

Application Type Renewal
Facility Type Industrial
Major / Minor Major

**NPDES PERMIT FACT SHEET
ADDENDUM**

Application No. PA0002208
APS ID 1001540
Authorization ID 1288111

Applicant and Facility Information

Applicant Name	<u>Shell Chemical Appalachia LLC</u>	Facility Name	<u>Shell Polymers Monaca Site</u>
Applicant Address	<u>4301 Dutch Ridge Road Beaver, PA 15009</u>	Facility Address	<u>300 Frankfort Road Monaca, PA 15061-2210</u>
Applicant Contact	<u>Kimberly J. Kaal</u>	Facility Contact	<u>***same as applicant***</u>
Applicant Phone	<u>(724) 709-2467</u>	Facility Phone	<u>***same as applicant***</u>
Client ID	<u>311950</u>	Site ID	<u>102360</u>
SIC Code	<u>2821, 2869</u>	Municipality	<u>Potter Township</u>
SIC Description	<u>Manufacturing - Industrial Organic Chemicals, NEC, Manufacturing - Plastics Materials And Resins</u>	County	<u>Beaver</u>
Date Published in PA Bulletin	<u>August 8, 2020</u>	EPA Waived?	<u>No</u>
Comment Period End Date	<u>September 22, 2020 (extended)</u>	If No, Reason	<u>Major</u>
Purpose of Application	<u>Application for a renewal of an NPDES permit for discharge of treated Industrial</u>		

Internal Review and Recommendations

The public notice of draft NPDES Permit PA0002208 for the Shell Polymers Monaca Site (SPMS) was published in the *Pennsylvania Bulletin* on August 8, 2020 for a 30-day comment period. By email dated September 3, 2020, the Environmental Integrity Project (EIP) requested a 15-day extension of the comment period. DEP granted EIP's requested extension on September 3, 2020 pursuant to 25 Pa. Code § 92a.82(d). The extended comment period ended on September 22, 2020.

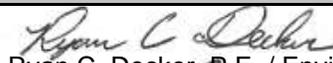
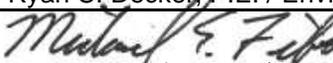
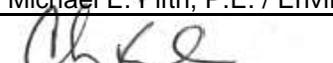
By letter dated September 4, 2020, Shell Chemical Appalachia LLC (Shell) submitted comments on the draft NPDES permit. DEP's responses to Shell's comments are provided below. On October 21, 2020, DEP sent an email to Shell requesting feedback on proposed permit changes made in response to Shell's September 4, 2020 comments. Shell sent a letter responding to DEP's email on November 13, 2020.

Shell Comment 1: For the description of Outfalls 001 and 013 please add the following language "*and sources monitored at Internal Monitoring Point (IMP) 108*". These outfalls are authorized to discharge hydrotest waters same as Outfall 008 and therefore should have same language as Outfall 008 in their description.

DEP's Response to Shell Comment 1: The effluent descriptions for Outfalls 001 and 013 will be modified to include IMP 108's wastewaters. The receiving waters identified for IMP 108 also will be updated to include Outfall 001 as follows:

"Poorhouse Run through Outfall 008 or the Ohio River through **Outfall 001 and** Outfall 013"

Discharges of hydrostatic test water from Outfalls 001 and 013 do not prompt any changes to the effluent limits at those locations.

Approve	Return	Deny	Signatures	Date
X			 Ryan C. Decker, P.E. / Environmental Engineer	February 22, 2021
X			 Michael E. Fifth, P.E. / Environmental Engineer Manager	February 24, 2021
X			 Christopher Kriley, P.E. / Program Manager	February 24, 2021

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Shell Comment 2: As per our October 10, 2019 submittal please remove Outfall 017 as it is no longer needed.

DEP's Response to Shell Comment 2: The outfall for storm water runoff from the wastewater treatment plant area (Outfall 017) will be removed from the final permit. Per 25 Pa. Code § 92a.73 and 40 CFR § 122.63, outfall deletions are classified as minor amendments, so no public notification is needed to remove Outfall 017.

In accordance with Shell's October 10, 2019 application update, Outfalls 018, 019, 020, 022, and 023 in the draft permit will be renumbered as Outfalls 017, 018, 019, 020, and 022, respectively, in the final permit.

Shell Comment 3: We request that the permit authorize the following "general" discharges that are allowed under the PADEP General Permit (PAG-03) in Part C.I.B:

- Discharges from emergency/unplanned fire-fighting activities;
- Potable water, including water line flushings and fire hydrant flushings, that do not contain measurable concentrations of Total Residual Chlorine (TRC);
- Uncontaminated condensate from air conditions, coolers chillers, and other compressors (if treatment through an oil/water separator is provided) and from the outside storage of refrigerated gases or liquids;
- Irrigation drainage;
- Landscape water if such water does not contain pesticides, herbicides or fertilizers;
- Pavement wash waters where no detergents or hazardous cleaning products are used, and the wash waters do not come into contact with oil and grease deposits, sources of pollutants associated with industrial activities, or any other toxic or hazardous materials;
- Routine external building washdown/power wash water that does not use detergents or hazardous cleaning products (e.g., those containing bleach, hydrofluoric acid, muriatic acid, sodium hydroxide, nonylphenols);
- Uncontaminated ground water or spring water;
- Foundation or footing drains where flows are not contaminated with process materials; and
- Incidental windblown mist from cooling towers that collects on rooftops or adjacent portions of a facility, but no intentional discharges from the cooling tower.

DEP's Response to Shell Comment 3: Even though the industrial storm water conditions in the individual NPDES permit are similar to those in the PAG-03 General Permit, the listing of authorized non-storm water discharges in the PAG-03 was excluded from the individual NPDES permit's storm water condition with the intent that such non-storm water discharges would be listed in the effluent descriptions for each outfall receiving those types of discharges.

In its November 13, 2020 response letter, Shell provided a matrix of uncontaminated non-storm water discharges and the outfalls through which those non-storm waters may discharge. That matrix of allowable non-storm water discharges will be added as Condition XII in Part C of the final permit. The approved non-storm water discharges include the following:

- Discharges from emergency or unplanned fire-fighting activities.
- Potable water, including water line flushing and fire hydrant flushing, if residual chlorine is not detectable in the effluent.
- Uncontaminated condensate from air conditioners, coolers/chillers, and other compressors (if treatment through an oil/water separator is provided) and from the outside storage of refrigerated gases or liquids.
- Pavement wash waters where no detergents or hazardous cleaning products are used, and the waters to not come into contact with oil, grease, or sources of pollutants from industrial activities.
- Routine external building washdown/power wash water that does not use detergents or hazardous cleaning products.
- Incidental windblown mist from cooling towers that collets on rooftops or adjacent portions of a facility, but not intentional discharges from the cooling tower.

The permit's allowance for the above-listed sources does not affect the permit's effluent limits.

Shell Comment 4: As a point of clarity we would like the description of IMP 101 to add the term "process wastewaters" to read as follows:

"Treated process water, process wastewater and storm water from the wastewater treatment plant"

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This language would be consistent with our July 2016 submittal where we defined the term “process wastewater” per EPA guidance to include numerous types of non-process wastewater streams that are generated in operation of an Organic Chemicals, Plastics and Synthetic Fibers (OCPSF) facility and that are contaminated and designated by EPA as process wastewater for applicability under the Effluent Limit Guidelines (ELG). See Table VII-50 of the EPA Development Document for the ELG for OCPSF.

In addition, we are seeking DEP input as to how the permit should reflect this list of process wastewaters that may go to the WWTP for clarity for all parties in the future.

DEP’s Response to Shell Comment 4: In its October 21, 2020 email, DEP proposed to add a footnote to Part A of the permit to identify the list of possible wastewater sources that make up the “process wastewaters” referenced in IMP 101’s wastewater description (i.e., to list the process and non-process wastewaters that are managed as process wastewaters, which EPA considered as part of the Organic Chemicals, Plastics and Synthetic Fibers Effluent Limitations Guidelines per Table VII-50 in the OCPSF ELG Development Document). Shell provided a detailed list of such wastewaters in its November 13, 2020 response email. The footnote will state the following:

“Process wastewaters” may include one or more of the following non-process wastewaters that are treated and discharged as process wastewaters.

- | | | |
|---|---|---|
| 1. Air Pollution Control Wastewater (Catalyst Wash) | 12. Water Demineralizer Wash Water | 23. Generator Blowdown |
| 2. Boiler Blowdown | 13. Filter Backwash | 24. Ion Exchange Resin Rinse |
| 3. Steam Condensate | 14. Demineralizer Wash, Blowdown and Wastewater | 25. Hydraulic Leaks |
| 4. Storage, Shops | 15. Utility Clarifier Blowdown | 26. Contact Rainwater |
| 5. Lab Drains and Miscellaneous Lab Wastewater | 16. Steam Generation | 27. Product wash |
| 6. Raw Water Clarification | 17. Reverse Osmosis Rejection Water | 28. Backflush from Demineralizer |
| 7. Water Treatment | 18. Potable Water Treatment | 29. Water Clarifier Blowdown |
| 8. Technical Center (R&D Center) | 19. Non-Contact Floor Cleaning | 30. Water Treatment Filter Press water and wash water |
| 9. Utility Water Streams | 20. Vacuum Truck | 31. Secondary Containment Wash Water |
| 10. Washdown of Equipment / Buildings and General Operational Areas | 21. Ion Bed Regeneration | 32. Bundle Wash Water |
| 11. Contact Cooling Water | 22. Tank Car Washing | 33. Gas Turbine Wash Water |

The list encompasses the wash waters Shell mentions in Comment 8.

Shell Comment 5: Stormwater sampling frequency for Outfalls 003 and 008 should be revised to be consistent with the other stormwater only outfalls. Based on our understanding that “main” stormwater outfalls are sampled once per six months and that stormwater pond overflows are sample per discharge please correct the following:

- Outfall 003 is the East Pond overflow and sampling frequency should be once per discharge, not per six months.
- Outfall 008 is the Clean Rainwater Pond main outlet and sampling frequency should be once per six months not per discharge.

DEP’s Response to Shell Comment 5: Shell is correct. It was DEP’s intent for the main storm water outfalls to be sampled 1/6 months and for emergency overflows to be sampled 1/discharge. The minimum measurement frequencies for Outfalls 003 and 008 will be 1/discharge and 1/6 months, respectively.

Shell Comment 6: On the Site Drainage Feature, the sample locations for Internal Monitoring Points (IMP) 101 and 201 are located in the wastewater treatment plant and should be shown there collocated with IMP 101. Likewise, the sample location for Outfall 001 is located in the wastewater treatment plant and should be noted there as well.

DEP’s Response to Shell Comment 6: DEP acknowledges Shell’s corrections. For clarification, since some sampling locations are not co-located at outfalls, Shell provided updated sampling location descriptions in its November 13, 2020 email. The sampling location descriptions in the permit for Outfall 001 and IMPs 101 and 201 will be updated as follows:

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- Outfall 001 – Downstream of the treatment system at the head of the discharge pipe leading to Outfall 001
- Internal Monitoring Point 101 – downstream of the treatment system before it mixes with IMP 201 (cooling tower blowdown) and upstream of the sampling point for Outfall 001
- Internal Monitoring Point 201 – downstream of the cooling towers and upstream of the sampling point for Outfall 001

Shell Comment 7: Wastewater from Periodic Testing of Fire Hydrant System

It is our interpretation that this wastewater will be covered by inclusion of our Comment #3 in the permit. The details are:

- Raw water, sourced from the Ohio River, is utilized in the hydrant system.
- Hydrants will be tested on a quarterly basis
- Hydrant test water will be discharged to the AC system or to stormwater ponds at the plant.
- Firefighting foam will not be used for emergency drills or testing of fire hydrants.

DEP's Response to Shell Comment 7: As Shell states, discharge approval for hydrant testing/flushing is included in Condition XII in Part C of the permit as discussed in DEP's Response to Shell Comment 3. Hydrant test water consisting of potable water can be discharged if there is no detectable residual chlorine.

Shell Comment 8: Water from Cogen turbine washing:

- The turbine manufacturer recommends daily washing of the turbines
- For worst case Daily on-line washing each machine generates about 0.001 MGD (based on GE estimate of 1150 liters or 303 gallons per machine). This water goes to the wastewater treatment plant.
- We are identifying this specific wash waters as we are not clear if this is covered by the EPA table referenced in our comment #4. We are seeking the Department's input on whether additional information is required to be included in the permit.

DEP's Response to Shell Comment 8: No additional information is required. The wash water will be treated by the wastewater treatment plant and the discharge of that wash water is covered by the listing of "process wastewaters" in the footnote added to Part A of the permit as discussed in DEP's Response to Shell Comment 4.

Shell Comment 9: Once issued, the renewed NPDES contact for the permit and responsible official will be:

Kimberly J. Kaal
Environmental Manager
Attorney-in-Fact

DEP's Response to Shell Comment 9: The applicant contact will be updated.

By email dated September 22, 2020, the Environmental Integrity Project (EIP) and cosigning organizations and individuals submitted comments on the draft NPDES permit. DEP's responses to EIP et al.'s comments are provided below.

EIP Comment I: DEP Must Re-Notice and Re-Open a 30-day Public Comment Period for this Permit.

As an initial issue, DEP must re-notice this draft renewal permit in the Pennsylvania Bulletin with a new 30-day public comment period for several reasons. First, file reviews are currently not available due to COVID-19 restrictions, and Commenters were unable to obtain the draft permit, fact sheet, or other important submittals and documents for this draft permit renewal until September 9, 2020, and these documents were not uploaded for the public on DEP's website until September 16, 2020. This means because the public was unable to schedule an in-person file review to review the documents needed for proper review of and comment on the draft permit, and because DEP did not publicly upload any of the important documents – including even the draft permit itself – to its website until well after the initial 30-day public comment period closed and only six days before the extended public comment period closed, the public did not have sufficient time for review of this permit. Consequently, DEP should re-notice this draft NPDES permit renewal in the PA Bulletin and re-start a new 30-day public comment period now that the documents, which are voluminous, are accessible by the public.

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DEP's Response to EIP Comment I: The public notice for Shell's draft permit was published in the *Pennsylvania Bulletin* on August 8, 2020. EIP did not request the draft permit documents until September 8, 2020. In-person file reviews and website uploads are not the sole means by which draft permit documents are provided, as evidenced by DEP's transmission of the permit application and draft permit documents to EIP by email on September 9, 2020. DEP did not receive any requests for file reviews (at which time DEP could have provided the draft permit documents to the requester electronically as it did for EIP) or requests for documents to be sent directly or to be uploaded to the website from any interested parties other than EIP. DEP followed the procedures for public notice of permit applications and draft permits in 25 Pa. Code § 92a.82, which states, in part:

"The Department will prepare and send to any person, upon request, following public notice of draft permit, a fact sheet with respect to the draft permit described in the public notice. The contents of the fact sheet will include at least the information contained in § 92a.53 (relating to documentation of permit conditions)." [emphasis added]

Interested parties had as much time as they do for any NPDES permit to review the public notice, request documents, and provide comments.

EIP Comment III: The Draft Permit Fails to Ensure that Any Monitoring Will be Required of the 126 Priority Pollutants from IMP 201 for which "No Detectable Amount" is the Applicable Standard, Making this Standard Unenforceable.

The Draft Permit fails to ensure that the cooling tower blowdown discharges will ever be monitored to determine whether any of the 126 priority pollutants meet the best available technology economically achievable ("BAT") limit of "No detectable amount" that DEP claims it is applying to these discharges. While DEP claims in the Fact Sheet that "cooling tower blowdown monitored at IMP 201 will be subject to the most stringent TBELs and narrative limitations from § 423.12(b) paragraphs (1) and (7) for Best Practicable Control Technology Currently Available (BPT) and § 423.13 paragraphs (d)(1) - (d)(3) for Best Available Technology Economically Achievable (BAT)," the Draft Permit does not actually require Shell to monitor of any of the 126 priority pollutants contained in Appendix A to 40 C.F.R. § 423.

Pursuant to the effluent limitations guidelines at 40 C.F.R. § 423.13(d)(1), these 126 priority pollutants have a BAT limit of "No detectable amount." However, DEP's Draft Permit does not require monitoring for any of these pollutants from IMP 201 or Outfall 001; it only reserves the option to request monitoring at its later discretion. It states: "Cooling tower blowdown discharges shall contain no detectable amounts of the 126 Priority Pollutants listed in 40 CFR Part 423, Appendix A, that are contained in chemicals added for cooling tower maintenance, except for Total Chromium and Total Zinc. When requested by DEP, the permittee shall conduct monitoring or submit engineering calculations to demonstrate compliance with 40 CFR 423.13(d)(1)."

If the Draft Permit fails to require monitoring for any of these pollutants, compliance with the "[n]o detectable amount" standard cannot be ensured. DEP should require, in Part A of the permit for IMP 201, monitoring for all 126 priority pollutants at least monthly in order to ensure compliance with the ELG standard.

DEP's Response to EIP Comment III: DEP addressed this issue by modifying a condition in Part C of the 2017 permit amendment (PA0002208 A-1) but failed to carry forward relevant parts of that permit condition. Therefore, Condition I.K in Part C of the permit will be updated to duplicate Condition I.L in Part C of the 2017 permit amendment. The condition is as follows:

Cooling tower blowdown discharges shall contain no detectable amounts of the 126 Priority Pollutants listed in 40 CFR Part 423, Appendix A, that are contained in chemicals added for cooling tower maintenance. When requested by DEP, the permittee shall conduct monitoring or submit engineering calculations to demonstrate compliance with this requirement. If the permittee proposes to use a cooling tower maintenance chemical that has not been approved for use at the facility, then the permittee shall submit engineering calculations with the Chemical Additives Notification Form (required under Part C.II of this permit) demonstrating that cooling tower blowdown discharges will contain no detectable amounts of the 126 Priority Pollutants listed in 40 CFR Part 423, Appendix A, that are contained in chemicals added for cooling tower maintenance.

As DEP noted in response to a similar comment from EIP on the 2017 permit amendment, regular monitoring for the 126 priority pollutants listed in 40 CFR Part 423 Appendix A is not a regulatory requirement. The requirements specified in the updated Condition I.K are consistent with § 423.13(d)(3) and § 423.15(b)(10)(iii) regarding alternative demonstrations of compliance with the prohibition on the discharge of the 126 priority pollutants as a result of the use of cooling tower maintenance chemicals. The alternative to regular monitoring includes one-time calculations (i.e., "engineering calculations")

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to demonstrate that priority pollutants are not present due to the use of cooling tower maintenance chemicals. Shell has confirmed with its chemical supplier that priority pollutants will not be present in the cooling water as a result of Shell's use of the chemical additives listed in the application. The absence of priority pollutants associated with cooling tower maintenance chemicals used in the cooling system would be maintained implicitly provided that Shell continues to use the same chemical additives it has already confirmed will not contribute priority pollutants to cooling water discharges. The updated Condition I.K in Part C of the permit requires Shell to submit engineering calculations to demonstrate compliance with the priority pollutant prohibition whenever Shell proposes to use a new cooling tower maintenance chemical that was not approved for use at the facility.

EIP Comment IV: The Draft Permit Must Require Daily Monitoring for the Discharge of Nurdles to Ensure No Plastic Pollution of the Nurdles Themselves Enters the Ohio River or Its Tributaries and to Make the Draft Permit's Prohibition on the Discharge of Floating Solids Enforceable.

The draft permit fails to require visual inspections of the facility, discharge areas, or receiving streams to ensure no releases of nurdles have occurred. Such monitoring must be required. The whole purpose of this facility is to create plastic pellets, referred to colloquially as nurdles. "The SPSM will employ four processing units (an Ethylene Cracker Unit and three Polyethylene Units) and a Steam and Power Generation Unit to convert a feedstock composed of natural gas liquids containing ethane into polyethylene pellets."

The Draft Permit arguably prohibits such discharges by prohibiting the permittee from discharging "Floating solids, scum, sheen or substances that result in observed deposits in the receiving water. (25 Pa Code § 92a.41(c))." It also requires Shell to minimize discharges of nurdles by requiring Shell to "Minimize the discharge of plastic resin pellets in your stormwater discharges through implementation of control measures including but not limited to the following: minimize spills; clean up spills promptly and thoroughly; sweep thoroughly; pellet capturing; employee education; and disposal precautions." But these prohibitions are only as good as the provisions—such as monitoring—that ensure their compliance and enforceability.

Discharge of nurdles into waterways is a vast and growing plastic pollution problem facing our society today. "Due to their small size and buoyancy, nurdles are hard to contain and have been recorded washing up on beaches all over the world." There is abundant research regarding the widespread pollution from nurdles, the ingestion of nurdles by wildlife, the harm that ingestion of nurdles causes to wildlife, and the harm to human health that this presents.

The Shell Polymers Monaca Site's generation of an estimated trillions of nurdles annually could significantly contribute to this pollution problem if nurdles are released into the environment. DEP must require visual inspections and require any additional measures necessary to ensure that the air and water pollution already occurring due to this environmentally-destructive plastics facility will not be exacerbated by pollution of plastic nurdles as well.

DEP's Response to EIP Comment IV: Nurdles and other potential pollutants are already subject to visual inspection and reporting requirements under the permit. Condition III.D. in Part C of the permit requires Shell to conduct routine visual inspections on a semi-annual basis including inspections of: 1) areas where industrial materials or activities are exposed to stormwater; 2) areas identified in the PPC Plan as potential pollutant sources; 3) areas where spills or leaks have occurred in the past three years; 4) stormwater outfalls and locations where authorized non-stormwater discharges may commingle; 5) physical BMPs used to comply with this permit. The condition also requires Shell to evaluate, document, and report the following conditions: 1) raw materials, products or wastes that may have or could come into contact with stormwater; 2) leaks or spills from equipment, drums, tanks and other containers; 3) off-site tracking of industrial or waste materials, or sediment where vehicles enter or exit the site; 4) tracking or blowing of raw, final or waste materials from areas of no exposure to exposed areas; 5) control measures or BMPs needing replacement, maintenance or repair; 6) the presence of authorized non-stormwater discharges that were not identified in the permit application and non-stormwater discharges not authorized by this permit.

DEP also conducts yearly inspections of Major facilities, including the SPMS.

EIP Comment V: Commenters Support DEP's Decision Not to Remove any Limits from Outfall 015.

Commenters strongly oppose Shell's request in the permit application to backslide and remove the permit requirements currently applicable to Outfall 015, the groundwater seep from an old coal ash landfill, because of high levels of certain pollutants including arsenic and zinc in the leachate discharges and because DEP stated that Shell relied upon detection levels that were higher than DEP's target quantitation limits. For the same reasons, Commenters support DEP's decision in the Draft Permit not to remove these requirements.

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In support of its claim for removing the requirements from Outfall 015, which is a groundwater seep, Shell has claimed that the water volume is low. However, removing limits or monitoring requirements from this outfall is not warranted because the sampling data provided show extremely high levels of pollution in this discharge. Specifically, arsenic was measured at a maximum of 0.50 mg/L, five times the water quality criteria of 0.01 mg/L. DEP's Fact Sheet also showed that arsenic concentrations average "<13.7" ug/L, but Pennsylvania has water quality criteria and an MCL for arsenic of 10 ug/L, which this exceeds, and Shell's zinc concentrations were more than double those in the average combustion residual leachate sample (513 v. 211 ug/L). The seeping of these pollutants and the others currently included in the permit must be continually monitored and, if warranted, limited, and monitoring frequency or number of parameters should not be reduced as the numbers do not warrant such backsliding. Furthermore, the fact that Shell's detection levels are higher than DEP's target quantitation limits is troubling and indicates a need for more sampling of this seep to determine accurate pollutant concentrations and possible treatment needs.

DEP's Response to EIP Comment V: Shell is not pursuing its request to eliminate monitoring requirements from Outfall 015. Monitoring frequencies will remain as specified in the draft permit consistent with the nature and effect of the discharge.

EIP Comment VI: DEP Must Require Biological Monitoring of Impinged and Entrained Fish and Recordkeeping of these Monitoring and Sampling Results as Part of Its BTA Requirements for the Cooling Water Intake Structure.

DEP should revise the Draft Permit to require Shell to conduct biological monitoring of impinged and entrained fish, keep records, and report the results as part of its BTA requirements for the cooling water intake structure. Commenters do not agree with DEP and Shell's assessment that the cooling water intake structure is an existing structure. The only component of the structure that is not new is the foundation, and that has had to be structurally reinforced to be usable by Shell. The other nine (out of ten) components of the cooling water intake are new, including the structure itself, which will be a new steel structure to completely replace the previously existing cinder block structure. As a new structure, the ELGs for new sources must apply to comply with section 316(b) of the Clean Water Act. DEP should require biological monitoring of impinged and entrained fish as set forth in 40 C.F.R. 125.84(b)(7), and, recordkeeping of these numbers of fish as set forth in 40 C.F.R. § 125.84(b)(8).

Shell cited the definitions as follows: "Under the new facility rule, to be considered a new facility a facility must be a new source or new discharger and use a newly constructed cooling water intake structure or a modified existing cooling water intake structure whose design intake has been increased. Thus, changes to a cooling water intake structure at an existing facility that is not a new source or new discharger are not subject to this rule." Here, Shell's SPMS facility is a new source that is part of a completely different industrial category than the previous and demolished Monaca zinc smelter and the entire cooling water intake structure minus the foundation that is cracking and had to be structurally reinforced for use was rebuilt anew. To call this an existing source strains the regulatory definition.

Furthermore, Commenters' request for impingement and entrainment monitoring is a fairly modest ask to ensure the safety of fish populations, which cannot be ensured or measured accurately under the terms of the Draft Permit, which currently lacks biological monitoring of fish species to measure efficacy of the impingement and entrainment efficacy of the closed-cycle system.

DEP's Response to EIP Comment VI: DEP had similar concerns about Shell's extensive modifications to Horsehead's cooling water intake structure and how those modifications could impact the applicability of 316(b) regulations. DEP examined the regulatory classification of Shell in detail and concluded that, with respect to regulation under Section 316(b) of the Clean Water Act, Shell is an "existing facility". As DEP stated in response to an EIP comment on the 2017 permit amendment, "Generally, references to the Complex as a "new facility" by Shell and DEP are not intended to invoke a specific term of art except in certain instances...and even then the Complex or a specific unit at the Complex may qualify as both an "existing facility" and a "new source" as those terms are defined in applicable regulations."

There are three main criteria defining whether the SPMS qualifies as a "new facility" pursuant to 40 CFR Part 125, Subpart I: 1) whether the SPMS is a "new source" or "new discharger" and is either a "greenfield" or "stand-alone" facility; 2) whether construction of the SPMS commenced after January 17, 2002; and 3) whether Shell uses a newly constructed cooling water intake structure or an existing cooling water intake structure with an increased design capacity. All those criteria must be met for the SPMS to be a "new facility" under Part 125, Subpart I. The SPMS meets two of the "new facility" criteria in 40 CFR § 125.83.

40 CFR Part 125, Subpart I – Requirements Applicable to Cooling Water Intake Structures for New Facilities Under Section 316(b) of the Act defines "new facility" in § 125.83 as follows:

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New facility means any building, structure, facility, or installation that meets the definition of a “new source” or “new discharger” in 40 CFR 122.2 and 122.29(b)(1), (2), and (4) and is a greenfield or stand-alone facility; commences construction after January 17, 2002; and uses either a newly constructed cooling water intake structure, or an existing cooling water intake structure whose design capacity is increased to accommodate the intake of additional cooling water. New facilities include only “greenfield” and “stand-alone” facilities. A greenfield facility is a facility that is constructed at a site at which no other source is located, or that totally replaces the process or production equipment at an existing facility (see 40 CFR 122.29(b)(1)(i) and (ii)). A stand-alone facility is a new, separate facility that is constructed on property where an existing facility is located and whose processes are substantially independent of the existing facility at the same site (see 40 CFR 122.29(b)(1)(iii)). New facility does not include new units that are added to a facility for purposes of the same general industrial operation (for example, a new peaking unit at an electrical generating station).

(1) Examples of “new facilities” include, but are not limited to: the following scenarios:

(i) A new facility is constructed on a site that has never been used for industrial or commercial activity. It has a new cooling water intake structure for its own use.

(ii) A facility is demolished and another facility is constructed in its place. The newly-constructed facility uses the original facility's cooling water intake structure, but modifies it to increase the design capacity to accommodate the intake of additional cooling water.

(iii) A facility is constructed on the same property as an existing facility, but is a separate and independent industrial operation. The cooling water intake structure used by the original facility is modified by constructing a new intake bay for the use of the newly constructed facility or is otherwise modified to increase the intake capacity for the new facility.

(2) Examples of facilities that would not be considered a “new facility” include, but are not limited to, the following scenarios:

(i) A facility in commercial or industrial operation is modified and either continues to use its original cooling water intake structure or uses a new or modified cooling water intake structure.

(ii) A facility has an existing intake structure. Another facility (a separate and independent industrial operation), is constructed on the same property and connects to the facility's cooling water intake structure behind the intake pumps, and the design capacity of the cooling water intake structure has not been increased. This facility would not be considered a “new facility” even if routine maintenance or repairs that do not increase the design capacity were performed on the intake structure.

As explained in the Fact Sheet, the SPMS is a “new source” as defined in 40 CFR §§ 122.2 and 122.29. When construction of the SPMS began, other sources existed and some sources continue to exist (e.g., the Mall Lot 2 discharge). Assuming that the existence of sources under the “greenfield facility” definition in § 125.83's “new facility” definition is referring to process and production equipment sources and not sources such as the Mall Lot 2 discharge, the SPMS could be considered a greenfield facility because there are no other pre-existing process and production equipment sources from Horsehead located at the site. Alternatively, the SPMS would be a greenfield facility because Shell's process and production equipment will completely replace Horsehead's process and production equipment.

Construction of the SPMS commenced after January 17, 2002.

The third criterion requires the use of a newly constructed cooling water intake structure or an existing cooling water intake structure whose design capacity is increased to accommodate the intake of additional cooling water. The regulation does not define what constitutes “newly constructed” but the examples in the regulation suggest that EPA meant ‘brand new’ and not ‘extensively modified’.

Example (1)(ii) in § 125.83 identifies the following as a “new facility” scenario: “A facility is demolished and another facility is constructed in its place. The newly-constructed facility uses the original facility's cooling water intake structure, but modifies it to increase the design capacity to accommodate the intake of additional cooling water.”

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Horsehead's facility was demolished and the SPMS is being constructed in its place. Horsehead's cooling water intake structure was not demolished. Shell is reusing Horsehead's cooling water intake structure—seemingly only the foundation—and is otherwise modifying it. Notwithstanding the extensive modifications and repairs, some portion of Horsehead's cooling water intake structure is being reused. Importantly, however, Shell is not modifying the intake to increase its design capacity and such modification is the only type of modification that would classify the SPMS under § 125.83's "new facility" definition.

As an existing facility, Shell is not subject to the impingement and entrainment monitoring and reporting requirements in §§ 125.84(b)(7) and (b)(8) of 40 CFR Part 125, Subpart I. However, comparable requirements could be imposed pursuant to regulatory provisions of 40 CFR Part 125, Subpart J for existing facilities. Refer to DEP's responses to comments on the draft permit from the U.S. Fish & Wildlife Service, below.

In a follow-up to its September 22, 2020 comments, EIP requested to reintroduce its comments and concerns on Shell's 2017 permit amendment relating to the permit's existing authorized TDS load. DEP refers EIP to the Comment Response document for the 2017 permit amendment.

EIP did not present any new information relating to TDS that would warrant a reevaluation of DEP's determination in 2017 and Shell has not proposed any changes that trigger a reevaluation of Shell's existing authorized TDS loadings. Therefore, the existing authorized TDS loadings remain unchanged in Condition X in Part C of the permit.

By letter dated September 1, 2020, the Pennsylvania Field Office of the U.S. Fish and Wildlife Service (USFWS) submitted comments on the draft NPDES permit. USFWS's letter includes supporting information, analyses, and recommendations. The sections of the letter containing USFWS's recommendations and the information and analyses that directly lead to those recommendations are reproduced below. DEP's responses to USFWS's comments are provided after.

USFWS Comments

Cleaning of Proposed Fish-handling TWS

Shell proposes to utilize high-pressure spray for removal of fish from the traveling screens. This can be injurious to fish (e.g., descaling), especially to fragile species. According to 40 CFR § 125.94(c)(9), the owner or operator of the facility must comply with any additional measures, established by the Pennsylvania Department of Environmental Protection (DEP), to protect fragile species. The Service recommends using a low-pressure spray to safely remove fish from traveling screens. Temperature of the spray water can also be an issue. The Service recommends that spray water for removal of fish from the traveling screens approximate river water temperature.

There are examples of fish-handling TWS at other manufacturing facilities or power plants that are specifically designed to gently remove aquatic species from the buckets on the screens. A high pressure spray (80-100 pounds per square inch [psi]), specifically designed to avoid the contents of the fish handling buckets, is used to remove any debris impinged on the mesh into the debris trough. As the baskets rotate around the head sprocket, the contents of the buckets descend on the incline of the mesh panel where low pressure sprays (10-15 psi) are used to direct impinged fish into the fish return trough. In some designs, the baskets continue to descend towards an additional high pressure spray (80-100 psi) that removes any remaining debris into a rear debris trough. This final wash reduces 'carryover' debris that could potentially enter the pump intakes and assists in maintaining the available open area, which reduces the potential for impingement.

Request and Justification for Biological Monitoring

The Service is the principal agency charged with enforcing the ESA's protections for federally-listed threatened and endangered freshwater species, and is responsible for ensuring the recovery of listed species. As previously stated, there are several federally-listed freshwater mussel species that are known to occur in downstream navigation pools of the Ohio River, as well as in upstream pools in the Allegheny River. Mussel populations have been showing signs of recovery in the Ohio River, as evidenced by new records for listed species in other navigation pools. Given this trend, and the documented movements of host fish species between pools, the potential exists for listed mussels to occur in the Montgomery Pool. In addition, I&E impacts to host fishes or food-chain species upon which they depend may indirectly affect listed mussels, and slow or prevent their recovery.

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The Source Water Physical and Biological Baseline Characterization Study (study) carried out in support of the SPMS (AECOM 2016) identifies smallmouth bass and sauger as being potentially susceptible to I&E, based on abundance and the presence of persistent populations within the Montgomery Pool. Also identified as potentially susceptible were Cyprinids (shiners and minnows), species which are important prey for recreationally important species. Some of the above are also important mussel hosts, as previously discussed. Cyprinids were identified as being generally susceptible to I&E throughout their lives due to their small size. Based on analyses of losses of fish at multiple facilities along the length of the Ohio River, the study concluded that in most cases, I&E losses have little to no effect on fish populations. The Service is interested in determining whether operation of the SPMS CWIS will have the potential to contribute to direct or indirect cumulative effects to fish and mussel populations, and recommends I&E monitoring at the SPMS facility in order to verify the conclusions of the study.

While the combination of the fish-handling TWS and the estimated 0.38 fps through-screen velocity are expected to reduce impingement impacts, especially if a low-pressure spray is used for removal of fish and shellfish, the level of entrainment of fish eggs and larvae, and shellfish, is unknown and could be significant.

According to 40 CFR §125.98(b)(2)(i), if, based on information submitted by any fishery management agencies or other relevant information, there are migratory, sport or commercial species subject to entrainment that may be directly or indirectly affected by the CWIS, the DEP may include additional permit requirements. In addition, 40 CFR §125.98(b)(2)(ii) states, if, after meeting the standards for minimizing entrainment, operation of the facility would still result in undesirable cumulative stressors to federally-listed and proposed species, or critical habitat, the DEP may include additional permit requirements. The Service believes that both of the above conditions may apply. There are several sport fish species, some of which serve as important mussel hosts, that may be directly or indirectly affected by the CWIS. Direct effects to important sport fish species may result from entrainment of their eggs and larvae, and indirect effects to these species may result from entrainment of the eggs and larvae of important prey species (e.g., gizzard shad). Indirect effects to federally-listed mussels may result from entrainment of the eggs and larvae of host fish species. It may also be possible for juvenile mussels to become entrained.

Under 40 CFR §125.94(g), the DEP may require additional measures to protect federally-listed threatened and endangered species and designated critical habitat, and may require additional control measures, monitoring requirements and reporting requirements. Additional measures that may be required would be designed to minimize incidental take, reduce or remove more than minor detrimental effects to federally-listed species and designated critical habitat, or avoid jeopardizing federally-listed species or destroying or adversely modifying designated critical habitat. In considering whether or not to recommend biological monitoring, the Service considered the following:

- The CWIS will be mostly new construction, and monitoring to verify that intake velocities will not exceed 0.5 fps under all flow conditions has not been carried out yet
- The 6.35-mm (0.25-inch) square openings in the fish handling TWS will allow entrainment of fish eggs and larvae, and possible entrainment of juvenile mussels
- The Montgomery Pool may support federally-listed mussel species, and verification that there will be no take of federally listed species (e.g., juvenile mussels) is needed
- There are several fish species in the Montgomery Pool that serve as hosts for federally-listed mussels, and entrainment of eggs and larvae of these species or those of food-chain species on which they depend (e.g., gizzard shad) should be quantified
- Potential cumulative effects to populations of federally listed species in the Ohio River due to both direct and indirect I&E impacts need to be evaluated.
- The Service has a responsibility to recover federally-listed threatened and endangered species.

For the above reasons, the Service recommends that the applicant monitor fish I&E for 2 years following permit issuance. Monitoring should include:

- Impingement sampling: Collect samples to monitor impingement rates (simple enumeration) for each species over a 24-hour period and no less than once per month when the cooling water intake structure is in operation.

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- Entrainment sampling: Collect samples to monitor entrainment rates (simple enumeration) for each species over a 24-hour period and no less than biweekly during the primary period of reproduction, larval recruitment, and peak abundance (March through September). Samples must be collected only when the cooling water intake structure is in operation.

The Service understands that because Shell has chosen to meet BTA standards through closed-loop cooling, there is no automatic requirement for I&E monitoring, and that the estimated through-screen velocity of 0.38 fps and use of fish-handling TWS are expected to achieve the targeted reduction in I&E of fish and shellfish. However, for the reasons described above, the Service recommends monitoring to verify the expected levels of I&E for this particular CWIS. The results of monitoring will also provide important data for future reference, for this CWIS with its particular design specifications under the specific conditions in the Montgomery Pool.

Possible Additional Measures to Prevent I&E of Shellfish

According to 40 CFR § 125.94(c)(8), the owner or operator must comply with any additional measures, such as seasonal deployment of barrier nets, established by the DEP to protect shellfish. The Service recommends consideration of barrier nets during the months of March through September to prevent I&E of any federally listed endangered freshwater mussels that may occur in the Montgomery Pool. Although not applicable under this subparagraph of the regulations, seasonal deployment of a fine mesh barrier net will also prevent the entrainment of fish eggs and larvae. The mesh on the proposed traveling screens will have 6.35-mm (0.25-inch) square openings, which will allow fish eggs and larvae, and any juvenile mussels that may be suspended in the drift, to become entrained. Any determination by the DEP regarding whether or not to require the seasonal deployment of barrier nets should be based on a thorough review of the results of biological monitoring. The Service requests the opportunity to participate in the review of results of any biological monitoring that the DEP may require.

DEP's Response to USFWS Comments: Please note that, as part of the initial NPDES permitting of the Shell Polymers Monaca Site in 2017, DEP determined that Shell's operation of a closed-cycle recirculating system constitutes Best Technology Available (BTA) for Shell's cooling water intake structure. USFWS was given an opportunity to comment on that permit, but DEP received no comments from USFWS at that time.

Notwithstanding DEP's previous determination of BTA, DEP agrees that impingement and entrainment (I&E) sampling at Shell's intake would be beneficial since there has been a significant change in operations at this location. I&E sampling may be used to determine whether additional operational measures to protect threatened and endangered (T&E) species are warranted. Note that there is no designated critical habitat in the project area.

On October 21, 2020, DEP communicated to Shell that a requirement to conduct I&E sampling was being considered for the renewed permit pursuant to 40 CFR §125.94(g). In a November 12, 2020 response, Shell proposed to voluntarily conduct monthly I&E sampling for one year after startup of all production units when the intake is operating in full (expected sometime in 2022). Shell also stated the following:

Shell will submit a work plan and conduct I&E sampling for a period of 1-year. Shell will provide the sampling results in a report to the agencies to determine if an additional year of monitoring is warranted or if some other form of management would be beneficial (example: seasonal barrier nets). A barrier net is just one of many technologies available to deflect fish and other biological organisms away from an intake structure. This report will also include an evaluation of all technologies, including bubble curtains, strobe lights, sonic generators and others. If I&E monitoring results suggest any of these technologies will be beneficial, these alternatives can be installed without pilings or concrete blocks/buoys (to support the nets) that would create an obstruction to river navigation and future maintenance work on the intake structure (by a crane barge, for example).

DEP agrees with Shell's proposal as a response to USFWS's comments. One year of monthly I&E sampling will be enough to identify impacts to fish and mussels caused by the operation of Shell's intake. The results of Shell's I&E sampling will inform the need for additional permit requirements to protect T&E species after the impacts of Shell's intake are established.

Consistent with Shell's proposal, the Cooling Water Intake Structure condition in Shell's NPDES permit has been modified to require one year of monthly I&E sampling. Shell will be required to submit a sampling plan to DEP that must be approved by DEP before I&E sampling begins. The modified permit condition also requires Shell to submit a summary report containing the results of the I&E sampling and an evaluation of technologies to reduce I&E.

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With respect to the proposed low-pressure spray, DEP notes that it erred in its description of Shell's intake structure on Page 65 of the Fact Sheet. There is no fish return. There is one spray wash system for each screen (102 gpm each) leading into a common trough to a collection point for offsite disposal. As constructed, Shell cannot implement a separate low-pressure spray. Shell did state in its November 12, 2020 response that its spray wash system uses lower capacity pumps than those previously used by Horsehead Corporation at the same intake (two 102 gpm pumps versus Horsehead's two 225 gpm pumps).

By letter dated September 22, 2020, the Pennsylvania Fish and Boat Commission (PFBC) submitted comments on the draft NPDES permit. DEP's responses to PFBC's comments are provided after.

PFBC Comment 1: The PFBC recommends an updated freshwater mussel survey be completed within the anticipated mixing zone. A prior survey by URS/EnviroScience was conducted circa 2014, which makes the survey more than five years old. If the survey was conducted within the past five years, PFBC generally considers that little has changed or that change would not be noticeable/detectable. For many mussels, it takes several years of growth before they reach a size that is readily detectable at the substrate surface. Additionally, with the discovery of the state endangered Pistolgrip (*Tritogonia verrucosa*) in the Dashields pool, there is a possibility that this species (which uses Flathead Catfish, *Pylodictis olivaris*, as its primary host) may be present within the mixing zone. Of secondary note is that the Beaver River, which enters the Montgomery pool a short distance upstream of this site, is home to the state's only known reproducing population of Pistolgrip (Shenango River).

DEP's Response to PFBC Comment 1: Based on the results of the 2013 mussel survey included in Shell's "Freshwater Mussel (Unionidae) Survey Report – Ohio River" from February 2014, DEP does not consider an updated freshwater mussel survey to be necessary. Portions of the 2014 Survey Report summarizing the conclusions of the mussel survey are reproduced below.

In total, 190 live unionids representing eight live species were collected. Two additional species were observed as weathered shells (Fragile Papershell and Fawnsfoot). The dominant species were the Pink Heelsplitter, Mapleleaf, and Threehorn Wartyback. All other species were observed in low abundance. [see Table 7 from the 2014 Survey Report reproduced below]

Low abundance, dominance of the unionid community by common/generalist species, low numbers of young individuals, and substrate quality suggests the project area is overall unsuitable for harboring a dense and species rich unionid population. [...] No federal or state listed species were observed.

Although the unionid community in this area does not appear to support federally or state listed species, nor suitable habitat, proposed activities associated with this project will have limited, and minor affects to unionid resources that are present in the project area. [...] In an effort to reduce impacts to unionids and suitable habitat that may occur in the project area, unionids collected within the previously identified potential areas of direct impact (ADI) were moved to a PFBC and USFWS approved site in the New Cumberland Pool (Phillis Island, Ohio River mile 35.0) downstream of the project area. Timed searches were devoted to collecting and moving unionids located in the proposed ADI areas associated with dock construction and maintenance dredging. In total, 145 live unionids representing seven species were moved from the proposed dredge areas and dock ADI locations to Phillis Island. [...] It is not anticipated that the proposed project will have an adverse effect on unionid resources in this area of the Montgomery Pool of the Ohio River.

Direct and indirect effects to the unionid communities within the Ohio River and along the project shoreline are expected to be temporal and minimal in nature. The current locations for the East and West Docks have been recessed into the shoreline resulting in a reduction of impacts to the river bottom from dock construction. Additionally, potential shoreline protection (i.e., geocells) has been reduced significantly. Observed abundances of unionids along the project shoreline were very low and scattered. Significant sedimentation observed within the study area does not support the establishment or success of healthy and diverse unionid populations. The reduced and controlled flows have allowed significant amounts of unconsolidated silt and sediment to accumulate along the extent of the project area shoreline. The impoundment created by the Montgomery Lock and Dam has diminished river flows and serves to control excessive scour and shear stresses typically created by large flow events. Areas in the navigation channel or immediately upstream and downstream of the Montgomery and Dashields Locks and Dams may have increased flow and areas of habitat protected from dredging and industrial influences that may allow riverine species to thrive.

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Impacts to existing unionid communities from the proposed activities are expected to be minimal. Results of this survey indicate the absence of a dense and diverse unionid community in the project area. The few unionids that occur within the survey area are dominated by non-riverine species that are habitat generalists or occur in areas of reduced flow. The unionids present were mostly older individuals and little recruitment was observed. Unionid habitat was generally lacking throughout the project area. The only riverine species to occur within this project survey area were *O. reflexa* and *L. recta* and these individuals were not abundant. [...]

The existing substrate condition along the project shoreline is influenced by deep and unconsolidated silt, which appears to be inhibiting unionid colonization. Additionally, field observations of portions of the shoreline which were dewatered during low pool events indicate a reduced potential for unionids to colonize the near shore area (<10 m).

Table 7. Summary of unionids observed in qualitative and transect searches in the project area, Ohio River, 2013.

	Qualitative				Transect				Total Live	Rel. Ab. (%)
	L	F D	W D	S F	L	F D	W D	S F		
<i>Anodonta suborbiculata</i>	-	-	-	-	1	-	-	-	1	0.5
<i>Lampsilis siliquoidea</i>	1	-	-	-	1	-	-	-	2	1.1
<i>Lasmigona complanata</i>	2	-	-	-	3	-	-	-	5	2.6
<i>Leptodea fragilis</i>	-	-	1	-	-	-	-	-	0	-
<i>Ligumia recta</i>	1	-	-	-	4	-	-	-	5	2.6
<i>Obliquaria reflexa</i>	18	-	-	-	2	-	-	-	20	10.5
<i>Potamilus alatus</i>	65	2	6	1	32	-	12	1	97	51.1
<i>Pyganodon grandis</i>	-	-	-	-	1	-	-	-	1	0.5
<i>Quadrula quadrula</i>	45	-	2	-	14	-	2	-	59	31.1
<i>Truncilla donaciformis</i>	-	-	-	-	-	-	1	-	0	-
Total	132	2	9	1	58	0	12	1	190	
Effort (min)	589				149					
CPUE ¹ (no./hour)	4				2.3				-	
Surface Density ²	-				0.2				-	
Species Richness Total	7				9				10	
Species Richness Live	6				8				8	

According to the 2014 Survey Report, transects extending 100 meters from the shoreline identified that the dominant substrate was 42% silt, 17.5% cobble, 10% clay, which indicates that the substrate in the vicinity of the SPMS is poor for mussels—a condition that is unlikely to have changed significantly. In addition, 145 of the 190 mussels found were relocated to Phyllis Island, which is downriver in the next pool. Since most mussels found in the project area were relocated to reduce direct impacts, comparing the results from a new survey to the results of the 2013 survey would not yield information on impacts attributable to Shell.

PFBC Comment 2: If mussels are detected within the mixing zone, the PFBC recommends establishing a long-term mussel monitoring site. The suite of effluent constituents represents some pollutants (e.g., chlorine, chlorides) that are known to have adverse impacts on mussels, as well as other constituents with little supporting research to determine their effect on freshwater mussels. The completion of a current mussel survey may guide siting of a long-term mussel monitoring site to help determine what, if any, effects the proposed discharge may have on freshwater mussels.

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DEP's Response to PFBC Comment 2: See DEP's Response to PFBC Comment 1. Transects 15 through 30 and Transects 44 and 45 of the 2013 mussel survey were located in what will be the mixing zone for Shell's primary outfall (Outfall 001).

DEP's authority to require Shell to monitor for adverse impacts to mussels caused by NPDES discharges would originate from other regulations (e.g., 25 Pa. Code §§ 92a.21(d)(2) and 92a.61(b)) and not from the cooling water intake structure regulations because the cooling water intake structure regulations were not promulgated to evaluate impacts to aquatic life from NPDES discharges. However, any biological monitoring conducted for Shell's intake structure pursuant to 40 CFR § 122.21(r)(4) (regarding requirements for existing facilities with cooling water intake structures to submit source water baseline biological characterization data with each NPDES permit renewal application) would capture data in the mixing zone for Outfall 001 because Outfall 001 is located about one-half mile upstream of the intake structure.

DEP notes that effluent limits in Shell's NPDES permit are developed to protect human health and aquatic life. Shell provided estimated effluent quality for Outfall 001's discharges, which DEP analyzed for water quality impacts resulting in no applicable water quality-based effluent limits. Therefore, Shell's discharges are not expected to cause adverse impacts to mussels (or other aquatic life or human health). The discharge concentrations of the pollutants to which mussels are sensitive are estimated to be low and would be diluted further by the Ohio River. For example, chloride concentrations in the Ohio River downstream of Outfall 001 might increase from a long-term average background of 28.4 mg/L to 28.7 mg/L at Shell's maximum estimated discharge concentration of chloride (313 mg/L) and the river's full regulated minimum flow (4,730 cfs) or to about 30.1 mg/L assuming partial mixing conditions (946 cfs or 20% of the river's minimum regulated flow if mixing remains close to the shoreline). Ammonia-nitrogen might increase from a long-term average background of 0.077 mg/L to 0.078 mg/L (full flow) or 0.087 mg/L (partial mixing) at Shell's maximum estimated discharge concentration of ammonia-nitrogen (1.8 mg/L). At those concentrations, no adverse impacts to mussels are expected.

PFBC Comment 3: The PFBC agrees with recent comments submitted via email to your office on 1 September 2020 by the US Fish and Wildlife Service (USFWS). USFWS comments were primarily focused on impacts resulting from impingement and entrainment (I&E) at the Cooling Water Intake Structure (CWIS). We acknowledge adherence to Best Technology Available (BTA) standards to help reduce I&E impacts at the intake, including implementation of a closed cycle recirculating system, water velocities lower than a recommended 0.5 foot per second threshold (under normal flow conditions) and fish handling traveling water screens. Even with these measures fish eggs and larval fish can succumb to I&E effects at these and similar intake structures. Previous PNDI reviews have indicated that Bigmouth Buffalo, *Ictiobus cyprinellus*, recognized as a PA state endangered fish species, is known from the project area. Furthermore, there are many sport fish species present within the Montgomery Pool supporting recreational angling opportunities, including but not limited to Smallmouth Bass, *Micropterus dolomieu*, Largemouth Bass, *M. salmoides*, Spotted Bass, *M. punctulatus*, Rock Bass, *Ambloplites rupestris*, Walleye, *Sander vitreus*, Sauger, *S. canadensis*, Channel Catfish, *Ictalurus punctatus*, and Flathead Catfish, among others. In addition to supporting recreational angling opportunities these species serve as host species to maintain mussel populations and to redistribute mussel species into historically occupied habitats. Based on potential direct and indirect effects to state Endangered fish species, sport fish species and mussel host fish species we support the consideration of monitoring I&E effects at the CWIS as outlined in USFWS' letter.

DEP's Response to PFBC Comment 3: DEP agrees that some I&E sampling is appropriate. Refer to DEP's Response to USFWS Comments.

PFBC Comment 4: Similar to comments 1 and 2 above, it is unknown what effects the suite of potential chemical constituents in the effluent will have on the downstream fish community. Indirect and direct effects to a PA Endangered fish species, sport fish species and mussel host species necessitates the characterization of the existing fish community within the mixing zone and a plan to detect any changes in that community during facility operation. PFBC recommends the applicant develop a fish community monitoring plan to establish a baseline in the effluent mixing zone. The plan should include periodic long-term monitoring to detect any changes in the fish community while the facility is in operation. Monitoring plans should be developed in cooperation with the PFBC.

DEP's Response to PFBC Comment 4: Refer to DEP's Response to PFBC Comment 2. Effluent limits in Shell's NPDES permit are developed to protect human health and aquatic life, so downstream fish communities should not be adversely impacted by Shell's discharges. To the extent that PFBC's recommended periodic long-term fish community characterization is warranted to evaluate impacts from Shell's discharges (and is not related to impingement and entrainment impacts, which PFBC does not mention), source water baseline biological characterization data collected in accordance with 40 CFR § 122.21(r)(4) (relating to cooling water intake structure requirements) would serve that purpose.

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U.S. Environmental Protection Agency Comments

The draft permit was transmitted to the U.S. Environmental Protection Agency (EPA) on July 28, 2020. By email dated August 27, 2020, EPA indicated that it had chosen to perform a limited review of the draft permit based on the wasteload allocation requirements of the approved TMDL for PCBs and Chlorane in the Ohio River; the technology-based requirements of 40 CFR 414 - Organic Chemicals, Plastics, and Synthetic Fibers ELG; and CWA § 316(b) requirements. Based on its review, EPA had no comments on the draft permit.

The final permit will be issued with the changes discussed in this Fact Sheet Addendum.