Bryan Park Dam Removals and Stream Restoration

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To: Urban Design Committee

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Re: Bryan Park Dam Removals and Stream Restoration
Urban Design Committee Conceptual Review – Project Narrative

Project Background and Purpose

Bryan Park is a 266-acre public park in northern Richmond near Henrico County featuring trails, sports fields, gardens, disc golf, forests, streams, open space, and is home to the RVA Big Market. The park, originally established in 1910, is managed by the City of Richmond (City) Department of Parks, Recreation, and Community Facilities. The ponds near Bryan Park Avenue, collectively known as Youngs Pond, are impounded by two 1910s era concrete masonry dams. The dams are owned and operated by the Department of Parks, Recreation, and Community Facilities. The Lower Dam is regulated by the Virginia Department of Conservation and Recreation (DCR) Dam Safety Program, while the Upper Dam does not meet the size thresholds for state regulation.

In 2021, the City received a Letter of Engagement from DCR outlining the requirements to bring the dams at Bryan Park into dam safety compliance. The City contracted with Hazen and Sawyer (Hazen) to perform a condition assessment of the dams to determine compliance with the DCR Dam Safety Program regulations. The assessment identified structural deficiencies at both dams that warrant corrective action and a hydrologic and hydraulic analysis indicated that the hydraulic capacity of the dams is severely limited. Additionally, dam breach modeling demonstrated that failure of the Upper Dam could cause failure of the Lower Dam, and that failure of the Lower Dam would create downstream hazards with the potential for loss of life. As a result, the Lower Dam is considered a high hazard structure and is currently out of compliance with DCR Dam Safety Program regulations due to its condition and insufficient hydraulic capacity. Although only the Lower Dam is subject to state regulation, rehabilitation or removal of both dams is a priority for the City to eliminate the dam safety risks they pose and to resolve existing and potential future regulatory noncompliance.

Following this initial assessment, Hazen evaluated several design alternatives, and City staff selected dam removals and stream valley restoration as the preferred alternative based on regulatory, economic, and ecological considerations.

The purpose of this project is to ensure full compliance with DCR Dam Safety Program regulations through the dam removals and stream restoration and to leverage this opportunity to make ecological improvements and enhance the experience of Bryan Park visitors. The project goals include:

- Meeting DCR Dam Safety Program regulations.
- Involving and coordinating with regulatory agencies and all private and public stakeholders.
- Developing solutions consistent with the character of Bryan Park.
- Minimizing temporary and permanent impacts to Bryan Park and the surrounding area.
- Improving the ecosystem and environment of Bryan Park.
- Exploring cost-effectiveness and grant funding eligibility.

The project will address critical dam safety concerns, eliminate the risks and liabilities associated with dam ownership, and reduce the ongoing maintenance burden for the City. Ecological improvements will diversify wildlife habitats, improve water quality, restore natural stream function, remove invasive vegetation, and provide fish passage to over five miles of upstream habitat. The project also aims to enrich the Bryan Park user experience by improving connectivity and accessibility, enhancing existing viewsheds, interpreting the site's history through salvaged materials and educational signage, creating additional respite areas, and supporting existing park programming. Collectively, these project objectives will ensure a safer, more sustainable, and enjoyable Bryan Park for all.

Community Engagement

The project team has actively engaged the community at each stage of the project. Engagement efforts have included a public meeting held on March 27, 2024 following the alternatives analysis to solicit feedback regarding the selected project approach and to inform the community of the overall project goals. Following preliminary design, the City and Hazen met with the Friends of Bryan Park to review existing and proposed conditions and discuss the members' primary concerns about the project. Further input was solicited directly from park users through two "pop-up" events held on August 12th and 16th, 2025 during which City and Hazen staff set up a booth in Bryan Park with materials demonstrating the project background, purpose, conceptual design, and benefits. Visitors were encouraged to respond to three questions regarding the project:

- What do you love most about the area of the park around the ponds, and what would you want to make sure stays the same?
- If you could shape the future of this area of the park, what would you change or imagine for the next generation?
- What else should we be considering as we continue to move forward with this project?

The project team also met with the River City Disc Golf Club to ensure changes to the area are coordinated with course improvements planned for the popular disc golf course at Bryan Park. Responses received during these early design efforts were organized by the project team and directly incorporated into the project design (specific examples are provided later in this application).

As design progresses, the project team will continue actively engaging with the community to promote alignment with the Bryan Park users and neighbors. Another public meeting is planned for April 2026, alongside an online survey to gather public feedback on design-specific prompts. Coordination with groups, including the Friends of Bryan Park and the River City Disc Golf Club, is ongoing and will continue throughout the project.

In addition to community engagement, the City keeps the RVAH2O.org website and its webpage specific to these improvements at Bryan Park (www.RVAH2O.org/bryan-park) updated with project information, the project flyer, and frequently asked questions. This platform will continue to be maintained throughout permitting and construction to keep the public informed of the project status. The project team has also identified several opportunities to engage volunteers in meaningful ways following construction to promote the long-term success of the project.

Proposed Plan

The project consists of removing the dams impounding Youngs Pond, restoring the Upham Brook and Princeton Creek stream valleys through the project area, removing and managing invasive vegetation, constructing two pedestrian bridges to maintain connectivity through Bryan Park, and implementing a robust landscape plan featuring an all-native planting palette. A preliminary construction sequence has been established that prioritizes public safety, erosion and sediment management, contractor accessibility, and pedestrian access to Bryan Park throughout construction. An illustrative site plan and additional graphics are included in this application for context and design details are provided later in this application.

Dam Removal and Stream Restoration

The design includes full removal of both the upper and lower dams impounding Youngs Pond on Upham Brook. Full removal of the structures will promote stream stability, wholistic connectivity for fish passage, and a fresh foundation from which to construct the Upper Bridge. Sediment impounded upstream of the dams will be excavated and hauled off-site. A valley-wide grade control structure has been designed to fix the upstream limits of the stream restoration in place, thereby preserving the wetland areas in the Upper Pond and preventing erosion upstream along Upham Brook and Jordan's Branch.

Removal of the dams will result in approximately 20-feet of grade differential from the downstream to upstream limits of the project area. To help stabilize the stream valley following the dam removals, approximately 2,000 linear feet of Upham Brook and 500 linear feet of Princeton Creek will be restored using natural channel design principles. Hazen collected data from stable reference reaches in the watershed to serve as the basis for natural channel design. The resulting design was refined using hydraulic model results to confirm long-term stability for both frequent and extreme storm events.

Hydraulic model results were also used to calculate scour depths and loading conditions to inform the design of the two new pedestrian bridges. The hydraulic design storm for the bridges is the 2% annual exceedance probability flood, which is consistent with Virginia Department of Transportation guidelines.

Landscape and Park Amenities

The key features of the landscape design for this project are pedestrian circulation and connectivity, native plantings, site amenities, and revealing key moments in the site's history with reused material details and signage.

The circulation strategy establishes a fully connected, looped trail system that will meet the US Forest Service Trail Accessibility Guidelines (FSTAG 2013) and thereby maximize the accessibility of trails

while protecting the natural characteristics of the site. A five-foot-wide decomposed granite path will serve as the primary, fully looped route, while a series of three-foot-wide compacted earth trails will provide access to additional areas of interest. To honor Bryan Park's layered history, reused materials will be repurposed for key areas along the trail network, and a series of educational signs will be curated and installed along the trail network where there is visual access to information referenced in the signage.

The proposed planting strategy builds upon the site's existing native vegetation. Species that have demonstrated success on site will be emphasized through the creation of distinct planted stands. A new riparian buffer will also be established, featuring native, site-appropriate grasses, perennials, shrubs, and trees to enhance ecological function. Vegetation will be strategically sited to help buffer pedestrians against the disc golf course and help direct circulation for both the public and disc golf players. The strategy also includes robust measures to protect as many healthy trees as possible and the execution of an aggressive invasive vegetation removal and long-term management plan.

Site amenities include a dedicated gathering space and trailheads that will feature reused materials from the project site, such as salvaged cobbles, concrete bollards, and trees that will be reintroduced into the landscape as paving, seating, and stream features. The space will also include informal fishing areas, a low-water riffle crossing at Princeton Creek, and opportunities for bird watching in diverse habitats.

Project Impacts and Benefits

Key impacts:

Key impacts of the project are anticipated to include:

- Removing the existing dams
- Removing trees where unavoidable to accommodate the proposed design
- Temporarily closing certain portions of the Bryan Park during construction
- Temporarily impacting wildlife and certain vegetated areas during construction

The City understands how important trees and wildlife are to the community and to the natural character of Bryan Park. While some impacts are unavoidable to accomplish the project's goals, the team has made great efforts to limit harm to trees, wildlife, and the surrounding environment.

Each of the trees that is anticipated to be directly impacted by construction was carefully evaluated against the proposed design. Where practicable, the design was modified to protect trees (e.g., by adjusting grading and shifting the location of trails). A clear example of this commitment was the project team's decision to move the location of the proposed lower bridge further upstream to reduce construction impacts and risks to the large oak tree adjacent to the Lower Dam. This option also maintains the natural and historic character of Bryan Park and aligns with community feedback.

Additionally, Hazen is developing a tree protection plan that specifies methods the selected contractor will be required to follow to reduce construction risks to trees within the limits of disturbance that are not expected to be removed. These methods include establishing tree protection fencing, creating barriers around tree trunks, and limiting the use of heavy equipment in critical root zones.

Given the nature of the project, several trees must be removed due to the elevation difference between existing and proposed conditions and space required for construction access in several locations. In these cases, mitigation comes in the form of a robust reforestation plan that includes planting 450 new trees within the project area.

Similarly, the project team is working to ensure compliance with applicable regulations and best practices for wildlife protection. In addition to the rare, threatened, and endangered species survey, which found no such species within the project limits or immediate surrounding area, the selected contractor will be required to implement a range of mitigation practices for both aquatic and terrestrial life. These include timing construction to avoid critical breeding periods and installing measures to prevent wildlife entry into hazardous zones.

The drawdown of Youngs Pond will be performed gradually to give fish and other aquatic life an opportunity to migrate upstream or to deeper parts of the pond. A fish removal program will relocate native species to suitable habitats while ensuring predatory and invasive species are not introduced to sensitive areas. The team is committed to these precautions and minimizing fish mortality due to stress to the extent practicable.

Annual biological monitoring tracks fish populations and other indicators of ecosystem health upstream and downstream of the dams and will continue for several years following construction. Data from these studies will be provided to the City.

These collective efforts are expected to yield long-term benefits for Bryan Park and the Upham Brook watershed. Key benefits of the project are listed below.

Key benefits:

- Eliminating dam safety risks and regulatory requirements
- Reconnecting over five miles of previously inaccessible habitat for fish passage
- Reducing flood risk and impacts along Upham Brook
- Preserving wetland habitat upstream of the Upper Dam
- Improving water quality in Upham Brook
- Restoring natural aquatic and riparian habitats
- Removing invasive vegetation and establishing native species
- Expanding access and enhancing the public’s experience in Bryan Park

Funding and Timeline

The project is funded by the City of Richmond Department of Public Utilities’ capital improvement program. The City has also been awarded a Round 6 Community Flood Preparedness Fund grant in the amount of $5,706,042.00 to cover a portion of the project costs. The project is expected to break ground in early 2028 with phased construction continuing for approximately two years. The City plans to complete detailed design by July 2026 to secure the necessary permits prior to the anticipated construction start date. Following construction, it is expected that monitoring and reporting will be required for a period of three to five years to meet permit conditions.