# Stream Biological Conditions EA Report

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| **Project Name** | H-600 Pipeline Spread C | **AFE** | 124300131 | **Spread** | H-600 Pipeline Spread C |
| **Contractor** | Precision | | | **Report #** | 410 |
| **Environmental Auditor** | Jeffrey Arbogast | | | **Date/Time** | 11/17/2023 11:26 AM |

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|---|---|---|---|---|---|
| **Stream ID** | S-O4 | **Crossing Start Date** | 11/17/2023 | **Crossing Completion Date** | 11/20/2023 |
| **Milepost** | 98.77 | **Pre-Con Assessment Date** | 11/16/2023 | **Post-Con Assessment Date** | 11/21/2023 |
| **Station** | 5214+99 | **Bankfull Width (ft.)** | 18.0 | **Riffle:Pool Complexes Present?** | No |
| **State** | WV | **Stream Classification** | Perennial | | |
| **County** | Webster | **303(d) Impairment Listing** | No | | |

| | Resource Post-Crossing Conditions | |
|---|---|---|
| 1 | Were all applicable resource specific crossing conditions satisfied? | N/A |
| | Time of Year Restrictions (TOYR)? N/A Mussel Relocation? N/A | |
| 2 | This question is not applicable in WV. | |
| 3 | Which crossing methods were utilized during the stream crossing? (If so select one or more)<br>Dam & Pump X Flume Cofferdam Conventional Bore Horizontal Directional Drill (HDD) Bore | |
| 4 | Was the top 1-foot (12-inches) of streambed substrate segregated and stockpiled separate from trench spoils? | Yes |
| 5 | Was excess material not needed for backfill removed and disposed of in an upland area? | N/A |
| 6 | Was the top 12-inches of backfill made with clean native stream substrate? | Yes |
| 7 | Was the pre-construction survey data utilized during restoration in attempt to re-establish pre-construction contours? | Yes |
| 8 | Were any field modifications to the stream implemented by project or regulatory personnel to address potential drainage or bank restoration limitations? | No |
| 9 | Were impervious trench breakers/plugs properly installed within 25-feet of top-of-bank to prevent subsurface erosion to or from the resource area? | See Below |
| 10 | Was permanent seed and stabilization material (straw or matting) applied to riparian areas and stream banks prior to re-establishing flow to the impact area of the channel? | Yes |
| 11 | Was the time of disturbance minimized by conducting resource work continuously to completion? | Yes |
| 12 | Have civil surveys been scheduled to verify as-built conditions meet pre-construction conditions in accordance with the project Mitigation Framework and federal/state permit requirements? | Yes |
| 13 | Are bareroot saplings required and/or scheduled to be planted for the dormant season (10/1 - 4/30)? | N/A |
| 14 | Did any unauthorized discharges to unpermitted resources occur during the crossing? If so, explain the corrective actions implemented in the Comments section and include additional photos. | No |

| | Biological Conditions | Pre-Con | Post-Con |
|---|---|---|---|
| 15 | **Predominant Substrate Type (select one):** Bedrock, Boulder (>10"), Cobble (2-10"), Gravel (0.1-2"), Sand (<0.1"), Mud/Silt/Clay | Bedrock, Boulder (>10") | Cobble (2-10") |
| 16 | **Channel Conditions:Rating:** 1-Optimal (80-100% stable banks), 2-Sub-optimal (60-80% stable banks), 3-Marginal (40-60% stable banks), 4-Poor (20-40% stable banks), 5-Severe (0-20% stable banks, highly eroded or unvegetated banks | 1 | 2 |
| 17 | **Riparian Buffer Zone within ROW and ≤50 ft. from Stream Top-of-Bank: Rating:** 1-Optimal (60-100% heavy vegetative cover), 2-Sub-optimal (30-60% mixed vegetated coverage), 3-Marginal (<30% vegetative coverage), 4-Poor (Mowed/maintained area or farmland, impervious area, sparsely vegetated coverage, etc.) | 1 | 3 |

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| Biological Conditions Continued | | Pre-Con | Post-Con |
|---|---|---|---|
| 18 | **Instream Habitat Conditions:** Examples: Varied substrate sizes, varied combination of water velocities & depths, presence of woody/leafy debris, stable substrate with low amount of mobile particles, low embeddedness, shade protection, undercut banks, root mats, Varied combination of water velocities, submerged aquatic vegetation Rating: 1-Optimal (Habitat conditions present in >50% of resource), 2-Suboptimal (Habitat conditions in 30-50% of resource), 3-Marginal (Habitat conditions in 10-30% of resource), 4-Poor (Habitat conditions in 0-10% of resource) | 1 | 2 |
| 19 | **Channel Alterations:** Examples: Straightened channel, non-MVP stream crossings, non-native riprap/rock along banks, concrete/gabions/concrete block, manmade embankments, constrictions w/in channel, livestock or agricultural impacts Rating: 1-Negligible (unaltered/natural stream), 2-Minor (20-40% of resource disrupted by channel alterations), 3-Moderate (40-80% of resource disrupted), 4-Severe (>80% of resource disrupted) | 1 | 2 |

## Additional Notes

A dam and pump around was built prior to any disturbance within the 10' stream buffer. A ditch dewatering system was set up after trench excavation. Pumping operations were carried out as needed during the stream crossing. All pumping operations were monitored 24/7 during this crossing.

Expanded notes for question 9: Bentonite trench breakers were installed at 11' from the coming in side (CIS) and 23' from the going away side (GAS) of the top of bank as per survey.

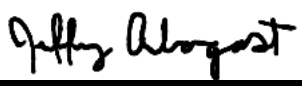
11/17/2023: The topsoil from the stream bank 10' buffer zone was stripped, placed in super sack, and stored in an upland area. The streambed comprised of solid bedrock with a few large rocks of significance to the stream flow. These large rocks were surveyed and set aside to ensure they could be replaced at the completion of the crossing. After the blasting crew drilled, set charges and shot the ditch line through the stream, erosion control devices (ECD) were replaced around the stream.

11/18/2023: A heavy rain event overnight left the site too wet for excavation. The day was spent performing ECD maintenance, housekeeping and staging of materials.

11/19/2023: The top 12 inches of stream substrate bedrock was segregated on geotech fabric in an upland area (Ref. Appendix B: Restoration Work Plan-MVP Section 3.4). The stream subsoil had to be hammered out before being placed in an upland area. An excavator mounted rock crusher was used to make padding material from the large stone removed during stream sub-layer excavation. The ditch line was dug back through to the GAS loose end.

11/20/2023: The stream section of pipe was lowered in, and a weld was completed on the GAS of the crossing. After X-ray testing, the bentonite breakers were built on either side of the stream. Native stone material was used to backfill the ditch to within 12" of the streambed preconstruction elevation. Aqua Block was placed within the sub-layer to help seal the stream. Operators then replaced the large substrate stone that came out of the streambed and filled in gaps with smaller substrate material. The significant rocks that were removed prior to construction were returned to their place in the streambed. Stream banks were reconstructed up to the 10' buffer and all contours, elevations, and other significant points were verified by civil survey. The stream banks were properly seeded in prior to installing erosion control blankets, straw mulch, and silt fence. (Ref. MVP Restoration and Rehabilitation Plan Sections 2.1 and 3.5).

In accordance with the Mountain Valley Pipeline Comprehensive Stream and Wetland Monitoring, Restoration and Mitigation Framework, this independent report was completed to document the on-site monitoring of instream invertebrate and fisheries resources during all construction activity related to waterbody and wetland crossings, and document instream conditions and any impacts to the resources.

| Name | Signature | Company | Date |
|---|---|---|---|
| Jeffrey Arbogast |  | SWCA | 11/21/2023 |

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## Required Photos


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|---|---|
| **GPS Location** | See caption in photo. |
| **Description** | Downstream view of permitted impact area during pre-construction assessment.<br>Standing on upstream LOD. |


| | |
|---|---|
| **GPS Location** | See caption in photo. |
| **Description** | Downstream view of unimpacted area during pre-construction assessment.<br>Standing on timber mat bridge. |


| | |
|---|---|
| **GPS Location** | See caption in photo. |
| **Description** | Downstream view of permitted impact area during post-construction assessment.<br>Standing on upstream LOD. |


| | |
|---|---|
| **GPS Location** | See caption in photo. |
| **Description** | Downstream view of unimpacted area during post-construction assessment.<br>Standing on timber mat bridge. |


| | |
|---|---|
| **GPS Location** | See caption in photo. |
| **Description** | View from the CIS of stream, on centerline, during the pre-construction assessment. |


| | |
|---|---|
| **GPS Location** | See caption in photo. |
| **Description** | View from the GAS of stream, on centerline, during the pre-construction assessment. |

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## Optional Photos


| | |
|---|---|
| **GPS Location** | See caption in photo. |
| **Description** | View from the CIS of stream, on centerline, during the post-construction assessment. |


| | |
|---|---|
| **GPS Location** | See caption in photo. |
| **Description** | View from the GAS of stream, on centerline, during the post-construction assessment. |


| | |
|---|---|
| **GPS Location** | See caption in photo. |
| **Description** | Rock drill prepping stream bed for blasting. |


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|---|---|
| **GPS Location** | See caption in photo. |
| **Description** | Stream substrate being removed. |


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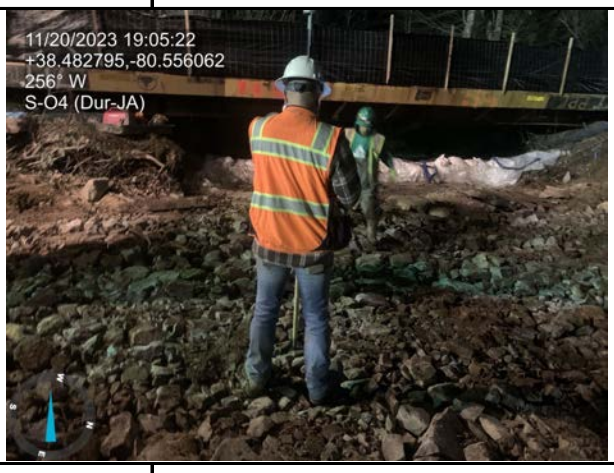
|---|---|
| **GPS Location** | See caption in photo. |
| **Description** | Aqua Block being placed in the stream sub layer to promote sealing. |

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|---|---|
| **GPS Location** | See caption in photo. |
| **Description** | Surveyor checking stream elevation. |