

**DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS MANAGEMENT**

- DOCUMENT NUMBER:** To be assigned.
- TITLE:** Policy for the Replacement or Restoration of Private Water Supplies.
- EFFECTIVE DATE:** Upon publication as final in the *Pennsylvania Bulletin*.
- AUTHORITY:** The 2012 Oil and Gas Act (58 Pa. C.S. §§ 3201–3274); The Clean Streams Law (35 P.S. §§ 691.1, *et seq.*); The Land Recycling and Environmental Remediation Standards Act (35 P.S. §§ 6026.101, *et seq.*); Sections 1905-A, 1917-A and 1920-A of The Administrative Code of 1929 (71 P.S. §§ 510-5, 510-17 and 510-20); regulations at 25 Pa. Code Chapter 78 (relating to conventional oil and gas wells) and 25 Pa. Code Chapter 78a (relating to unconventional wells).
- POLICY:** The Department of Environmental Protection (Department) will follow the guidance presented in this document to implement the requirements relating to the restoration or replacement of private water supplies adversely impacted by oil and gas operations with a water supply of adequate quantity and/or quality for the purposes served by impacted water supply source(s).
- PURPOSE:** The purpose of this guidance is to inform Department staff, the regulated industry and the public how to comply with the water supply restoration and replacement requirements in the 2012 Oil and Gas Act, The Clean Streams Law, and 25 Pa. Code Chapters 78 and 78a.
- APPLICABILITY:** This document is the Department’s guidance for ensuring compliance with legal requirements related to restoration and replacement of private water supplies adversely impacted by oil and gas operations.
- DISCLAIMER:** The policies and procedures outlined in this guidance document are intended to supplement existing requirements. Nothing in the policies or procedures shall affect more stringent statutory or regulatory requirements.
- The policies and procedures herein are not an adjudication or a regulation. There is no intent on the part of the Department to give this document that weight or deference. This document establishes the framework within which the Department will exercise its administrative discretion in the future. The Department reserves the discretion to deviate from this policy statement if circumstances warrant.
- PAGE LENGTH:** 17 Pages

## **BACKGROUND:**

Section 3218(a) of the 2012 Oil and Gas Act requires a well operator that adversely affects a public or private water supply by pollution or diminution to restore or replace the impacted supply with an alternate water source adequate in quantity and quality for the purpose served by the supply. Section 3218(a) and 25 Pa. Code §§ 78.51(d)(2) and 78a.51(d)(2) provide that the quality of a restored or replaced water supply must meet the standards established under the Pennsylvania Safe Drinking Water Act (35 P.S. §§ 721.1–721.17) or is comparable to the quality of the water that existed prior to pollution if the water quality was better than these standards. *See* 58 Pa.C.S. § 3218(a); 25 Pa. Code §§ 78.51(d)(2) and 78a.51(d)(2).

If a water supply user/owner, or an operator, contacts the Department with a complaint that a water supply may have been adversely impacted by oil and gas operations; the Department will conduct an investigation to determine whether the water supply has been affected by oil and gas operations. *See* 58 Pa. C.S. § 3218(b). If oil and gas operations are determined or presumed to have adversely impacted a water supply, the Department will take appropriate measures to require the responsible operator to restore or replace the supply. *See* 58 Pa. C.S. § 3218(b).

If the water supply user/owner or operator indicates or complains that human health is being affected as a result of oil and gas operations, the Department will provide the individuals with contact information for the Department of Health. If oil and gas operations are determined or presumed to have adversely impacted a water supply, the Department will also inform the Department of Health of this determination.

If a causal connection between oil and gas operations and the water supply impact cannot be established and the “rebuttable presumption” (see below) does not apply, the complainant will be notified that oil and gas operations did not impact the water supply or that there was insufficient evidence to determine that oil and gas operations caused the impacts to the water supply.

Section 3218(c) of the 2012 Oil and Gas Act creates a rebuttable presumption of liability on a well operator for the pollution of a water supply if the supply is located within a “rebuttable presumption area” and the pollution occurs within a defined period of time. *See* 58 Pa. C.S. §§ 3218(c). For a conventional oil or gas well, the rebuttable presumption applies if a water supply is within the rebuttable presumption area of 1,000 feet from an oil or gas well, and the pollution occurred within six months after completion of drilling or alteration of the well. *See* 58 Pa. C.S. §§ 3218(c)(i). For an unconventional gas well, a water supply is within the rebuttable presumption area if the water supply is within 2,500 feet of the vertical well bore and the pollution occurred within 12 months of the later of drilling, stimulation, well alteration or completion activities. *See* 58 Pa. C.S. §§ 3218(c)(ii).

Section 3218(d) of the 2012 Oil and Gas Act provides the well operator an opportunity to rebut the presumption of liability. There are five statutory defenses to the presumption of liability which are listed below. Any one of these defenses is sufficient to rebut the presumption.

1. The pollution existed prior to the drilling or alteration activity as determined by a pre-drilling or pre-alteration survey.
2. The landowner refused to allow the operator access to conduct a pre-drilling or pre-alteration survey. The operator should submit evidence to the Department demonstrating that the landowner was notified by certified mail or personal service that the refusal of access to conduct a pre-drill or pre-alteration survey could be used to rebut a presumption of liability.
3. The water supply is not within 1,000 feet of a conventional well or 2,500 feet of an unconventional well.
4. For conventional wells, the pollution occurred more than six months after completion of drilling or alteration activities for conventional wells. For unconventional wells, the pollution occurred more than 12 months after the later of completion, drilling, stimulation or alteration activities for unconventional wells.
5. The pollution occurred as a result of a cause other than drilling or alteration activity.

Given the technical nature of this defense, the report documenting the cause should be prepared and sealed by a geologist licensed in this Commonwealth or accompanied by an explanation of why a geologic analysis was unnecessary based on the facts.

## **PROCEDURES**

### **A. Addressing Water Supply Pollution or Diminution.**

Generally, water supply related issues come to the attention of the Department in one of three ways: 1) a complaint by the water supply user, 2) notification by the operator, or 3) discovery of the problem by the Department while conducting an investigation in the area of the water supply.

All water supply concerns related to oil and gas operations should be referred to the appropriate Oil and Gas District Office; the contact information for those offices is provided in Appendix B. Other oil and gas related complaints may be directed to the state wide toll free number at 1-866-255-5158.

The procedure for how the Department conducts all water supply investigation requests related to oil and gas operations can be found in the Department's document titled, "Standards and Guidelines for Identifying, Tracking, and Resolving Oil and Gas Violations" (Document number 820-4000-001) (January 17, 2015).

Once the Department makes a positive determination that an oil and gas operator is responsible for adverse impacts to a water supply, the Oil and Gas District Offices should use the procedures outlined in this document as guidance to ensure adequate and timely

replacement or restoration of an affected water supply. Oil and Gas District Offices should follow this guidance unless the circumstances of a specific case warrant a different approach to resolving the case, within the requirements of the law.

## **B. Providing Water to Users of an Impacted Water Supply.**

If the Department observes a potential impact (e.g., effervescence, turbidity, odor, sheen or other obvious contamination) to a water supply in which the rebuttable presumption applies, the Department will request that the operator provide water to the user within 24 hours and to provide the Department all information known to the operator that may support any of the statutory defenses to the rebuttable presumption of liability.

If the Department determines that oil and gas operations have adversely impacted the water supply in which the rebuttable presumption does not apply, the Department will request that the responsible operator provide water to the user within 24 hours. The Department will also notify the water supply owner/user of the determination in writing.

### **1. Water for Immediate Needs.**

Upon notice by the Department for the need to provide water, operators should take immediate measures within 24 hours to address the needs of those affected by the impacted water supply while making arrangements for the installation of a temporary water supply. The immediate response of providing potable water for human consumption should be at least one gallon per person per day or five gallons per household per day, whichever is greater. Additional water may be necessary for animals dependent on the impacted water supply, including pets and livestock.

If the operator fails to provide potable water immediately to address immediate water needs of the impacted party within 24 hours of the Department's notification, the Program Manager will issue an administrative order directing the operator to provide potable water immediately.

### **2. Temporary Water Supply.**

If the statutory presumption cannot be rebutted or the Department determines that the operator is responsible for the impact to the water supply, a temporary water supply of adequate quantity and quality for the purposes served by the impacted water supply must be established within 72 hours of the Department's notice. Temporary water replacement is only acceptable for a period approved by the Department and does not relieve the operator of the obligation to provide a restored or replaced water supply. *See* 25 Pa. Code §§ 78.51(f) and 78a.51(f).

Temporary water must be adequate in quantity and quality for the purposes served by the impacted water supply. For sources used for human consumption and sanitary purposes, the temporary water meets this requirement when it is from a potable water supply that conforms to and is transported in a manner that meets the requirements in the Pennsylvania Safe

Drinking Water Act (35 P. S. §§ 721.1—721.17) and Title 25 Pa. Code Chapter 109. Also, temporary water storage tanks and its associated plumbing accessories must be certified for conformance with ANSI/NSF Standard 61.

The temporary water supply for domestic use is adequate in quantity and quality if it is at least 75 gallons per person per day of potable water, plumbed into the existing water supply system, unless specific needs require higher amounts (e.g. pets, livestock, plants and other domestic needs).

Temporary water supplies used in lieu of water supplies for agricultural, commercial, industrial or other legitimate beneficial uses is adequate in quantity and quality if it meets an acceptable standard in a necessary quantity, as determined by the Department, to allow the continuance of the uses that were dependent on the impacted water supply.

Temporary water must continue to be supplied, uninterrupted, by the operator to the users of the affected water supply until the Department determines that the need for a temporary water supply no longer exists.

### **C. Permanent restoration or replacement of a private water supply.**

If the Department determines that a private water supply must be permanently restored or replaced due to pollution or diminution, within 30 days following a final positive determination, the Department should issue, as appropriate, a Notice of Violation or a Request for Corrective Action requesting, among other things, a permanent water supply restoration or replacement plan with specified timeframes. *See* “Standards and Guidelines for Identifying, Tracking, and Resolving Oil and Gas Violations” (Document number 820-4000-001) (January 17, 2015).

The plan should state what measures will be taken by the operator to permanently restore or replace the impacted water supply and be prepared and signed by a qualified professional (e.g., P.E., P.G., etc.).

A plan for the permanent restoration or replacement of a water supply should include, at a minimum, water treatment options, new water source options (e.g., new well in uncontaminated zone), or connection to a public water system.

When an impacted water supply is permanently replaced with a public water supply regulated by the Department’s Safe Drinking Water Program, and provisions for the permanent payment of the increased operating and maintenance costs are made to the affected parties, but the property owner does not wish to be provided with any additional treatment measures to water from the public water supply, the Department will consider the remedy as having met the Department’s requirement for the responsible operator to permanently restore or replace the affected supply.

The Department, the well operator or the water user may request a conference under Section 3251 of the 2012 Oil and Gas Act to facilitate the review and approval of the means for permanently restoring or replacing the water supply.

The requirements described below may be waived in writing by the water supply owner.

**D. Factors to be considered in permanent water supply restoration or replacement response selection.**

The Department will consider a number of factors when evaluating permanent the water supply restoration or replacement plan. These include, but are not limited to:

1. Effectiveness – The ability of the remedial response to mitigate the threats posed by the site specific contaminants. Restoration or Replacement Plans must provide responses that meet Pennsylvania Safe Drinking Water Act standards or better. *See* 78.51(d)(2) and 78a.51(d)(2).
2. Time Frame of the Response – Providing an expedited temporary water supply and timely permanent water supply remediation to affected parties is the goal of the Department.
3. Reliability – Restored or replaced water supplies must be capable of consistently meeting all required health-based and performance-based standards in addition to quantity demands. If a restored or replaced water supply remediation response fails to meet both water quality and quantity requirements, the Department will require the responsible party to employ a more reliable solution.
4. Implementation – The feasibility of restoring versus replacing the water supply should be considered.
5. Cost – The capital costs of proposed water supply remedies that are capable of meeting the Department’s requirements should be considered. Long term operation and maintenance costs will be considered in addition to the initial capital cost of replacing or restoring a water supply.

**E. Additional Measures.**

Please see the “Land Recycling Program Technical Guidance Manual” (Document Number 253-0300-100) for guidance when conducting groundwater remediation pursuant to Act 2.

**F. Permanent Water Replacement/Restoration Planning.**

1. Preliminary Conference

A meeting between the operator, water supply owner, consultant(s), and the Department should be conducted prior to determining what remedial action will be taken to restore or replace the impacted water supply. This will provide all parties involved with a better understanding of the Department’s expectations for restoring/replacing the impacted water supply.

2. Restoration of a Water Supply with Treatment System(s):

If an operator is proposing to restore an impacted water supply with treatment system(s), the proposed treatment system(s) must be reviewed by the Department prior to installation. The proposed treatment system(s) drawings, specifications, manufacturer's literature and any additional information requested by the Department should be provided for review.

Restoration of a private water supply with treatment system(s) should meet the following:

- a. Restore the water quality and/or quantity to the predrilling or prealteration survey quality and/or quantity, with such restoration confirmed by comparisons to post-drilling analytical sampling results and surveys taken by the Department, the operator, and/or the user.
  - (i) If prior to the impact of oil and gas operations, a water quality parameter was better than primary or secondary Maximum Contaminant Levels (MCL) standards established under the Pennsylvania Safe Drinking Water Act. The restored parameter should be comparable to the pre-impact quality of the water.
  - (ii) If prior to the impact of oil and gas operations, an impacted water quality parameter was worse than the primary or secondary MCL standards established under the Pennsylvania Safe Drinking Water Act, the restored parameter must meet or be better than the respective MCL established under the Pennsylvania Safe Drinking Water Act.
  - (iii) If a water quality parameter with no primary or secondary drinking water standard established under the Pennsylvania Safe Drinking Water Act is determined to be impacted by oil and gas operations, the concentration of the parameter in the restored water supply should be comparable to the pre-impact water quality.
  - (iv) If the predrilling or prealteration concentration of a PA Safe Drinking Water Act water quality parameter impacted by oil and gas operations is unknown, the restored parameter should meet or be better than the respective primary or secondary MCL standard established under the Pennsylvania Safe Drinking Water Act.
  - (v) If a water quality parameter is impacted by oil and gas operations and that parameter has no primary or secondary drinking water standard established under the Pennsylvania Safe Drinking Water Act and the pre-impact concentration is unknown, the restored water supply should meet an applicable health-based criteria used by the Safe Drinking Water Program and/or the Statewide Health Standards for Groundwater used by the Department's Environmental Cleanup and Brownfields Program. These programs will be consulted to determine an acceptable contaminant level for restoration requirements.

- (vi) Restored water supplies to be used for agricultural, commercial, industrial or other legitimate beneficial uses should meet an acceptable standard, determined by the Department, to allow those uses that were dependent on the impacted water supply to continue.
- b. Meet the quantity requirements for the purposes served by the restored water supply and deliver the amount of water necessary to satisfy the water user's needs and the demands of reasonably foreseeable uses. *See* 25 Pa. Code §§ 78.51(d)(3) and 78a.51(d)(3). With respect to agricultural water supplies, the term reasonably foreseeable uses includes the reasonable expansion of use where the water supply available prior to drilling exceeded the actual use. *See* 25 Pa. Code §§ 78.51(d)(3)(iii) and 78a.51(d)(3)(iii).
  - c. Be as reliable as the previous water supply. *See* 25 Pa. Code §§ 78.51(d)(1)(i) and 78a.51(d)(1)(i).
  - d. Be as permanent as the previous water supply. *See* 25 Pa. Code §§ 78.51(d)(1)(ii) and 78a.51(d)(1)(ii).
  - e. Not require excessive maintenance. *See* 25 Pa. Code §§ 78.51(d)(1)(iii) and 78a.51(d)(1)(iii).
  - f. Provide the water user with as much control and accessibility as exercised over the previous water supply. *See* 25 Pa. Code §§ 78.51(d)(1)(iv) and 78a.51(d)(1)(iv).
  - g. Include provisions for all necessary plumbing, conveyance, pumping or auxiliary equipment and facilities necessary for the water user to utilize the water supply. *See* 25 Pa. Code §§ 78.51(d)(4) and 78a.51(d)(4).
  - h. Prevent any potential cross connection to the abandoned water supply.
  - i. Not result in increased costs to operate and maintain. If the operating and maintenance costs of the restored or replaced water supply are increased, the operator shall provide for permanent payment of the increased operating and maintenance costs. *See* 25 Pa. Code §§ 78.51(d)(1)(v) and 78a.51(d)(1)(v).
  - j. Include a sample plan to demonstrate that the remedial actions for the water quality parameter(s) impacted by oil and gas operations meet, at a minimum, the drinking water MCL standards found in the Pennsylvania Safe Drinking Water Act and any other MCL standards for water quality parameter(s) or contaminant(s) of a concern required by the Department.

For restored water supplies utilizing only a treatment system, pretreatment and post treatment water samples should be collected to ensure the effectiveness of the treatment system. Where multiple treatment systems are employed serially, samples



should be taken after each stage of treatment.

For each sample location, initially collect and analyze samples for all the required water quality parameters identified in Appendix A. Any other parameters deemed of a concern by the Department based on the Department's investigation and documentation submitted by the operator to the Department regarding the constituents of concern from the well site that are affecting the water supply should also be sampled. If insufficient information is provided to identify the constituents of concern, the Department may request that the operator analyze samples to identify tentatively identified compounds ("TICs"). If the TICs may be reasonably associated with the operations at the well site, then the Department may require that the operator sample for those tentatively identified compounds to specify MCL standards, as set forth in paragraphs 2. a. (i-vi), above. Analyses of water samples from the water supply should include the parameters identified in Appendix A and the other parameters deemed of a concern by the Department. Sampling to confirm the adequacy of the restoration may be required to continue three consecutive quarters following one quarter of sampling results that meet the requirements of the law and/or an order of the Department.

3. Permanent Replacement of a Water Supply with a New Water Source:

If an operator is proposing to replace a water supply, the proposed alternative source of water must be reviewed by the Department prior to connecting the new water supply to the affected property. Unregulated surface water sources or groundwater sources under the direct influence of surface water should not be used to replace the existing private water supply intended for human consumption unless a treatment system is installed to provide continuous filtration and disinfection to ensure adequate treatment to reliably protect users from the adverse health effects of microbiological contaminants, including pathogenic bacteria, viruses and protozoan cysts.

Replacement of a private water supply should meet the following:

- a. Ensure the replacement water supply meets all primary and secondary MCL standards established under the Pennsylvania Safe Drinking Water Act.
  - (i) If prior to impact by oil and gas operations, a water quality parameter was better than the primary or secondary MCL standards established under the Pennsylvania Safe Drinking Water Act, the water quality parameter in the replacement water supply should be comparable to the pre-impact quality of the water.
  - (ii) If a water quality parameter with no primary or secondary drinking water MCL standard established under the Pennsylvania Safe Drinking Water Act is determined to be impacted by oil and gas operations; the concentration of the parameter in the replacement water supply should be comparable to the pre-impact water quality.

- (iii) Replacement water supplies to be used for agricultural, commercial, industrial or other legitimate beneficial uses should meet an acceptable standard, determined by the Department, to allow the continuance of the uses that were dependent on the impacted water supply.
- b. Meet the quantity requirements for the purposes served by the restored water supply and deliver the amount of water necessary to satisfy the water user's needs and the demands of reasonably foreseeable uses. See 25 Pa. Code §§ 78.51(d)(3) and 78a.51(d)(3). With respect to agricultural water supplies, the term reasonably foreseeable uses includes the reasonable expansion of use where the water supply available prior to drilling exceeded the actual use. See 25 Pa. Code §§ 78.51(d)(3)(iii) and 78a.51(d)(3)(iii).
- c. Be as reliable as the previous water supply. See 25 Pa. Code §§ 78.51(d)(1)(i) and 78a.51(d)(1)(i).
- d. Be as permanent as the previous water supply. See 25 Pa. Code §§ 78.51(d)(1)(ii) and 78a.51(d)(1)(ii).
- e. Not require excessive maintenance. See 25 Pa. Code §§ 78.51(d)(1)(iii) and 78a.51(d)(1)(iii).
- f. Provide the water user with as much control and accessibility as exercised over the previous water supply. See 25 Pa. Code §§ 78.51(d)(1)(iv) and 78a.51(d)(1)(iv).
- g. Include provisions for all necessary plumbing, conveyance, pumping or auxiliary equipment and facilities necessary for the water user to utilize the water supply. See 25 Pa. Code §§ 78.51(d)(4) and 78a.51(d)(4).
- h. Prevent any potential cross connection to the abandoned a water supply.
- i. Not result in increased costs to operate and maintain. If the operating and maintenance costs of the restored or replaced water supply are increased, the operator shall provide for permanent payment of the increased operating and maintenance costs. See 25 Pa. Code §§ 78.51(d)(1)(v) and 78a.51(d)(1)(v).
- j. If polluted water well(s) are being abandoned, properly abandon the impacted groundwater supply in accordance with Act 610, the Water Well Drillers License Act. Guidance on water well abandonment procedures can be found in the Department's document titled, "Groundwater Monitoring Guidance Manual" (Document number 383-3000-001) (December 1, 2001).
- k. ***Measures to be taken when proposing drilled water well(s) as remedy for water replacement:***

For helpful information related to water well construction, refer to the Hydrogeologic

Report requirements in the “PUBLIC WATER SUPPLY MANUAL” (Document Number 383-2125-108); the “AQUIFER TESTING GUIDANCE FOR PUBLIC WATER SYSTEMS” (Document Number 349-2125-001; and the well abandonment procedures of the “GROUNDWATER MONITORING GUIDANCE” (Document Number 383-3000-001).

(i) Well Siting

A professional geologist licensed in this Commonwealth must be responsible for siting the proposed private water supply well at an appropriate location and should make reasonable efforts to obtain the highest quality groundwater sources available. It is important that the hydrogeologic setting be considered during the well siting phase of a project.

The location of the water well should be adequate to protect the groundwater source from foreseeable sources of contamination, and reasonable measures should be taken to prevent diminution of source water quality. The well should be located so that it is protected against flooding and surface water influence.

If groundwater withdrawal has potential to impact a special protection water (High Quality or Exceptional Value) based on designated use classification per 25 Pa. Code Chapter 93, the operator should work with the Department in creating a plan that satisfies the guidelines outlined in the Department’s guidance, *Water Quality Antidegradation Implementation Guidance*, DEP ID: 391-0300-002.

(ii) Site Survey

After the well is sited, locational data (latitude and longitude) should be provided to the Department. The Department may conduct a site survey and evaluate the well location to survey and document the physical surroundings of the well and its proximity to any potential sources of contamination.

(iii) Well Drilling Plan

After the site survey is conducted, the professional geologist should prepare and submit a well drilling plan to the appropriate Oil and Gas District Office. See Appendix B. The plan should establish a preliminary hydrogeologic understanding of the project site, a monitoring plan for aquifer testing (quality and quantity) and the proposed well construction design of the water well(s). Well drilling should not commence until the well drilling plan is reviewed by a Department Professional Geologist. For existing wells being proposed as a source of replacement water supply, a plan should still be submitted to the Department establishing a preliminary hydrogeologic understanding of the project site, a monitoring plan for aquifer testing (quality and quantity) and any available information on the existing water well(s), such as well driller logs and field tests.

Water well(s) should be drilled by a registered well driller licensed by the Commonwealth of Pennsylvania. The Department should be provided with dates and times of all water well drilling and testing activities.

Erosion and sediment control measures must be followed for all earth moving activities. *See* 25 Pa. Code Chapter 102 and the Department's guidance document, *Erosion and Sediment Pollution Control Manual*, DEP ID: 363-2134-008 for further information.

(iv) Drilling Plan Modifications

After well drilling, the professional geologist should provide the Department with any modifications to the drilling plan as an addendum to the drilling plan.

(v) Aquifer Testing

If the water demand is deemed high enough the Department may require a constant rate pump test to be conducted on the well(s) being proposed as a new source in order to adequately define the hydraulic characteristics of the aquifer and well(s). The duration of the pump test will be based upon the required yield of the new source to meet the quantity requirements for the purposes previously served by the replaced water supply. The proposed duration of the pump test should be shared with the Department prior to commencement of pump test. The yield must also deliver an amount of water necessary to satisfy the water user's needs and the demands of any reasonably foreseeable uses. Data from the test are subject to appropriate analysis to demonstrate the suitability of the well as a long-term water supply source including, when necessary, the evaluation of significant potential impacts from the groundwater withdrawal on other water resources. The results derived from properly conducted and analyzed aquifer tests will also provide oil and gas operators with the data necessary to support their claim that the water supply has been properly replaced to meet the requirements outlined in the 2012 Oil and Gas Act (58 Pa. C.S. §§ 3201, *et seq.*) and Title 25 Pa. Code §§ 78.51-52 or 78a.51-52. All data and analysis derived from the aquifer test should be submitted to the Department for review.

(vi) Capital costs and long term cost

In addition to the cost of providing an affected property with a new water supply, the operator shall provide for permanent payment of the increase of the operating and maintenance costs. *See* 25 Pa. Code §§ 78.51(d)91)(v) and 78a.51(d).

(vii) Sample plan:

Include a sample plan to demonstrate that the drilled water well meets all primary and secondary MCL standards established under the Pennsylvania Safe Drinking Water Act and any other MCL standards for water quality parameter(s) or

contaminant(s) of a concern required by the Department.

All groundwater samples should be collected directly from the production well prior to any filtration and/or treatment so that the original groundwater chemistry is not altered. If applicable, the aquifer should be tested immediately following the constant-rate pumping test, when the groundwater system is stressed and most representative of groundwater quality. In order to achieve reliable laboratory results, proper collection, preparation and storage of groundwater samples and the use of appropriate sampling equipment and techniques should be followed and documented. If the aquifer that the replacement drilled water well draws water from was also impacted by the well site, the Department may require water quality analyses of parameters in addition to those identified Appendix A, including but not limited to constituents of concern from the release or TICs, as described in paragraph 2. J., above.

If a treatment system is also required for the new water well, post-treatment samples should be collected as well.

Scheduled sampling should continue until the water supply is restored or replaced, meeting the requirements of an outstanding order and the law. Sampling to confirm the adequacy of the replacement may be required to continue three consecutive quarters following one quarter of sampling results that meet the requirements of the law and/or an order of the Department.

1. ***Measures to be taken when proposing to connect to a public water supply regulated by the Department's Safe Drinking Water Program as remedy:***

(i) Approval from public water purveyor/water authority.

An operator should consult with the public water supply/water authority on the feasibility of connecting new customers to their water supply. Many factors should be considered by the public water supply including:

- Available capacity to add additional consumers to public water supply,
- Federal, State, and Local approvals and permit requirements,
- Pennsylvania Public Utility Commission requirements (if applicable),
- Logistics and property easements.

(ii) Water quality

Section 3218(a) and 25 Pa. Code §§ 78.51(d)(2) and 78a.51(d)(2) provide that the quality of a restored or replaced water must meet the standards established under the Pennsylvania Safe Drinking Water Act (35 P.S. §§ 721.1–721.17) or is comparable to the quality of the water that existed prior to pollution if the water quality was better than these standards. *See* 58 Pa.C.S. § 3218(a); 25 Pa. Code §§ 78.51(d)(2) and 78a.51(d)(2).

If deemed necessary by the water supply owner or the Department, additional treatment of the public drinking water supply may be required to meet these conditions.

(iii) Capital costs and long term cost

In addition to the cost of connecting an affected property to a public water supply, the operator shall provide for permanent payment of the increased cost for the service provided by the public water supply, compared to the historic operation and maintenance costs of the replaced water supply. *See* 25 Pa. Code §§ 78.51(d)(1)(v) and 78a.51(d)(1)(v).

(iv) Notification to the Department

Both the Department's Oil & Gas Management Program and Safe Drinking Water Program should be notified of the intent to connect users to a public water supply.

(v) Include a sample plan based sampling requirements will be contingent on the public water system's classification as follows:

- Community Water Supply – Total Coliform, E. Coli and Heterotrophic Plate Count samples should be collected at a sample point after the connection to the public water system.
- Non-transient Water Supply - Total Coliform, E. Coli and Heterotrophic Plate Count samples should be collected at a sample point after the connection to the public water system.
- Transient Water Supply - All parameters required under the Pennsylvania Safe Drinking Water Act should be sampled at a sample point after the connection to the public water system.

If a treatment system is installed onto the distribution system being served by the public water supply; post treatment samples should be collected. Any water quality parameters deemed a concern by the Department for which the treatment system is targeting, those parameters should also be sampled for in addition to those required in this section for public water supplies.

## **G. Laboratory Analysis.**

All analyses of samples should be performed by a laboratory that is certified by the DEP under 25 Pa. Code Chapter 252. The samples should be submitted to the laboratory in laboratory-issued bottle ware, with appropriate chain-of-custody documentation and within the required holding times.

Additionally, all volatile organic chemicals (VOCs) to be submitted to a laboratory for VOC analysis should be collected by a person properly trained to collect such samples.

## Appendix A

The following tables list the initial minimum sampling requirements for newly drilled/altered groundwater sources and any replaced or restored systems that require a new treatment system. The Department may require monitoring of any other contaminant(s) as determined necessary to adequately evaluate the quality of the replaced/restored water supply.

### VOLATILE ORGANIC CHEMICALS (VOCs):

BENZENE CARBON TETRACHLORIDE o-DICHLOROBENZENE para-DICHLOROBENZENE 1,2-DICHLOROETHANE 1,1-DICHLOROETHYLENE cis-1,2-DICHLOROETHYLENE	trans-1,2-DICHLOROETHYLENE DICHLOROMETHANE 1,2-DICHLOROPROPANE ETHYLBENZENE MONOCHLOROBENZENE STYRENE TETRACHLOROETHYLENE	TOLUENE 1,2,4-TRICHLOROBENZENE 1,1,1-TRICHLOROETHANE 1,1,2-TRICHLOROETHANE TRICHLOROETHYLENE VINYL CHLORIDE (See NOTE) XYLENES (Total)
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NOTE: Monitoring for vinyl chloride is only required when one or more of the following two-carbon compounds are detected: trichloroethylene, tetrachloroethylene, trans-1,2-dichloroethylene, cis-1,2-dichloroethylene, 1,2-dichloroethane, 1,1-dichloroethylene, 1,1,1-trichloroethane.

### SYNTHETIC ORGANIC CHEMICALS (SOCs):

ALACHLOR ATRAZINE BENZO(A)PYRENE CARBOFURAN CHLORDANE DALAPON DI(2-ETHYLHEXYL) ADIPATE DI(2-ETHYLHEXYL) PHTHALATE DIBROMOCHLOROPROPANE (DBCP) DINOSEB	DIQUAT ENDOTHALL ETHYLENE DIBROMIDE (EDB) ENDRIN GLYPHOSATE HEPTACHLOR HEPTACHLOR EPOXIDE HEXACHLOROBENZENE HEXACHLOROCYCLOPENTADIENE LINDANE	METHOXYCHLOR OXAMYL (VYDATE) PCBs <sup>1</sup> PENTACHLOROPHENOL PICLORAM SIMAZINE TOXAPHENE 2, 3, 7, 8-TCDD (DIOXIN) <sup>1</sup> 2, 4-D 2, 4, 5-TP (SILVEX)
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1. Monitoring for PCBs and/or dioxin is required when there is a contamination source within 1,000 feet of the new groundwater source. Provide details of the assessment in Public Water Supply Module 3A, Part U to support a finding of no sources of contamination.

### INORGANIC CHEMICALS (IOCs):

ANTIMONY ARSENIC ASBESTOS (See NOTE) BARIUM BERYLLIUM CADMIUM	CHROMIUM COPPER CYANIDE (as free cyanide) FLUORIDE LEAD MERCURY	NICKEL NITRATE (as Nitrogen) NITRITE (as Nitrogen) SELENIUM THALLIUM
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NOTE: Monitoring for asbestos is required when DEP has reason to believe the source is vulnerable to contamination.

<b>RADIONUCLIDES:</b>	
GROSS ALPHA	GROSS BETA (See NOTE)
RADIUM-226, RADIUM-228	URANIUM
NOTE: If the Gross Beta exceeds 50 pCi/L, analyze the same or equivalent sample to identify the major radioactive constituents present.	

<b>MICROBIOLOGICAL CONTAMINANTS:</b>	
TOTAL COLIFORMS CONCENTRATION	<p>Three (3) separate samples obtained at 15-minute intervals immediately prior to the conclusion of the constant rate aquifer test.</p> <p>For each Total Coliform positive sample, analyze the same or equivalent sample for <i>E. coli</i> concentration.</p>

<b>SECONDARY CONTAMINANTS AND OTHERS:</b>		
ALKALINITY ALUMINUM CHLORIDE COLOR FOAMING AGENTS	HARDNESS IRON MANGANESE pH (See NOTE) SILVER SODIUM	SULFATE TEMPERATURE (See NOTE) TOTAL DISSOLVED SOLIDS TOTAL ORGANIC CARBON TURBIDITY (NTU) ZINC
NOTE: Temperature and pH measurements may be obtained in the field with a calibrated water quality meter within 15 minutes of sample collection.		
(If applicable)  <b>MICROSCOPIC PARTICULATE ANALYSIS (MPA)</b>	MPA sampling should be conducted by a qualified person for all new groundwater sources to be used for human consumption which fall within the criteria of the <i>Guidance for Surface Water Identification Protocol</i> , DEP ID: 383-3500-106, available on DEP's website at <a href="http://www.dep.state.pa.us">www.dep.state.pa.us</a> .	

<b>OTHER CONTAMINANTS:</b>
The Department may require monitoring of any other contaminant(s) as determined necessary to adequately evaluate the quality of the source. Testing for additional contaminates will be determined based upon known current and historical impacts to the aquifer, known potential sources for contamination and geology.



# Appendix B

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