Equitrans, L.P.
Equitrans Expansion Project
Docket No. CP16-13-000

Responses to Environmental Information Request
Dated June 24, 2016

Federal Energy Regulatory Commission

Resource Report 2 – Water Use and Quality – Water Resources

2. The FERC environmental staff does not agree with Equitrans' January 22, 2016 response to our December 29, 2015 Environmental Information Request (EIR) RR2 No. 5 regarding well yield testing. In order to establish baseline individual well production capacity and background (pre-construction) water yield, Equitrans should commit to performing short-term yield tests (specific capacity) for private and public water supply wells. These data should be collected and reported for each season prior to construction. File a plan outlining the procedures that Equitrans would follow for its pre-construction domestic water well testing. Note: for public utility sources, monitoring records of yield can be used instead of testing.

Response:

Equitrans will sample domestic private water wells that are within 150 feet of construction workspaces approximately six months prior to construction, with a follow-up sample approximately three months prior to construction. There are no public water supplies within 150 feet of the Project. Sampling will be conducted by competent professionals experienced in well yield testing and water quality sampling.

In addition to analyte testing, the first sampling event will also document the condition of the water source in relation to the surrounding landscape to understand the potential for impacts to occur from construction. Appendix A at the end of this response lists the information that will be collected concurrent with the analysis. Once lab results are returned, water quality information obtained from sampling will be shared with the well owner.

The second sampling event will be conducted for well yield testing. Appendix B describes the private well testing protocol. Equitrans will review the well testing procedure and request specific permission to access the landowners' well during the test. Again, results of the second sampling event will be provided to the owner. It is possible that some water supply owners may not want Equitrans to perform some or all of the samplings proposed, and Equitrans will honor such requests.

The following discussion outlines protocols for pre-construction sampling activities. The results of testing will be documented by Equitrans and shared with the applicable well owner.

1. The currently anticipated construction start for the Project is mid-2017. Equitrans intends to conduct two baseline pre-construction water resource sampling events at each private (domestic) water resource identified within 150 feet of construction work zones (see Resource Report 2 and associated responses to data requests). Equitrans proposes to

collect one sample (water quality) approximately six months before construction and a second sample (water quality and yield) within three months prior to construction.

2. All private property owners with a known or suspected water resource will be contacted by certified letter using the following format:

    a. Send first letter by certified mail;

    b. If no response is received within 30 days of sending the letter, send a second follow-up letter by certified mail;

    c. If no response is provided by property owner after two attempts by certified letter, this result will be documented and Equitrans will suspend further contact to the property owner regarding water quality testing;

    d. If a property owner declines permission for Equitrans to conduct water quality testing, this will be documented and Equitrans will suspend further contact with the property owner regarding water quality testing.

3. Property and water supply access approval documentation will be secured by Equitrans before entering the property. The property / supply owner will be notified prior to Equitrans entering the property for sampling. See Appendix A for information to be collected from the water supply owner during initial and follow-up contact.

4. A two-person field crew will deploy to collect water samples at the identified locations.

5. The sampling location will be marked in the field with a semi-permanent marker and labeled. The sampling location coordinates will be collected using GPS (1 meter resolution) and recorded.

6. Field testing, sample collection and sample management techniques will be implemented consistent with industry standards and approved guidance (U.S. EPA, Pennsylvania Department of Environmental Protection; and West Virginia Department of Environmental Protection).

7. Based on available information, no springs have been identified within 150 feet of construction work zones. If a spring is identified within 150 feet of construction work zones during pre-construction surveys, a decontaminated or new one-time-use sample collection device suitable for the surface water resource will be inserted in a flowing portion of the spring or stream and the water sample transferred directly to the appropriate sample container provided by the laboratory.

8. A decontaminated field meter will be inserted in a flowing portion of the spring and the field parameters recorded along with date and time.

9. For water well testing, a water sample will be collected from a flowing spigot (after a minimum of 10 minutes purging) upstream of any treatment system (if applicable) in order to collect a raw water sample in the appropriate laboratory-prepared sample bottle with appropriate preservatives. Field parameters will be analyzed at the time of water sample collection.

    a. If the well does not have a pump installed, or does not demonstrate artesian flow, a new, disposable one-time use bailer and clean nylon string will be used to collect the water sample. There will be limited ability to purge the well bore of water using the bailer.

10. Water samples will be kept cool and transported by overnight courier to the analytical laboratory(ies) under Chain of Custody.

11. The same analytes will be tested in both planned sampling events. National Environmental Laboratory Accreditation Program (NELAP)-accredited laboratories will be utilized for water sample analyses.

    The analyte list includes the following:

    a. · Alkalinity
    b. · Oil and Grease
    c. · Specific Conductance
    d. · Total Dissolved Solids
    e. · Total Suspended Solids
    f. · Chloride
    g. · Sulfate
    h. · Hardness
    i. · Nitrate as N
    j. · MBAS / Surfactants
    k. · Total Coliform
    l. · E. Coli
    m. · Turbidity
    n. · Volatile Organic Compounds
    o. · Hydrocarbons
    p. · Total Metals

12. Water resources testing activities (including the condition of the water resource and equipment) will be photo-documented. All field activities and meter calibration for each water resources sampling event will be documented.

13. The first pre-construction sampling event will be used to evaluate the condition of each well, spring or intake, surrounding topography and land characteristics and land-use, and generally assess the overall vulnerability of the water supply to existing or future sources of impact. Well water quality sampling and yield testing for private wells would be

conducted only if owner permission is granted. Data collection requirements for well sampling and yield testing is provided in Appendix A. Yield testing procedures for private wells are described in Appendix B.

14. Equitrans will share laboratory quality results with the water supply owner. Equitrans will also review with the landowner any conditions that were observed at the water supply that represent potential for existing or future sources of impacts.

15. The second sampling event will include private well yield testing. Equitrans will review the procedures for well yield testing with the landowner, and Equitrans will request permission to access the well for the quantity testing, at the owner's discretion. See Appendix B herein for private well yield testing protocol (PADEP, 2007; PADEP 2009).

16. Post-construction water quality sampling would only be performed at the specific request of well owners where pre-construction sampling was performed. Post-construction yield tests would also only be performed at the specific request of well owners where pre-construction yield testing was performed based on owner concerns regarding a potential change in the well yield. Sampling and testing protocols would follow pre-construction criteria and as described in Appendix B.

References

National Environmental Laboratory Accreditation Program (NELAP), 2016. http://www.nelac-institute.org/content/NELAP/index.php
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PADEP, 2007. Water Supply Replacement and Permitting, Document number 563-2112-605. Pennsylvania Department of Environmental Protection, Bureau of Mining Programs, Volume 12, Tab 74 (BMP PGM Section II, Part 6, Subpart 5). October 24, 2007.

PADEP, 2009. Procedures for Establishing the Quantity of Water in Low-Yield Wells, Document number 563-2112-605. Pennsylvania Department of Environmental Protection, Bureau of Mining Programs, Volume 12, Tab 74 (BMP PGM Section II, Part 6, Subpart 5). October 24, 2007.

Appendix A Information Collected from Water Supply Owners

Route Specific Sort Order
Parcel Number(s)
APN(s)
Name (Last, First or Company)
Permission to Enter
Date on Form
Signed
Address Line 1
Address Line 2
City, State, Zip
Telephone Number
Email Address
Preferred Day/Time of Contact
Water Wells
- Drilled or Dug
- Used for Drinking
- Well Depth
- Treatment System or Filter
- GPS location of supply
- Static water level
- Type of pump
- Is well accessible
- Number of household inhabitants
- Holding tanks or pressure tanks present?

Other Water Wells
- Number of Other Wells
- Drilled or Dug
- Used for Drinking
- Well Depth
- Treatment system
- GPS location of supply
- Static water level
- Type of pump
- Is well accessible
- Describe use
- Holding tanks or pressure tanks present?

Springs
- Number of Springs
- Used for Livestock/Irrigation

Streams

Number of Streams
Used for Livestock/Irrigation
Other Bodies of Water
Number of Other Bodies of Water
Description
Used for Livestock/Irrigation
Comments

Appendix B Private Well Yield Testing Protocol

The following outlines the methodology for measuring pre-construction well yield at private water supply wells. Public water supplies have documented production data and this will be used for pre-construction baseline data. The private water well yield testing methods described below were taken from The Pennsylvania Department of Environmental Protection, Bureau of Mining Programs, Document 563-2112-605 (Water Supply Replacement and Permitting; Appendix B, Section C), and Document 563-2112-606 (Procedures for establishing the quantity of water in low-yield wells) (PDEQ 2007, PDEQ 2009a).

There are two (2) procedures discussed below. The first is well yield testing when the well is accessible for measuring water level during pumping and recovery. The second is a flow testing protocol when the well is not accessible, or the property owner does not authorize Equitrans to access the well but requests a well yield test.

If the property owner requests a post-construction well yield test, it is critical that the test be conducted under the same conditions to the extent possible in order to provide as accurate a comparison as possible. Since pumping rate and the test duration both affect the well yield estimate, these parameters need to be nearly the same to compare results of post-construction to pre-construction tests. If possible, the two tests should be conducted during the same season of the year because seasonal variation of well recharge can influence the yield estimate.

Yield Testing Protocol for Accessible Wells - Specific Capacity

The "specific capacity" of a well is the number of gallons of water produced per minute for each foot of well drawdown.

A test duration of 1 hour at a pumping rate of 5 gallons per minute (gpm) will be conducted to estimate well specific capacity.

Procedure

Request that the well owner not operate the well for as long as practical prior to conducting the test. Record when the owner last used the water system.

Well plumbing fixtures, such as the pressure shutoff switch, sediment filter and pressure tank may need to be by-passed or disconnected to maintain a stable, steady pumping rate.

Ensure that the discharged water is collected, or discharged away from the well so that it does not artificially recharge the well.

Measure and record the depth to water from the top of the well casing.

Measure and record the depth to the pump from the top of the well casing, if possible. Record any pump installation data that are available.

Record time that flow testing begins.

The following measurements should be taken during the pumping period:

Pumping rate – measure at the start of the test; at five minute intervals during the initial stages of the test; at 10 minute intervals during the latter stages of the test; and at the conclusion of pumping. Adjust flow controls as necessary to maintain the optimal 5 gpm pumping rate.

Water level – measure at the start of the test; at one or two minute intervals during the first 10 to 20 minutes; at five minute intervals during the remainder of the pumping period; and at the conclusion of pumping.

Terminate pumping if the water level drops within 5 ft of the pump, so the pump is not damaged by running it dry.

Record time that flow testing ends.

At the conclusion of the pumping test, commence recovery measurements in accordance with the following guidelines:

0 – 5 minute interval: every 30 seconds

5 - 10 minute interval: every 60 seconds

10 - 20 minute interval: every two minutes

20 - 60 minute interval: every five minutes

If after one hour the level of recovery is less than 50% of the depth of drawdown, continue to measure water levels at five minute intervals until water level has recovered to 90% of the depth of drawdown or until three hours since the start of recovery, whichever occurs first.

Tabulate pumping rate, drawdown and recovery data, and prepare a graph of water level vs. time.

Well yield can be calculated from specific capacity by multiplying the available drawdown in the well (the distance between the static water level and the normal pump setting in feet) with the specific capacity (units in gallons per minute per feet of drawdown), the result having the units of gpm. This calculated yield takes into consideration both the storage capacity of the well and the aquifer performance under the limited conditions of the specific capacity test.

SC=R/D

Where: SC = specific capacity (gpm/ft), R = adjusted discharge rate (gpm), and D = total drawdown (ft.)

$R = (Vt - Vs) / t$

Where: Vt = total volume of water discharged during test (gallons), Vs = volume of water discharged from borehole storage (gallons), and t = duration of the test (minutes).

$Vs = 23.5D\ r^2$

Where: Vs = volume of water discharged from borehole storage (gallons), D = total drawdown (feet), r = well radius in feet.

(Note, for a standard 6-1/2 inch diameter well, Vs = 1.72 gal./ft. X D)

Yield (gpm) = AD x SC

Where: AD = available drawdown (ft) = depth to pump intake - static water level - 5 ft.

Well storage may be overemphasized in specific capacity tests. Unlike a long-duration test of a high-performance, industrial well, a short-duration test of a low-yielding well, especially a deep well, may result in borehole storage water representing most of the water discharged during the test. A borehole storage problem becomes significant if the specific capacity is then multiplied by the available drawdown to calculate a yield. A poor-performing, unreliable well can appear to have a relatively good yield when an inappropriate test method is used. There are two ways to avoid this problem. First, compare specific capacities (without borehole storage) and do not calculate a yield. This approach completely eliminates consideration of borehole storage. The second approach allows well storage to be considered but not overemphasized by subtracting the volume of borehole storage from the amount of water discharged prior to calculating specific capacity, then calculating the well yield. This second approach gives credit for borehole storage, but does not count it twice.

<u>Yield Testing Protocol for inaccessible Wells - Peak Demand Test</u>

The Peak Demand Test (PDT) will be used if a well is inaccessible for direct monitoring of water level during pumping and recover. The PDT is used to simulate well usage during peak demands, and does not provide an actual yield value. It only tests a delivery system's ability to provide water to the user.

Procedure

The test will be performed by running the water from an outdoor spigot or indoor faucet.

If possible, well plumbing fixtures, such as the pressure shutoff switch, sediment filter and pressure tank may need to be by-passed or disconnected to maintain a stable, steady flow rate.

Ensure that the discharged water is collected, or discharged away from the well so that it does not artificially recharge the well.

Open spigot or faucet for flow at 5 gpm for 15 minutes and then stop flow for recovery for 15 minutes.

The on/off pumping cycles are repeated for 4 hours or until the well fails, whichever comes first.

Record time at the beginning and end of each cycle.

The discharge rate (flow rate) will be recorded every 5 minutes (three times per pumping cycle).

If the pump intake breaks suction and the discharge rate drops noticeably, record the time when this occurs.

The parameters of the PDT must be carefully recorded. Maintaining a constant discharge rate can be difficult to achieve because an in-place water delivery system for a home can be difficult to control and the discharge rate may decline as the test advances.

Because the PDT does not require entry to the well bore, liability concerns from well damage are less. The test also provides a means of testing water supplies not physically accessible for water level measurements. A disadvantage of the test is that the PDT takes longer to perform than the short-duration specific capacity test. Because of the on-and-off cycles, the PDT will not adequately test the well if its duration is shortened to less than 4 hours. The PDT should only be allowed where borehole access requires an extraordinary effort, or the well owner does not authorize entry.

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