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October 12, 2022

Sent via e-mail

Samantha Lutz
Oil and Gas Operations District
Southwest Regional Office
Pennsylvania Department of Environmental Protection
400 Waterfront Dr
Pittsburgh, PA 15222

RE: PennEnergy Resources, LLC
Southwest Pennsylvania Water Management Plan
for Unconventional Shale Gas Well Development
Economy Borough, Beaver County

Ms. Lutz:

The attached information is being re-submitted on behalf of:

PennEnergy Resources, LLC
1000 Commerce Drive
Park Place One, Suite 400
Pittsburgh, PA 15275
Attn: Richard M. Watson

Please find attached a copy of the PennEnergy Resources, LLC Water Management Plan Application for Unconventional Shale Gas Well Development in the Pennsylvania Department of Environmental Protection (PADEP) Southwest Region: Big Sewickley Creek. This copy of the complete revised application is being submitted in response to the comments following the review provided by the PADEP on August 24, 2022 via email. The comments, with responses in italics, are provided below. The responses below are also reflected in the application.

Comment 1a: The Department requested that PennEnergy justify average daily flow (ADF) of Big Sewickley Creek and determine the most protective passby flow rate. The representative historic data that was provided and utilized does not represent the most protective passby flow rate for Big Sewickley Creek.

The Pennsylvania Fish and Boat Commission's (PFBC) recommendation of applying the Tennant Method to instream flow estimates provided by the USGS StreamStats for Big Sewickley Creek provides the most protective passby flow rate for this withdrawal location. Update the Water Management Plan (WMP) Application to follow the recommendation's outlined in Species Impact Review (SIR) # 56633.

In accordance with the PFBC SIR# 56633, the passby flow rate was reassessed using the Tennant method recommended flow of 30% of ADF for the months of October through March, and 50% of the ADF from April through September. The ADF provided by the USGS StreamStats website was used for the passby calculations. The results are summarized in the table below.

Table: Recommended base flow regimen based on Tennant's "Excellent" flow description and Average Daily Flow from USGS StreamStats

	BSC Average Daily Flow	Proposed Withdrawal Amount (% of ADF)	30% ADF (Oct-Mar)		50% ADF (Apr-Sept)	
			Minimum Passby – Stop Withdrawal	Passby Required for Full Withdrawal	Minimum Passby – Stop Withdrawal	Passby Required for Full Withdrawal
Cubic Feet per Second	21.6	2.3 (10.6%)	6.5	8.8	10.8	13.1
Gallons per Day	13,960,408	1,500,000 (10.6%)	4,188,123	5,687,574	6,980,204	8,479,655
Stage Measured at Onsite Upstream Staff Gage(ft)	1.66		1.33	1.41	1.46	1.52

The following revisions have been made in the WMP to reflect the ADF and passby requirements tabulated above:

- Section III.A.4.c.
 - o Revised to reflect the ADF as provided by USGS StreamStats.
- Section III.A.4.e.
 - o Revised to reflect the passby requirements tabulated above.
- Attachment B (Stream Gage Calibration Report)
 - o The last paragraph in the Results/Discussion section and the first paragraph in the Conclusions section were revised to include the passby requirements tabulated above.
- Attachment F (Passby Flow Determination)
 - o Revised to reflect the passby requirements reflected above.
- Attachment G (PNDI)
 - o The latest correspondence from PFBC (SIR #56633) was included.
- Attachment J (Withdrawal Impacts Analysis)
 - o Section (c) was updated to reflect the passby requirements tabulated above.

Comment 1b: PennEnergy did not address how taking greater than 10% of the ADF is protective of both instream flows and low flows.

Update the WMP Application to address that taking greater than 10% of the ADF is protective of both instream and low flows. 25 Pa. Code §78a.69 (b)

The following revisions have been made in the WMP to address that taking greater than 10% of the ADF is protective of both instream and low flows:

- *Attachment J (Withdrawal Impacts Analysis)*
 - o *Section (c), paragraph 4 states:*

The less restrictive of the two passby percentages (30%) is adequately protective of both instream flows and low flows. Tennant lists 30% ADF as representative of “excellent” flow conditions and states “This is a base flow recommended to sustain good survival habitat for most aquatic life forms.”. During the late May through early June spawning season of the Southern Redbelly Dace, an enhanced passby of 50% ADF is proposed to offer additional habitat protection for the species. The PAFBC has concurred with this assessment of flow protection and stated in SIR #56633 that “This pass by flow recommendation is deemed to be protective of instream habitat minimizing decreases in wetted width.”. During average flow conditions, 89.4% of ADF will remain in the creek. Considering that seasonal passby restrictions of 30% ADF and 50% ADF are protective of low flows as described above, and considering that those base flow recommendations are deemed to sustain survival habitat and minimize decreases in wetted width, allowing 89.4% of ADF to remain in the creek will not materially impact aquatic life and, with the inclusion of passby requirements will be protective instream flows, satisfying 25 Pa. Code §78a.69 (b)(1).

Comment 6: A downstream gage needs to be installed and evidence of calibration needs to be submitted prior to approval of the WMP Application. The Withdrawal Impact Analysis also needs updated to address the monitoring frequency of the downstream staff gage. 25 Pa. Code § 78a.69 (e) (2)

Update the WMP Application to document that a downstream gage was installed, and calibrations have been started.

The following revisions have been made to reflect that a gage was installed downstream of the withdrawal point, and that calibration measurements have been started and are ongoing:

- *Attachment A (Water Source Use and Monitoring Plan)*
 - o *Passby section updated to reflect the addition of the downstream gage.*
- *Attachment B (Stream Gage Calibration Report)*
 - o *Page 1, paragraph 3 was revised to indicate that a gage was installed downstream of the withdrawal point, that calibration measurements have begun, and that they are ongoing.*

It also states that an addendum to the Stream Gage Calibration Report will be submitted once calibration of the downstream gage is complete.

- *Figure 2 was updated to include the location of the downstream gage.*
- *Attachment 1 was updated to include photographs of the downstream gage.*

Please feel free to contact me by email or phone at 814-724-4970 with any questions you may have.

Sincerely,
Moody and Associates, Inc.

A handwritten signature in black ink that reads "Paul J. Martin". The signature is written in a cursive style with a large, stylized initial "P".

Paul J. Martin, P.G.
PMartin@moody-s.com