

Biddle Parking Lot

Site Introduction & Existing Conditions

The Biddle Avenue parking lot sits at Frick Park's eastern edge in Regent Square, serving as one of the park's primary access points for trail users and park visitors. The lot consist of 0.X acres of unmanaged asphalt with no existing stormwater controls: runoff from the parking surface and adjacent impervious areas drains to Fern Hollow Creek via an existing MS4 outfall. While this drainage already reaches the stream, it arrives unmanaged—at volumes and velocities that contribute to streambank erosion and channel instability in the receiving reach. Existing trees adjacent to the lot must be protected, and the park-edge terrain immediately west of the lot falls within the City's steep slope and landslide-prone overlays, precluding in-situ infiltration and requiring careful management of any new discharges to the hillside.

Proposed Solution

The schematic design proposes a bioretention GSI retrofit of the existing parking lot—a system of vegetated, engineered planting beds that capture, filter, and slowly release stormwater runoff. Bioretention cells are sized to capture runoff from the lot and its directly connected impervious drainage area, providing stormwater quality treatment, volume reduction, and peak rate and temperature control before flows are released to the existing MS4 outfall and on to Fern Hollow Creek. By attenuating peak flows the project reduces the erosive impact of parking lot runoff on the receiving stream channel and its banks. The design prioritizes preservation of existing mature trees surrounding the parking lot and avoids grading and infiltration within the steep slope buffer.

Expected Performance & Implementation Considerations

The Biddle Lot GSI project is among the most straightforward of the five project areas from a regulatory standpoint, because the intervention avoids work both right-of-way work requiring coordination with DOMI and instream work in Fern Hollow itself requiring DEP/ACOE Chapter 105 permitting. Chapter 105 review could be required for any modifications to the existing MS4 outfall connection to the creek. Key implementation steps could include subsurface utility investigation and/or CCTV to confirm pipe condition and capacity, tree protection planning during construction, and coordination with the City on parking lot modifications.

DESIGN FEATURES:

- Bioretention GSI retrofit of existing parking lot
- Provides stormwater quality, volume, and rate control to existing MS4 outfall tributary to Fern Hollow
- Reducing erosion of hillside

SITE CONSTRAINTS:

- Existing mature trees
- Adjacent to steep and landslide prone slopes
- Infiltration not permitted

PERFORMANCE METRICS:

- Note



DESIGN NOTES

- 1 CONVERT EXISTING STORM INLET TO OUTLET CONTROL STRUCTURE WITH SLOW RELEASE OUTLET TO EXISTING MS4
- 2 LINED BIORETENTION RAIN GARDEN
- 3 POROUS PAVER PARKING STALLS
- 4 CONCRETE CURB WITH CURB CUTS TO BELGIAN BLOCK FOREBAYS (PER YWCA DETAIL)
- 5 ASPHALT DEPAVING
- 6 ASPHALT MILLING & REPAVING

Biddle Parking Lot



Wetland

Site Introduction & Existing Conditions

The Wetland project area is located mid-valley within Frick Park, roughly midway along the Fern Hollow Creek corridor. It encompasses one of the most ecologically significant habitats in Pittsburgh’s urban park system: a functioning wetland complex supporting hydrophytic vegetation, seasonal ponding, and a range of wetland-dependent wildlife. The wetland and adjacent stream valley also serve as a natural floodplain, providing important water storage and flow attenuation during storm events. Despite its ecological value, the area is crossed by existing aggregate pathways and trail and sewer infrastructure that restrict the natural course of Fern Hollow Creek, concentrate surface flows, and contribute to erosion of both the trail surfaces and adjacent streambanks. Biddle Trail side drainage runnels are inadequate, leading to erosive flow across trail surfaces and into the wetland. The project area falls within the City’s landslide-prone overlay and within 50 feet of the steep slope overlay, and existing sewer infrastructure in the area is shallow and incompletely mapped. The shallow sewer infrastructure running beneath and adjacent to Tranquil Trail is a defining constraint at this site: it limits grading options, influences boardwalk foundation design, and — as the hydraulic barrier between the surrounding groundwater and the stream channel — is a primary driver of the altered hydrology that the project seeks to partially address.

Proposed Solution

The schematic design addresses the wetland area’s trail and hydrology problems through three coordinated interventions. First, existing aggregate pathways that restrict the course of Fern Hollow Creek through the wetland are replaced with elevated fiberglass boardwalks, removing physical obstructions from the stream channel and wetland and allowing natural floodplain inundation to occur without trail damage. Second, Tranquil Trail’s grade is raised above the floodplain elevation and fitted with cross drains, allowing the wetland and stream valley to flood naturally during storm events without eroding the trail surface. Third, Biddle Trail side drainage runnels are reinforced and improved with cross drains to intercept and manage erosive side flows before they reach the trail and wetland. Together, these interventions restore more natural hydrology to the wetland complex, improve ecological conditions, and provide an accessible, low-impact trail experience through one of the park’s most distinctive habitats. Seating, educational signage, and a small outdoor classroom space are incorporated into the boardwalk design.

Expected Performance & Implementation Considerations

The Wetland project carries the most significant regulatory complexity of the five project areas. All three design interventions involve work within or immediately adjacent to a jurisdictional wetland and regulated waterway. While some of the trail improvement work could possibly be completed through a Chapter 105 GP-7 Minor Road Crossing permit, realizing the full extent of proposed improvements would require a joint Individual Permit from PA DEP (Chapter 105) and the U.S. Army Corps of Engineers (Section 404), including a formal alternatives analysis and wetland impact mitigation assessment. Phasing and coordination with multiple agencies—including DPW, PA DEP, and USACE—will be essential. A tree survey and geotechnical investigation are required before design can be finalized. On the performance side, the USACE hydraulic model indicates that removing trail fill from the floodplain will increase wetland storage capacity and reduce flood inundation extents—measurable hydrologic benefits that complement the ecological restoration goals of the project.

DESIGN FEATURES:

- Existing aggregate pathways restricting the course of Fern Hollow to be replaced by elevated boardwalks
- Tranquil Trail grade raised above floodplain with cross drains permit wetland and stream valley to flood without eroding the trail
- Biddle Trails side drainage runnels reinforced and improved with cross drains to mitigate trail erosion

SITE CONSTRAINTS:

- Existing mature trees
- Existing jurisdictional wetland and multi threaded watercourse
- Extensive network combined sewers and relief sewer connections crisscross the site just below the surface.
- Intersection of multiple major trails that serve park users, and maintenance and emergency access

PERFORMANCE METRICS:

- Linear feet of trail to boardwalk conversion
- Cubic yards of trail bed transferred from floodway
- Area of wetland vegetation restored
- Linear feet of trail runnels repaired
- Number of cross drain connections



DESIGN NOTES

- 1 WETLAND OVERLOOK DECK AND SEATING
- 2 EXISTING TRAIL BE REPLACED WITH BOARDWALK AND WETLAND RESTORATION BELOW
- 3 BELGIAN BLOCK DRAINAGE RUNNEL TO STREAM
- 4 HILLSIDE REVEGETATION / STABILIZATION
- 5 RIPARIAN ENHANCEMENT PLANTINGS
- 6 TRANQUIL TRAIL GRADING ADJUSTMENTS

Wetland

