Excerpt from Guidance for Monitoring Effects of Gas Pipeline Development on Surface Water and Groundwater Supplies

Section 5: Recommendations for Landowner Monitoring

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August 18, 2016

Downstream Strategies

Sponsors

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ABOUT DOWNSTREAM STRATEGIES

Downstream Strategies (DS) is a West Virginia-based consulting firm with offices in Morgantown and Alderson. Since 1997, DS has provided environmental services combining sound interdisciplinary skills with a core belief in the importance of protecting the environment and linking economic development with natural resource stewardship.

Our projects fit within one or more of our program areas—water, land, and energy—and most projects also utilize one or more of our tools, which include geographic information systems, monitoring and remediation, and stakeholder involvement and participation. Our primary service area includes West Virginia and Appalachia. DS has considerable background in environmental science and policy, environmental site assessments, geographic information systems, permitting, field monitoring, community and stakeholder facilitation, watershed planning, and other areas.

DS is experienced at conducting both water sampling and biological sampling. We frequently perform sampling of the air, soil, and water in support a wide range of environmental projects including underground storage tank corrective actions, contaminated site characterization, stream monitoring, drinking water monitoring, delineation of microbial impacts, and microbial remediation.

5. RECOMMENDATIONS FOR LANDOWNER MONITORING

Monitoring is essential to ensure that surface and groundwater can produce a safe and adequate supply, to help understand potential sources of contamination, and to inform use and management decisions. Monitoring can be done by normal observation (appearance, taste, and odor), collecting field measurements, and/or conducting laboratory tests. It can be done by landowners or others. Assessments can be qualitative (observed but not measured) or quantitative (measured). Each type of monitoring is useful, and there are costs and benefits to each. Ideally, a combination of approaches over time provides the best and most efficient result.

This report recommends a tiered approach involving data collection by both landowners and third-party consultants as described in **Figure 9**.

Use of third-party consultants or contractors offers numerous advantages, and is recommended for collecting quantifiable measurements, such as water quality samples or sustained yield tests. Properly qualified third-party consultants are independent of the results, which helps to improve defensibility. They are also experienced with equipment operation, collection and handling of samples, and should be able to clearly explain and document results and methods of data collection and analysis. The disadvantage is that consultants will add cost, which also tends to limit the frequency.

However, landowners can implement their own qualitative monitoring plan as often as is reasonable, which provides several advantages. It helps landowners become intimately familiar with the water source and generally allows landowners to monitor more often and less expensively. It allows landowners to quickly recognize if there is a change in water quality or quantity. Disadvantages are that self-monitoring is not independent and may come into question in legal or regulatory situations.

One of the most important aspects of monitoring, whether done by the landowner or a third-party consultant, is **thorough, appropriate documentation of conditions and methods**. In the event that there is impact on water quality or quantity, it may be necessary to prove that the observed changes are not a result of natural variation or other causes. **Photographs, videos, log books, and laboratory reports in digital and/or hard copy are all evidence of water quality and quantity trends through time.**

A monitoring program will have a starting point and end point, or it may continue indefinitely. In either event, a starting point or baseline condition should be established. Once there is a baseline, additional surveillance or screening assessments can be performed over time, and if screening indicates concern, specific assessment can be done for confirmation.

This report describes three phases of monitoring:

1. **Baseline** sampling to establish conditions prior to any contamination,
2. **Surveillance** monitoring to determine any changes in water quality or quantity, and
3. **Event** sampling, to document an occurrence of contamination.

WHO should have their water tested?

You should have your water tested if:

- The pipeline will cross your property
- You are downgradient of a location where the pipeline will cross a stream
- Your water resources are within the specified distances for sampling by ACP or MVP representatives
- Your property overlies karst and is in the vicinity of a pipeline
- Your drinking water source is located near one of the pollution hotspots included in **Table 2.**
- You are concerned about your water quality related to pipeline development
- Your well or spring is your only source of potable water

WHY should you monitor your water resources?

- To provide baseline data for comparison to future monitoring
- To provide support for or highlight discrepancies in sampling results collected by ACP and MVP
- To identify changes in water quality that may be a result of pipeline development

WHEN should you monitor?

- NOW, prior to pipeline construction, to obtain BASELINE data, which includes water sampling and observation.
- During construction you should conduct SURVEILLANCE monitoring to look for changes in water quality or quantity.
- If there appears to be a change in appearance, taste, or smell of water, EVENT sampling may be necessary to confirm potential contamination in your water.

WHAT should be monitored?

- Recommendations for sampling are in **Table 3**.
- For BASELINE monitoring, you should have water analyzed for as many parameters as practical.
- Observations should be collected for water quantity, appearance, smell, and taste.
- For SURVEILLANCE monitoring you should continue to record observations and collect select field measurements.
- EVENT sampling parameters should be based on the suspected contamination source, if known.

HOW to conduct monitoring:

For defensible results that could be used in a legal situation, a third party independent consultant should be used to collect water quality and/or quantity samples. However, landowners can collect observation information, such as quantity, appearance, taste, or smell, as often as is practical. All observations should be carefully recorded, and should be maintained, along with any sampling results, by the landowner. Photos and/or video should also be used to document conditions.

5.1 Who should have their water monitored?

If a property is within the distances proposed by ACP and MVP—150 feet or 500 feet in karst—wells or springs will be sampled by developers for water quality. However, this distance is arbitrary from an environmental transport point of view—it is difficult to predict how far downstream a contamination event may travel once it reaches a stream or river. In karst areas, transport of contaminants can be even more unpredictable as to how far, and even which direction, contamination can travel if it reaches groundwater. These complexities make recommending a specific distance from a pipeline project that is best to monitor impractical. The most accurate approach would be to have an individual assessment by a professional geologist or hydrologist. But, this requires time and possibly significant expense. As the pipeline route continues to be adjusted, a precautionary approach is recommended for anyone within the counties being traversed by new pipeline construction. As we have seen, in karst areas, caution for much larger areas is well warranted.

It is recommended that landowners within the distances specified by the pipeline companies should certainly have their drinking water resources monitored, and possibly double or triple these distances. Due to the unpredictability of groundwater flow in karst, those who are regionally close to pipeline development, even within a few miles, should consider monitoring, if possible. If a pipeline crosses a property, water resources on that property should be monitored. If a stream of concern or importance located on a property is crossed by a pipeline, downstream of the crossing should be monitored. In general, monitoring is recommended if you have the means to monitor water resources, and you are concerned about potential impacts from pipeline development. This may be especially important if the only source of water is a well or spring.

Table 2. Contaminant sources and sensitive receptors
This table describes locations with high potential for pollution to reach water resources. These areas should be high priorities for water monitoring.

Source or receptor	Potential Impact
Hydrostatic test water discharge points	Concentrated discharge may cause erosion, sedimentation, and/or turbidity
Fuel or lubricant storage areas	Release of diesel or other chemical spills
Truck and construction equipment storage or staging	Diesel or other chemical spills, erosion and sedimentation from site construction
Streams or springs crossed by a pipeline	Sedimentation and erosion, increased turbidity, change in flow patterns-loss or flow or flooding
Sinkholes downgradient from construction	Sediments or surface spills may quickly reach groundwater or transmit contaminants such as diesel or chemicals to surface water

5.2 Defensible data

Obtaining defensible data is a function of how it is collected, analyzed, and documented. Defensible, as used here, refers to whether data was collected in a reliable, accurate, and repeatable manner. Different levels of defensibility may be necessary for different uses. For example, data used to support legal or regulatory decisions will need to be the most defensible. Consider that in the future, you may need to rely on your data in a legal setting.

Another question pertaining to defensibility is whether a sufficient amount of data has been collected to support a conclusion. For example, it might take additional data to indicate whether changes are due to contamination or seasonal variation. Determining a "defensible" amount of data can be difficult. Some data is better than no data. Without the limitations of cost and time, homeowners and water providers alike could sample for an extensive list of parameters by third-party consultants monthly, have a well yield test performed by professionals, and collect surveillance data weekly. However, this is not practical or obtainable for many homeowners. This does not mean that steps cannot be taken to protect water resources.

The degree to which the ACP and MVP developers will assume responsibility for harm to water supplies is unclear. For example, information provided in ACP Resource Report 2, Water Use and Quality, indicates that temporary or permanent water supplies will be provided to well owners if an investigation shows that damage to water supplies was caused by pipeline construction. (Natural Resource Group, 2015). It is not clear, though, how such an investigation will be conducted, and there is no mention of replacing damaged spring water supplies.

To collect the most "defensible" data practical for your situation, follow the suggestions listed below:

- If budget allows, have a third-party consultant collect samples. This is highly recommended for baseline water quality or if contamination is suspected. Ensure that the consultant uses standard operating procedures that are based on approved regulatory guidance. Discuss quality assurance/quality control methods with them to make sure the sampling will support your future needs.
- Ensure that all laboratory analyses are conducted by a state-certified laboratory. Both West Virginia and Virginia maintain current databases for certified laboratories:

  Virginia: http://www.dgs.state.va.us/EnvironmentalLaboratoryCertification2/tabid/1503/Default.aspx?#information_on_velap-accredited_commercial_laboratories

  West Virginia: http://www.dep.wv.gov/WWE/Programs/lab/Pages/default.aspx

- Conduct surveillance monitoring as often as practical. The more data you have, the better you can interpret your data, identify seasonal trends, and support conclusions.
- Carefully record on the **Water Monitoring Log**, or other form or notebook, any observations collected. Record date, time, and who was present. Take photos and videos. Back up data in digital form.
- If contamination is suspected, call state agencies as soon as possible (contact information on page 35). Carefully record relevant information, including who was contacted and when agencies were contacted.
- Consider allowing the pipeline companies to collect their own samples. When they visit, be present and document their activities. Be sure that you are provided with a complete record of any information they collect about your water sources.

5.3 Establishing a baseline

To evaluate water quality and quantity, it is necessary to establish a baseline condition. The best time to do this is now, prior to any pipeline construction. This is needed to confirm that contamination or supply problems do or do not already exist, to allow detection of future problems should they occur, and to document the range and pattern of natural conditions.

Baseline Water Quality

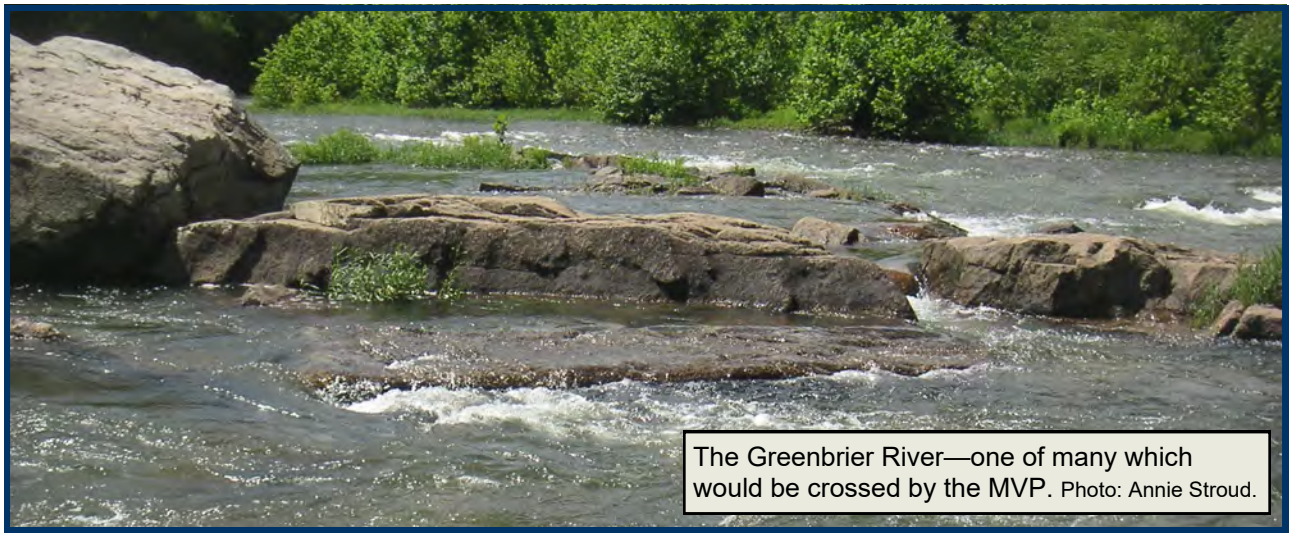
Because there are so many potential sources for contamination, it is ideal to establish a baseline for as many as possible. However, this can quickly become very expensive. **Table 3** shows a recommended set of testing parameters most likely to be affected by natural gas pipeline development. This list has been developed through monitoring experience and research (40CFR § 450.21; USEPA, 1999a; USEPA 1999b; USEPA, 2005; WVDEP, 2014), and it has been divided into **three sets, or "tiers" of analytical parameters**. **Tier 1** includes the recommended set of parameters that should be collected during each sampling event. These parameters are all good indicators of a change in water quality, and they are likely to be impacted if contamination from pipeline development occurs. **Tier 2** parameters provide more information about the water source and create a more robust dataset. They may be impacted by contamination from pipeline development. **Tier 3** parameters are recommended if there is concern that contamination of the water supply has occurred. Other than the metals, each of these parameters has a specific source that can usually be identified.

A quantitative approach should be used to establish a baseline for water quality and quantity, although landowner observations should be recorded during this period as well. Independent contractors should collect samples for water quality analyses and landowners can collect qualitative data on a regular basis.

Approximate analytical costs

Laboratory analysis costs for a single analysis of the entire recommended sampling parameters in Table 3 (Tiers 1-3) would normally range between $500 and $600. The cost for just the Tier 1 analyses would be between $150 and $200.

Having a consultant or contractor conduct the sampling and interpret results could bring the total cost to $1,000 to over $2,000, depending on a variety of factors, including number of samples or travel time. Costs would include labor, travel, and equipment expenses, along with the laboratory costs and documentation of methods and analytical accuracy.



The Greenbrier River—one of many which would be crossed by the MVP. Photo: Annie Stroud.

Table 3. Recommended sampling parameters (continued on following page)

Parameter	Information provided	Tier 1 Likely indicators of change in water quality-sample every time	Tier 2 Provides more comprehensive water quality information-include parameters from Tier 1	Tier 3 If observation suggests contamination or for confirmation of contamination-include parameters from Tier 1
Meter measurements				
pH	Physical and chemical character of the sample. Good indicators of contamination and helps interpret other results.		x	
Specific conductivity		x		
Temperature			x	
Dissolved oxygen			x	
Turbidity		x		
General chemistry				
Hardness	Laboratory parameters that are good indicators of change.		x	
Total dissolved solids		x		
Major ions				
Chloride	Major ions are good indicators of contamination and have federal secondary standards for comparison.	x		
Sulfate		x		
Nutrients and biologicals				
Nitrate	Indicators of contamination from surface runoff (sewage, agriculture).			x
Total and fecal coliform			x	
Metals				
Aluminum	Absent existing baseline data, analyzing for these metals is recommended based on our experience as those likely to impact water quality from surface and subsurface land disturbances. The source for most are natural deposits (geology) but they may be concentrated in man-made products. Natural amounts will vary based on location. Tier 1 metals include good indicator parameters and/or they have very low water quality standards.		x	
Antimony				x
Arsenic		x		
Barium				x
Beryllium				x
Cadmium			x	
Chromium		x		
Copper		x		
Iron			x	
Lead		x		
Manganese		x		
Mercury		x		
Nickel			x	
Potassium		x		
Selenium		x		

Table 3. Recommended sampling parameters (continued from previous page)

Parameter	Information provided	Tier 1 Likely indicators of change in water quality-sample every time	Tier 2 Provides more comprehensive water quality information-include parameters from Tier 1	Tier 3 If observation suggests contamination or for confirmation of contamination-include parameters from Tier 1
Organic compounds				
Volatile Organic Compounds	Although these tests are relatively expensive, we recommend testing for the full method Target Analyte Lists (TAL)* since the cost is not significantly greater than for testing just a few, and there is more specific information than from indicator group tests, such as Oil and Grease or Total Petroleum Hydrocarbons (TPH).			x
Semi-volatile Organic Compounds				x
BTEX	Benzene, toluene, ethylbenzene, and xylenes (BTEX) - a subset of the full VOC list including four of the most important compounds associated with petroleum contamination. Test for these if the full VOC list is not affordable.			x
Additional parameters				
Pesticides and herbicides	ACP indicated in FERC filings that pesticides and herbicides won't be used and that mowing will be the method for right-of-way maintenance. However, this could change over time.			x
Blasting agents	Explosives may be used to excavate rock.			x

Note: *The Target Analyte List is defined by the USEPA Hazardous Waste Methods SW-846 for a specific set of volatile organic parameters that may be analyzed by this method.

Confirm with the lab or your consultant that the appropriate and acceptable analytical methods are used for each parameter. The lab should be certified by the state for each parameter.

Assessing the results

Laboratories will provide the results of the sampling in a report, which includes sampling results and QA/QC data. The third-party contractor who collected the samples should explain the results and possibly provide a summary report to the landowner.

When testing drinking water—either a well, spring, or surface water—the best criteria for evaluation are provided by the USEPA Federal Drinking Water Standards. The drinking water standards establish maximum contaminant levels (MCLs), which are legal, health-based, enforceable limits for certain contaminants in drinking water. While the USEPA standards apply specifically to public drinking water supplies, they provide a point of comparison for water quality in the samples collected. The USEPA also issues Secondary Standards, which are not health-based and are non-enforceable. Still, secondary standards provide recommended thresholds for aesthetic qualities, such as taste, odor, and appearance. The most recent version of the drinking water standards can be found on the USEPA website.

https://www.epa.gov/ground-water-and-drinking-water/table-regulated-drinking-water-contaminants

When testing surface water, West Virginia or Virginia surface water quality standards can be used for comparison. These standards are established for different designated uses to protect human health and aquatic life, among other things.

The current West Virginia numeric water quality standards can be found here:
http://www.dep.wv.gov/WWE/getinvolved/sos/Documents/WQS/Standards.pdf

The current Virginia standards can be found here:
http://law.lis.virginia.gov/admincode/title9/agency25/chapter260/section140/

Qualitative, observable conditions

While quantitative methods are important for baseline testing, qualitative observations should not be overlooked. These are often the simplest and least expensive method for monitoring water quality.

At some routine interval, make it a point to document characteristics you can readily observe, such as the appearance, odor, and if potable, the taste of your water source. An example record form for routine surveillance monitoring of your water source is provided as Appendix B "**Water Monitoring Log**." Complete this at regular intervals, as frequently as is convenient, and maintain the record for future reference. This should be completed at least monthly, but weekly or even daily can be very useful, especially when a potential stressor, such as pipeline construction, is occurring nearby.

Baseline monitoring can be enhanced substantially by self-testing using relatively inexpensive meters or by collecting samples yourself and submitting them to a laboratory for analysis. Self-collected samples by non-professionals may not be defensible in legal settings, but remember that surveillance monitoring is intended to determine whether conditions are changing from the baseline and if additional data collection steps are warranted. One good way to do this is to purchase a meter than can measure the temperature and conductivity (specific conductance) of your water source. Simple devices are also available for measuring turbidity (more information is available in the Water monitoring procedures document included with this guide in Appendix A).

Tools landowners can use to measure water quality

Conductivity meter: Specific conductance, often referred to as conductivity, is a measure of how electricity can move through the water. The more ions (charged particles) that are in the water, the higher the conductivity. Many, but not all, potential contaminants can affect conductivity. While specific conductance does not identify specifically what is in the water, changes or very high levels can indicate the presence of contaminants.

Many reliable meters are commercially available at costs below $200. Include meter readings on your monitoring records and compare them over time for variation.

Secchi tube: Another inexpensive tool that is available to landowners is a Secchi tube. Secchi tubes measure turbidity. They work by pouring sample water into a clear tube and assessing the depth at which a small disk can be clearly observed. The depth relates to the turbidity of the water. Secchi tubes can be constructed or purchased, and many non-profits, such as Trout Unlimited or West Virginia Rivers Coalition, may make them available for use, along with the other meters mentioned in this report. (See Water Monitoring Procedures document in Appendix A included with this guide to learn how to measure turbidity with a Secchi tube.)


Secchi tube.
Photo: www.pca.state.mn.us

This section describes recommended approaches to implementing a monitoring program for water resources through a combination of both qualitative and quantitative measurements. This section has generally been crafted towards owners of private water resources, but may also serve to help inform public water managers, particularly about the types of parameters to consider for sampling.

Water providers are typically required to conduct baseline water quality monitoring. However, a comparison of the recommended parameters for sampling related to pipeline development against their required monitoring may suggest additional parameters to include. Adding additional parameters may add a minimal cost, but could provide a more thorough dataset.

Establishing a source water monitoring program upstream of a public water supply intake (in the case of a surface water intake) may also provide additional information about the water source.

Baseline water quantity

As discussed, pipeline development may affect water quantity by altering local soils, geology, and the hydro-geological cycle in general. In terms of quantity, one should consider not only the rate of flow, but also how long it can be maintained. Each can be assessed qualitatively or quantitatively.

Flow rate can be assessed qualitatively (appears to be more or less than before) or quantitatively (measured in volume per time). Self-measured methods can be used, such as how long it takes to fill a container (5-gallon bucket, swimming pool, bathtub). Alternatively, third-party contractors can be hired to conduct independent, and typically more detailed, measurements.

For surface water, quantity can be assessed as a water level of a pond, lake, or river. Quantity can also be assessed as a flow rate (volume/time) in a stream. For groundwater, the volume of flow from springs may be assessed in much the same way. Flow rate can be affected by many factors and often changes seasonally or based on weather.

Sustained yield

Particularly in the case of water wells, water quantity is more accurately assessed as sustained yield or simply, how long a flow rate can actually be maintained by an aquifer. With the exception of artesian wells, defensibly documenting sustainable yield for a water well requires an aquifer pumping test. This should not be confused with a well yield test, which does not accurately represent the true sustainable yield of the groundwater resource, and instead is a function of the well pump and plumbing.

Sustained yield tests normally involve using specialized equipment and knowledge under a prescribed methodology and demonstrate what can be produced by the well, not what is stored in a plumbing system. Most state, local, and county jurisdictions require that sustained yield tests be performed by licensed professionals. For example, WVDEP recently specified requirements for developers of water supply wells for oil and gas operations to conduct detailed aquifer tests, which includes a sustained yield test. These tests must be conducted by licensed groundwater professionals or water system installers and require 72 hours to properly complete (WV 35CSR8 9.1.a.4). **This type of test comes at a considerable cost, which can be $5,000 or more. For these and other reasons, we do not recommend that homeowners perform sustained yield tests themselves**. Typically, a pump test is performed by the well driller when a new well is installed, and you may have a record of this historical information as a baseline to refer to.

If cost were not a factor, sustained yield tests could be performed during different times of the year to assess seasonal variation. However, if one test could be performed, the late summer or early fall dry season should be prioritized.

Public water providers that use wells for source water should have a previous sustained yield test from when the well was installed and originally permitted by the State. Depending on how long ago it was conducted, it may be prudent to perform an updated sustained yield test prior to pipeline construction.

5.4 Surveillance/screening

Once a baseline condition has been established, surveillance monitoring or periodic screening can be performed. This helps to indicate if conditions have changed since the baseline and generally involves less effort and lower cost. This can be done prior to or during pipeline development and construction. Surveillance monitoring is intended to detect changes rather than to "prove" contamination.

Surveillance for water quality

Qualitative observations, as described in the "Establishing a baseline" section, are also important during surveillance monitoring and can be performed as often as practical. Surveillance monitoring is a good time to collect specific conductivity and turbidity measurements with a Secchi tube to look for the range of variation and any trends in the data. It is important to note any changes observed in water quality through time. It is also important to note any physical changes, such as when construction occurs, near the water source that may impact water quality or quantity.

Surveillance water quality sampling can also be performed. The Tier 1 parameters listed in **Table 3** are a limited suite of "indicator parameters" that would provide good information and limit cost.

Surveillance for water quantity

For water wells, the static water level can also be recorded on a regular basis. This can be done by purchasing a water level meter, which is a sensor on a measuring tape that is unwound into a well. It beeps when the water is reached, and the depth to the water can then be recorded. However, water level meters generally cost several hundred dollars or more and require homeowners to introduce equipment inside the well casing, which can potentially cause damage or introduce contaminants. For these reasons and others, we recommend hiring a licensed well driller or consultant to monitor your water level.

Water levels in surface water bodies or groundwater can also be monitored using transducer data loggers, which are sensors that, once deployed, can automatically record water level or other measurements frequently and over long time periods. These systems, including the software to manage the data, are generally too expensive to be considered by individual landowners and will require training to program, properly deploy, and interpret the data. If there are multiple homeowners in an area interested in having data loggers installed in their wells or streams, collectively negotiating with a contractor or consultant may provide a way to overcome the barriers of cost and training requirements. In this way, local or even regional water level trends can be assessed at the same time, while costs can be distributed between several landowners.

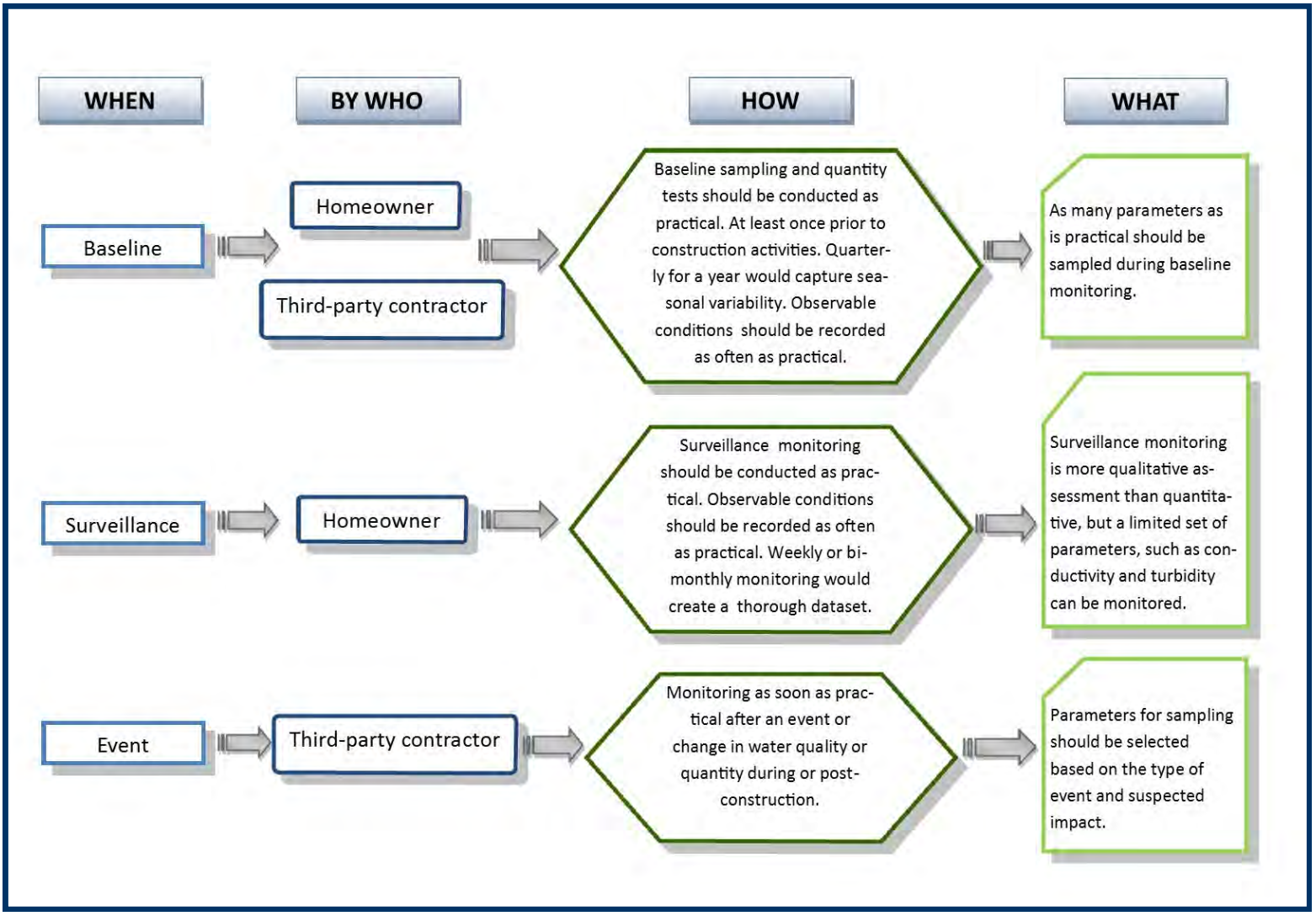
Qualitative assessments about stream or spring quantity can be recorded by the homeowner. Assessing whether flow is "typical" or more or less than "typical" can be recorded on a regular basis. A depth, or stage, at an established location, can also be noted as a way to monitor flow. The "**Water Monitoring Log**" in Appendix B allows this information to be recorded.

5.5 Event monitoring

If surveillance monitoring indicates a sudden change or deviation from baseline, this is the time to document water quality or quantity with a quantitative assessment (measurement). This may involve a case-by-case decision as to which type of assessment or set of analytical parameters is most appropriate, or as default, you may defer to the approach and methods used for the baseline assessment. This may be the most important time to consider use of a third party for guidance and to conduct the sampling or measurement to ensure defensibility and credibility to others. If results indicate an impact to water quality or quantity, then it is time to contact your regulatory agency for assistance in resolving the problem.

Figure 9 outlines each of the types of sampling described above and summarizes recommended actions.

Figure 9. Sampling flow chart



5.6 Emergency response reporting information

If there is a suspected spill or contamination of your water, the WVDEP or VADEQ should be contacted immediately. Be prepared to provide as much information as possible such as date and time of incident, exact location of spill or location of impacted water source, responsible party if known, and potential contaminant. If you have photos or videos, these should be shared as well.

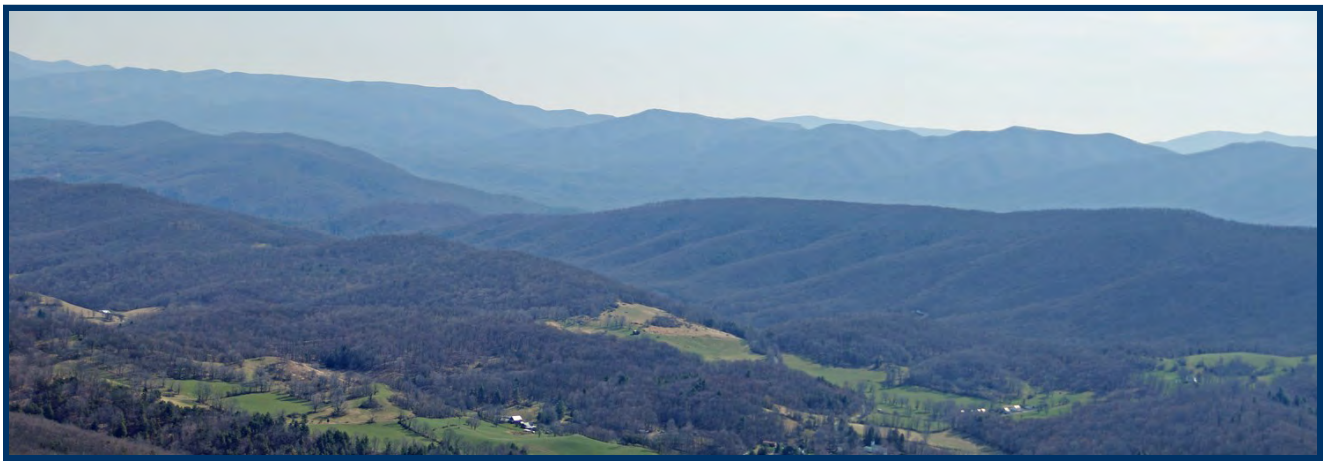
WVDEP or VADEQ should send a representative to the site to investigate. If this is on your property, plan to meet the inspector, and document their investigation. Request to have any information collected, as well as follow up information, sent to you as well.

National Response Center

The National Response Center (NRC) is the federal government's national communications center, which is staffed 24 hours a day by U.S. Coast Guard officers and marine science technicians.

Use this contact for emergencies and other sudden threats to public health, such as:

- oil and/or chemical spills,
- radiation emergencies, and
- biological discharges.



Emergency contact information

West Virginia

To report a suspected contamination event, call the West Virginia Department of Environmental Protection Spill Response Hotline.

WVDEP Spill Response Hotline
1-800-642-3074
Email: Rusty Joins, Rusty.T.Joins@wv.gov

Virginia

In Virginia there are several ways to report a pollution incident:

1. During ***normal work hours*** call the number listed for the Virginia Department of Environmental Quality Pollution Response Program (PREP) for the PREP Regional Contact that covers the area where the incident occurred.

A map of PREP regions and contacts is available here: http://www.deq.virginia.gov/Programs/PollutionResponsePreparedness/Contacts.aspx

2. Alternatively, the new on-line Pollution Reporting Form allows citizens and permittees to report pollution events on-line. Once you complete the form, a unique reference number is provided. **IMPORTANT** – citizens and permittees should make note of this number. The number will be required for follow-up on any pollution report.

The **Pollution Reporting Form** is available here: http://www.deq.virginia.gov/Programs/PollutionResponsePreparedness/PollutionReportingForm.aspx

3. ***Nights, holidays, and weekends***, call the **D**epartment of **E**mergency **M**anagement's (**DEM**) 24 hour reporting number.
In-state calls only: 1 800 468-8892
Out-of-state calls: 1 804 674-2400

National Response Center

Contact this center for emergencies or sudden threats to public health.

1-800-424-8802