

Wetlands & Floodplain Impact Assessment — Desktop Study

1. Purpose and Scope

This chapter assesses the floodplain and wetland features identified within the study buffer of a proposed 275.8-mile steel tower transmission line corridor traversing Pennsylvania (PA) and West Virginia (WV). The assessment is conducted at desktop study level, drawing on the best available digital and state-maintained mapping described in Section 3. Pennsylvania Zone A and Zone X500 floodplain polygons, sourced from the Pennsylvania Department of Environmental Protection (PA DEP) dataset, may originate from hand-digitisation of older paper Flood Insurance Rate Maps where current digital FIRM coverage is absent; those extents are treated as lower-confidence throughout this chapter and are flagged explicitly in the methodology and feature discussions.

The scope covers: inventory of regulatory floodplains and wetlands within the route buffer; characterisation of feature-level interaction types and impact significance; the applicable permitting regime; and the cumulative risk profile across the corridor. Field delineation of wetland or floodplain boundaries, drafting of permit applications, and commentary on construction cost or schedule are out of scope and are addressed in separate project chapters. All acreages and boundary extents reported here are planning-stage estimates derived from desktop GIS analysis; they are subject to revision upon field delineation by qualified specialists in accordance with applicable federal and state regulatory requirements.

2. Legislative and Permitting Context

2.1 Federal Nexus and EO 11988/11990 Applicability

Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands) impose procedural obligations — including preparation of a floodplain/wetland assessment and a Statement of Findings — only when a **federal nexus** exists. A federal nexus arises when a project involves a federal permit, federal financial assistance, federal land, or other direct federal authorisation. Because this project crosses waters of the United States and requires U.S. Army Corps of Engineers (USACE) authorisation under Clean Water Act (CWA) Section 404, a federal nexus exists for the affected crossings. The USACE's own Floodplain Management Regulations (33 CFR Part 320 and applicable agency-specific guidance) and the Department of Energy implementing regulation at **10 CFR Part 1022** (where DOE financing or authorisation is involved) would each independently trigger EO 11988/11990 compliance obligations for any agency action. Accordingly, a floodplain/wetland assessment and a formal Statement of Findings must be prepared for each crossing where floodplain or wetland resources are involved prior to issuance of a Section 404 permit. This is distinct from a purely state/local process, which would not independently trigger the EO 11988/11990 procedural requirements.

The Youghiogheny River Lake intersection, where the study geometry crosses a USACE-constructed flood-control reservoir spanning the Pennsylvania–Maryland state line, is the most significant EO 11988 trigger on this route. The evidence confirms that operational sensitivity at Youghiogheny River Lake is classified as Moderate, with the reservoir's floodplain function explicitly identified as a regulatory driver and a Statement of Findings requirement under 10 CFR 1022 noted where a federal nexus applies.

2.2 CWA Section 404 Permit Pathway

2.2.1 Applicable Nationwide Permit

The current governing Nationwide Permit for overhead electric utility line crossings of waters of the United States is **Nationwide Permit 57 — Electric Utility Line Activities** (NWP 57). NWP 57 was introduced in the 2021 USACE reissuance of the Nationwide Permit programme, superseding the former NWP 12, which had previously bundled all utility line types. The evidence in this report consistently cites NWP 57 as the applicable instrument for this steel tower transmission line project.

Key thresholds and parameters for NWP 57 (2021–2026 reissuance):

Parameter	Detail
Permit type	Nationwide Permit 57 — Electric Utility Line Activities
Maximum WOTUS loss per single/complete crossing	½ acre (0.50 ac)
Pre-Construction Notification (PCN) acreage trigger	Greater than 1/10 acre (0.10 ac)
PCN trigger — Section 10 navigable waters	Required for all crossings
Current permit expiry	March 14, 2026
Responsible USACE district — PA, WV, OH	Pittsburgh District
Responsible USACE district — MD	Baltimore District
CWA Section 401 Water Quality Certification	Required from each state separately

Practitioners should note that NWP 57, like all general permits, is subject to periodic reissuance; figures above reflect the current 2021 reissuance cycle expiring March 14, 2026. If project construction extends beyond that date, the then-current reissued terms will govern.

2.2.2 USACE District Jurisdiction

The project traverses Pennsylvania, Ohio, West Virginia, and Maryland. Section 404 jurisdiction over waters of the United States in Pennsylvania, Ohio, and West Virginia falls under the **USACE Pittsburgh District**. Maryland crossings fall under the **USACE Baltimore District**. The Youghiogheny River Lake crossing is particularly complex: the reservoir straddles the Pennsylvania–Maryland state line (the Mason–Dixon Line), placing it under the concurrent jurisdiction of both the Pittsburgh District and the Baltimore District, requiring coordinated permitting with both offices.

2.2.3 Individual Permit Requirement at Youghiogheny River Lake

The Youghiogheny River Lake, which directly intersects the study geometry at a crossing of approximately 4.4 square miles (11 km²) of open water, almost certainly exceeds the ½-acre per crossing threshold that defines the outer limit of NWP 57 eligibility. Crossings of this magnitude will require an **Individual Permit (IP)** under CWA Section 404, supported by a Section 404(b)(1) alternatives analysis demonstrating the avoid → minimise → compensate mitigation sequence. The USACE's standard public interest review applies. Youghiogheny River Lake is also a USACE-constructed flood control project (completed 1944), adding an additional layer of USACE operational coordination.

2.2.4 NWP 57 Applicability to Stream and Unnamed Lake/Pond Crossings

The five unnamed perennial stream crossings and the ten lake/pond feature groups that directly intersect the study geometry may qualify for NWP 57 authorisation provided each single/complete crossing causes loss of no more than ½ acre of waters of the United States. A PCN must be submitted to the relevant USACE district for any crossing exceeding 1/10 acre of impact or involving a Section 10 navigable water. Where overhead spans can be configured to avoid permanent fill — which the evidence identifies as feasible for most narrow stream crossings — the NWP 57 acreage thresholds may not be exceeded, though the PCN process is still triggered for Section 10 waters.

CWA Section 404 Permit Pathways by Water Feature Type

Unnamed perennial streams (5 crossings)	NWP 57 — PCN if >1/10 ac
Unnamed lake/pond features (10 groups, intersecting)	NWP 57 or IP if >1/2 ac
Youghiogheny River Lake (intersecting)	Individual Permit likely (size)
High Ridge Reservoir (non-intersecting, ~1,640 ft)	No 404 trigger (no intersection)
Sugar Run Reservoir (non-intersecting, ~1,640 ft)	No 404 trigger (no intersection)
Lake Gloria (non-intersecting, ~1,640 ft)	No 404 trigger (no intersection)

2.3 'Waters of the United States' Definition — State-by-State Status

The scope of CWA Section 404 jurisdiction depends on which definition of "waters of the United States" (WOTUS) is in effect in each project state. The WOTUS definition has been subject to substantial regulatory and judicial change following the Supreme Court's decision in *Sackett v. EPA*, 598 U.S. 651 (2023), and the USACE and EPA's subsequent conforming rule ("Revised Definition of 'Waters of the United States,'" 88 Fed. Reg. 61964, Sept. 8, 2023). As of mid-2025, the applicable regulatory status by state is as follows:

Pennsylvania: The 2023 post-*Sackett* conforming rule applies. Under the narrowed WOTUS definition, jurisdiction extends to relatively permanent waterbodies (rivers, streams, lakes with a continuous surface connection to navigable waters) and wetlands with a continuous surface connection to covered waters. Isolated wetlands and many ephemeral features may no longer meet the federal definition. However, Pennsylvania maintains its own independent wetland and waterway permitting programme (see Section 2.4 below), so state jurisdiction can extend beyond the federal reach.

Ohio: The post-*Sackett* conforming rule similarly applies at the federal level. Ohio does not have a state-level wetland permitting programme equivalent to Pennsylvania's, meaning the narrowing of federal WOTUS jurisdiction has more direct practical consequence for projects in Ohio. Jurisdictional determinations from the USACE Pittsburgh District are the operative reference for Ohio crossings.

West Virginia: The post-*Sackett* conforming rule applies. West Virginia does not maintain a state wetland programme separate from the federal 404 process, so federal WOTUS jurisdiction governs. State 401 Water Quality Certification from the West Virginia Department of Environmental Protection (WVDEP) is nonetheless required before any NWP 57 or IP becomes effective.

Maryland: The post-*Sackett* conforming rule applies at the federal level. Maryland, however, operates its own comprehensive Tidal and Non-Tidal Wetlands programme under the Maryland Wetlands Act (Md. Code, Env. § 16-101 et seq. for tidal; Md. Code, Env. § 5-901 et seq. for non-tidal), administered by the Maryland Department of the Environment (MDE). Maryland's state definition of wetlands is broader than the current federal WOTUS definition and remains unaffected by *Sackett*. Accordingly, features in Maryland that may no longer qualify as federal WOTUS can still require a state non-tidal wetlands permit from MDE.

Note: Judicial and regulatory developments affecting the WOTUS definition remain active; practitioners should confirm the current regulatory status with the relevant USACE district at the time of permit application rather than relying on this summary as a static reference.

2.4 State and Local Floodplain and Wetland Permitting Requirements

Each project state layers additional permitting obligations on top of the federal Section 404 process. The following requirements apply across the project corridor:

CWA Section 401 Water Quality Certification (all four states)

Before any USACE Section 404 nationwide or individual permit becomes effective, each state in which an impact occurs must issue a Section 401 Water Quality Certification (or waive its right to do so). This applies in Pennsylvania (administered by the Pennsylvania Department of Environmental Protection, PADEP), Ohio (Ohio EPA), West Virginia (WVDEP), and Maryland (MDE). A state may attach conditions to its 401 certification that are more stringent than the federal permit terms.

Pennsylvania

- *Chapter 105 Water Obstruction and Encroachment Program (PADEP)*: Any structure, obstruction, or encroachment in, along, across, or projecting into a watercourse, floodway, or body of water in Pennsylvania requires a permit under the Dam Safety and Encroachments Act (32 P.S. § 673.1 et seq.) and its implementing regulations at 25 Pa. Code Chapter 105. This applies to all stream and lake crossings, including those already subject to federal Section 404 review.
- *Chapter 102 Erosion and Sediment Control Program (PADEP)*: Earth disturbance activities of 1 acre or more (or less under certain conditions) require an Erosion and Sediment Control (E&S) permit or NPDES Construction Activity Permit from PADEP. For a 275.8-mile steel tower transmission line, this programme will apply across the Pennsylvania portion of the corridor.
- *State Floodplain Management*: Pennsylvania's Floodplain Management Act (32 P.S. § 679.101 et seq.) requires municipalities to administer floodplain regulations consistent with FEMA National Flood Insurance Programme (NFIP) requirements. Local ordinances in each municipality through which the route passes must be individually confirmed; many Pennsylvania municipalities have adopted the Model Floodplain Ordinance. Construction within the 100-year floodplain will require a local floodplain development permit.
- *Pennsylvania Natural Diversity Inventory (PNDI)*: Although not a floodplain or wetland permit per se, PNDI review is a standard prerequisite to PADEP Chapter 105 permits and will apply to crossings near the High Ridge Reservoir, Sugar Run Reservoir, and Youghiogheny River Lake, all of which involve sensitive or publicly designated water supply resources.
- *High Ridge Reservoir and Sugar Run Reservoir*: Both features carry NoGo classifications under Hydrology and Hydrogeology in the project source data and serve as public water supply sources (High Ridge Reservoir for the Highridge Water Authority; Sugar Run Reservoir for St. Clair Township) in Westmoreland County, Pennsylvania. PADEP administers additional safeguards under the Safe Drinking Water Act implementing regulations and may require consultation or additional setback compliance for construction activities within their watersheds, even where direct intersection does not occur.

Ohio

- Ohio does not administer a standalone state wetland 404-equivalent programme. The federal NWP 57 / Section 404 pathway, with Ohio EPA Section 401 WQC, is the primary instrument.
- Local floodplain ordinances conforming to FEMA NFIP standards apply in each jurisdiction along the corridor.

West Virginia

- WVDEP administers the Section 401 WQC process and issues Wetlands Activity Permits (WAP) for certain activities in state-jurisdictional wetlands.
- Stream Crossing Permits under the Water Pollution Control Act (W. Va. Code § 22-11) may be required separately.
- Local floodplain management ordinances conforming to the State Flood Plain Management Act (W. Va. Code § 29-22A) apply.

Maryland

- *Non-Tidal Wetlands Permit (MDE)*: Maryland's Non-Tidal Wetland Protection Act (Md. Code, Env. § 5-901 et seq.) requires MDE authorisation for any filling, grading, or alteration of non-tidal wetlands. The state definition of non-tidal wetlands under COMAR 26.23 is broader than the current federal WOTUS definition post-Sackett, creating a category of features regulated by Maryland but not currently subject to federal 404 jurisdiction.
- *Waterway Construction Permit (MDE)*: Activities altering the 100-year floodplain, stream channel, or banks of any navigable water in Maryland require a Waterway Construction Permit from MDE under Md. Code, Env. § 5-503.

- *Maryland Department of Natural Resources (DNR) — Critical Area:* The Youghiogheny River Lake crossing may engage Maryland Critical Area or State Forest requirements depending on the precise crossing location; this should be confirmed through MDE and DNR pre-application consultation.
- The evidence confirms that the Youghiogheny River Lake crossing explicitly triggers both USACE Baltimore District Section 404 review and Maryland Non-Tidal Wetlands permitting.

Local Floodplain Ordinances (all four states)

All four states participate in the FEMA National Flood Insurance Programme. Local governments along the 275.8-mile corridor are required under their NFIP participation agreements to issue floodplain development permits for any construction within the mapped 100-year floodplain (Special Flood Hazard Area). The specific ordinance requirements, including any freeboard standards above base flood elevation, vary by municipality. Each local jurisdiction through which the route passes must be individually consulted.

2.5 Summary of Regulatory Triggers by Feature

The table below consolidates the principal regulatory triggers identified in the evidence for the water features associated with this route.

Feature	Intersection	Federal Trigger	State Trigger(s)	EO 11988/11990
Youghiogheny River Lake	Yes	Sec. 404 IP; USACE Pittsburgh + Baltimore Districts	PA Ch. 105; MD Non-Tidal Wetlands; MD Waterway Construction	Yes — Statement of Findings required
Unnamed perennial streams (5)	Yes	NWP 57 (PCN likely); Sec. 401 WQC	PA Ch. 105 / Ch. 102; state WQC (each state)	If in mapped floodplain — EO 11988 applies
Unnamed lake/pond groups (10 groups)	Yes	NWP 57 or IP if >½ ac; Sec. 401 WQC	PA Ch. 105; state WQC	EO 11990 if wetland character confirmed
High Ridge Reservoir	No (~1,640 ft)	No direct 404 trigger; CWA general buffer obligations	PA water supply protections; PADEP	No direct EO trigger (no intersection)
Sugar Run Reservoir	No (~1,640 ft)	No direct 404 trigger	PA Ch. 105 watershed protections; PADEP	No direct EO trigger (no intersection)
Lake Gloria	No (~1,640 ft)	No direct 404 trigger	Somerset County, PA local ordinances	No direct EO trigger (no intersection)

3. Methodology

This desktop study assesses hydrology and hydrogeology constraints along the proposed transmission route corridor through Pennsylvania (PA) and West Virginia (WV). The analysis draws on nationally and state-maintained geospatial datasets intersected against the route's inner buffer and a wider 1,640 ft (500 m) proximity ring. Wetland inventory and floodplain extents, acreages, and crossing lengths reported throughout this document are **planning-stage estimates only**; all boundaries and acreages are subject to revision following physical field delineation and survey.

3.1 Wetland Inventory Mapping

Wetland extent along the corridor is sourced entirely from the **US Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI)**, applied consistently across both Pennsylvania and West Virginia. Five NWI layer types appear in the assessment:

NWI Layer	Features in Inner Buffer	Features in Proximity Ring
Freshwater Forested/Shrub Wetland	28	134
Freshwater Emergent Wetland	13	82
Freshwater Pond	12	194
Lake	1	3
Riverine	182	367

Known limitations of the NWI dataset:

- **Under-representation beneath forest canopy.** The NWI mapping methodology relies substantially on aerial and satellite imagery interpretation. Forest canopy suppresses the spectral and textural signals that distinguish wetland soils and vegetation from upland conditions. Consequently, wetland extent within wooded areas — most directly relevant to the Freshwater Forested/Shrub Wetland layer, which accounts for 5,008 ft of route passage — is likely under-mapped. Additional unrecorded forested wetlands may exist along the corridor beyond what the NWI records.
- **Mapping vintage.** NWI data are updated on a rolling, non-uniform schedule; some tiles covering the route corridor may reflect imagery and conditions from multiple years prior to this study, and recent wetland gains or losses may not be reflected.
- **Classification.** NWI polygons represent best-available remote-sensing interpretation and do not substitute for on-the-ground jurisdictional delineation under the Clean Water Act.

Because the NWI is a single nationally consistent digital dataset, no jurisdictional confidence distinction is drawn between PA and WV for wetland inventory; confidence is treated as **moderate and uniform** across both states, with the canopy limitation noted above applying wherever forest cover is present.

3.2 Floodplain Mapping

Four floodplain layers are used in this assessment. The source agency, flood zone designations present in the intersecting features, and mapping confidence vary by jurisdiction.

Pennsylvania floodplain layers — Source: PA Department of Environmental Protection (PA DEP)

- **PA 100-Year Floodplains.** This layer covers both Zone A and Zone AE polygons. Of the features intersecting the inner buffer and proximity ring, FEMA flood zone codes present include Zone A (approximate study, no base flood elevation established) and Zone AE (detailed study, base flood elevation established), along with two features carrying a FLOODWAY (FW) designation. Zone AE polygons are produced from detailed hydraulic studies and are held as **digital data of higher confidence**. Zone A polygons are derived from approximate methods and, in areas without current digital FIRM coverage, may originate from **hand-digitisation of older paper Flood Insurance Rate Maps (FIRMs)**; such features are treated as **lower-confidence** for the purposes of this study.
- **PA 500-Year Floodplains.** Features are designated Zone X500. The origin of individual Zone X500 polygons within the PA DEP dataset may likewise reflect paper-map digitisation where detailed digital FIRM panels are not available; these are treated as **lower-confidence** accordingly.

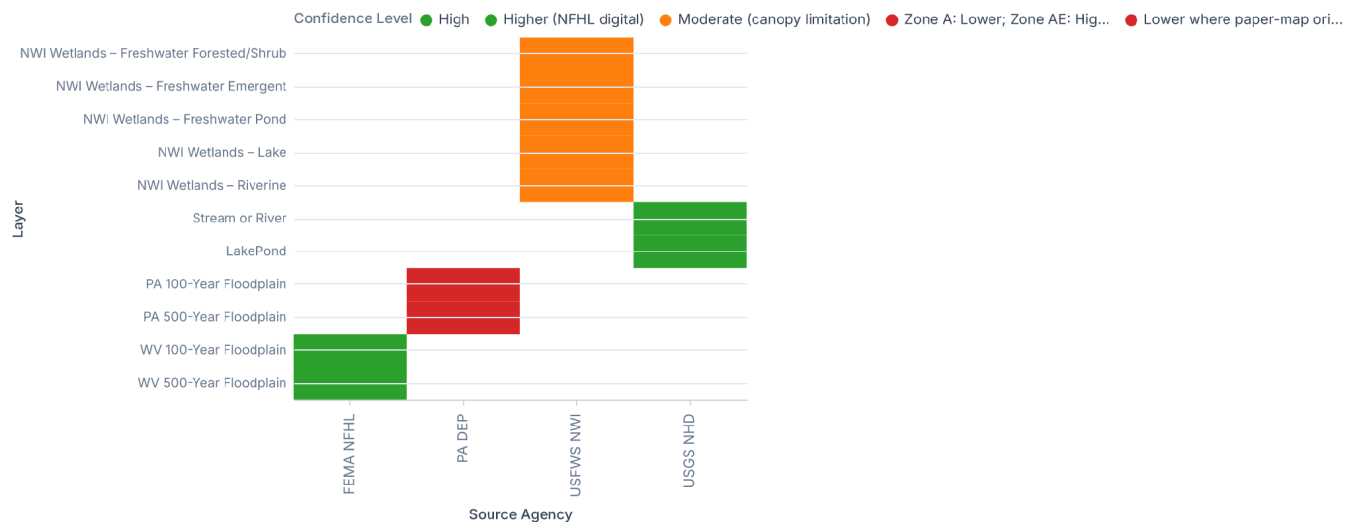
Where Zone A or Zone X500 polygons in the PA DEP dataset lack supporting digital hydraulic study data, the boundaries plotted in this report are considered indicative and should not be used to determine regulatory compliance or permitting obligations without verification against current official FIRM panels.

West Virginia floodplain layers — Source: FEMA National Flood Hazard Layer (NFHL)

- **WV 100-Year Floodplain.** Sourced from FEMA's NFHL, a nationally maintained digital dataset compiled from current effective FIRMs. The WV 100-year layer is treated as **digital mapping of higher confidence** relative to the PA Zone A areas.
- **WV 500-Year Floodplain.** Also sourced from FEMA NFHL and treated as **digital mapping of higher confidence**.

Neither WV floodplain layer intersects the route's inner buffer in this option; each has one feature present in the wider proximity ring only.

Floodplain & Wetland Data Sources by Layer and Confidence



3.3 Hydrography

Streams, rivers, lakes, and ponds intersected as linear and area features are drawn from the [USGS National Hydrography Dataset \(NHD\)](#), a nationally consistent digital product covering both PA and WV. The NHD is maintained at high positional accuracy for perennial features; ephemeral and intermittent features may be less completely mapped in headwater reaches. No hand-digitised or paper-map limitation applies to the NHD layers used in this study.

3.4 Confidence Summary by Jurisdiction and Layer Type

Layer	Source	Jurisdiction	Mapping Type	Confidence
NWI Wetlands (all types)	USFWS NWI	PA and WV	Digital	Moderate — canopy under-representation applies
Stream or River	USGS NHD	PA and WV	Digital	Higher
LakePond	USGS NHD	PA and WV	Digital	Higher
PA 100-Year Floodplain — Zone AE	PA DEP	PA	Digital	Higher
PA 100-Year Floodplain — Zone A	PA DEP	PA	Mixed; hand-digitised paper FIRM origin possible	Lower
PA 500-Year Floodplain — Zone X500	PA DEP	PA	Mixed; hand-digitised paper FIRM origin possible	Lower

Layer	Source	Jurisdiction	Mapping Type	Confidence
WV 100-Year Floodplain	FEMA NFHL	WV	Digital	Higher
WV 500-Year Floodplain	FEMA NFHL	WV	Digital	Higher

3.5 General Caveats

All wetland and floodplain acreages and boundary extents reported in this study are **planning-stage estimates derived from desktop GIS analysis**. They are not the product of physical field surveys, topographic surveys, or jurisdictional wetland delineations. Reported acreages and crossing lengths will be subject to revision once field delineation is undertaken by qualified specialists in accordance with applicable federal and state regulatory requirements. Where digital floodplain mapping does not exist for a given area — particularly for PA Zone A and Zone X500 polygons that may have been digitised from historical paper maps — the mapped extents carry additional uncertainty and should be independently verified against current effective FIRM panels before being relied upon for permitting or design purposes.

4. Baseline Overview

The studied corridor traverses a hydrologically complex landscape in Pennsylvania and West Virginia. Within the route buffer, the assessment identifies four distinct floodplain and wetland data layers of regulatory relevance — two floodplain layers per state — together with six NWI wetland classification layers sourced from the U.S. Fish and Wildlife Service National Wetlands Inventory. All are area-type features; the route passes through them rather than crossing discrete linear features.

Floodplains

Floodplain coverage within the route buffer is drawn from four sources: Pennsylvania 100-year and 500-year floodplains (PA Department of Environmental Protection) and West Virginia 100-year and 500-year floodplains (FEMA National Flood Hazard Layer). Of these, only the PA 100-Year Floodplains layer records features intersecting the route's inner buffer, with 3 features directly intersected and 10 features in the inner ring. The PA 500-Year Floodplains layer has 0 inner-buffer features and 1 inner-ring feature; both West Virginia floodplain layers record 0 inner-buffer features and 1 inner-ring feature each. None of the four floodplain layers carries a no-go designation.

Pennsylvania 100-year floodplain polygons include both Zone A (approximate, un-detailed study) and Zone AE (detailed study with base-flood elevations established) features; at least two of the Zone AE polygons carry a designated floodway (FLOODWAY = FW). Pennsylvania and West Virginia 500-year floodplain polygons are uniformly designated Zone X500. Per-feature acreage figures for floodplain polygons were not supplied in the evidence; ACRES values are recorded as unavailable for all PA and WV floodplain features in the dataset. Accordingly, a total floodplain acreage for the route buffer cannot be reported from the available data. The chart below instead presents the count of floodplain features intersecting the inner route buffer by layer, which is the numeric measure available in the evidence.

As shown, PA 100-Year Floodplains is the only floodplain layer with direct inner-buffer intersections (3 features), encompassing both Zone A (approximated) and Zone AE (detailed study) designations, including one feature carrying a FLOODWAY (FW) designation. The remaining three layers — PA 500-Year Floodplains, WV 100-Year Floodplain, and WV 500-Year Floodplain — each record zero direct inner-buffer crossings for this option.

Wetlands

Six NWI wetland classifications are intersected by the route buffer. The per-feature acreage data available in the evidence covers a subset of the full feature inventory (the source table contains 1,363 rows of which 88 are shown; the NWI Riverine layer alone records 182 inner-buffer intersections and 367 inner-ring intersections). The figures below reflect the acreage-attributed features present in the evidence and should be read as a minimum partial accounting rather than an exhaustive corridor total.

The total NWI wetland acreage within the route buffer, summed across all five recorded classifications, is approximately **572.68 acres**. The breakdown by classification is as follows:

NWI Wetland Classification	Total Area (acres)	Feature Count (inner buffer)
Riverine	268.24	8
Freshwater Forested/Shrub Wetland	108.23	16
Freshwater Emergent Wetland	102.83	13
Lake	86.17	1
Freshwater Pond	7.21	12

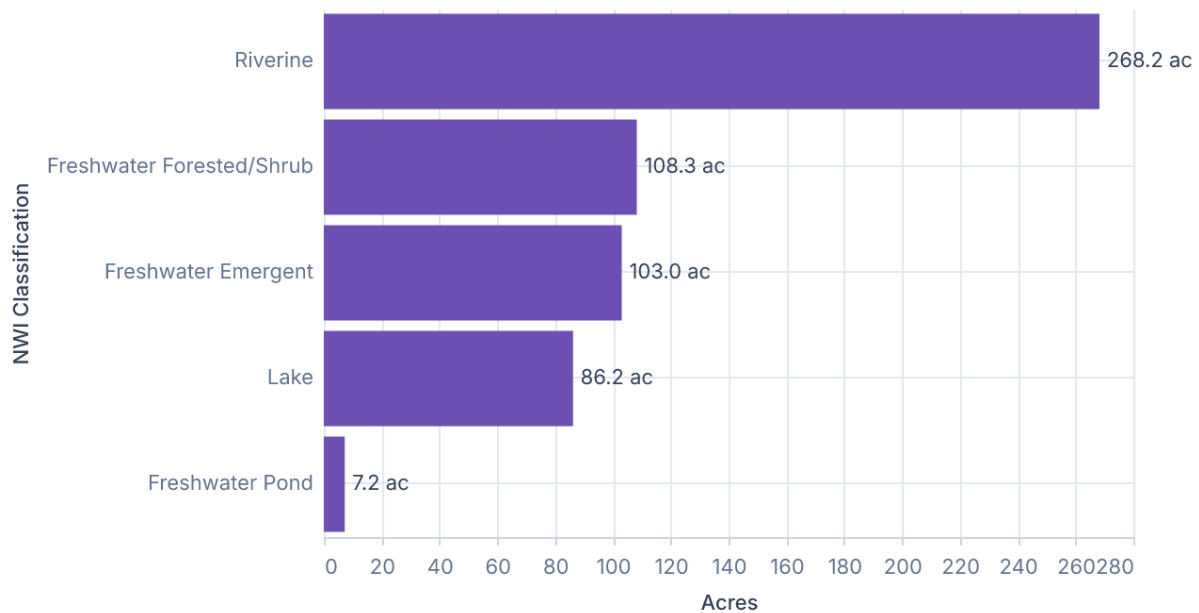
Riverine wetlands account for the largest share of total wetland acreage (268.24 ac, approximately 47%), followed by Freshwater Forested/Shrub Wetland (108.23 ac, approximately 19%) and Freshwater Emergent Wetland (102.83 ac, approximately 18%). Lake wetlands contribute a notable 86.17 ac from a single feature, while Freshwater Pond wetlands represent the smallest classification at 7.21 ac across 12 features.

In addition to the NWI wetland layers, the route buffer overlaps with hydrology layers representing Stream or River (2,006 ft) and LakePond (2,020 ft) features from the USGS National Hydrography Dataset; these are

designated as significant layers and are assessed separately from the NWI classification data above. The buffer also intersects Pennsylvania and West Virginia 100-year and 500-year floodplain extents, for which per-feature acreage data was not available in the evidence.

Several individual features and feature groups dominate the baseline and merit specific callout so they are not lost in the aggregate figures. Within the Riverine class, one polygon (feature 2880641382) accounts for approximately 110.0 acres — by itself representing about 41% of all Riverine acreage in the evidence subset and roughly 19% of the partial corridor wetland total. Within Freshwater Emergent Wetland, a single polygon (feature 2877695558, approximately 47.1 ac) accounts for nearly half that classification's recorded acreage. Within Freshwater Forested/Shrub Wetland, two features — 2874365376 (approximately 19.2 ac) and 2874361507 (approximately 17.6 ac) — together contribute more than one-third of that class's recorded acreage. The single NWI Lake polygon (feature 2872333213, approximately 86.2 ac) represents the entirety of the Lake classification within the evidence.

NWI Wetland Acreage Within Route Buffer by Classification (Partial — Featured Subset)



Because the per-feature table covers only 88 of 1,363 source rows, and because NWI Riverine alone holds 182 inner-buffer-intersecting features (only 8 of which carry acreage in the evidence), the true wetland acreage within the route buffer is substantially larger than the approximately 572.68-acre partial figure reported here. The Riverine class in particular is expected to grow considerably as the full feature inventory is applied.

5. Individual Feature Assessment

(a) Narrative

Youghiogheny River Lake

Youghiogheny River Lake is the highest-sensitivity water body on the route. It is a significant perennial lake/pond feature (USGS NHD FCODE 39009) spanning the Mason–Dixon Line between southwestern Pennsylvania and western Maryland, covering approximately 4.4 square miles (11 km²) ([Youghiogheny River Lake](#)). The feature directly intersects the study geometry (distance = 0), confirming that the transmission line route must cross this reservoir.

The reservoir is classified as a NoGo feature in the source data, indicating it represents a hard constraint where avoidance is the preferred outcome. Construction sensitivity is rated **High**. Key drivers are the size of the crossing, which almost certainly exceeds the ½-acre per single/complete crossing threshold for Nationwide Permit 57 (Electric Utility Line Activities), and the cross-state jurisdiction that simultaneously engages the USACE Pittsburgh District (Pennsylvania) and the USACE Baltimore District (Maryland). A crossing of this magnitude requires an Individual Permit under CWA Section 404, supported by a full Section 404(b)(1) alternatives analysis. Filling or dredging in waters of the U.S. requires USACE authorization; this is a large reservoir with significant hydrological function. Sediment and erosion control during construction requires stringent best management practices to prevent discharge into the reservoir. The Youghiogheny River Lake also serves flood-control functions for the region, and construction timing may be restricted to avoid flood-control operations.

Spanning the reservoir entirely to avoid any in-water structures is the preferred approach. With 115–230 kV spans of 500–1,300 ft and 500 kV spans of 1,000–1,500+ ft, a thorough engineering review should confirm whether the approximately 16-mile-long reservoir can be spanned with zero in-water structures. If spanning is not feasible, micro-siting of structures is required to minimize the footprint within the reservoir boundary. Where intermediate towers within the reservoir corridor are unavoidable, foundations must be shown to cause no measurable rise in base flood elevation, consistent with EO 11988 and USACE floodplain development standards.

Operational sensitivity is rated **Moderate**. The reservoir lies within a floodplain; structures supporting the transmission line must be evaluated against base flood (100-year) elevations per EO 11988. If structures are sited within the floodplain, a Statement of Findings under 10 CFR 1022 would be required where a federal nexus applies. The Youghiogheny Dam is an earthen structure 184 feet high — the reservoir is a managed flood-control facility, and operational protocols may impose access restrictions during high-water periods. Winter ice conditions and the hydroelectric facility (12 MW) downstream may affect maintenance access. The area receives over one million visitors annually for recreation — line visibility and safety considerations apply. The USACE Pittsburgh District and USACE Baltimore District must both be consulted, given the reservoir's cross-state extent.

The Youghiogheny River Lake was constructed as a USACE flood-control project, completed in 1944, and is sourced from the USGS National Hydrography Dataset.

Unnamed LakePond Feature Groups (NHD Perennial — Intersecting)

Ten lake/pond feature groups, comprising 110 individual [NHD perennial waterbody features](#) (FTYPE 390), directly intersect the study geometry. All ten groups carry a NoGo classification, indicating that routing through these features is prohibited. These are mapped perennial waterbodies classified as Waters of the U.S. under CWA Section 404. Construction sensitivity is rated **High**.

Because the features intersect the study geometry, any construction activity would require placing structures within or immediately adjacent to the waterbody, triggering permanent fill impacts; crossing with construction access, equipment, and material transport; and disturbance to streambanks, littoral zones, and aquatic habitat. For a steel tower transmission line crossing perennial lakes/ponds, the appropriate regulatory pathway is CWA Section 404 permitting under Nationwide Permit 57. However, the NoGo classification indicates that direct routing through these waterbodies should be avoided entirely rather than permitted. Rerouting to avoid all mapped lake/pond features is the preferred outcome. If avoidance is infeasible, USACE Section 404 permits must be obtained, wetland delineation must be conducted to confirm boundaries, and compensatory mitigation provided for unavoidable fill and conversion impacts. A Pre-Construction Notification is required when impacts exceed 1/10 acre; an individual permit is required when impacts exceed 1/2 acre per single/complete crossing.

Operational sensitivity is rated **Moderate**. During operation, permanent impacts are limited to the tower foundation footprint if any structures are sited within the waterbody. For spans crossing open water, increased vertical and lateral loads may affect tower design. Maintenance access by boat or during frozen-ground conditions may be required, creating periodic disturbance to the waterbody and its buffers. Spans should be designed to fully clear the waterbody with zero in-water structures where possible.

Feature-level detail for the unnamed LakePond groups is summarised at layer level due to data volume; individual feature widths and in-ROW acreages were not reported at per-feature resolution in the source data for this layer.

Unnamed Perennial Stream Crossings (NHD — Intersecting)

Five unnamed perennial stream features from the USGS NHD directly intersect the study geometry. All are perennial streams (Hydrographic Category = Perennial) located in the Pennsylvania/Ohio/West Virginia/Maryland region, each lacking an official [GNIS](#) name ([NHD Data Dictionary](#); [NHD Hydrography & Geographic Names](#)). Construction sensitivity is rated **Moderate**.

The stream crossings trigger regulatory requirements under the Clean Water Act. Construction activities within stream corridors and their associated buffers require: a USACE Section 404 permit (linear utility crossings typically utilise Nationwide Permit 57, which authorises fills provided the crossing does not cause loss of more than 1/2 acre of Waters of the U.S. per single/complete crossing; a PCN is required above approximately 1/10 acre or for any Section 10 navigable water); a Section 401 Water Quality Certification from the applicable state; and state-specific stream crossing permits, as each of the four project states may have additional requirements.

For overhead transmission lines, streams can typically be spanned with no in-water structures required, avoiding permanent fill. However, construction still involves temporary disturbance from access roads, staging areas, and structure installation near the stream boundaries. The streams' relatively small drainage areas (ranging from 7 to 37 square kilometers based on source data) indicate these are likely narrow enough to span with standard steel tower configurations, reducing but not eliminating construction-phase sensitivity. Mitigation measures include scheduling construction during low-flow or dry seasons to minimise in-stream disturbance, using temporary crossing methods (bridges or ford limits) if access across streams is necessary, implementing erosion and sediment control measures upgradient of streams, and restoring disturbed stream banks and riparian areas upon completion. Operational sensitivity is rated **Lower**. Once constructed, the transmission line's operational footprint within stream corridors is minimal. Operational sensitivities are limited to periodic vegetation management within the right-of-way, access road maintenance near streams, and potential for storm-related debris accumulation. Routine operational activities near streams follow standard environmental protection measures.

Feature-level detail for the five unnamed perennial stream crossings is summarised at layer level due to data volume; individual crossing widths and in-ROW fill acreages were not reported at per-feature resolution in the source data for this layer.

Pennsylvania 100-Year Floodplain

Three features from the PA 100-Year Floodplains layer (PA DEP) directly intersect the route's inner buffer. The flood zone designations present include both Zone A (approximate study, no base flood elevation established) and Zone AE (detailed study with base flood elevation established); two features carry a designated FLOODWAY (FW) flag. Zone AE polygons are treated as digital data of higher confidence; Zone A polygons may originate from hand-digitisation of older paper FIRMs and are treated as lower-confidence for this study.

The two floodway-designated features are the most significant from a regulatory standpoint: any permanent encroachment within the FEMA-defined floodway triggers the most stringent regulatory scrutiny under EO 11988 and state floodplain management programmes. Steel tower construction offers substantial span capability (500–1,300 ft for standard configurations), and placing tower foundations entirely outside floodway boundaries — on upland terraces on each side of the floodway — is the preferred approach. The remaining Zone A and Zone AE features without a floodway designation represent 100-year floodplain encroachments that require local floodplain development permits and must demonstrate no adverse effect on flood conveyance.

Per-feature acreage data for floodplain polygons was not supplied in the source evidence. Layer-level counts (3 inner buffer, 10 inner ring) are the numeric measure available; individual crossing widths and floodplain acreage within the ROW are not determined at desktop stage.

An additional 10 PA 100-Year Floodplain features lie within the proximity ring (within approximately 1,640 feet of the route's inner buffer). Three PA 500-Year Floodplain features (Zone X500) are present in the proximity ring; no PA 500-Year features intersect the inner buffer. One WV 100-Year Floodplain feature and one WV 500-Year Floodplain feature each appear in the proximity ring; neither intersects the inner buffer.

NWI Wetland Layers — Freshwater Forested/Shrub Wetland

The Freshwater Forested/Shrub Wetland NWI layer records 28 features intersecting the inner buffer, with the route passing through 5,008 ft of this wetland type. Partial acreage data (covering 16 of 28 inner-buffer features) totals approximately 108.23 acres. Two individual features — 2874365376 (approximately 19.2 ac) and 2874361507 (approximately 17.6 ac) — together contribute more than one-third of the recorded acreage for this class.

Freshwater Forested/Shrub Wetland crossings carry the highest planning-stage compensation ratios among NWI wetland types (see Section 7.2) because forested wetland ecological functions are the most difficult to replace on a comparable timeline. Any conversion from forested or shrub-scrub canopy to herbaceous cover within the right-of-way constitutes a type conversion under CWA Section 404. The NWI methodology is known to under-map forested wetland extent beneath dense canopy, so the 28-feature count and 108-acre partial total likely understate

actual forested wetland exposure along this corridor. Feature-level detail for this layer is summarised at layer level due to data volume.

NWI Wetland Layers — Freshwater Emergent Wetland

The Freshwater Emergent Wetland NWI layer records 13 features intersecting the inner buffer, with the route passing through 2,784 ft of this wetland type. Per-feature acreage data is available for all 13 inner-buffer features, totalling approximately 102.83 acres. A single feature (2877695558, approximately 47.1 ac) accounts for nearly half the recorded acreage for this classification. Emergent wetland crossings are subject to CWA Section 404 permitting; type conversion from emergent to herbaceous ground cover within the ROW is a permanent impact requiring compensatory mitigation where avoidance is not achievable. Feature-level detail for this layer is summarised at layer level due to data volume.

NWI Wetland Layers — Freshwater Pond

The Freshwater Pond NWI layer records 12 features intersecting the inner buffer, with the route passing through 1,129 ft of this wetland type. Per-feature acreage data is available for all 12 inner-buffer features, totalling approximately 7.21 acres. Individual pond features are generally small (less than 2 acres each), and most are likely spannable or avoidable through minor alignment micro-siting. CWA Section 404 permitting applies to any fill impacts. Feature-level detail for this layer is summarised at layer level due to data volume.

NWI Wetland Layers — Lake

The NWI Lake layer records one feature intersecting the inner buffer, with the route passing through 547 ft of this wetland type. The single inner-buffer feature (2872333213) has a recorded area of approximately 86.17 acres, representing the entirety of the Lake classification within the evidence. This is the largest single NWI polygon in the evidence subset after the dominant Riverine feature. CWA Section 404 permitting applies; any permanent fill would likely require a PCN and could approach the individual permit threshold depending on the tower configuration at this crossing. Feature-level detail is summarised at layer level due to data volume.

NWI Wetland Layers — Riverine

The NWI Riverine layer records 182 features intersecting the inner buffer and 367 features in the proximity ring, making it the most extensively distributed wetland type along the corridor by feature count. Partial acreage data covers 8 of the 182 inner-buffer features, totalling approximately 268.24 acres — the largest wetland acreage class in the partial evidence. One feature (2880641382, approximately 110.0 acres) alone constitutes about 41% of the Riverine acreage in the evidence subset. Because only 8 of 182 inner-buffer features carry acreage data in the available subset, the true Riverine wetland acreage within the route buffer is substantially larger than the partial figure reported here. Riverine wetlands represent CWA-jurisdictional waters; permanent fill within riparian wetland areas requires Section 404 permitting with compensatory mitigation. Feature-level detail for this layer is summarised at layer level due to data volume.

High Ridge Reservoir

[High Ridge Reservoir](#) is a [perennial lake/pond](#) (NHD LakePond layer) serving as a public water supply for the Highridge Water Authority, which provides water to residents in Westmoreland, Indiana, and Cambria counties in western Pennsylvania. The feature does not intersect the study geometry — spatial separation is approximately 1,640 feet. Construction sensitivity is rated **Moderate**.

Although construction activities would not directly affect the reservoir, proximity to a designated public water supply source triggers heightened sensitivity under U.S. environmental regulations. The CWA Section 404 programme and state-level water supply protections apply to construction activities near public water supply reservoirs. Standard buffer guidance for water supply sources typically recommends maintaining adequate separation to prevent sedimentation, contamination from construction runoff, and indirect hydrologic impacts. The recorded distance substantially exceeds what would typically be considered a direct impact zone, but remains within a range where transmission line projects implement enhanced erosion and sediment control measures. The feature carries a NoGo classification in the source data, reflecting its status as a constraint feature — both from a regulatory perspective and due to its function as critical water infrastructure for regional population centres. No fill or structural placement within the reservoir is anticipated at this separation distance.

Operational sensitivity is rated **Moderate**. During operational phases, the primary sensitivities revolve around protection of the reservoir as a public water supply source. The feature does not intersect the study geometry, meaning the overhead transmission line infrastructure would not directly cross or span the reservoir. Operational sensitivities include potential for routine maintenance activities to require access roads or temporary work areas in the vicinity, and the need to prevent any hazardous material releases that could reach the water supply intake or connected waterways.

Sugar Run Reservoir

[Sugar Run Reservoir](#) is a 22-acre perennial lake/pond (NHD LakePond layer, feature ID 1433998205) located in Westmoreland County, Pennsylvania, with an associated earth dam (60 ft height) constructed in 1907, serving St. Clair Township's water supply needs. The dam carries a [high hazard potential classification](#), meaning dam failure could result in probable loss of human life. The feature does not intersect the study geometry; it is located approximately 1,640 feet from the transmission line corridor. Construction sensitivity is rated **Moderate**.

The feature carries a NoGo classification in the source data under Hydrology and Hydrogeology, reflecting its function as a water supply reservoir. Construction-phase sensitivities include sediment and erosion control (construction activities within the assessment corridor could generate sediment runoff reaching the reservoir watershed; standard erosion and sediment control measures are required to prevent water quality degradation), spill prevention (given the reservoir's water supply function and high hazard dam classification, fuel, hydraulic fluid, or chemical spills during construction could impact water quality downstream; spill prevention and containment measures are appropriate), and access and staging (construction access routes and staging areas should be sited to maintain the existing setback from the reservoir). No fill or structural placement within the reservoir is anticipated at this separation distance. The steel tower ruling span (typically 500–1,300 ft for 115–230 kV configurations) confirms the crossing is readily spanned with no in-feature structures anticipated.

Operational sensitivity is rated **Negligible**. The feature does not intersect the study geometry and is separated by approximately 1,640 feet from the transmission line alignment. At this distance, no operational impacts on the reservoir are anticipated, including no structure foundations within the reservoir or its buffer, no vegetation clearing within the reservoir boundary, no alteration of hydrologic patterns affecting water levels, and no access requirements through the reservoir area.

Lake Gloria

[Lake Gloria](#) is a private recreational reservoir in Somerset County, Pennsylvania, covering approximately 33–34 acres ([Lake Link](#)). The lake is formed by an earth dam on Beaverdam Run, constructed in 1958. The dam is 29 feet high with a 440 acre-feet storage capacity and carries a high hazard potential classification, indicating that dam failure could result in loss of life. The feature does not intersect the study geometry; Lake Gloria is located within approximately 1,640 feet of the study geometry but maintains explicit spatial separation. The transmission line route does not cross or directly interact with the lake or its associated infrastructure. Both construction and operational sensitivity are rated **Negligible**.

No direct physical interaction occurs between the proposed transmission line and Lake Gloria. The separation distance substantially exceeds any typical construction buffer requirements for water bodies. Standard erosion and sediment control measures applied to the broader construction corridor would adequately address any incidental runoff concerns during temporary construction activities. At this separation distance, no in-feature structure placement is required, and operational activities for an overhead transmission line do not produce impacts on water bodies located outside the study geometry.

Unnamed LakePond Features — Buffer Only (NHD Perennial, Non-Intersecting)

A group of 202 unnamed NHD perennial waterbody features (FTYPE 390) with a combined area of approximately 0.42 km² (104 acres) are located within the 1,640-foot study buffer but do not intersect the study geometry. Both construction and operational sensitivity are rated **Negligible**.

The features do not intersect the study geometry, meaning no direct physical disturbance would occur from construction activities. At a separation distance of approximately 1,640 feet, indirect construction-phase impacts such as sediment drift, stormwater runoff, or accidental spills are unlikely to reach these features provided standard erosion and sediment control BMPs are implemented. Because no intersection occurs, no Section 404 permit trigger applies. No fill or type conversion acreage would result from the proposed alignment under the current geometry. Normal transmission line operation does not generate emissions, runoff, or other pathways that would affect water bodies at this separation distance.

(b) Appendix Table

Note: This run's feature data was reduced for volume; several NWI wetland layers and the NHD Stream/River and LakePond unnamed-group layers carry layer-level summaries in the source data rather than individual per-feature assessments. Rows marked "layer-level summary" reflect this data-volume constraint; acreages and widths for those rows are not determined at desktop stage unless explicitly provided in the layer-level evidence.

Feature ID / Name	Designation (floodplain zone / wetland type)	Interaction Type	Width (ft) / Acreage in ROW (acres)	Sensitivity Rating (Construction / Operational)	Likely Impact	Proposed Mitigation
Youghiogheny River Lake (GNIS, NHD LakePond)	Perennial lake/pond; USACE flood- control reservoir; floodplain feature	Crossing (direct intersection)	4.4 sq mi (11 km ²) total surface area; ROW acreage not determined at desktop stage	High / Moderate	Open-water crossing of major USACE reservoir spanning PA–MD state line; highly likely to exceed ½-ac NWP 57 threshold, requiring Individual Permit; floodplain encroachment triggers EO 11988; Statement of Findings required	Preferred: span reservoir entirely with no in-water structures; if unavoidable, micro-site foundations outside floodway; prepare Section 404(b)(1) alternatives analysis; coordinate with USACE Pittsburgh and Baltimore Districts; seasonal construction windows; no-rise certification for floodplain
Unnamed LakePond feature groups (NHD — 10 groups, 110 features; layer-level summary)	Perennial lake/pond — Waters of the U.S.; NoGo classification	Crossing (direct intersection)	Layer-level summary — not determined at desktop stage per feature	High / Moderate	Permanent fill risk in each waterbody; NoGo status requires rerouting preference; cumulative acreage across 10 crossings could aggregate toward individual permit threshold	Reroute to avoid all mapped lake/pond features; where avoidance is impracticable, obtain Section 404 permits with PCN above 1/10 ac; provide compensatory mitigation; span to eliminate in-water foundations; low-impact installation methods
Unnamed perennial streams — NHD (5 features; layer-level summary)	Perennial stream — Waters of the U.S.	Crossing (direct intersection)	Drainage areas 7– 37 km ² ; individual crossing widths not determined at desktop stage	Moderate / Lower	Temporary and potential permanent fill in stream corridors; Section 404 NWP 57 and state stream crossing permits triggered; most crossings likely spannabable	Schedule construction during low-flow periods; temporary crossing methods; erosion and sediment controls upgradient; restore disturbed riparian areas; submit PCN above 1/10 ac

Feature ID / Name	Designation (floodplain zone / wetland type)	Interaction Type	Width (ft) / Acreage in ROW (acres)	Sensitivity Rating (Construction / Operational)	Likely Impact	Proposed Mitigation
PA 100-Year Floodplains — Zone AE with FLOODWAY (2 features; layer-level summary)	Regulatory floodway within 100-year floodplain (Zone AE); higher-confidence digital mapping	Crossing (direct intersection)	Acreage in ROW not determined at desktop stage	High (floodway encroachment)	Floodway encroachment triggers highest regulatory scrutiny under EO 11988 and PA state floodplain management; no-rise certification required	Tower foundations placed outside floodway on upland banks; no-rise analysis at each floodway crossing; local floodplain development permit; PADEP Chapter 105 permit
PA 100-Year Floodplains — Zone A and Zone AE (remaining 1 inner-buffer feature; layer-level summary)	Base floodplain (100-year); Zone A lower-confidence (paper FIRM origin possible); Zone AE higher-confidence	Crossing (direct intersection)	Acreage in ROW not determined at desktop stage	Moderate	Floodplain development within 100-year SFHA; local permit required; Zone A boundary uncertainty adds permitting risk	Local floodplain development permit; verify Zone A boundary against current FIRM panels; design foundations to resist flood forces; PADEP Chapter 105 permit
PA 100-Year Floodplains — proximity ring (10 features)	Base floodplain (100-year); mixed Zone A / Zone AE	Adjacent (within ~1,640 ft, no intersection)	Not determined at desktop stage	Low	No direct construction impact under current alignment; potential risk if alignment shifts or access roads placed nearby	Monitor during detailed design; confirm no encroachment as tower locations are finalised
NWI Freshwater Forested/Shrub Wetland (28 inner-buffer features; layer-level summary)	Freshwater Forested/Shrub Wetland (NWI); likely WOTUS	Crossing (direct intersection)	5,008 ft route passage; partial acreage ≈ 108.23 ac (16 of 28 features); ROW intersection acreage not determined at desktop stage	Moderate–High	Canopy-to-herbaceous type conversion within ROW; highest compensation ratios; NWI likely under-maps forested extent; CWA Section 404 permitting required	Minimise ROW width through forested wetland areas; retain canopy where practicable; section 404 PCN and compensatory mitigation at planning-stage 2:1–3:1 ratio; field delineation required

Feature ID / Name	Designation (floodplain zone / wetland type)	Interaction Type	Width (ft) / Acreage in ROW (acres)	Sensitivity Rating (Construction / Operational)	Likely Impact	Proposed Mitigation
NWI Freshwater Emergent Wetland (13 inner-buffer features; layer-level summary)	Freshwater Emergent Wetland (NWI); likely WOTUS	Crossing (direct intersection)	2,784 ft route passage; acreage $\approx$ 102.83 ac (all 13 features); ROW intersection acreage not determined at desktop stage	Moderate	Permanent type conversion within ROW; Section 404 permitting required	PCN above 1/10 ac; compensatory mitigation at planning-stage 1.5:1–2:1 ratio; erosion and sediment control during construction
NWI Freshwater Pond (12 inner-buffer features; layer-level summary)	Freshwater Pond (NWI); likely WOTUS	Crossing (direct intersection)	1,129 ft route passage; acreage $\approx$ 7.21 ac (all 12 features); ROW intersection acreage not determined at desktop stage	Moderate	Permanent fill risk; most features small enough for spanning or micro-siting to avoid fill	Span or micro-site to avoid fill; PCN where impacts exceed 1/10 ac; compensatory mitigation if unavoidable fill
NWI Lake (1 inner-buffer feature; feature 2872333213; layer-level summary)	Lake (NWI); likely WOTUS	Crossing (direct intersection)	547 ft route passage; total feature area $\approx$ 86.17 ac; ROW intersection acreage not determined at desktop stage	Moderate–High	Large single lake polygon; any permanent fill likely requires PCN and may approach individual permit threshold	Span to avoid in-water structures; PCN required above 1/10 ac; compensatory mitigation at planning-stage 2:1–3:1 ratio if fill unavoidable
NWI Riverine (182 inner-buffer features; layer-level summary)	Riverine wetland (NWI); likely WOTUS	Crossing (direct intersection)	Route passage not separately quantified;	Moderate	Largest wetland class by acreage in evidence; riparian and floodplain character;	Minimise disturbance to riparian corridors; restore disturbed areas; erosion and

Feature ID / Name	Designation (floodplain zone / wetland type)	Interaction Type	Width (ft) / Acreage in ROW (acres)	Sensitivity Rating (Construction / Operational)	Likely Impact	Proposed Mitigation
summary)			partial acreage ≈ 268.24 ac (8 of 182 features); total corridor acreage substantially higher; ROW intersection acreage not determined at desktop stage		Section 404 permitting required; type-conversion acreage expected to be largest contributor	sediment control; compensatory mitigation for unavoidable fill at planning- stage 1:1–1.5:1 ratio
PA 500-Year Floodplains (proximity ring only; 1 feature)	500-year floodplain (Zone X500); lower- confidence (paper FIRM origin possible)	Adjacent (within ~1,640 ft, no intersection)	Not determined at desktop stage	Low	No direct construction impact under current alignment	Monitor during detailed design
WV 100-Year Floodplain (proximity ring only; 1 feature)	100-year floodplain (FEMA NFHL — higher confidence)	Adjacent (within ~1,640 ft, no intersection)	Not determined at desktop stage	Low	No direct construction impact under current alignment	Monitor during detailed design; confirm no encroachment as tower locations are finalised
WV 500-Year Floodplain (proximity ring only; 1 feature)	500-year floodplain (FEMA NFHL — higher confidence)	Adjacent (within ~1,640 ft, no intersection)	Not determined at desktop stage	Low	No direct construction impact under current alignment	Monitor during detailed design
High Ridge	Perennial	Nearby	~1,640 ft	Moderate /	No direct disturbance; indirect	Enhanced erosion and sediment

Feature ID / Name	Designation (floodplain zone / wetland type)	Interaction Type	Width (ft) / Acreage in ROW (acres)	Sensitivity Rating (Construction / Operational)	Likely Impact	Proposed Mitigation
Reservoir (NHD LakePond; NoGo — public water supply)	lake/pond; public water supply; NoGo classification	(~1,640 ft, no intersection)	separation; no ROW acreage	Moderate	risk from construction runoff to water supply watershed	control in construction corridor; spill prevention and containment plan; maintain access staging outside reservoir setback; PADEP consultation regarding water supply watershed
Sugar Run Reservoir (NHD LakePond ID 1433998205; NoGo — public water supply)	Perennial lake/pond; public water supply; high hazard dam (60 ft); NoGo classification	Nearby (~1,640 ft, no intersection)	~1,640 ft separation; no ROW acreage	Moderate / Negligible	No direct disturbance; indirect risk from construction runoff to water supply and high- hazard dam watershed	Standard erosion and sediment control; spill prevention measures; maintain existing setback during access and staging
Lake Gloria (NHD LakePond; Somerset County, PA)	Perennial lake/pond; private recreational reservoir; high hazard potential dam (29 ft)	Nearby (~1,640 ft, no intersection)	~1,640 ft separation; no ROW acreage	Negligible / Negligible	No significant impact anticipated; no direct or indirect interaction expected	Standard construction BMPs applicable for work in the vicinity; no dedicated mitigation required
Unnamed LakePond — buffer only (NHD — 202 features; non- intersecting)	Perennial lake/pond — NHD; likely WOTUS where perennial	Nearby (within ~1,640 ft, no intersection)	Not determined at desktop stage	Negligible / Negligible	No Section 404 trigger under current alignment; no fill or type-conversion acreage anticipated	Standard project-wide erosion and sediment BMPs; no specific mitigation required under current alignment

6. Cumulative Risk Profile

6.1 Total Predicted Wetland / Waterbody Type-Conversion Acreage

The route intersects three categories of jurisdictional waters that carry potential permanent fill or type-conversion acreage under Clean Water Act (CWA) Section 404:

Feature Category	Intersecting Count	Predicted Type-Conversion Acreage
LakePond — unnamed NHD perennial (10 groups)	10 groups (110 individual features)	Up to ≤ 0.50 ac total across all groups (PCN threshold per crossing)
Youghiogheny River Lake (named LakePond, 4.4 sq mi)	1	Exceeds $\frac{1}{2}$ ac per single/complete crossing; acreage not quantified in source data
Perennial streams — unnamed NHD (5 features)	5	Individually spannable; permanent fill projected < 0.10 ac per crossing; cumulative fill data unavailable
LakePond — non-intersecting buffer features (202)	0	0 ac — no Section 404 trigger

For the 10 unnamed lake/pond groups that intersect the study geometry, each individual crossing is constrained at or below the $\frac{1}{2}$ -acre Nationwide Permit 57 (NWP 57) threshold if impacts are limited to tower foundation footprints at the waterbody edge; however, cumulative fill across all 10 groups can aggregate toward the threshold band that triggers an individual permit review (see Section 6.3 below). For the five perennial stream crossings, all features are described as narrow enough to span with standard steel tower configurations, making permanent in-water fill minimal; precise acreage was not reported in the source evidence.

The Youghiogheny River Lake crossing stands alone in scale: the reservoir covers approximately 4.4 square miles and spans two states (Pennsylvania and Maryland). Any in-water structure placement would, on its own, exceed the $\frac{1}{2}$ -acre single-crossing threshold under NWP 57, placing it squarely in individual-permit territory regardless of cumulative accounting.

Three categories of Waters of the U.S. intersect the study geometry and constitute the project's Section 404 fill and type-conversion exposure: (1) 110 unnamed perennial LakePond features, (2) the Youghiogheny River Lake, and (3) five unnamed perennial stream crossings. An additional 202 unnamed LakePond features lie within the 1,640-foot study buffer but do not intersect the geometry; they generate no fill or type-conversion acreage under the current alignment and are therefore excluded from the cumulative impact accounting.

Per-feature fill acreage from individual wetland delineations was not reported in the evidence for any of the intersecting crossing categories. Accordingly, cumulative acreage exposure in the chart below is expressed as the product of the confirmed crossing count for each category and the applicable Nationwide Permit 57 Pre-Construction Notification (PCN) threshold of 0.10 acre per single/complete crossing — the lowest regulatory trigger point. This represents the acreage level at which each individual crossing requires formal PCN submission to the USACE and is therefore the most operationally meaningful threshold for cumulative planning purposes. Actual fill acreage per crossing will be smaller than this ceiling for most overhead-span configurations and will only be confirmed through site-specific wetland delineation.

Under this framing, the 110 unnamed LakePond crossings carry a cumulative PCN-threshold exposure of **11.0 acres**, the Youghiogheny River Lake crossing carries **0.10 acres**, and the five unnamed stream crossings carry a combined **0.50 acres**, for a project-wide total of **11.60 acres** at the PCN-threshold basis.

The two horizontal reference lines in the chart mark the operative Nationwide Permit 57 thresholds. The lower dashed line at **0.10 acre per crossing** is the PCN trigger: any individual crossing where fill or type conversion equals or exceeds this area requires advance notification to the USACE before work begins. The upper dashed line at **0.50 acre per crossing** is the individual permit threshold: fill at or above this level for a single/complete crossing cannot be authorised under NWP 57 and requires an Individual Section 404 Permit, including a full 404(b)(1) alternatives analysis. Both thresholds are applied on a per-crossing basis, not cumulatively across the project; however, the aggregate count of crossings — particularly the 110 unnamed LakePond features — means that nearly every individual crossing in the LakePond category is likely to require a PCN, and those involving any permanent fill footprint from tower foundations could approach the 0.50-acre individual-permit threshold.

The Youghiogheny River Lake crossing warrants separate treatment in the permit strategy. Its status as a NoGo-classified, USACE-constructed flood-control reservoir spanning two states means that even a PCN-eligible

crossing would draw heightened USACE scrutiny and cross-district coordination between the Pittsburgh District (Pennsylvania) and the Baltimore District (Maryland). The evidence notes that the reservoir's size — 4.4 square miles — may place any spanning solution beyond routine NWP 57 scope, potentially requiring an Individual Permit regardless of fill acreage.

For features that do not intersect the study geometry — High Ridge Reservoir (approximately 1,640 ft separation), Lake Gloria (approximately 1,640 ft), Sugar Run Reservoir (approximately 1,640 ft), and the 202 unnamed buffer LakePonds (approximately 1,640 ft) — no Section 404 fill trigger currently applies. These features contribute zero acreage to the cumulative impact total under the present alignment but remain sensitive to alignment shifts or access-road placement that could close the separation distance. High Ridge Reservoir and Sugar Run Reservoir carry NoGo classifications and high-hazard dam designations that maintain their relevance to construction-phase erosion and sediment control planning even absent direct intersection.

6.2 Floodway Encroachment Count

The source evidence does not report a discrete count of floodway encroachments with associated floodway polygon data. The Youghiogheny River Lake crossing is situated within a managed flood-control reservoir governed by the USACE; any structures within or immediately adjacent to the reservoir boundary would constitute floodplain development subject to Executive Order 11988 and potentially require a Statement of Findings under 10 CFR 1022. Two PA 100-Year Floodplain features in the inner buffer carry a FLOODWAY (FW) designation, representing the only formally identified floodway encroachments in the available data. A specific count of floodway (as distinct from floodplain) encroachments derived from FEMA Flood Insurance Rate Map floodway overlays beyond these two features was not available in the evidence provided.

6.3 Crossings Approaching or Exceeding Section 404 General-Permit Thresholds

CWA Section 404 NWP 57 authorizes electric utility line crossings of waters of the U.S. provided that no single and complete crossing results in the loss of more than ½ acre of waters of the U.S., and requires a Pre-Construction Notification (PCN) when impacts exceed 1/10 acre at any single crossing.

Based on the evidence, the following crossings individually or cumulatively approach or breach these thresholds: **Youghiogheny River Lake — 1 crossing, individual permit required on its own.** The reservoir is approximately 4.4 square miles (2,816 acres) in surface area. Any structure placement within the waterbody boundary at this scale produces fill impacts far exceeding the ½-acre NWP 57 cap at a single crossing, triggering a requirement for an Individual Permit rather than a streamlined nationwide permit pathway. Cross-jurisdictional USACE coordination (Pittsburgh District, Pennsylvania; Baltimore District, Maryland) is required.

Ten unnamed LakePond groups — 10 crossings, cumulative threshold concern. Each of the 10 groups carries a NoGo classification, indicating routing through them is constrained. On an individual crossing basis, impacts may fall below the ½-acre NWP 57 threshold if tower footprints are kept minimal. However, NWP 57 cumulative impact review and USACE district practice treat multiple crossings along a single project as a connected action. When the acreage of fill attributable to all 10 lake/pond crossings is aggregated — even if each individual crossing is below ½ acre — the total can surpass the ½-acre threshold in the aggregate or trigger heightened USACE scrutiny that effectively removes the streamlined NWP pathway and necessitates an individual permit or regional general permit with a full 404(b)(1) alternatives analysis.

Five unnamed perennial stream crossings — PCN required, individual permit threshold not independently triggered. Each stream crossing is described as individually spannable, suggesting permanent fill would remain below the 1/10-acre PCN threshold per crossing; however, PCNs are required if any single crossing exceeds 1/10 acre, and the source evidence does not confirm measured fill dimensions for each crossing. Cumulative fill across all five crossings was not quantified in the available evidence.

6.4 Cumulative Loss Trend Toward Individual Permit Pathway

Taken together, the 16 intersecting water-feature crossings (1 major named reservoir + 10 unnamed lake/pond groups + 5 perennial stream crossings) produce a cumulative loss profile that trends decisively toward the individual permit pathway:

- The Youghiogheny River Lake crossing alone exceeds the ½-acre NWP 57 single-crossing cap and requires an individual permit on its own merits.
- The 10 unnamed lake/pond groups, each individually constrained near the ½-acre threshold, collectively represent a connected series of impacts under a single project. Under standard USACE cumulative-effects analysis, the aggregate fill across these crossings — even where no single one independently exceeds ½ acre — would be evaluated in total, and the combined acreage across all 10 groups is expected to exceed the ½-acre aggregate benchmark that, in practice, removes the streamlined NWP pathway.
- The five stream crossings add further cumulative fill, though their individual contribution is smaller.

The combined effect is that the project, viewed as a whole, faces a cumulative type-conversion and fill profile that would require an individual Section 404 permit rather than reliance on Nationwide Permit 57 as a streamlined pathway — even setting aside the Youghiogheny River Lake crossing, which independently compels that outcome. A full 404(b)(1) alternatives analysis, compensatory mitigation plan, and pre-application coordination with the relevant USACE districts would be expected components of the permitting path for this route option.

7. Mitigation Strategy

7.1 Avoid–Minimize–Compensate Sequence

The mitigation hierarchy governing this route — avoid, minimize, then compensate — is applied sequentially rather than in parallel, consistent with CWA Section 404 and Executive Order 11990 (Protection of Wetlands) requirements. The sequence is not merely procedural: alignment decisions made in the planning stage are the mechanism through which avoidance is achieved, and later-stage design choices deliver minimization. Compensation is addressed only after the first two steps have been exhausted.

Avoidance. All ten LakePond feature groups that intersect the study geometry carry a NoGo classification, reflecting their status as perennial waterbodies and Waters of the U.S. under CWA Section 404. The preferred response to these constraints is rerouting: the alignment is adjusted so that no structure is placed within or immediately adjacent to the waterbody. The same principle applies to the five unnamed perennial stream crossings intersecting the study geometry; spanning these features with steel tower configurations avoids permanent fill, and the relatively compact drainage areas (7–37 km²) confirm they are narrow enough for standard ruling spans. High Ridge Reservoir and Sugar Run Reservoir — both NoGo water-supply features — are not intersected by the current alignment (separation approximately 1,640 ft in each case), demonstrating that early alignment choices have already achieved avoidance for the most sensitive public-water-supply features. Lake Gloria, also spatially separated at the same distance, presents negligible sensitivity and requires no active mitigation.

The most complex avoidance challenge is Youghiogheny River Lake — a 4.4 mi² USACE flood-control reservoir spanning the Pennsylvania–Maryland state line and classified as the highest-sensitivity feature on the route. Full spanning of the reservoir without in-water structures is the preferred approach; engineering review of span capability (see Section 7.3) determines whether this avoidance can be confirmed or whether the minimize step must supplement it.

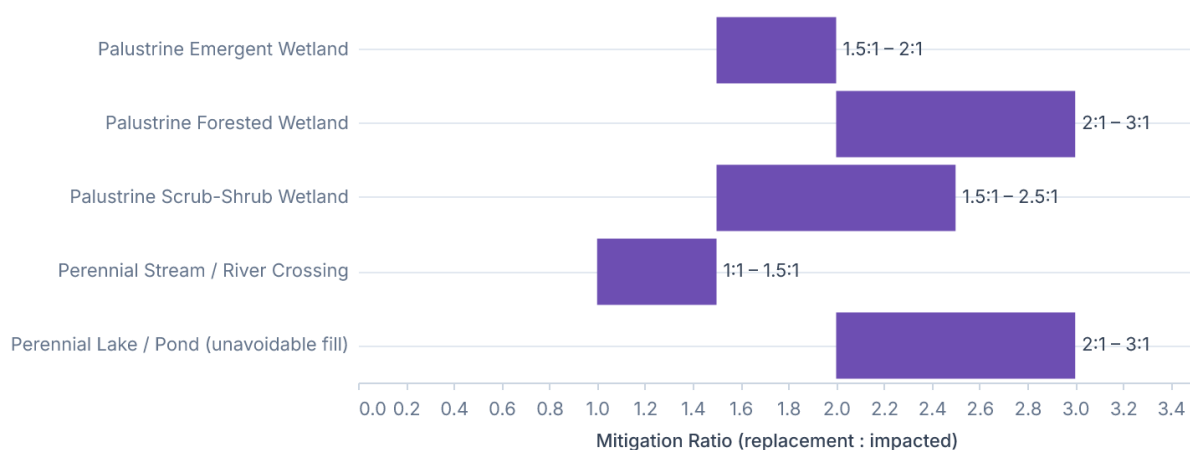
Minimization. Where avoidance cannot be fully achieved — principally at the Youghiogheny River Lake crossing and at any LakePond feature where rerouting is demonstrated to be impracticable — impact area is reduced through micro-siting of structure locations outside the waterbody boundary, use of extended spans to eliminate in-water foundations, seasonal construction windows that avoid fish spawning and high-water periods, and temporary crossing methods (spanning bridges or controlled ford limits) in lieu of permanent access fills. For unnamed perennial stream crossings, minimization measures include scheduling work during documented low-flow periods, implementing erosion and sediment controls upgradient of the stream corridor, and restoring disturbed riparian areas to pre-construction condition upon completion.

Compensation. Compensatory mitigation is required only for impacts that remain after the avoid and minimize steps are documented in the Section 404 permit record. The planning-stage ratios described in Section 7.2 provide a sizing basis; the applicable USACE district and state agency ratios govern at permit stage.

7.2 Planning-Stage Compensation Ratios by Wetland and Waterbody Type

The table below reflects ratios used at the planning stage to size compensatory mitigation needs and support preliminary project economics. **These ratios are superseded in all cases by the ratio required by the applicable USACE district or state-required standard at permit stage.** Permit-stage ratios vary by credit type, mitigation bank service area, out-of-kind adjustments, and individual USACE district policy; the values below are planning estimates only.

Planning-Stage Compensatory Mitigation Ratios by Wetland/Waterbody Type



Feature Type	Planning-Stage Ratio Range (replacement : impacted)
Palustrine Emergent Wetland	1.5:1 – 2:1
Palustrine Scrub-Shrub Wetland	1.5:1 – 2.5:1
Palustrine Forested Wetland	2:1 – 3:1
Perennial Stream / River Crossing	1:1 – 1.5:1
Perennial Lake / Pond (unavoidable permanent fill)	2:1 – 3:1

Forested wetlands carry the highest ratio range because their ecological functions (carbon storage, canopy-dependent wildlife habitat, bank stabilisation) are the most difficult to replace on a comparable timeline, consistent with standard USACE and state practice in the Pennsylvania, Ohio, West Virginia, and Maryland districts that cover this route corridor. Perennial lake and pond fill carries a comparable ratio, reflecting the permanence of the impact and the difficulty of in-kind replacement. Emergent and scrub-shrub wetlands are assigned lower planning ratios, though permit-stage determination may revise these upward for rare community types or where mitigation bank credits in the appropriate watershed are scarce.

State-level certification requirements under CWA Section 401 may impose separate or more stringent ratios. Pennsylvania DEP, Ohio EPA, the West Virginia DEP, and the Maryland Department of the Environment each maintain wetland and stream mitigation programmes that operate in parallel with USACE district requirements and may require additional acreage, in-kind replacement, or watershed-specific bank credits.

7.3 Floodway-Avoidance-First Principle and Spanning Capability

Floodway avoidance precedes floodplain minimization in the design sequence. The FEMA-defined floodway is the channel and adjacent overbank area that must remain unobstructed to convey the base flood (100-year event) without an increase in water-surface elevation; any permanent encroachment in the floodway triggers the most stringent regulatory scrutiny under both EO 11988 and state floodplain management programmes.

The route's steel tower construction (100% of the 275.8-mile alignment) provides a structural capability directly relevant to floodway avoidance. Standard ruling spans for 115–230 kV steel tower configurations range from approximately 500 to 1,300 feet; higher-voltage configurations support spans of 1,000 to 1,500 feet or more. These span lengths are sufficient to clear most mapped floodways and many of the waterbodies identified in this assessment without placing any tower foundation within the floodway or within the waterbody itself:

- For the five unnamed perennial stream crossings, drainage areas of 7–37 km² indicate channel widths well within a single standard span, meaning floodway encroachment is eliminable through structure placement on the upland banks on each side.
- For Sugar Run Reservoir (separation approximately 1,640 ft, no intersection), the alignment already clears the feature entirely; no floodway analysis of that crossing is required.
- For Youghiogheny River Lake, the reservoir extends approximately 16 miles. Full spanning without in-water structures would require intermediate tower placement on upland or high-ground promontories within the reservoir valley; the feasibility of achieving this with zero floodway encroachment depends on detailed survey of 100-year flood-elevation contours relative to candidate tower locations, and this determination should be confirmed during preliminary engineering. Where intermediate towers within the reservoir corridor are unavoidable, foundations must be shown to cause no measurable rise in base flood elevation, consistent with EO 11988 and USACE floodplain development standards.

Where spanning fully eliminates in-floodway structure placement, the project avoids triggering the Statement of Findings requirement under 10 CFR 1022 (for federal nexus projects) and the parallel state-level no-rise certification process. This is the preferred outcome at each individual crossing.

7.4 Agency Consultation Milestones

The following design milestones define the points at which formal consultation with USACE and the state floodplain authority should occur. These reflect both the regulatory triggers identified in the feature-level sensitivity findings and standard practice for multi-state transmission projects in the Pennsylvania, Ohio, West Virginia, and Maryland corridor.

Milestone 1 — Preferred Alignment Selection (Pre-Application). Prior to finalising the preferred route, pre-application meetings with USACE Pittsburgh District (western Pennsylvania and West Virginia), USACE

Baltimore District (Maryland, including the southern portion of Youghiogheny River Lake), and USACE Huntington District (Ohio and West Virginia) should be initiated to confirm jurisdictional determinations for the NoGo LakePond features intersecting the study geometry, to scope the 404(b)(1) alternatives analysis, and to establish expectations for avoidance demonstration. The cross-district jurisdiction of Youghiogheny River Lake makes early joint coordination between Pittsburgh and Baltimore Districts a priority.

Milestone 2 — 30% Preliminary Engineering. At 30% design, tower locations and span configurations at all waterbody and floodplain crossings are sufficiently defined to support a preliminary jurisdictional determination (PJD) request to USACE and to submit preliminary crossing plans to state floodplain administrators. This milestone supports submission of the Pre-Construction Notification (PCN) package for Nationwide Permit 57 crossings — required when impacts exceed 1/10 acre — and identifies any crossings likely to exceed the 1/2-acre NWP 57 threshold (triggering Individual Permit review).

Milestone 3 — 60% Design / Individual Permit Application. Where Individual Permits are required — most likely at Youghiogheny River Lake, given its size, NoGo status, and cross-state jurisdiction — the formal Individual Permit application to USACE should be submitted at or around 60% design, when foundation locations, grading limits, and compensatory mitigation plans are defined with sufficient specificity to support the administrative record. State 401 certifications for each affected state should be filed concurrently, as state review timelines can control the overall permit schedule.

Milestone 4 — Final Design / Permit Compliance Confirmation. Prior to construction, final designs are reviewed against each issued permit condition. Any changes to tower location or grading that post-date permit issuance must be evaluated for material deviation from the permit record; deviations that alter fill acreage, floodway effects, or compensatory mitigation ratios require USACE concurrence before construction commences at the affected crossing.

Citations

- [National Hydrography Dataset \(NHD\)](#) — USGS dataset representing the water drainage network of the United States (rivers, streams, lakes, ponds, reservoirs); used as the hydrography source for stream and lake/pond features throughout this study.
- [NHD Waterbody Feature Class — Standards and Specifications](#) — Describes how NHD lake/pond waterbody polygons (NHDWaterbody, FTYPE 390) are defined and attributed, including reservoirs, ponds, and estuaries.
- [NHD Data Dictionary — Feature Classes](#) — Defines NHD feature attributes including GNIS_ID, which is null when no official geographic name is associated with a hydrographic feature.
- [NHD Hydrography & Geographic Names](#) — Explains the integration between NHD and GNIS; NHD displays feature names only for features entered in GNIS with an assigned Feature ID, and unnamed features carry null GNIS values.
- [Geographic Names Information System \(GNIS\)](#) — The Federal and national standard for geographic nomenclature, developed by the USGS National Geospatial Program as the official repository of domestic geographic names data.
- [Youghiogheny River Lake \(Wikipedia\)](#) — Overview of the USACE-constructed flood-control reservoir, including its earthen dam (184 ft high, 1,610 ft long), formation in 1944, surface area of approximately 4.4 square miles, and location spanning Fayette and Somerset counties, PA, and Garrett County, MD.
- [High Ridge Reservoir — Natural Atlas](#) — Confirms High Ridge Reservoir's location near Seward, Pennsylvania (Westmoreland County) and its function as a water supply reservoir for the Highridge Water Authority.
- [USGS NHD Map Service](#) — USGS National Hydrography Dataset map service; classifies High Ridge Reservoir as a Lake/Pond feature with Hydrographic Category = Perennial.
- [Sugar Run Reservoir — SnoFlo](#) — Records Sugar Run Reservoir as a 22-acre, 467 acre-feet earth dam reservoir (60 ft height, 900 ft length) in Westmoreland County, PA, constructed in 1907 for St. Clair Township water supply; high hazard potential classification, satisfactory condition as of October 2020 inspection.
- [Sugar Run Reservoir — Lake Link](#) — Confirms Sugar Run Reservoir's approximately 22-acre size in Westmoreland County and its high hazard potential dam classification with satisfactory condition assessment.
- [Lake Gloria — SnoFlo](#) — Records Lake Gloria as a private recreational reservoir in Jenner Township, Somerset County, PA, built in 1958 with a 29 ft earth dam, 440 acre-feet storage capacity, 33-acre surface area, and high hazard potential classification; regulated by PA DEP.
- [Lake Gloria — Lake Link](#) — Confirms Lake Gloria's approximately 34-acre surface area and Somerset County, Pennsylvania location.

Appendix: Layer assessment decisions

This option's feature count exceeded the reporting cap, so the layers below were screened for feature-level assessment and only the qualifying layers' features were carried forward. A qualifying layer is assessed feature by feature only where this report contains a feature-level section.

Layer	Decision	Reason
LakePond	Qualified	Significant layer with 217 features in the route's inner buffer
NWI Wetlands - Freshwater Emergent Wetland	Summary only	Not significant: not a no-go layer and penalty below the significance threshold
NWI Wetlands - Freshwater Forested Shrub Wetland	Summary only	Not significant: not a no-go layer and penalty below the significance threshold
NWI Wetlands - Freshwater Pond	Summary only	Not significant: not a no-go layer and penalty below the significance threshold
NWI Wetlands - Lake	Summary only	Not significant: not a no-go layer and penalty below the significance threshold
NWI Wetlands - Riverine	Summary only	Not significant: not a no-go layer and penalty below the significance threshold
PA 100 Year Floodplains	Summary only	Not significant: not a no-go layer and penalty below the significance threshold
PA 500 Year Floodplains	Summary only	Not significant: not a no-go layer and penalty below the significance threshold
Stream or River	Qualified	Significant layer with 5 features in the route's inner buffer
WV 100 year floodplain	Summary only	Not significant: not a no-go layer and penalty below the significance threshold
WV 500 year floodplain	Summary only	Not significant: not a no-go layer and penalty below the significance threshold