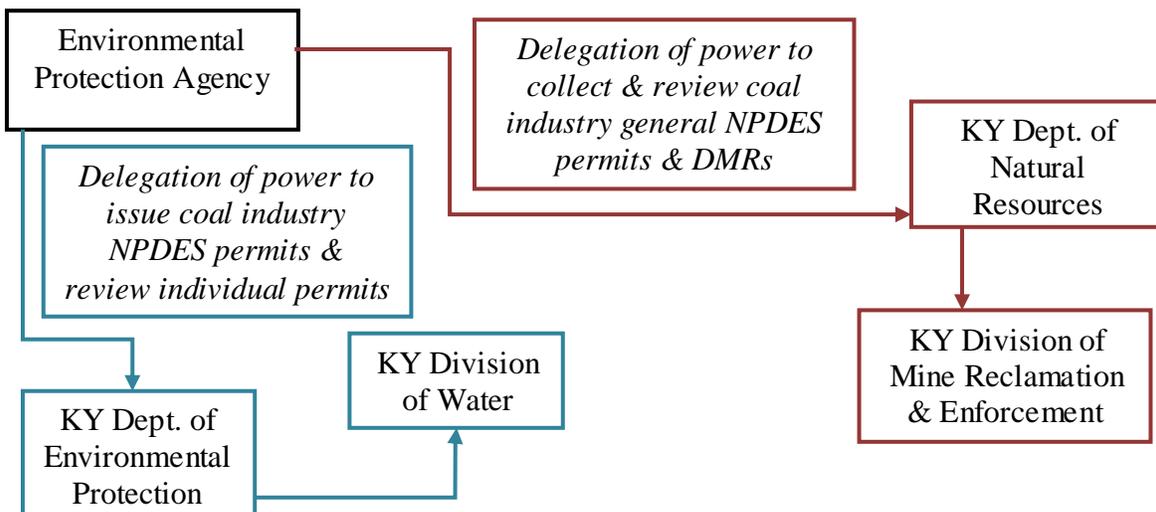
- Keep an eye on Clean Water Act goals
- Understand how the NPDES and other CWA tools work together
- Monitor watershed activities
- Play an active role in their ongoing implementation

In the absence of an ever-vigilant public, however, the NPDES can produce results that do not support the CWA goals to protect public waterways.

**DELEGATED PROGRAMS**

The EPA delegated primary NPDES program responsibility in most states to a state pollution control agency. This is the case in Kentucky, West Virginia, Tennessee, and Virginia.

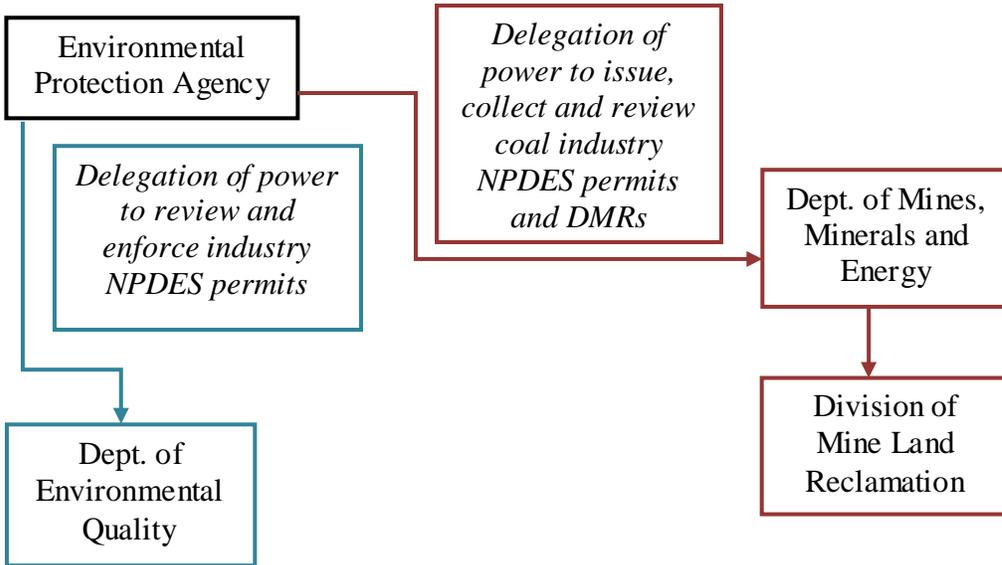
In Kentucky, the delegation of coal-related NPDES permits (sometimes referred to as KPDES permits), as well as discharge monitoring reports (DMRs), follows this flow chart:



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To find out more about requesting NPDES permits and DMRs in Kentucky, see Appendix A.

In Virginia, the delegation of NPDES permits (sometimes called VPDES permits), as well as DMRs, follows this flow chart:



To find out more about requesting NPDES permits and DMRs in Virginia, see Appendix B.

## **UNDERSTANDING COAL INDUSTRY NPDES PERMITS**

There are two types of NPDES permits: general permits and individual permits. Each type has different requirements and different public review opportunities.

- In Kentucky, most surface mining NPDES permits are general permits, but in some special cases, individual permits are used.
- In Virginia, all surface mine NPDES permits are individual permits.

### *GENERAL PERMITS*

General permits are developed for multiple enterprises that have the same type of discharge and occur within the same geographic area. This means that not every discharger is specifically examined or permitted for a unique activity and location. **General permits are commonly used for coal mining sites or related coal processing facilities within Kentucky.** If the owners of a coal facility believe their enterprise qualifies under an existing general permit category, they can apply to be covered by that permit. They generally do so through an application called a Notice of Intent (NOI). The amount of information required by the NOI varies, but very few are longer than two pages and require

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little detail about the activity. An individual permit can be required based on the decision of the state agency or because of a citizen petition (see *INDIVIDUAL PERMITS*). Reasons for the use of an individual permit include: the discharger is out of compliance, better technology is available, the receiving waterway is no longer protected by the original permit, or the discharger is a significant polluter.

The general permit is developed and renewed every five years. The permit describes the activities permitted, the potential impacts of these activities, and specifies when an activity does not qualify for the general permit. For example, if coal mine discharge is likely to affect fish when they are migrating or spawning, the permit could limit the timing and duration of the outflow. The permit will also describe the information needed from every applicant and the compliance requirements. General permits are subject to public notice and review only during the initial permit development and if there is a five-year renewal. There is limited public and governmental review of each the NOI applications during the five-year period. **Voicing concerns during the public review every five years is very important given that an unlimited number of coal industry permittees can be included under each general permit.** Information on the permittees covered by each general permit is public and should be available from your permitting agency or can be requested using the Freedom of Information Act (FOIA), which is discussed below.

### *INDIVIDUAL PERMITS*

Individual permits are site-specific and usually more detailed than general permits. The pollutant limits may be based on the category of discharge or the water quality of the receiving waterway. According to the CWA, major industrial dischargers must apply for individual permits. States may differ in how they define major industrial dischargers, but their definitions must be acceptable to the EPA. In Kentucky, individual permits may be issued to coal mines under special circumstances. Individual permits are becoming more common in Kentucky. Virginia has never developed a general permit for coal mine discharge, so only individual permits are used in Virginia. **The individual NPDES permit and permit application are often part of a much larger Surface Mining Control and Reclamation Act (SMCRA) permit for Virginia mines, which can make these documents difficult to locate for review. Follow your initial request with additional emails to create written records of your requests. Persistence is crucial!**

The permits begin with several pages called "Fact Sheets." These pages contain important information including the mine name, mine location, NPDES permit number, the waterways receiving the discharge, and names or numbers corresponding to the discharging ponds. The permit will also usually have several pages of standard provisions at the end that are often used repeatedly with each new permit. When reviewing permits, don't skip this language. This section of the permit can include crucial requirements.

## TAKING ACTION WITHIN THE NPDES SYSTEM

The Clean Water Act provides for public comment and involvement in the NPDES permitting process. As a participant in water quality protection with Appalachian Water Watch, you can monitor permit compliance *and* existing DMRs. This is often the most effective way to catch a coal company violating the law.

### *MONITORING WATER QUALITY AND PERMIT COMPLIANCE*

**Reviewing permit compliance is a major objective of the citizen monitoring program with Appalachian Water Watch! The data you collect provides valuable information about contaminated waterways and coal company permit noncompliance.**

The regulatory state agency responsible for NPDES permits collects and reviews discharge monitoring reports (DMR) submitted by the coal company. Most of the water monitoring that is reported in DMRs is conducted by the discharging coal industry. State and federal officials make spot checks for NPDES permit limit violations (often in response to public concerns or questions).

**The NPDES self-monitoring system (DMRs) is like you recording every time you broke the speed limit then submitting your violations to the police. In the real world, coal companies have falsified data, not completed DMRs, or submitted violations on reports without the state agency noticing (and thus enforcing the law).**



Failure to report properly and on time is a permit violation. The state agency compiles DMR information and must make it available to the EPA and the public. When violations are evident, enforcement actions are in order; however, enforcement may not always occur due to missed violations or tardy reviews. By increasing public monitoring, we can identify concerns about specific discharge areas and increase state enforcement of discharge requirements.

### *REVIEWING DISCHARGE MONITORING REPORTS (DMRs)*

DMRs are part of the public record in each state; therefore, they are available for your review. DMRs are useless unless the data within them is accurate and values that exceed permit limits are found and acted upon. **Often, DMRs are collected but *not* reviewed by state agencies. Therefore, citizen review of DMRs can be an effective way to bust big polluters for Clean Water Act violations.**

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When reviewing DMRs, look for:

- Multiple limit violations
- Repeated data values between different months
- Unusual patterns you would not expect to see in the natural environment
- Large discrepancies between water quality monitoring data you have collected and the data reported in DMRs

Coal companies are required to report values that exceed permit limits and take appropriate steps to correct the problem. Sometimes limit violations are repeatedly reported and not corrected because no one notices the reported violation. In Kentucky, permit limits are listed on the DMR; in Virginia, the permit limits are indicated on Effluent Limitations sheets.

In Kentucky, DMRs are submitted quarterly, so each report contains three months of data. In Virginia, reports are usually submitted quarterly, but the DMLR will provide all requested data in a single spreadsheet, not divided by quarters. Sometimes you may find that data from one quarter or month repeats in a future quarter or month. This may indicate that the company has forgotten to fill in updated data for the current month, or that fraudulent data has been submitted—either way, the finding indicates that inaccurate data has been submitted. Similarly, you may find repeating patterns that you would not expect to find in the natural environment. For example, pH measurements may slowly increase through one set of three months, then decrease sharply during the first month of the next quarter, then slowly rise again. This is not a natural phenomenon and may indicate false data. Please see Appendix A for examples of DMRs with pollution violations.

If you test downstream from a nearby coal mining outfall and compile the data over several months or more, you can obtain DMRs from the same time period and waterway to compare with your data. Remember that your data and the data on DMRs will differ depending on when and where the measurements were taken, but general comparisons can still be useful to identify major discrepancies.

**If you find unusual data within a set of DMRs, report your findings to the local AWW trainer.** Be sure to provide the trainer with copies of the DMRs or, at the very least, the relevant data values and appropriate identifying information, including the mine name, company, and permit. The trainer can help to verify your findings and report suspected problems to Appalachian Voices so that appropriate enforcement steps can be taken.

*Obtaining DMRs for Review*

Most states have established a process for requesting public information. In Kentucky, use the Kentucky Open Records Act. In Virginia, use the Virginia Freedom of Information Act. These acts require that you are a citizen of the state

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from which you are requesting the documents and that you submit a written request. There are forms for these requests for both Kentucky and Virginia found in Appendices A and B, respectively.

DMRs can be printed or sent electronically to the requesting citizen or agency. If you are requesting printed DMRs, be sure to ask about the cost of copies and remember to mention that you are requesting documents through a non-profit organization. Black and white copies are often around 10 cents a page, but larger documents and color copies may have additional fees. There may be a service fee involved if you ask agency personnel to locate documents for you. Electronic copies are usually available and can be sent on a CD. Many DMRs are submitted electronically (in an Excel or text file) by the coal company to the state agency and can be transferred to you in the original electronic format. Another option is to review documents in the agency office. This is often the most efficient and least expensive option. If requesting DMRs is becoming financially difficult, please contact Appalachian Voices to find cheaper ways to obtain these reports.

For a list of agency contact information for Kentucky, please see Appendix A. For a list of agency contact information for Virginia, please see Appendix B.



***Familiarize yourself with the Kentucky or Virginia DMR formats by checking Appendix A (KY) or Appendix B (VA) example DMRs.***

# 3 Taking Action

## PART ONE – HOW TO IDENTIFY HOT SPOTS

### GATHER INFORMATION—TESTING LOCATION

#### STEP 1: IDENTIFY WHERE COAL MINING AFFECTS WATERWAYS

INTERNET MAPPING IN YOUR COMMUNITY

PERMITTED DISCHARGE LOCATIONS

#### STEP 2: WHERE YOU CAN TEST

DEFINITION OF STATE AND FEDERAL WATERS

#### STEP 3: WHEN TO TEST—WEATHER, TIMING CONSIDERATIONS

### GATHER INFORMATION—TESTING LOCATION

Choosing an appropriate site location is the most important step when testing and reporting potential water quality issues. Appalachian Water Watch focuses primarily on large scale pollution hot spots. These are locations where coal mining operations can harm ecosystem functions, wildlife, plants, and/or human use of waterways. When choosing a monitoring location, ask yourself the following questions:

Step 1: Is the waterway affected by nearby coal mining operations or discharge outfalls?

Step 2: Can I legally and safely access this waterway?

Step 3: When is the best time to test the water?

### STEP 1: IDENTIFY WHERE COAL MINING AFFECTS WATERWAYS

Hot spots include streams or rivers that experience heavy coal mining pollution and are devoid of healthy aquatic life and plants. In some cases, mining operations have a history of water quality violations that can be found in the news or online. If you live near a coal mine that has violated either state or federal water laws, then the nearby waterways can be considered hot spots. Also, waterways that are downhill or downstream of outfalls indicated in Discharge Monitoring Reports (DMRs) are reliable test locations. This is due to their physical connection to coal mining operations and the current operational status of the coal mine. To review DMRs and how to obtain and monitor them, see Chapter 2.

#### INTERNET MAPPING IN YOUR COMMUNITY

**The Google Maps interactive mapping application is a great tool to find testing sites downhill or downstream from a mine site. Go to**

**[www.maps.google.com](http://www.maps.google.com)**. Make sure the application is in “Satellite” mode (see photo on the following page). You can search for your home town or home address if you live near a mining operation, or for the specific mine address. The

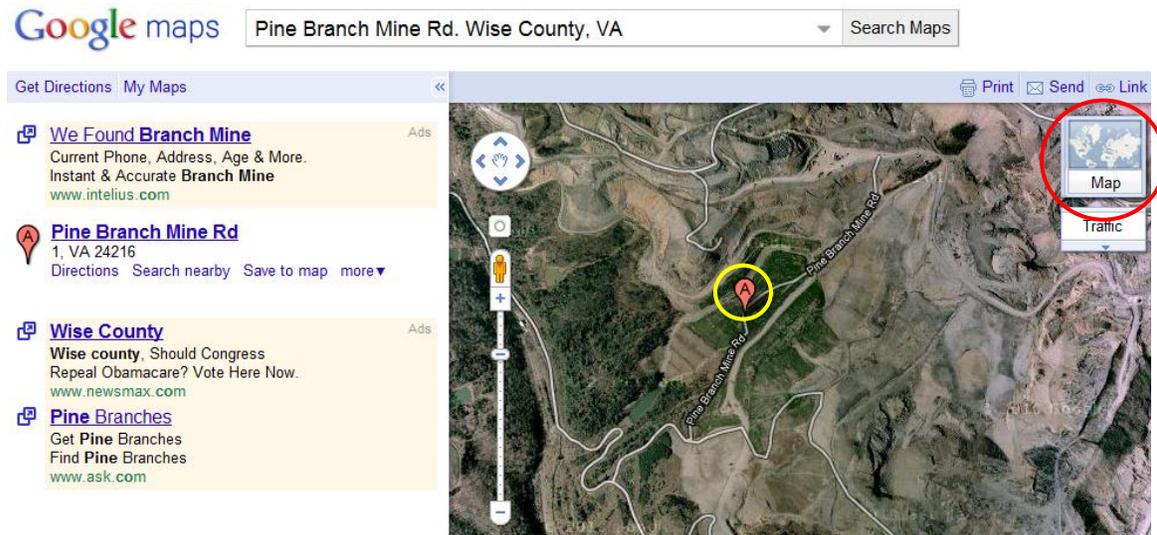


*Sometimes the best way to find a testing site is by word of mouth. Internet mapping is by no means the best or only way to find a monitoring location.*

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address or location you enter in the search bar will be marked by a red, lettered “balloon” on the map (circled in yellow, below).



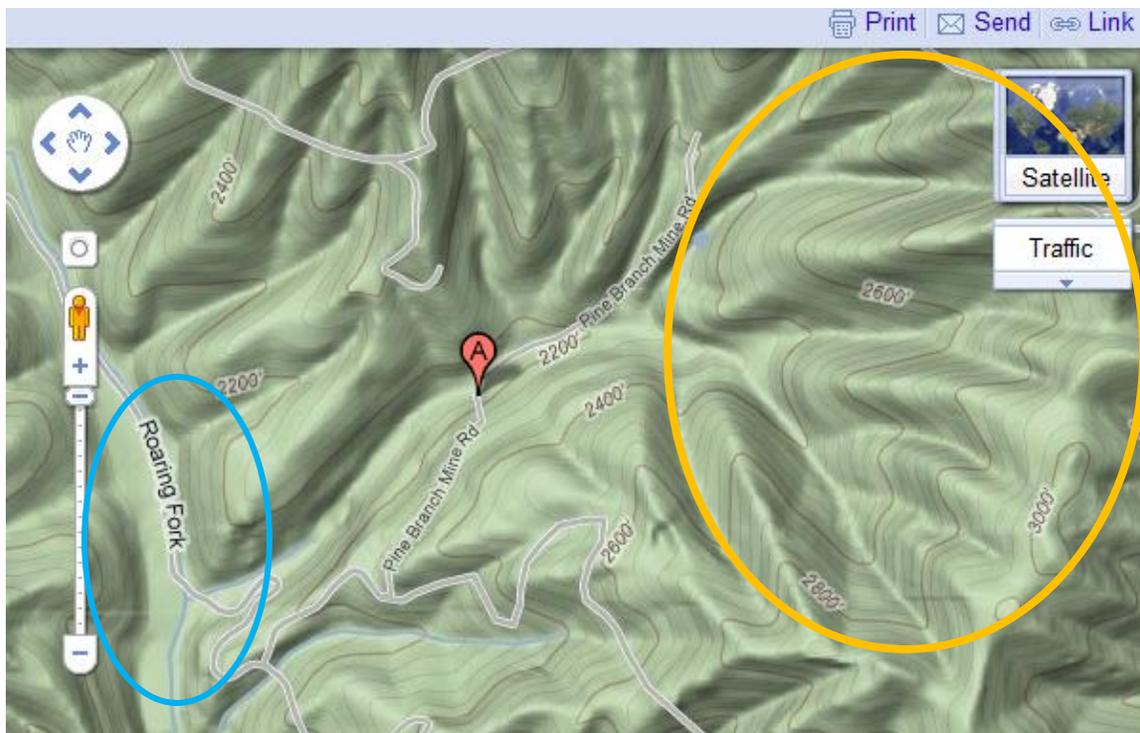
Example: Locating a Virginia mine using Google Maps in “Satellite” mode.

Once you have located the mining operation on the Google Map, zoom in or out using the scale on the left hand side and move around the mapping area by single-clicking and dragging on the map. While in “Satellite” mode, the landscape topography is visible according to the shading of valleys and side slopes.

To see a topographic map without the picture quality of “Satellite” mode, click the “Map” button to activate “Map” mode (circled in red above). Hover over the “Satellite” button to select the “Terrain” viewing option. This allows you to view the contour lines (measured elevations) and waterways (streams, rivers, ponds, lakes) in the same area you found using “Satellite” mode. The same map above is on the following page. The Roaring Fork River is circled in blue and the area of an active mine is circled in orange. The elevation of the mine is indicated as 2,600 feet to 3,000 feet. The downhill Pine Branch Road and Roaring Fork River are 2,000 feet to 2,200 feet in elevation. By using the terrain feature in “Map” mode you can easily identify waterways that are downhill or downstream from mining operations.

Downhill and downstream waterways are ideal monitoring areas. Read on to Step 2 (page 13) to finalize an exact monitoring location and make sure that the waterway is legally and safely accessible. Both the “Map” and “Satellite” modes will show the state roads that you can use to access the nearby waterways affected by coal mining activities.

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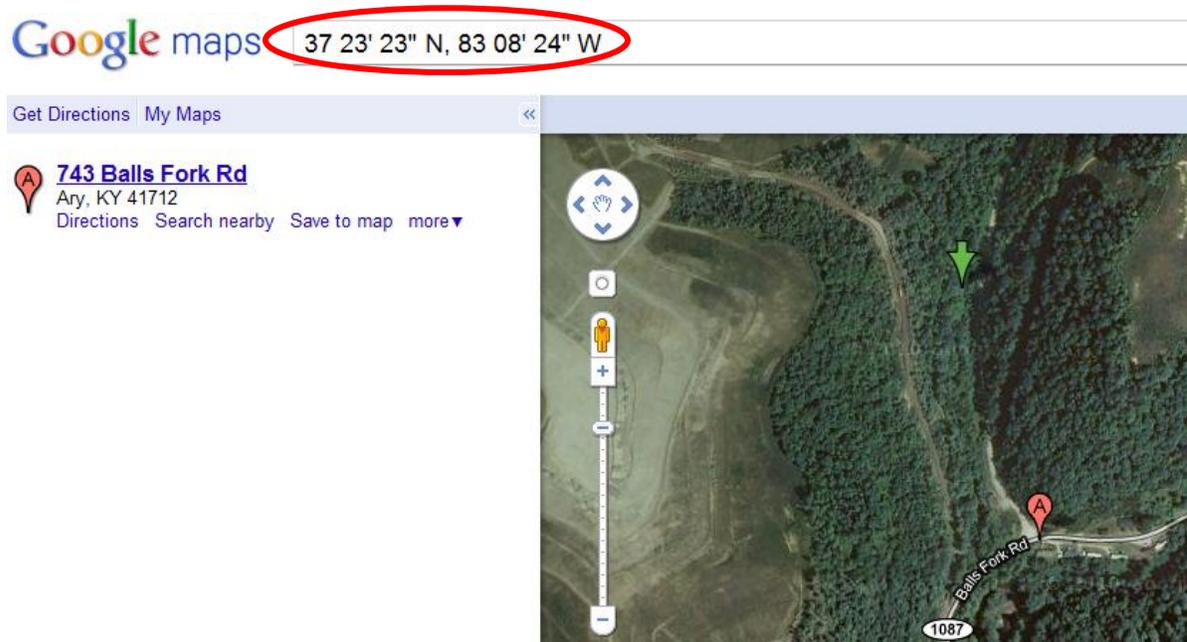


Example: Same Virginia mine location shown in the “map” mode of Google Maps. This allows you to view contour lines and more easily locate waterways.

**PERMITTED DISCHARGE LOCATIONS**

You can obtain DMRs from specific mines by requesting them from the state agencies detailed in Chapter 2 and Appendices A and B. When choosing a DMR for citizen testing, check the coal company testing dates on the report to ensure that the outfall is still in use. The latitude and longitude of the permitted discharge outfall can be found on the DMR. If this is missing, use the internet mapping option above to locate the specific mine location. Kentucky DMRs may indicate receiving waters for the permitted outfall. Virginia receiving waters can be found on the NPDES permit fact sheets. Since these streams and rivers are directly indicated on the permit, they are prime hot spots for testing.

Next, you can use [www.maps.google.com](http://www.maps.google.com) to find the DMR outfall on an interactive map. Enter the latitude and longitude in the search bar according to the format shown in the picture on the following page (circled in red). Make sure to include the “N” and “W.” This interactive map will show the satellite geographic picture of the location. **Important:** the specific location is indicated by a green arrow; the lettered, red marker indicates a nearby residence, business, or known point of interest.



Example: Google Maps search for DMR outfall of latitude 37 23' 23" N and longitude 83 08' 24" W indicated by the green arrow. Red 'balloon' maker with letter "A" marks a nearby mailing address on Rt. 1087 and Balls Fork Rd. The uphill clearing on the left is a surface coal mining site.

You can zoom in or out to find waterways that are downhill or downstream from the outfall. Refer to the above instructions about "Map" mode, "Satellite" mode, and how to identify downhill and downstream waterways from coal mines. The map will also show any state roads that you can use to access the nearby waterways affected by the outfall discharge.

## STEP 2: WHERE YOU CAN TEST

You will most likely **not** be able to test immediately below a coal mine or next to a targeted outfall. **However, testing downstream or downhill of a pollution source is extremely effective and reliable. Make sure you are on public land, a public road, or within a public waterway when testing, ensuring you are not trespassing on the coal company's property or other private property** (unless the landowner has given explicit permission).



*While driving to the test location, keep a lookout for polluted streams or pools of water near the mine.*

After identifying a stream, creek, or river that clearly receives water from the coal mine or DMR outfall, check that it is safe to access before testing in the field.

## DEFINITION OF STATE AND FEDERAL WATERS

Citizen testing is most effective when implemented in waterways that are defined by the state and the federal Clean Water Act. “Navigable waters” are federally protected under the Clean Water Act and include temporary, permanent, or standing waterways that form “geographic features.” U.S. citizens are legally allowed to travel within and test any U.S. navigable water, as long as the citizen is not trespassing. Traveling within a waterway and then accessing private land onshore is considered trespassing.



Testing from a bridge

Volunteers are legally allowed to access a stream or river via public bridges, state or federal roads, and travel up or downstream to test the water. The Appalachian Water Watch program highly encourages volunteers to choose testing locations that are safe and easily accessible. **Do not test in locations that pose any physical or legal risks. Data obtained illegally (for example by trespassing) cannot be used as legal evidence.**



Do Not Trespass!

When you have completed testing, the approximate latitude and longitude of your testing site can be uploaded to the Appalachian Water Watch website under Citizen Testing Reports (see Chapter 5). **On the day of testing, make sure to record any landmarks or roads near the site of testing so that you can easily identify and map it online (Site Report Card, Appendix C).**

### STEP 3: WHEN TO TEST—WEATHER, TIMING CONSIDERATIONS

Now that you have identified a waterway that has safe, legal access and has clear potential to be harmed by coal mining discharge, the last step is to pick a testing date. Plan your travel time for equipment retrieval, site visit, and equipment return within one day. The one day limit is due to the testing equipment sensitivity to drying out and frequency of use by other volunteers.

Do not test water within 24 hours of rain or snow. One exception is if you notice unusual discharge or other unusual characteristics in a waterway following a large rainstorm. In this case, water testing can be done, but carefully document and report the rain event as well. *Do test after a major pollution disaster, such as a slurry impoundment break, regardless of weather.* Again, do not take any physical or legal risks when choosing the test date.

**Review of location identification:**

1. Find your community, nearby coal mine, or permitted DMR outfall using the Google Maps application.
2. Identify, on Google Maps, any streams, creeks, or rivers downhill or downstream from the coal mining operation.
3. Plan how you will access the waterway of interest, make sure that:
  - a. There are roads accessing the stream, creek, or river
  - b. You can safely test the water either from a bridge or public road
  - c. If you test within the waterway that you take no physical or legal risks
  - d. You do not trespass when testing the stream
4. Plan when to test, make sure that:
  - a. It has not rained within 24 hours
  - b. You test immediately after any major news or pollution events related to the waterway or mining operation
  - c. You can complete testing within 1 day, including travel time
5. Record any landmarks near the testing site for later documentation

**Safety protocol for responding to spills:**

1. Your safety is more important than any water sample!
2. Call your local AWW trainer and the Riverkeeper Team at the Appalachian Voices if you become aware of a spill (if you wish to remain anonymous and do not want to document the spill, the Riverkeeper Team may be able to send others to complete documentation).
3. Only if it is safe, travel to the waterway impacted by the spill
4. Take pictures/video from a safe place (elevated ground, upwind of any air pollution)
5. Conduct testing from a safe place with protective clothing (non-flood waters, wear waterproof gloves, shoes, and clothes)
  - a. Immediately wash instrument (heavy metals, acids, toxins can destroy it)
6. Call trainer or Appalachian Voices quickly to report your test results
7. Upload data, pictures, video to the AWW website
8. Once facts are known, call news media and appropriate regulatory agencies
9. Continue to coordinate with your local AWW trainer and the Appalachian Voices Riverkeeper Team



## **Taking It to the Watershed**

### **PART TWO – HOW TO MONITOR WATER QUALITY**

#### HOW TO MONITOR WATER QUALITY

CONDUCTIVITY

pH

TEMPERATURE

TOTAL DISSOLVED SOLIDS (TDS)

#### HOW COAL MINING DISCHARGE CAN AFFECT MEASUREMENTS

#### TAKING FIELD MEASUREMENTS

INSTRUCTIONS

STORAGE AND CARING FOR THE INSTRUMENT BETWEEN SAMPLING

TRIPS

#### POLAROID JUSTICE

#### RECORDING THE DATA

### **HOW TO MONITOR WATER QUALITY**

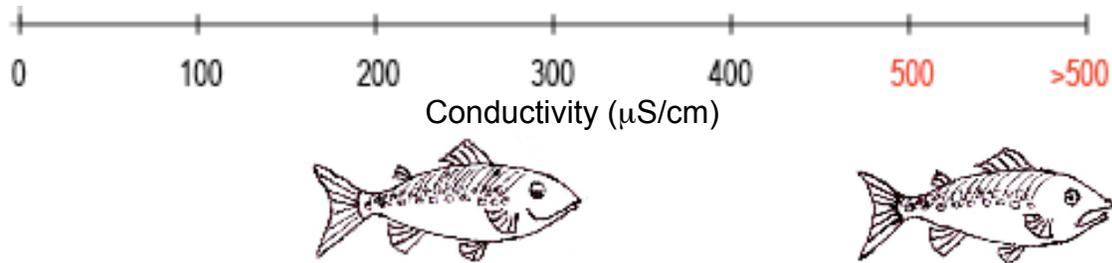
This chapter will explain which measurements you will monitor and why they are important indicators of watershed health. Using the monitoring equipment provided to your local organization by Appalachian Voices, you will measure and record conductivity, pH, temperature, and total dissolved solids (TDS) at sites likely impacted by mining discharge. Unlike other industries, pollutant discharge from coal mines is often affected by rainfall. Therefore, mine runoff can vary depending on daily and seasonal weather conditions, and must be monitored frequently. By monitoring as volunteers, we can ensure that mine operators are providing accurate reports and can identify where violations occur.

#### *CONDUCTIVITY*

Conductivity is a measurement of the ability of water to conduct an electrical current. For our purposes, conductivity will be measured in microsiemens per centimeter (symbolized as:  $\mu\text{S}/\text{cm}$ ). The conductivity of water is affected by the presence of dissolved substances in the water. Conductivity is not a pollutant, but serves as an indicator of the presence of pollutants. Natural Appalachian stream water has a base level of conductivity. This base level remains fairly constant assuming there are no additional pollutants. The EPA has determined that values below 300  $\mu\text{S}/\text{cm}$  protect aquatic life and values above 500  $\mu\text{S}/\text{cm}$  should not be exceeded in the watersheds of Central Appalachia.

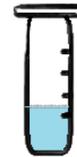
**If you find conductivity measurements that are greater than 500  $\mu\text{S}/\text{cm}$ , the reported value will indicate to Appalachian Voices that a problem area may exist and needs to be further investigated and reported.** Continued monitoring of this area will further establish this baseline and allow you to note changes that occur if factors (such as mine activity and rainfall) lead to new pollutant discharges.

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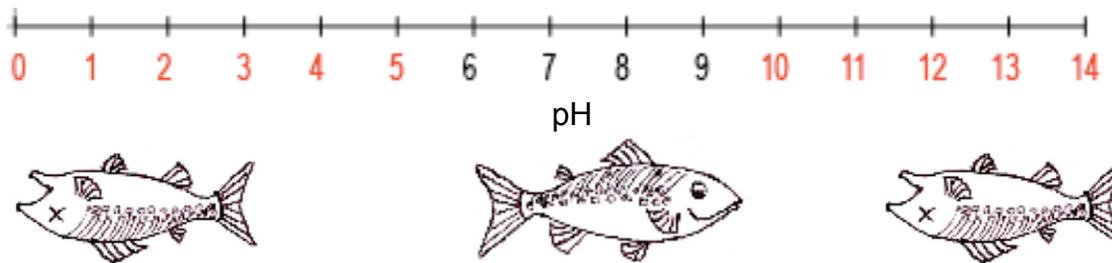
**pH**

pH is the measure of the hydrogen ion activity of the water sample. A pH value of 7 indicates a neutral water sample, while a pH less than 7 indicates an acidic sample and a pH greater than 7 indicates an alkaline (or basic) sample. The EPA criterion for freshwater pH is 6.0 – 9.0. Changes in pH can have many associated negative effects: more acidic water can increase the release of dissolved metals in the water, many substances become more toxic with changes in pH, and many forms of aquatic life are unable to live in water that varies greatly from a neutral pH. Besides affecting aquatic life, acidic water can damage man-made structures such as bridges, pipes and wells, and may contaminate drinking water supplies.



Acid mine drainage or extremely acidic streams are typically a bright, neon orange color: another testing hot spot.

**If you find pH measurements that are greater than 9.0 or less than 6.0, the reported value will indicate to Appalachian Voices that a problem area exists and needs to be further investigated and reported.** pH measurements between 6.0 – 9.0 indicate the baseline pH conditions for that stream. Continued monitoring of this area will further allow you to note changes that may occur as factors such as mine activity and rainfall release new pollutant discharges.



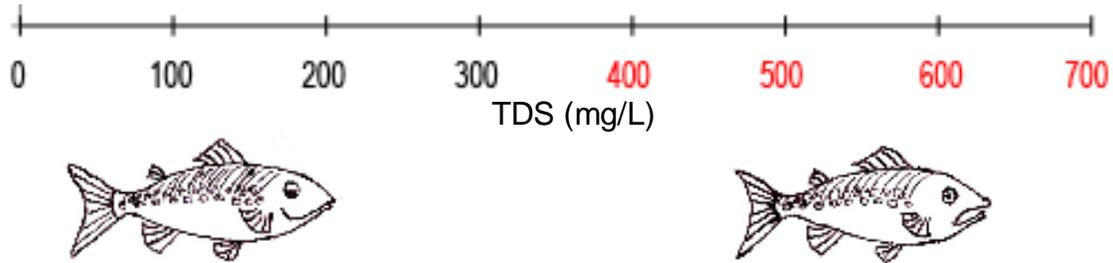
**TEMPERATURE**

Water temperature is an important factor because it directly affects aquatic life and the chemical characteristics of a waterway. Changes in temperature can affect the solubility of solids, including heavy metals, and can make some compounds more toxic. Temperature also affects the solubility of gases, such as dissolved oxygen—an important factor in stream suitability for fish and other aquatic life. You will record temperature in degrees Fahrenheit (F).

### TOTAL DISSOLVED SOLIDS (TDS)

Total dissolved solids (TDS) is the measure of all dissolved substances in a water sample. These substances include anything that can't be filtered through a sieve (what can be filtered is referred to as total suspended solids). Like conductivity, TDS itself is not necessarily a pollutant, but can indicate the presence of pollutants. Too much sediment in the water can smother fish gills or clog aquatic habitats. Watersheds have naturally occurring dissolved solids, but mine runoff can carry toxic sediments and solids. Increases from a normal stream TDS amounts may indicate the addition of pollutants from a nearby mine. You will record TDS in milligrams per liter (mg/L).

The EPA does not currently have guidelines for TDS measurements in Central Appalachia. The monitoring instruments calculate TDS based on the conductivity ratings, so we have created the scale below based on the EPA conductivity standard. **Please monitor your local watersheds for large changes in TDS.**



### HOW COAL MINING DISCHARGE CAN AFFECT MEASUREMENTS

Coal mines can discharge sulfate and bicarbonate salts, which increase both conductivity and TDS. The oxidation of pyrite (which is found in coal and rock waste) produces sulfate. This sulfate breaks down, releases hydrogen ions, and results in acid mine drainage (AMD). AMD can lower the pH of freshwater, potentially making the water too acidic for aquatic life and for human consumption. Common heavy metals from mine discharge include manganese, iron, mercury and lead which are all toxic to aquatic life at high levels.

Donna and Kara testing road-side acid mine drainage from a Kentucky surface mine site using the YSI Pro Plus probe. The pH measured 3.2—a toxic environment for aquatic life and human use.



## TAKING FIELD MEASUREMENTS

Appalachian Voices will provide community organizations throughout Central Appalachia with a YSI Professional Plus (Pro Plus) instrument to monitor water quality. The Pro Plus measures pH, temperature and conductivity, and calculates TDS based on temperature and conductivity. A trainer within the organization should be in charge of the instrument, the manual, and the calibration solutions.



**If you are testing in an area that you do not know well or are unsure of the testing conditions, bring another volunteer.**

Working in teams of two people or more can decrease testing time and make sampling much more safe.

### Equipment List:

- YSI Professional Plus
- 6051030-x cable
- 1001 – pH probe
- Cable spool
- User Manual
- Laminated Quick-Start Guide
- Cleaning kit (grease for o-ring lubrication, brush for cleaning, etc.)
- Small bottle of pH 4 solution for sensor storage
- Carrying case
- 3 bottles of 4.0, 7.0 and 10.0 pH solution for pH calibration
- 1 bottle of 10,000  $\mu\text{S}/\text{cm}$  solution for conductivity calibration
- 3 calibration cylinders



Professional Plus instrument to the left, and cable with probe attached to the right. The end of the cable attaches to the bottom of the Professional Plus body.

**INSTRUCTIONS:**

1. Preparation with the trainer:

When picking up the Pro Plus sampling kit from the trainer in your region, make sure to tell the trainer where you are going to test. Check weather reports to ensure you are not testing during a flood warning, thunderstorm, or other dangerous weather conditions. Ask if the organization has a first aid kit to lend. Bring a pad of paper and pens to record your results and a bottle of tap water to rinse the probe after each testing location.

The trainer can also set up the file and site names on the handheld device before you leave the office, ensuring your data is saved in an easy-to-find file. Volunteer ID cards should be available. Lastly, make sure that the probe has the metal case and grey protective cover on the probe end and the pH solution is removed.

2. Find your sampling location:

Choose a sampling location that is safe for you. If you can get directly down to the water without being on private property or putting yourself in danger, do so. The closer to a discharge site you can sample while remaining downstream of the site, the better. Roads are public right of ways, so there is no danger of trespassing. You can lower the probe into the water, holding it by the cable, from a bridge. Remember to be vigilant of traffic.

3. Prepare the probe:



Grey protective cover for probe, remove before sampling.



Metal protective cover for probe, must remain on probe during sampling.



*The metal cover is very important: it protects the pH bulb from damage while testing or calibrating.*

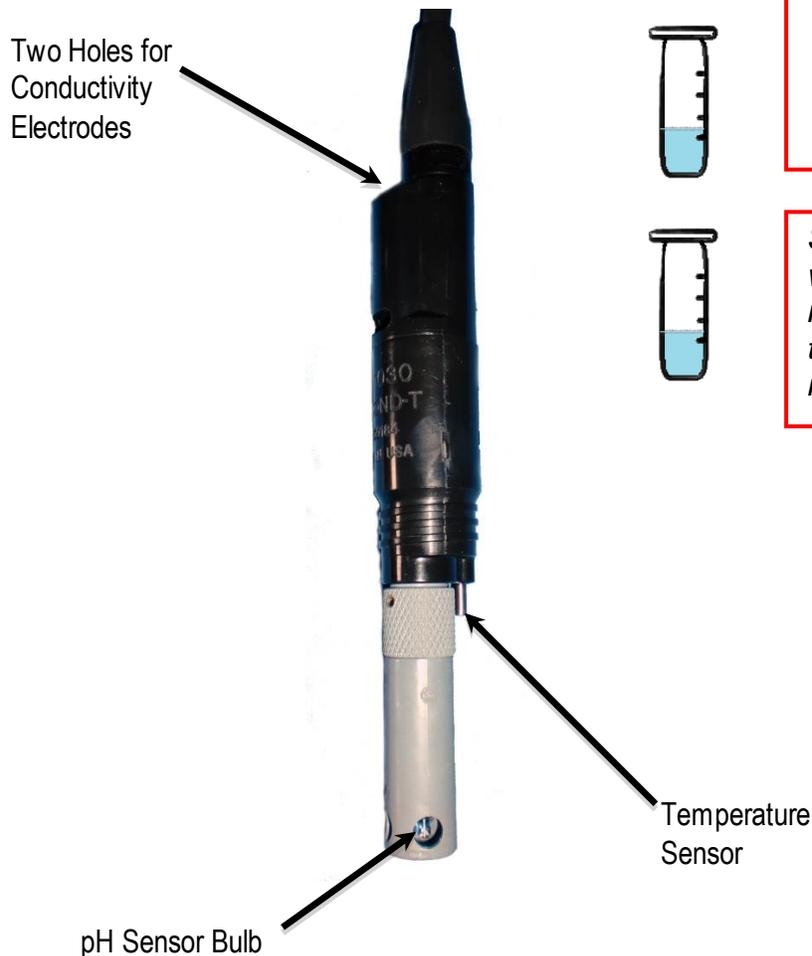
Attach the end of the cable to the bottom of the Professional Plus body. Remove the probe from its grey protective cover. The probe should be moist upon removal. **It is critical to always keep the bulb at the end of the probe moist, otherwise it will stop working! Make sure the cylindrical metal cover is**

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**screwed in place; this protects the fragile pH sensor from breaking.** The grey cover fits over the metal cover when you are not sampling in order to keep the pH bulb from drying out. When you are done taking a measurement, the damp probe should be rinsed with tap water from a bottle you carry with you and placed back into the grey protective cover until you are ready to sample again.

4. Take your measurements:

Turn the device on using the green power button. **With the metal cover in place**, submerge the probe into the water so that it is fully submerged past the two black holes at the top of the probe nearest the cable. Allow the readings to stabilize before recording them or removing the probe from the water. If no conductivity reading is registering on the device, then that usually indicates that the probe is not submerged past the conductivity electrodes.



*Submerge the probe without hitting the stream bottom or kicking up any sediment.*

*Sample in pools of water below a pipe, not in the pipe flow, to ensure the probe is immersed.*

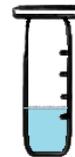


**Note: the probe pictured above is shown *without* the metal cover to better show the sensor locations. Do NOT take measurements without the metal cover in place.**

5. Record your measurements

**Write down your measurements before removing the probe from the water.**

Even if you are recording measurements in the monitoring device, a handwritten copy of your data prevents losing data if the device malfunctions or the batteries die. Also write down the date, time, your sampling location, the weather conditions, and any rainfall that has occurred in the past 24 hours. Ideally you should not sample within 24 hours following rainfall UNLESS you observe unusual water characteristics and need to document them. We have provided sample site report card sheets to help you keep track of your data in Appendix C.



*Rinse the entire probe between sample locations with tap water.*

To log a measurement in the handheld device just press enter while the instrument is displaying the stabilized readings—“Log One Sample” is already highlighted at the top of the screen. You can specify a site name or folder name to save the data under. You can create a new site or folder name through this menu too.

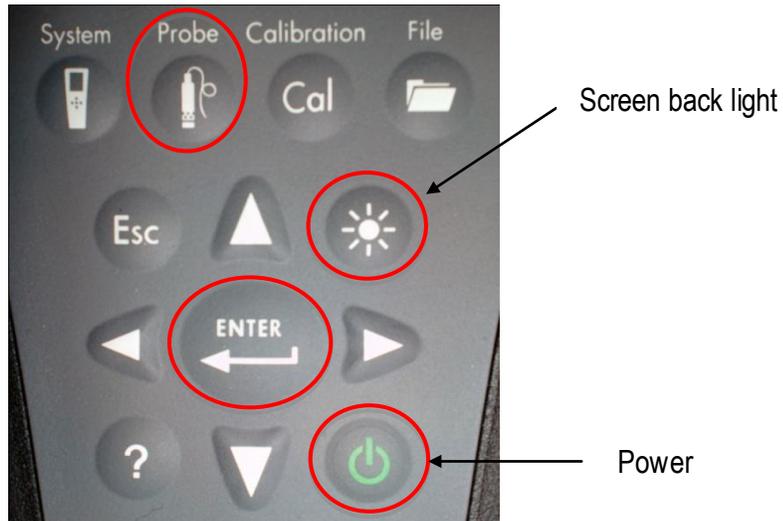
- Temperature should be reported in degrees Fahrenheit (F)
- Conductivity should be reported in microseimens per centimeter (uS/cm)
- TDS should be reported in milligrams per liter (mg/L)
- pH should be reported as pH (not mV pH)

If the instrument is set to display a measurement with the wrong set of units or one of the measurements is not displayed on the screen at all, you can add necessary measurements and change the units displayed by pressing the “Probe” button on the device (marked with a probe icon). This will bring up the sensor menu. Highlight “Display” using the down arrow and push enter. Highlight the measurement that needs to be added or for which the units need to be changed (either “Temperature”, “Conductivity”, or “ISE1” (pH)). To change the units for TDS, first select “Conductivity”, then select “TDS.” Lastly, select the appropriate units to be displayed. Your device should now display all four measurements with correct units on the main screen.



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Appalachian Voices Riverkeeper Team taking field notes



Use these buttons to turn the monitor on, turn on the screen back light, and navigate the on-screen display.

**STORAGE AND CARING FOR THE INSTRUMENT BETWEEN SAMPLING TRIPS**

*Storing the pH Sensor – VERY IMPORTANT!*

**Important:** The pH bulb should never be allowed to dry out. Keep the end of the probe with the pH sensor bulb stored in the small bottle of pH 4.0 buffer solution for long-term storage. Before lending the instrument to a volunteer, remove the end of the probe from the buffer solution and attach the metal cover and grey plastic sleeve over the probe using the instructions on the following page.



Small bottle filled with pH 4 buffer solution for pH bulb storage

## PROBE PREPARATION FOR SAMPLING:

1. Remove the end of the probe from the pH buffer bottle it is stored in by unscrewing the top of the bottle and keeping the top on the probe
  - \*Be careful not to spill the buffer solution, as you will want to place the probe back in the solution when the instrument is returned to you at the end of the day)
  - \*There is an extra bottle cap in one of the pockets of the carrying case you can use to seal the bottle and keep it at home, while the instrument goes out for sampling
2. Slide off the black o-ring and bottle top from the probe
  - \*Be careful not to lose the o-ring from the hole in top of the storage cap
3. **Important: Place the metal probe cover (found in the carrying case) over the probe and screw in place before sending the instrument out with volunteers**
4. Place the yellow, round sponge, soaked in water, in the bottom of the grey cover first – this will maintain a moist environment within the grey cover – then place the grey cover over the probe and metal cover
  - \*The rest of the probe (temperature sensor and conductivity electrodes) requires no special storage conditions.

**Important: Do NOT leave the instrument in hot cars. This will cause the moisture on the probe to evaporate and the pH sensor to fail. If the pH sensor dries out, a new one must be purchased. They are very expensive. Pick up the instrument from the trainer at the beginning of the day and return it by the end of the day so it can be properly stored.**

### *Calibrating the Instrument*

The trainer that is responsible for probe care and storage will handle calibrating the instrument regularly. Conductivity and pH need to be calibrated, but temperature and TDS do not. Accuracy of the temperature reading can be verified with a second thermometer and a water bath. We recommend that the instruments be calibrated at least once a month, more often if possible, and any time you suspect the instrument to be giving inaccurate readings. You can check the last time calibration occurred and which calibrations were done by pressing the “File” button and selecting “View GLP.” Calibration instructions can be found in Appendix C.

### *Cleaning*

The two holes near the top of the sensor (nearest the cable) house the conductivity electrodes. They can be cleaned regularly with the small brush in the

## APPALACHIAN WATER WATCH

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cleaning kit. A mild detergent can be used if deposits have formed on the electrodes. The temperature probe (the small metal rod near the bottom of the sensor) should also be kept free of buildup using the small brush. The pH bulb at the end of the probe can be cleaned with a soft cloth. If necessary, a dishwashing liquid can also be used. Be sure to rinse the bulb with fresh water after cleaning with soap.

## POLAROID JUSTICE

When monitoring, carry a camera with you to document any visual indicators of pollutant discharge. Use a camera provided by your host organization, your own digital camera, or even your cell phone. Photographs provide some of the most compelling documentation of coal mining's effects on Appalachia. If you become aware of a major pollution event, for example, a slurry pond spill, be sure to document the event and contact Appalachian Voices or your host organization. You can report the event to Appalachian Voices anonymously if you wish and we can attempt to find another person to take additional photographs to submit. Be sure to be able to provide as much detailed information on the nature of the event and the location as possible.



If you come across anything that appears out of the ordinary and can be documented by photo or video, take the footage and submit it! These photos can be made public through the Appalachian Water Watch website.

## RECORDING THE DATA

Obtaining water quality measurements is an important initial step in protecting your watersheds, but you must also **make these measurements public!** Appalachian Water Watch provides an easy way for you to make your data publicly available so this data can be used for ensuring safe, clean water in your community. Read on to **Chapter 5: Making It Public—Online Reporting** to learn how to report your water quality data, photos and videos.

# 5 Making It Public: Online Reporting

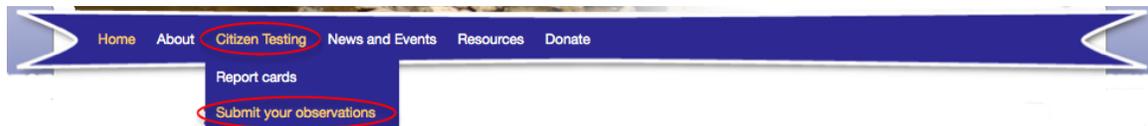
## PART THREE—EXPOSING HOW COAL AFFECTS APPALACHIAN WATERWAYS

FILING AN ONLINE SITE REPORT CARD  
LOGGING THE MONITORING LOCATION  
REPORTING DATA  
UPLOADING PICTURES AND VIDEOS

Using the Appalachian Water Watch website, you can make your data, photos, and videos available to anyone around the world. Publicizing the negative effects of poor coal mining practices is an important step in changing the laws that regulate those practices. Furthermore, data posted on the website alerts Appalachian Voices of where problems occur and provides valuable data to compare to company-supplied DMRs. If you cannot access the internet, please contact the community partner organization to help you upload your findings.

### FILING AN ONLINE SITE REPORT CARD

Before you can submit observations, you must register as a site user. Only volunteers who take the training will be allowed to register on the Appalachian Water Watch site. You should complete registration at the AWW training session. If you do not register at the training or have other problems with registration, contact your trainer or email [aww-admin@appvoices.org](mailto:aww-admin@appvoices.org). Make sure that your trainer has your full name, phone number and email address recorded at the training so there is documentation that you completed the training.



Once you have visited a monitoring location and obtained a set of measurements, you can report them to Appalachian Voices and make them publically available through the Appalachian Water Watch website: [www.appalachianwaterwatch.org](http://www.appalachianwaterwatch.org). To file a report card, go to the “Citizen Testing” tab and click on “Submit Your Observations.” You will then be able to login with your username and the password.

When you have logged in, you will see the “Submit your Observations” page, with fields for each of the reporting parameters, which are:

- ✓ Total Dissolved Solids (TDS)
- ✓ pH
- ✓ Temperature
- ✓ Conductivity
- ✓ Location
- ✓ Date and time
- ✓ Weather, including recent rainfall
- ✓ Any other pertinent observations

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**LOGGING THE MONITORING LOCATION**

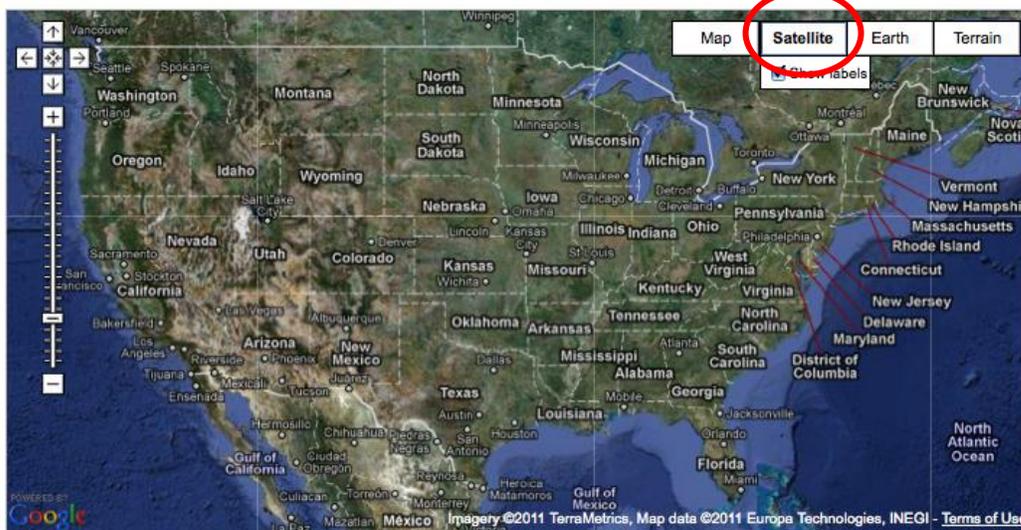
Please enter the latitude and longitude of your monitoring location in decimal form (ex: 37.49058, -82.40394) and not in degrees-minutes-seconds.

1. If you do not know the latitude and longitude, you can find your location by using the interactive map on the webpage. Use the “Map” button to identify nearby landmarks (towns, streets or public buildings) and zoom in on your location using the scale on the left side of the screen or by double clicking your location. Once you have zoomed in sufficiently, you can double click on your location to automatically generate the latitude, longitude and state in the fields above the map. You must type in the county location.
2. If you know the latitude and longitude of your field sampling location from a GPS device you have taken with you, type in the latitude and longitude.
3. If you are submitting measurements for a site that you have already submitted before, you can click on the existing map marker and copy and paste the latitude and longitude into the required fields using your browser’s edit functions.

Remember to fill in the county and state information for your observation as well.

Latitude  County   
Longitude  State

Reset Map Center



**REPORTING DATA**

1. **Water Quality Data:** Submit water quality measurements by typing in the numerical values you have recorded. The measurement units are included outside of the box, so units do not need to be entered.

2. **Date and Time:** The page will automatically fill in the current date and time of your page submission—correct this to reflect the date and time that you took the measurements in the field.
3. **Weather:** Write a brief description of the weather during the time your measurements were taken and also include information on recent rainfall.
4. **Other Observations:** The last box allows you to include any other observations you would like to report. Please indicate any blatant Clean Water Act violations or alarming data values.

When you are finished filling in each field, click on “Log Observation” to finalize your report. To view reports already submitted by you or other volunteers, click on the “Report Cards” link under “Citizen Testing.” All data submitted by you and other volunteers is viewable either through the interactive map, or the data table located below the map on the “Report Cards” page. To open specific reports, either find the location on the map or scroll through the data table.



*To delete or edit any old reports, contact [aww-admin@appvoices.org](mailto:aww-admin@appvoices.org)*

## **UPLOADING PICTURES AND VIDEOS**

To upload a picture, you must first log a site report card using the above steps. Ideally, your photos will be accompanied by water quality monitoring data taken on the same day; however, we know that you may come across the opportunity to photograph important findings without also being able to take water quality measurements on that day. If this is the case, log a new site report card for the appropriate location, day, and time, but leave the water quality measurement fields blank.

Once you have filled in all the appropriate fields in the site report card page, click “Log Observations.” You will then be taken to the next page where you can upload a photo or a video. If you need to upload a photo or video from a particular day after you have already logged your observations for the site report card, you can go back to any of your entries through the “Report Cards” link under the “Citizen Testing” tab. Clicking “View Here” next to your entry will take you back to the page where you can upload a photo or video. You can also upload multiple photos or videos this way. Please upload photos and videos that correspond with the date of testing.

In the “Photographs” or “Videos” entry box, which both appear below your data entry map and measurement values, give your submission a title and brief description in the appropriate boxes. Use the “Browse” button to locate your photo or video on your computer or external device (camera, video camera, etc.), then click “Upload My Photo/Video.” The photos/videos are viewable on the Report Card page.

## **6 Getting the Government to Do Its Job**

STOPPING AND CORRECTING PERMIT VIOLATIONS  
CIVIL ENFORCEMENT  
CRIMINAL PROSECUTION  
CITIZEN SUITS

### **STOPPING AND CORRECTING PERMIT VIOLATIONS**

Violations of NPDES permits can be enforced in three different ways:

- 1) State or federal agency enforcement actions or administrative penalties
- 2) Criminal prosecution
- 3) Citizen lawsuit

Permit enforcement actions can be triggered in a wide variety of circumstances, such as inspection results, review of submitted discharge monitoring reports, or from complaints filed by citizens and current or former employees.

#### *CIVIL ENFORCEMENT*

The state has the primary civil enforcement responsibility when it comes to permit violations. In the case of a violation, agencies decide if and how to pursue enforcement action on at least three factors: the violator's culpability or intention, the extent of environmental harm caused by the violation, and the economic benefit the violator gained through its failure to comply with the law. When a state agency documents a violation, it is supposed to issue a notice of noncompliance (NON) or notice of violation (NOV) to the violator. The most common civil enforcement action is the issuance of a civil penalty. The Clean Water Act charges a penalty of up to \$32,500 per violation per day. In addition to imposing penalties, an enforcement authority may also:

- Require immediate actions to correct the violation
- Require documentation of future compliance
- Order facility operators to cease operations until problems are fully addressed
- Revoke the discharger's permit
- Refuse to renew a permit

#### *CRIMINAL PROSECUTION*

The CWA and state water quality laws also contain criminal penalties for certain violations. Criminal prosecution is reserved for severe violations, but is becoming more common throughout the country. Criminal violations are prosecuted by

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United States Attorneys, State Attorneys General, or local District Attorneys in the county in which the violation occurred.

In determining whether to prosecute criminally, most investigators and prosecutors determine if the violation was committed intentionally (a “knowing” violation) or negligently, and whether the violation resulted in damage to the environment. However, a violation need not be intentional to be subject to criminal prosecution, nor must the extent of environmental damage necessarily be proven. The most common criminal cases involve discharging without permits, bypassing pollution control equipment, or falsifying discharge monitoring reports submitted to the state or the EPA.

Corporations as well as individuals may be criminally prosecuted. Criminal penalties may include substantial monetary fines, as well as significant terms of imprisonment for individuals found guilty.

***CITIZEN LAWSUIT***

The Clean Water Act grants private citizens the right to take independent enforcement actions for permit violations. Any person or entity that is or could be adversely affected by a permit violation may bring suit against the causing entity.

In 2010, Appalachian Voices investigated the Discharge Monitoring Reports submitted by several coal mining companies in Eastern Kentucky. After months of intense analysis, the Watauga Riverkeeper team (part of Appalachian Voices) found that the coal companies had been copying and pasting DMR water quality data between reports. This continued for several quarters over a 2 year period, amounting to over 20,000 violations of the Clean Water Act. Appalachian Voices partnered with Kentuckians for the Commonwealth, Kentucky Riverkeeper, The Waterkeeper Alliance, and PACE lawyers to bring a citizen lawsuit against the coal companies’ violations of the Clean Water Act. This coalition of organizations represented their members who live in the watersheds that might be impacted from the false DMRs. The legal case has not concluded yet; however, the coalition of organizations has successfully filed the citizen lawsuit in a Kentucky court and is suing for remediation to the impacted watersheds by the coal companies and increased oversight by the Kentucky Division of Water.

Major Clean Water Act violations can be brought to court by a citizen through a representative organization so long as he or she is a member of that organization. Civil actions like the case brought by Appalachian Voices and its partners that can restore the integrity of our public waterways and communities in spite of minor or severe coal mining pollution.

# **ACRONYMS**

AMD – Acid Mine Drainage

CSMO – Coal Surface Mining Operation

CWA – Clean Water Act

DEP – Department of Environmental Protection (Kentucky)

DEQ – Department of Environmental Quality (Virginia)

DMLR – Division of Mine Land Reclamation (Virginia)

DMME – Department of Mines, Minerals and Energy (Virginia)

DMR – Discharge Monitoring Report

DMRE – Division of Mine Reclamation and Enforcement, sometimes still referred to as Division of Surface Mine Reclamation and Enforcement (DSMRE) (Kentucky)

DNR – Department of Natural Resources (Kentucky)

DOW – Division of Water, within the Department of Environmental Protection (Kentucky)

EPA – Environmental Protection Agency (Federal)

KPDES – Kentucky Pollutant Discharge Elimination System

NPDES – National Pollutant Discharge Elimination System

NOI – Notice of Intent

NON – Notice of Noncompliance

NOV – Notice of Violation

SMCRA – Surface Mining Control and Reclamation Act

TDS – Total Dissolved Solids

TSS – Total Suspended Solids

VPDES – Virginia Pollutant Discharge Elimination System

# **GLOSSARY**

**Acid Mine Drainage:** Discharge with an acidic pH value from a coal mine. The discharge is usually acidic from the presence of sulfate salts.

**Conductivity:** The measurement of the ability of water to conduct electricity. The ability to conduct electricity indicates the presence of certain substances in a water sample, such as salts or heavy metals.

**Discharge/Point Source Discharge:** A discrete, identifiable source of wastewater released into public waterways. Usually in the case of coal mines, this discharge is released through a pipe referred to as an “outfall.”

**Heavy Metals:** Chemical elements that are classified as metals and have a high density. These metals are often toxic, such as lead or mercury.

**Navigable waters:** A legal definition to determine control over a waterway. The definition has been the subject of frequent legal debate. Generally, lakes, rivers, and small streams are considered navigable waters. These waters are considered public property and are under the jurisdiction of the federal government.

**Outfall:** The pipe from a coal mine sediment pond or other large water holding site, that releases wastewater from the pond into the public waterway (typically downhill of the pond).

**pH:** A measurement indicating the acidity or alkalinity of a water sample or other liquid. It is the concentration of hydrogen ions.

**Sediment Pond:** A pond used to hold wastewater and allow sediment to settle out of the water before the water is discharged downstream. In the case of coal mines, these ponds are usually constructed by building earthen dams within an existing stream leaving the coal mine.

**Slurry Pond:** A natural or artificial pond used to allow solids, such as coal dust, to settle out of water used in the coal washing process before the water is discharged into public waterways. Ponds usually also contain chemicals used in the coal washing process.

**Total Dissolved Solids:** The total measurement of all organic and inorganic substances dissolved in water. Unlike sediments or suspended solids, dissolved solids do not settle out of a water sample.

**Watershed:** An area of land where all surface and underground water drains to the same place.

# **APPENDIX A**

## **KENTUCKY DMR REVIEW TOOLS**

KENTUCKY OPEN RECORDS FORMS

EXAMPLE DMR

EXAMPLE GENERAL PERMIT

To request DMRs and NPDES permits, please refer to the below table for contact information and which forms to use. A general permit can be identified by the NPDES permit number: it will begin "KYG." An individual permit will not include the "G." You can also review DMRs in the agency office free of charge.

**All of the following contact information and request forms can be found and downloaded at: <http://eec.ky.gov/Pages/OpenRecords.aspx>**

<i>Document</i>	<i>KY Agency Receiving the Request:</i>	<i>Form to Use:</i>	<i>Mail Request to:</i>	<i>Direct Request to:</i>
Discharge Monitoring Report	Division of Mine Reclamation Enforcement	Kentucky Open Records Act (DMRE)	DMRE #2 Hudson Hollow Frankfort, KY 40601	Davie Ransdell (rms@ky.gov, 502-565-2320) OR Shawn Fritz (shawn.fritz@ky.gov, 502-564-2340)
Coal Mine General Permit	Division of Mine Reclamation Enforcement	Kentucky Open Records Act (DMRE)	DMRE #2 Hudson Hollow Frankfort, KY 40601	Davie Ransdell (rms@ky.gov, 502-565-2320) OR Shawn Fritz (shawn.fritz@ky.gov, 502-564-2340)
Coal Mine Individual Permit	Division of Water	Kentucky Open Records Act (DOW)	DOW* 200 Fair Oaks Ln., 4 <sup>th</sup> Floor Frankfort, KY 40601	Morgan Elliston dowopenrecords@ky.gov, 502-564-3410

\*It may be worth contacting the DMRE for individual permits and DMRs from the permits as well.

You can also review permits and DMRs in person at the regional offices:

*Middlesboro*

1804 East Cumberland Ave.  
Middlesboro, KY  
40965-1229  
Phone: (606) 248-6166

*Madisonville*

625 Hospital Dr.  
Madisonville, KY  
42431-1683  
Phone: (207) 824-7536

*Pikeville*

121 Mays Branch Rd.  
Pikeville, KY  
41501-9331  
Phone: (606) 433-7726

London

State Office Building, 3<sup>rd</sup> Floor  
London, KY 40741-9011  
Phone: (606) 330-2090

Prestonsburg

3140 South Lake Dr., Suite 6  
Prestonsburg, KY 41653-1410  
Phone: (606) 889-1746

## COMMONWEALTH OF KENTUCKY REQUEST TO INSPECT PUBLIC RECORDS

DATE:	
NAME:	
COMPANY NAME:	
ADDRESS:	
TELEPHONE NO.:	Signature of Custodian
SIGNATURE:	[REDACTED]

**PROCEDURES:**

1. Complete all information requested on form.
2. Is requested information:
  - a. From a database or geographic information system? YES  NO
  - b. For Commercial use? YES  NO
3. If the answer to question 2b is YES, the commercial purpose for which the requested information shall be used is:
4. All files **MUST** be returned to file room personnel by 4:15 PM on day of inspection.
5. Copying charges are as follows:
  - a. 10 cents per page
  - b. MAPS: Engineering Bond paper - \$3.00/ Mylar - \$10.00/ Color maps-\$10.00
  - c. TAPES: Audio cassettes - \$2.00 (60 minutes)/ VCR Tapes - \$3.00 (VHS-120)/CD's - \$2.00/DVD - \$5.00
6. A US Postal mailing charge will be added according to weight to any copies that are to be mailed
7. Checks and money orders must be written to **KENTUCKY STATE TREASURER**.  
Payment must be received prior to release of any copied material.
8. Methods For Sending Request:
  - Mail: Department for Natural Resources – Division of Mine Permits, ATTN: Records Management Section, 2 Hudson Hollow, Frankfort KY 40601-4311
  - FAX: (502) 564-6764, ATTN: Records Management Section
  - E-Mail: [rms@ky.gov](mailto:rms@ky.gov)

**REQUEST TO INSPECT THE FOLLOWING FILES PERTAINING TO THE COMPANY NAME AND PERMIT NUMBER(S) LISTED BELOW:**

COMPANY NAME	PERMIT NO.	INFORMATION DESCRIPTION/COMMENTS

**DISPOSITION OF REQUEST:**

For Department of Natural Resources – Division of Mine Permits –Administrative Support Section Use Only

Date Completed:			
Disposition: <input type="checkbox"/> Viewed;	<input type="checkbox"/> Copied -	pages	maps
<input type="checkbox"/> Mailed – Date:	<input type="checkbox"/> Picked Up – Date:	audio tapes	video tapes
Total Amount:	Payment: Cash <input type="checkbox"/>	Check <input type="checkbox"/> #	Money Order <input type="checkbox"/> #

COMMONWEALTH OF KENTUCKY  
REQUEST TO INSPECT PUBLIC RECORDS  
RE: KRS CH.61

REQUEST

TO: \_\_\_\_\_ DATE: \_\_\_\_\_  
Name of State Agency

Public files in Regional Offices are not necessarily complete. Complete public files may be examined at the appropriate central office in Frankfort, Ky.

1. I request to inspect the following document(s): \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. Number of copies of each document requested @ 10¢ a page: \_\_\_\_\_

3. Enclosed \$ \_\_\_\_\_ Check  Money Order  Cash

4. \_\_\_\_\_  
Signature

\_\_\_\_\_  
Company

\_\_\_\_\_  
Address Phone

5. Is requested information from a database or geographic information system: Yes  No

6. For commercial use: Yes  No

7. If the answer to questions 5 & 6 is yes, the commercial purpose for which the requested information shall be used to: \_\_\_\_\_  
\_\_\_\_\_

I hereby certify that the information set forth in item 7 is true and correct to the best of my knowledge

\_\_\_\_\_  
Signature

DISPOSITION

8. The following disposition was made of the above request: \_\_\_\_\_  
\_\_\_\_\_

9. \_\_\_\_\_  
Signature of Custodian Amount Received

\_\_\_\_\_  
Agency Date

## EXAMPLE DMR FROM A KENTUCKY COAL MINE

The following two pages are an actual DMR submitted to the Kentucky DMRE by Frasure Creek Mining in 2011. It is an example of what you will receive if you request DMRs. The electronic format for the DMRs was instituted in 2010. Prior to 2010, handwritten forms were used.

The DMR contains useful data including:

- Mine name
- Mine company
- Permit numbers
- Pond number
- Outfall number
- Date of submission
- Measured parameters (white boxes)
- Parameter limits (grey boxes)

We have highlighted the measured parameters that exceed the stated permit limit on this example DMR. Those measurements are considered violations of the permit and must be addressed by the mining company. The measurements that exceed the stated limits include: Total Suspended Solids, Total Recoverable Iron, Total Recoverable Manganese, and pH. Measurements are given for both the maximum measurement recorded during the month and the average value over the course of the month. Exceedances can occur in the monthly average, daily maximum, or both. In the case of pH measurements, values must fall between 6.0 SU and 9.0 SU—any measurement above *or* below that range is considered a violation.

When you review DMRs, you should look for instances where the measurements exceed the stated limit. You can also check DMRs for missing data. Sometimes the outfall will be listed as “No Flow” with a “Y” for “yes” in the adjacent box, which indicates no water was flowing at the time of sampling, so no measurements were taken. This does not indicate a violation. Lastly, you can compare multiple DMRs from the same pond and outfall for repeated data. In some cases, Appalachian Voices has found instances where a mine company has reported repeated measurements from one yearly quarter to the next: for example, data from January 2010 has been identical to the data submitted for the first month of the following quarter, April 2010.

## Active Mining Areas - Existing Sources

Permittee Name	Frasure Creek Mining, LLC 4978 TEAYS VALLEY ROAD	KPDDES Permit No DNR Permit No	KYG040569 860-0469	KPDDES Outfall No DNR Pond No	147 Dam 8
Mailing Address	SCOTT DEPOT, WV 25560	No Discharge Report		Latitude	37 25' 46"
Facility Name	Frasure Creek Mining			Longitude	83 05' 02"
Receiving Water	KY				

Monitoring Period	Year	Month	Day
	2011	1	1

to	Year	Month	Day
	2011	1	31

Parameter	Quantity or Loading			Quality or Concentration			Units	No. Ex	Frequency of Analysis	Sample Type
	Average	Maximum	Report	Minimum	Average	Maximum				
Flow (MGD)	Sample Measurement	0.03600	0.03600	MGD	*****	*****	*****	0	2	Instantaneous
	Permit Requirement	Report	Report	MGD	*****	*****	*****		2/Month	Instantaneous
Total Suspended Solids (mg/l)	Sample Measurement	*****	*****	*****	82.2	332	mg/l	2	5	Grab
	Permit Requirement	*****	*****	*****	*****	*****	*****			
Total Recoverable Iron (mg/l)	Sample Measurement	*****	*****	*****	35	70	mg/l		2/Month	Grab
	Permit Requirement	*****	*****	*****	*****	*****	*****			
Total Recoverable Manganese (mg/l)	Sample Measurement	*****	*****	*****	10.28	21.89	mg/l	2	5	Grab
	Permit Requirement	*****	*****	*****	3.5	4.0	mg/l		2/Month	Grab
	Sample Measurement	*****	*****	*****	18.46	27.57	mg/l	2	5	Grab
	Permit Requirement	*****	*****	*****	*****	*****	*****			
	Sample Measurement	*****	*****	*****	2.0	4.0	mg/l		2/Month	Grab
	Permit Requirement	*****	*****	*****	*****	*****	*****			

Conductivity (µS/cm)	Sample Measurement Permit Requirement	*****	*****	*****	1852	1852	umho/cm	0	1	Grab	
Acidity (as mg/l CaCO3)	Sample Measurement Permit Requirement	*****	*****	*****	Report	Report	umho/cm		1/Month	Grab	
	Sample Measurement Permit Requirement	*****	*****	*****	4	7	mg/l	0	2	Grab	
Alkalinity (as mg/l CaCO3)	Sample Measurement Permit Requirement	*****	*****	*****	Report	Report	mg/l		1/Month	Grab	
	Sample Measurement Permit Requirement	*****	*****	*****	101	168	mg/l	0	2	Grab	
pH (standard units)	Sample Measurement Permit Requirement	*****	*****	*****	Report	Report	mg/l		1/Month	Grab	
	Sample Measurement Permit Requirement	*****	*****	*****	9.13	9.57	Standard Units	1	2	Grab	
Oil & Grease (mg/l)	Sample Measurement Permit Requirement	*****	*****	*****	6.00	9.00	Standard Units		2/Month	Grab	
	Sample Measurement Permit Requirement	*****	*****	*****	N/A	N/A	mg/l	N/A	N/A	N/A	
Name/Title	Principal										
Kenneth Woodring, President	I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and based on my inquiry of those individuals immediately responsible for obtaining the information I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.										
Typed or Printed	Signature of Principal										
Comment and Explanation of Any Violations:	On the Oil and Grease section, the permittee has a BMP plan in place.										
	Telephone Number							Date			
	(304) 204-1455										
	Executive Officer or Authorize Agent							Area Code Number			

## EXAMPLE GENERAL PERMIT FROM A KENTUCKY COAL MINE

The following pages are some of the most useful excerpts from a Kentucky general permit. Page A1 has the effluent limitations and monitoring requirements for discharges of “acid or ferruginous mine drainage” from “existing source” or “new discharger” coal preparation plants and coal preparation plant associated areas. Page A2 has the effluent limitations and monitoring requirements for discharges of “acid or ferruginous mine drainage” from “new source” coal preparation plants and plant associated areas. You will notice that the limits and requirements on both sheets are the same. The only difference is the description of the source of the discharge. This general permit is what you will see for most coal mines in Kentucky.

The basic elements of a Kentucky general permit:

- **Fact Sheet:** Contains an overview of the permit requirements, as well as justifications for chosen limits and methodologies.
- **Cover Sheet:** Includes the discharger’s name and address, the receiving waterway name, and the dates during which the permit is effective.
- **Effluent Limitations and Monitoring Requirements:** Includes which parameters must be monitored, limits for some parameters, and requirements for monitoring frequency. There are many specific sets of limitations and requirements for different categories of discharge, which are described at the top of each sheet.
- **Other Requirements:** Includes additional information such as the procedure for reclassifying discharge type, alternative effluent standards, special monitoring during large rain events, and ecological assessments requirements.
- **Schedule of Compliance:** States that the permittee must achieve compliance with the permit upon issuance, and exceptions to this requirement.
- **Monitoring and Reporting:** Contains specifics for monitoring locations, documentation of those locations, when monitoring should occur, and when reporting must occur.
- **Definitions:** Defines terms used throughout the report, including definitions of different types of discharge, different coal mine areas and facilities, and different precipitation events.
- **Additional Requirements:** Defines additional information that must be provided by permittee and additional permitting that may be necessary.
- **Operations Automatically Excluded from General Permit Coverage:** Lists what activities cannot be covered under the general permit.
- **Best Management Practices:** Explains the permittee’s plan to prevent or minimize pollutant discharge.

**A1. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

Description of Discharge - Discharges of "acid or ferruginous mine drainage" from "existing source" or "new discharger" coal preparation plants and coal preparation plant associated areas

During the period beginning on the effective date of this permit and lasting through either Phase I bond release or the term of this permit, the permittee is authorized to discharge from all point source discharges as described in the SCMR permit

Such discharges shall be limited and monitored by the permittee as specified below:

<u>EFFLUENT CHARACTERISTICS</u>	<u>DISCHARGE LIMITATIONS</u>			<u>MONITORING REQUIREMENTS</u>		
	<u>(lbs/day)</u>		<u>Other Units (Specify)</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>	
	<u>Monthly Avg.</u>	<u>Daily Max.</u>	<u>Monthly Avg.</u>	<u>Daily Max.</u>		
Flow (MGD)	Report	Report	N/A	N/A	2/Month	Instantaneous
Total Suspended Solids (mg/l)	N/A	N/A	35	70	2/Month	Grab
Total Recoverable Iron (mg/l)	N/A	N/A	3.5	4.0	2/Month	Grab
Total Recoverable Manganese (mg/l)	N/A	N/A	2.0	4.0	2/Month	Grab
Oil & Grease <sup>1</sup> (mg/l)	N/A	N/A	10	15	1/Month	Grab
Conductivity (µS/cm)	N/A	N/A	Report	Report	1/Month	Grab
Acidity <sup>2</sup> (as mg/l CaCO <sub>3</sub> )	N/A	N/A	Report	Report	1/Month	Grab
Alkalinity <sup>2</sup> (as mg/l CaCO <sub>3</sub> )	N/A	N/A	Report	Report	1/Month	Grab

<sup>1</sup>The limits and monitoring for Oil & Grease do not apply if the permittee has developed and implemented a "Best Management Practices" (BMP) plan as required by this permit. The BMP plan shall include a specific section that addresses the handling, storage and disposal of petroleum products and the maintenance procedures for mining equipment.

<sup>2</sup>At all times acidity shall be less than alkalinity.

The pH of the effluent shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored 2/Month by grab sample. These types of discharges shall not cause the pH of the receiving stream to fluctuate more than 1.0 standard unit over a period of 24 hours.

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

**A2. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**

Description of Discharge - Discharges of "acid or ferruginous mine drainage" from "new source" coal preparation plants and coal preparation plant associated areas

During the period beginning on the effective date of this permit and lasting through either Phase I bond release or the term of this permit, the permittee is authorized to discharge from all point source discharges as described in the SCMRA permit

Such discharges shall be limited and monitored by the permittee as specified below:

EFFLUENT CHARACTERISTICS	DISCHARGE LIMITATIONS			MONITORING REQUIREMENTS		
	(lbs/day)		Other Units (Specify)	Measurement	Sample Type	
	Monthly Avg.	Daily Max.	Monthly Avg.			
Flow (MGD)	Report	Report	N/A	2/Month	Instantaneous	
Total Suspended Solids (mg/l)	N/A	N/A	35	2/Month	Grab	
Total Recoverable Iron (mg/l)	N/A	N/A	3.0	2/Month	Grab	
Total Recoverable Manganese (mg/l)	N/A	N/A	2.0	2/Month	Grab	
Oil & Grease <sup>1</sup> (mg/l)	N/A	N/A	10	1/Month	Grab	
Conductivity (µS/cm)	N/A	N/A	Report	1/Month	Grab	
Acidity <sup>2</sup> (as mg/l CaCO <sub>3</sub> )	N/A	N/A	Report	1/Month	Grab	
Alkalinity <sup>2</sup> (as mg/l CaCO <sub>3</sub> )	N/A	N/A	Report	1/Month	Grab	

<sup>1</sup>The limits and monitoring for Oil & Grease do not apply if the permittee has developed and implemented a "Best Management Practices" (BMP) plan as required by this permit. The BMP plan shall include a specific section that addresses the handling, storage and disposal of petroleum products and the maintenance procedures for mining equipment.

<sup>2</sup>At all times acidity shall be less than alkalinity.

The pH of the effluent shall not be less than 6.0 standard units or greater than 9.0 standard units and shall be monitored 2/Month by grab sample. These types of discharges shall not cause the pH of the receiving stream to fluctuate more than 1.0 standard unit over a period of 24 hours.

There shall be no discharge of floating solids or visible foam or sheen in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location: nearest accessible point prior to discharge to or mixing with the receiving waters or wastestreams from other outfalls.

The abbreviation N/A means Not Applicable.

# **APPENDIX B**

## **VIRGINIA DMR REVIEW TOOLS**

VIRGINIA FREEDOM OF INFORMATION ACT FORM

EXAMPLE DMR

EXAMPLE INDIVIDUAL PERMIT

To request DMRs and NPDES permits, please refer to the below table for contact information. The Virginia Freedom of Information Act can only be used by Virginia residents; however, non-residents can usually obtain data through a simple written emailed request. You can also review DMRs in the DMLR office free of charge.

<i>Document</i>	<i>VA Agency Receiving the Request:</i>	<i>Form to Use:</i>	<i>Mail Request to:</i>	<i>Extra Contact Info:</i>
Discharge Monitoring Report	Division of Mine Land Reclamation	VA Freedom of Information Act (form included)	VA DMLR 3405 Mountain Empire Rd Big Stone Gap, VA 24219-4634	Ph: 276-523-8100 Email: <a href="mailto:dmlrinfo@dmme.virginia.gov">dmlrinfo@dmme.virginia.gov</a>
Coal Mine Individual Permit	Division of Mine Reclamation	VA Freedom of Information Act (form included)	VA DMLR 3405 Mountain Empire Rd Big Stone Gap, VA 24219-4634	Ph: 276-523-8100 Email: <a href="mailto:dmlrinfo@dmme.virginia.gov">dmlrinfo@dmme.virginia.gov</a>



## Request for Records Under Virginia Freedom of Information Act

Please print clearly in ink or type the information needed to submit a request for records under the Virginia Freedom of Information Act (FOIA).

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Organization: \_\_\_\_\_

Please describe, as specifically as possible the type of information you are requesting.

Company and permit, mine index, well or file number for which information is requested:

N/A

For what specific county or site is the information needed?

If applicable, I understand that the requested permit application is currently under review and has not yet been approved.

Please return to:

Signature: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

FOR OFFICE USE ONLY  
COMPLETED BY:

Date: \_\_\_\_\_

## EXAMPLE DMR DATA FROM A VIRGINIA COAL MINE

In order to review DMRs, you need three pieces of information:

- DMR Data
- NPDES Permit Fact Sheets
- Effluent Limitations Sheets

There are examples of each of these sheets on the pages following this explanation.

The included DMR data spreadsheet is a compilation of 3 years of data submitted by Paramount Coal Company for the South Fork Surface Mine. The “Company ID” field indicates the outfall number is “001.” The pond name or number is assigned by the coal company. The outfall number can also be found on the Fact Sheet. The data is submitted to the DMLR each quarter and compiled into spreadsheets. You can view this data by either requesting that the DMLR send an Excel spreadsheet of DMR data from the specific mine you are interested in, or you can view this data on the customer computer in the DMLR office. The Coal Surface Mining Operation (CSMO) permit number, found on the large signs outside coal mine entrance roads, is the best number to use when requesting information from the DMLR.

The spreadsheet may look a little daunting at first, but is actually fairly straightforward. The columns of information you will want to review are those parameters that are required under the NPDES permit. These include:

- Flow
- Iron
- Tss (not “tSs”)
- pH
- Manganese
- Tds

The DMR data spreadsheet does not include permit limits, as these can vary depending on the type of pond and the watershed in which it is located. This is why you need the Fact Sheet and the Effluent Limitations sheets.

We have included the two most useful pages from the Fact Sheet for the South Fork Surface Mine. Page 1 includes the company name, mine name, mine location, receiving waterways, NPDES number and CSMO permit number. Page 3 contains a section title “III. NPDES Discharge Sites.” This list contains each of the outfalls for sediment ponds included under the NPDES permit for this mine. Under this section, the following useful information is included:

- Outfall Number
- Facility (indicates the pond name)
- Location
- Stream Code and Name (indicates the receiving waterway)

**APPALACHIAN WATER WATCH**  
*Busting Big Coal*

- Limit (provides the reference code with which to look up the specific limits and requirements on the Effluent Limits sheets)
- Stat (indicates the status of the pond: A = active, ND = no discharge, NC = not constructed)

Any pond that has an active status should have a sheet of DMR data. To determine the reporting requirements and limits for that particular pond, look at the limit code on the Fact Sheet. Then reference the Effluent Limitations sheets to find the requirements and limits that correspond to the code and therefore that particular discharge.

There are two different Effluent Limitations sheets. They can be differentiated by two characteristics:

- The fourth column contains the reference code found on the Fact Sheets
  - The “21” indicates effluent limits for an unimpaired waterway
  - The “30” indicates effluent limits for an impaired waterway
- The sheet for impaired waterways includes a column for TDS, which must be reported

Most outfalls will have either 21-13 or 30-13 as the limit code. These codes apply to new, acidic ponds on mines that have not yet been reclaimed. The “X” indicates which measurements and limits *are* required. The last column contains the “Minimum Precipitation for Exemption.” This column indicates that when at least 0.2 inches or more rain have fallen, the mine is not required to report either iron or manganese. If you see violations for an entry that includes precipitation of at least 0.2 inches, ignore these violations, as rain can cause many different effects on pH, TDS and TSS.

When you review DMRs, you should look for instances where the measurements exceed the limits stated on the Effluent Limitations sheets. In general, these limits are usually the following:

- pH less than 6 or pH greater than 9
- monthly average iron greater than 3.0
- daily iron greater than 6.0
- monthly average manganese greater than 2.0
- daily manganese greater than 4.0
- TSS monthly average greater than 35
- daily TSS greater than 70

If not indicated, measurements are usually in milligrams per liter (mg/L). You will have to calculate the monthly average values yourself, as they are not calculated on the spreadsheets.





DMLR.TMBR.08

DIVISION OF MINED LAND RECLAMATION  
-----  
MONITORING POINT DETAIL SUPPLEMENT  
RECORD 0002132 / PERMIT 1102008

PAGE 3  
06/02/11

III. NPDES DISCHARGE SITES  
Required

MPID	Outfall Number	Facility	State Plane N	State Plane E	Stream Code	Stream Name	Quad	Sec	Added	Deleted	Limit	Stat
0006925	001	POND 1	3586465.0000	10278895.0000	158	SOUTH FORK PO	FLAT GAP	*	04/11/08	*****	21-13	A
0006926	002	POND 2	3584425.0000	10279013.0000	158	SOUTH FORK PO	FLAT GAP	*	04/11/08	*****	21-13	ND
0006927	003	POND 3	3584067.0000	10278928.0000	158	SOUTH FORK PO	FLAT GAP	*	04/11/08	*****	21-13	NC

IV. GROUNDWATER MONITORING SITES  
Required

MPID	Number	Facility	State Plane N	State Plane E	Elev	Type	Quad	Sec	Added	Deleted	Stat
0006922	SF-1	CLINT.	3586871.0000	10275980.0000	1850	SPRING	FLAT GAP	*	04/11/08	06/09/10	A
0006923	UD-1	FILL1	3586778.0000	10277791.0000	1660	UNDERDRAIN	FLAT GAP	*	04/11/08	*****	A
0006924	UD-2	FILL2	3586322.0000	10277943.0000	1690	UNDERDRAIN	DUTY	*	04/11/08	*****	A
0007318	GW-1	SOUTH FORK	3586434.0000	10279069.0000	1580	WELL	FLAT GAP	*	12/04/09	*****	A

V. IN-STREAM MONITORING SITES  
Required

MPID	Outfall Number	Facility	State Plane N	State Plane E	Stream Code	Stream Name	Quad	Sec	Added	Deleted	Stat
0006928	SF-6	UPSTREAM	3583262.0000	10278725.0000	158	SOUTH FORK PO	FLAT GAP	*	04/11/08	*****	A
0006929	SF-10	DOWNSTREAM	3589348.0000	10279489.0000	158	SOUTH FORK PO	FLAT GAP	*	04/11/08	*****	A
0006930	SF-2	DOWNSTREAM	3586474.0000	10279029.0000	158	SOUTH FORK PO	FLAT GAP	*	04/11/08	*****	A
0006931	SF-3	DOWNSTREAM	3586297.0000	10279299.0000	158	SOUTH FORK PO	FLAT GAP	*	04/11/08	*****	A

VI. RAINFALL MONITORING SITES  
Required

MPID	Facility	State Plane N	State Plane E	Added	Deleted	Stat
0006921	POND 1	3586465.0000	10278895.0000	04/11/08	*****	A

**Effluent Limitations/Drainage Area Categories/Minimum Precipitation Events**
**Permit Number:**

Outfall Numbers	Source	Description/Drainage Area Category (DAC)	Effluent Limit	Flow N/L	pH 6-9	Fe Avg 3.0 Max 6.0	Fe Avg 3.5 Max 7.0	Mn Avg 2.0 Max 4.0	TSS Avg 35 Max 70	SS Max 0.5 ML/L	Minimum Precipitation For Exemption
	Existing/Acid	Prep Plant 1	21-05	X	X		X	X	X		0.2 Inches
	Existing/Acid	Pre-Reclamation 1	21-05	X	X		X	X	X		0.2 Inches
	Existing/Acid	Mine Drainage 3	21-01	X	X		X	X	X		Not Applicable
	Existing/Alkaline	Prep Plant 1	21-06	X	X		X		X		0.2 Inches
	Existing/Alkaline	Pre-Reclamation 1	21-06	X	X		X		X		0.2 Inches
	Existing/Alkaline	Mine Drainage 3	21-03	X	X		X		X		Not Applicable
	New/Acid	Prep Plant 1	21-13	X	X	X		X	X		0.2 Inches
	New/Acid	Pre-Reclamation 1	21-13	X	X	X		X	X		0.2 Inches
	New/Acid	Mine Drainage 3	21-09	X	X	X		X	X		Not Applicable
	New/Acid	Refuse Area 4	21-21	X	X	X		X	X		> 1 Yr/24 Hr Event
	New/Acid	Commingled 2	21-25	X	X	X		X	X		> 10 Yr/24 Hr Event
	New/Acid	Controlled 2	21-23	X	X	X		X	X		> 10 Yr/24 Hr Event
	New/Alkaline	Prep Plant 1	21-14	X	X	X			X		0.2 Inches
	New/Alkaline	Pre-Reclamation 1	21-14	X	X	X			X		0.2 Inches
	New/Alkaline	Mine Drainage 3	21-11	X	X	X			X		Not Applicable
	New/Alkaline	Refuse Area 1	21-14	X	X	X			X		0.2 Inches
	New/Alkaline	Controlled 1	21-14	X	X	X			X		0.2 Inches
	New/Alkaline	Commingled 1	21-14	X	X	X			X		0.2 Inches
	New or Existing	Reclamation Area 5	21-19	X	X					X	Not Applicable

Precipitation Exemptions provide for the alternate monitoring requirements of flow, pH, and SS for each limitation code once the minimum precipitation amount and the applicable requirements of 40 CFR 434 are met.

All discharges except mine drainage are exempt from all requirements except flow and pH for events greater than the 10-year/24 hour storm.

Sampling and analysis must be performed if a discharge (even one) occurs during any given monitoring period.

Unless otherwise noted, all samples shall be collected at least seven (7) days apart.

Revision Date 4/4/08

Effective Date 4/16/08

**Effluent Limitations/Drainage Area Categories/Minimum Precipitation Events**
**Permit Number:**

Outfall Numbers	Source	Description/Drainage Area Category (DAC)	Effluent Limit	Flow N/L	pH 6-9	Fe Avg 3.0 Max 6.0	Fe Avg 3.5 Max 7.0	Mn Avg 2.0 Max 4.0	TSS Avg 35 Max 70	SS Max 0.5 ML/L	TDS MG/L	Minimum Precipitation For Exemption
	Existing/Acid	Prep Plant 1	30-05	X	X		X	X	X		X	0.2 Inches
	Existing/Acid	Pre-Reclamation 1	30-05	X	X		X	X	X		X	0.2 Inches
	Existing/Acid	Mine Drainage 3	30-01	X	X		X	X	X		X	Not Applicable
	Existing/Alkaline	Prep Plant 1	30-06	X	X		X		X		X	0.2 Inches
	Existing/Alkaline	Pre-Reclamation 1	30-06	X	X		X		X		X	0.2 Inches
	Existing/Alkaline	Mine Drainage 3	30-03	X	X		X		X		X	Not Applicable
	New/Acid	Prep Plant 1	30-13	X	X	X		X	X		X	0.2 Inches
	New/Acid	Pre-Reclamation 1	30-13	X	X	X		X	X		X	0.2 Inches
	New/Acid	Mine Drainage 3	30-09	X	X	X		X	X		X	Not Applicable
	New/Acid	Refuse Area 4	30-21	X	X	X		X	X		X	> 1 Yr/24 Hr Event
	New/Acid	Commingled 2	30-25	X	X	X		X	X		X	> 10 Yr/24 Hr Event
	New/Acid	Controlled 2	30-23	X	X	X		X	X		X	> 10 Yr/24 Hr Event
	New/Alkaline	Prep Plant 1	30-14	X	X	X			X		X	0.2 Inches
	New/Alkaline	Pre-Reclamation 1	30-14	X	X	X			X		X	0.2 Inches
	New/Alkaline	Mine Drainage 3	30-11	X	X	X			X		X	Not Applicable
	New/Alkaline	Refuse Area 1	30-14	X	X	X			X		X	0.2 Inches
	New/Alkaline	Controlled 1	30-14	X	X	X			X		X	0.2 Inches
	New/Alkaline	Commingled 1	30-14	X	X	X			X		X	0.2 Inches
	New or Existing	Reclamation Area 5	30-19	X	X					X	X	Not Applicable

Precipitation Exemptions provide for the alternate monitoring requirements of flow, pH, and SS for each limitation code once the minimum precipitation amount and the applicable requirements of 40 CFR 434 are met.

All discharges except mine drainage are exempt from all requirements except flow and pH for events greater than the 10-year/24 hour storm.

Sampling and analysis must be performed if a discharge (even one) occurs during any given monitoring period.

Unless otherwise noted, all samples shall be collected at least seven (7) days apart.

Revision Date 4/4/08

Effective Date 4/16/08

# **APPENDIX C**

CALIBRATION INSTRUCTIONS  
SITE REPORT CARD  
LIABILITY RELEASE FORM

## **CALIBRATION INSTRUCTIONS**

### Conductivity Calibration

1. Pour calibration fluid into clear, plastic cylinder
2. Unscrew grey pH/temperature probe and replace with black attachment
3. Press "Cal" button
4. Select "Conductivity," press Enter
5. Select "Conductivity," (not Sp. Conductivity or Salinity), press Enter
6. Select "C-uS/cm," press Enter
7. Immerse probe into beaker fluid above the two calibration holes on upper, black part of probe
8. Select "Calibration value:" press Enter
9. Type in 10,000 to set the calibration value to "[10,000  $\mu$ S/cm]," press Enter
10. When calibration reading stabilizes, select "Accept Calibration," press Enter

### pH Calibration

1. Pour 7.0 pH fluid into clear, plastic cylinder
  - a. To calibrate to 4.0 or 10.0 pH simply use appropriate calibration fluid and set the calibration value accordingly.
2. Screw on the metal cover to protect the grey pH/temperature probe
3. Turn on handheld device
4. Press "Cal" button
5. Select "ISE1 (pH)," press Enter
6. Immerse probe into beaker fluid above temperature monitor
7. Select "Calibration value:" press Enter
8. Type in 7.0 to set the calibration value to "[7.0]," press Enter
9. When calibration reading stabilizes, select "Accept Calibration," press Enter
10. Repeat steps 1-9 for 4.0 and 10.0 pH calibration
11. After calibrating for all three pH values, press the "Cal" button to finish

## WATER QUALITY MONITORING SITE REPORT CARD

### Where

Receiving Stream (if applicable): \_\_\_\_\_

Nearest Road, Bridge, or Intersection: \_\_\_\_\_

\_\_\_\_\_

Nearest Town: \_\_\_\_\_

Latitude: \_\_\_\_\_ Longitude: \_\_\_\_\_

County: \_\_\_\_\_ State: \_\_\_\_\_

### When

Time: \_\_\_\_\_ Date: \_\_\_\_\_

### Weather

Description: \_\_\_\_\_

\_\_\_\_\_

Rain in last 24 hours?: \_\_\_\_\_

### Measurements

Temperature: \_\_\_\_\_ (°F) Conductivity: \_\_\_\_\_ (uS/cm)

TDS: \_\_\_\_\_ (mg/L) pH: \_\_\_\_\_

### Additional Notes

# Appalachian Water Watch Liability Release Form

As an Appalachian Water Watch volunteer, I will comply with all safety protocols outlined in the *Citizen Monitoring Manual* and training session. During all monitoring activities, including but not exclusive to field water testing, I agree to practice safe measures and not pose any physical or legal risks to myself or those around me.

While testing in flowing or standing water, I agree not to wade in waters more than knee-deep or under flood conditions. To reduce any physical harm from working in the field, I understand that proper shoes and clothing should be worn.

I agree to indemnify and not hold accountable Appalachian Voices and the community partner organizations of Appalachian Water Watch for all personal physical and legal harms that may occur while volunteering with the program. I agree not to trespass on private property at all times.

Signature: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Date: \_\_\_\_\_