Public Facilities Committee Agenda

City of Newton
In City Council

Wednesday, November 20, 2024

The Public Facilities Committee will hold this meeting as a hybrid meeting on Wednesday, November 20, 2024, at 7:00 PM in Room 204. To view this meeting using Zoom use this link: https://newtonma-gov.zoom.us/j/84722645080 or call 1-646-558-8656 and use the following Meeting ID: 847 2264 5080

Item Scheduled for Discussion:

Referred to Public Facilities and Finance Committees

#410-24 **Authorization to appropriate and expend $700,000 to fund Newton North High School Capital Projects**

HER HONOR THE MAYOR requesting authorization to appropriate and expend seven-hundred-thousand dollars ($700,000) from June 30, 2024 Certified Free Cash for the purpose of funding several high priority Newton Public School capital projects at Newton North High School.

Referred to Public Facilities and Finance Committees

#411-24 **Authorization to appropriate and expend $775,000 for Municipal Building Maintenance Projects**

HER HONOR THE MAYOR requesting authorization to appropriate and expend seven-hundred and seventy-five-thousand dollars ($775,000) from June 30, 2024 Certified Free Cash for the purpose of funding municipal building maintenance projects.

Referred to Public Facilities and Finance Committees

#416-24 **Authorization to appropriate and expend $225,000 for Fire and Police Security Camera and Access Control Improvements**

HER HONOR THE MAYOR requesting authorization to appropriate and expend two-hundred and twenty-five thousand dollars ($225,000) from June 30, 2024 Certified Free Cash for the purpose of funding security camera and access control improvements at Fire and Police Department locations.

The location of this meeting is accessible and reasonable accommodations will be provided to persons with disabilities who require assistance. If you need a reasonable accommodation, please contact the city of Newton's ADA Coordinator, Jini Fairley, at least two business days in advance of the meeting: jfairley@newtonma.gov or (617) 796-1253. The city's TTY/TDD direct line is: 617-796-1089. For the Telecommunications Relay Service (TRS), please dial 711.

#346-24 **Requesting a discussion on installation of solar panels at Brown and Oak Hill Schools**
COUNCILOR LUCAS AND FARRELL requesting a discussion and potential pause of the solar panel installation in the summer of 2025 at Brown and Oak Hill Schools in light of recent School discussions on plans for a revitalized campus at Brown, Oak Hill, and Newton South Schools.

#359-24 **Requesting Discussion regarding Dam Flooding at Wells Avenue**
COUNCILORS FARRELL AND LIPOF requesting a discussion with DPW Utilities Director and Conservation Commission Director to understand the problem of restoring culvert operations at Wells Ave with respect to non-lethal beaver intervention, protection of conservation land and accessing recently discovered sewer main. This would include discussion of the importance of beavers to conservation land, alternative solutions to the beaver population and City needs for access to sewer main.

#103-24 **Update on Planning and Construction of Bullough's Pond Dam**
COUNCILOR ALBRIGHT on behalf of the Public Facilities Committee requesting update on planning and construction of Bullough's Pond Dam.

#418-24 **Requesting a discussion regarding Bullough's Pond Dam Rehabilitation Project**
HER HONOR THE MAYOR requesting a discussion of the Bullough's Pond Dam rehabilitation project and the preferred safety design.

Respectfully submitted,

Susan Albright, Chair

Ruthanne Fuller
Mayor

City of Newton, Massachusetts
Office of the Mayor

#410-14

Telephone
(617) 796-1100
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(617) 796-1113
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(617) 796-1089
Email
rfuller@newtonma.gov

October 28, 2024

Honorable City Council
Newton City Hall
1000 Commonwealth Avenue
Newton Centre, MA 02459

Dear Honorable Councilors:

I respectfully submit this docket item to your Honorable Council requesting authorization to expend $700,000 from June 30, 2024 Certified Free Cash for the purpose of funding several high priority Newton Public School capital projects at Newton North High School.

The Council previously authorized the sum of $425,000 to replace the air handling unit that serves the pool complex. The original intent was to replace the unit in-kind in the same location. Through the design process, it became apparent that, while more expensive, it will double the life expectancy of the unit to install the new air handling unit on the roof as opposed to within the interior mechanical room. The additional cost for this investment will be $317,490.

In addition to the pool air handling unit, there is an immediate need to replace a portion of the Newton North's domestic hot water system which has reached the end of its useful life. The cost to complete this project is $382,510.

Attached is a memo from Public Buildings Commissioner Morse on these projects. The Commissioner and NPS staff will be available at the committee meeting to answer any questions you may have.

Sincerely,

Ruthanne Fuller

Ruthanne Fuller
Mayor

#410-24

CITY OF NEWTON, MASSACHUSETTS

PUBLIC BUILDINGS DEPARTMENT

52 ELLIOT STREET, NEWTON HIGHLANDS, MA 02461

Telephone (617) 796-1600
Facsimile (617) 796-1601
TDD/tty # (617) 796-1608

Ruthanne Fuller, Mayor
Josh Morse, Building Commissioner

October 22nd, 2024

Ruthanne Fuller, Mayor
Newton City Hall
1000 Commonwealth Avenue
Newton Centre, MA 02459

Re: Funding Request for Projects at Newton North High School

Dear Mayor Fuller,

The Public Buildings Department requests the sum of $700,000 for the purpose of funding the following projects at Newton North High School:

The Honorable City Council previously authorized the sum of $425,000 for the purpose of funding the replacement of the air handling unit the serves to pool complex. The original intent was to replace the unit in kind in the same location. Through the design process, it became apparent that, while more expensive, it is more advantageous to install the new air handling unit on the roof as opposed to within the interior mechanical room. This approach will nearly double the life expectancy of the new air handling unit, and all future units. The additional cost for this investment will be $317,490.

A portion of the domestic hot water system has reached its end of useful life and must be replaced. The cost to complete this project is $382,510.

Sincerely,

Josh Morse
Public Buildings Commissioner

Ruthanne Fuller
Mayor

City of Newton, Massachusetts
Office of the Mayor

#411-24

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rfuller@newtonma.gov

October 25, 2024

Honorable City Council
Newton City Hall
1000 Commonwealth Avenue
Newton Centre, MA 02459

Dear Honorable Councilors:

I respectfully submit a docket item to your Honorable Council requesting authorization to appropriate and expend $775,000 from June 30, 2024 Certified Free for the purpose of funding municipal building maintenance projects.

The funds will be used for the following municipal building projects:

- Albemarle Field House: Windows, Restrooms, and Interior Improvements
- Police Annex Retaining Wall Reconstruction
- Crystal Lake Bathhouse Painting and Restoration
- Jackson Homestead Painting and Preservation
- Kennard Estate Painting and Preservation
- Main Library Generator Transfer Switch Replacement
- Fire Station #1 and #2 Kitchen Improvements

Please see the attached letter from Public Buildings Commissioner Josh Morse. He will also provide additional back-up material in advance of the committee meeting on the docket item and will be available to speak at that meeting.

Thank you for your consideration of this matter.

Sincerely,

Ruthanne Fuller

Ruthanne Fuller
Mayor

#411-24

CITY OF NEWTON, MASSACHUSETTS

PUBLIC BUILDINGS DEPARTMENT

52 ELLIOT STREET, NEWTON HIGHLANDS, MA 02461

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TDD/tty # (617) 796-1608

Ruthanne Fuller, Mayor
Josh Morse, Building Commissioner

October 22nd, 2024

Ruthanne Fuller, Mayor
Newton City Hall
1000 Commonwealth Avenue
Newton Centre, MA 02459

Re: Funding Request for security projects at our Police and Fire facilities

Dear Mayor Fuller,

The Public Buildings Department requests the sum of $775,000 for the purpose of funding the following projects:

Albemarle Field House: Windows, Restrooms, and Interior Improvements
Police Annex Retaining Wall Reconstruction
Crystal Lake Bathhouse Painting and Restoration and Access Improvements
Jackson Homestead Painting and Preservation
Kennard Estate Painting and Preservation
Main Library Generator Transfer Switch Replacement
Fire Station #1 and #2 Kitchen Improvements

Sincerely,

Josh Morse
Public Buildings Commissioner

#416-24

Ruthanne Fuller
Mayor

City of Newton, Massachusetts
Office of the Mayor

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October 28, 2024

Honorable City Council
Newton City Hall
1000 Commonwealth Avenue
Newton Centre, MA 02459

Dear Honorable Councilors:

I respectfully submit a docket item to your Honorable Council requesting authorization to appropriate and expend $$225,000 from June 30, 2024 Certified Free Cash for the purpose of funding security camera and access control improvements at Fire and Police Department locations.

The first component of the improvements is the installation of security cameras and access controls at Fire Stations 1, 2, 4, 7, 10, and the Wires Division building. This $150,000 project will improve the general safety and security of the fire stations.

The second component will be the upgrade of security cameras and access control systems and the associated hardware and software at Police Headquarters. This $75,000 will complement a $50,000 grant the NPD previously secured. This project will improve the clarity and resolution of the security cameras, and it will better coordinate the access control system with the cameras at the various entry points.

Attached is a memo from Public Buildings Commissioner Morse on the projects. The Commissioner and Chiefs or members of their leadership team will be available at the committee meeting to answer any questions you may have.

Thank you for your consideration of this matter.

Sincerely,

Ruthanne Fuller

Ruthanne Fuller
Mayor

#416-24

CITY OF NEWTON, MASSACHUSETTS

PUBLIC BUILDINGS DEPARTMENT

52 ELLIOT STREET, NEWTON HIGHLANDS, MA 02461

Ruthanne Fuller, Mayor
Josh Morse, Building Commissioner

Telephone (617) 796-1600
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TDD/tty # (617) 796-1608

October 22nd, 2024

Ruthanne Fuller, Mayor
Newton City Hall
1000 Commonwealth Avenue
Newton Centre, MA 02459

Re: Funding Request for security projects at our Police and Fire facilities

Dear Mayor Fuller,

The Public Buildings Department requests the sum of $225,000 for the purpose of funding the following projects:

The installation of security cameras and access controls at Fire Stations 1, 2, 4, 7, 10, and the Wires Division building. This $150,000 project will improve the general safety and security of the fire stations, and it will protect the occupants and contents of the various facilities.

The upgrade of security cameras and access control systems and the associated hardware and software at Police Headquarters. This $75,000 will complement a $50,000 grant the NPD previously secured. This project will improve the clarity and resolution of the security cameras, and it will better coordinate the access control system with the cameras at the various entry points.

Sincerely,

Josh Morse
Public Buildings Commissioner

CITY OF NEWTON, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

Ruthanne Fuller, Mayor
James McGonagle
Commissioner of Public Works

Telephone (617) 796-1000
Facsimile (617) 796-1050
E-mail: jmcgonagle@newtonma.gov

To: Public Facilities Committee

From: James McGonagle, Commissioner of Public Works

Subject: Beaver Dam Removal

Date: November 15, 2024

Over the past several weeks we have been observing the area behind 2 Wells Ave and have not seen any beaver activity. Our assumption is that they have moved on.

The vacated beaver lodge is on top of the city's sewer manhole. We are working with the Conservation Commission to remove the beaver lodge, clear the dam and install a trash gate at the site before beavers return to the site.

We are in the process of applying for a Request for Determination of Applicability (RDA) from the Conservation Commission for dam clearing and a trash grate install and a Notice of Intent (NOI) for the removal of the vacated beaver lodge and the raising of the sewer manhole.
We have reached out to a beaver consultant to determine whether we could mitigate the flooding issue while allowing beavers to remain at the site. The consultant determined that other methods such as a beaver deceiver will not work due to the fact that there is not enough water depth.

Please see the below information from the State's website on removal of beavers.

Lethal removal*

Beavers are an important natural resource in Massachusetts. They are classified as a furbearer species, for which a regulated trapping season and management program have been established. Removal of problem beavers can be a quick way to alleviate beaver problems when done by an experienced trapper. Beavers can be trapped during the open season (November 1 – April 15) by a licensed trapper using permissible traps (i.e. box or cage-type traps). By removing beaver during the regulated trapping season, they can be used as a natural resource. An Emergency Permit is needed to trap beavers with restricted traps (i.e. body-gripping traps,

“Conibear” traps) and to trap beaver outside the regulated trapping season. It is against state law to capture and release beaver into another area.

*These options require permits or a trapping license. Learn more about how to get the right permits by reading **A Citizen’s Guide to Addressing Beaver Conflicts.**

#418-24

CITY OF NEWTON, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

Ruthanne Fuller, Mayor
James McGonagle
Commissioner of Public Works

Telephone (617) 796-1000
Facsimile (617) 796-1050
E-mail: jmcgonagle@newtonma.gov

Date: October 28, 2024

To: Jonathan Yeo, Chief Operating Officer
Maureen Lemieux, Chief Financial Officer

From: James McGonagle, Commissioner

Subject: Docket Request for Discussion of the Rehabilitation of Bullough's Pond Dam

I respectfully request a docket item be submitted for discussion of the recommended design of the rehabilitation of Bullough's Pond Dam.

Bullough's Pond Dam is an approximately 170-foot-long earthen embankment. The top of embankment is asphalt-paved Dexter Road. The water level in Bullough's Pond is maintained via an uncontrolled 35-foot-long spillway located toward the middle of the embankment, and a gated twin 24-inch diameter low-level outlet, located on the left or west side of the embankment. The upstream and downstream slopes are grassed and heavily vegetated with woody brush and trees. The Massachusetts DCR Office of Dam Safety (OSD) database indicates that Bullough's Pond Dam is an intermediate size structure with a Significant Hazard Potential.

Numerous inspections since 2017 have found the dam to be in poor condition. A Phase 2 dam inspection and report was completed in 2020, by GZA Geoenvironmental. The report recommended rehabilitation of the dam structure.

An Alternatives Analysis Report was completed in 2023, by GEI Consultants, including a detailed hydraulic/ hydrologic analysis of the dam and its features. Office of Dam Safety's requirements for this type of dam are as follows: 302 CMR 10.14 (6) for Significant Hazard Potential, Intermediate Size, Existing Dams:

- The spillway system shall have a capacity to pass a flow resulting from a design storm, unless the applicant provides calculations, designs and plans to show that the design flow can be stored, passed through, or passed over the dam without failure occurring.

Numerous meetings and presentations have been made to the Bullough's Pond Dam Working Group, with careful consideration of the group's concerns.

The Department of Public Works has carefully considered options, and recommend the design of downstream slope erosion protection, as the preferred design. Downstream slope erosion protection is a tried-and-true method of correcting deficient earthen dams, and this method is used nationwide. This design has little to no risk, requires no utility relocation, minimal roadway rehabilitation, and is considerably less costly when compared to other design options.

Please docket this request to the Honorable City Council for consideration and vote.

cc: Shawna Sullivan, Deputy Commissioner DPW
Louis M. Taverna, P.E., City Engineer

CITY OF NEWTON, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

Ruthanne Fuller, Mayor
James McGonagle
Commissioner of Public Works

Telephone (617) 796-1000
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E-mail: jmcgonagle@newtonma.gov

Bullough's Pond Dam Project Information

Nestled in a residential neighborhood just upstream from the village of Newtonville, the Bullough's Pond Dam originally dates back to the late 1600s and is a critical piece of infrastructure. It was last rehabilitated 98 years ago in 1926. If water rises over the edge of the Bullough's Pond Dam (an overtopping event), a large area downstream in Newtonville (as shown by flood inundation maps) would experience significant flooding. This flood zone includes over 450 homes, Newton North High School, commercial areas, Cabot Park, and the Mass Turnpike. (Inundation map attached)

The dam is a 170-foot-long earthen embankment. The top of embankment is asphalt-paved Dexter Road. The water level in Bullough's Pond is maintained via an uncontrolled 35-foot-long spillway located toward the middle of the embankment and a gated twin 24-inch diameter low-level outlet, located on the left or west side of the embankment. The upstream and downstream slopes are grassed and heavily vegetated with woody brush and trees. The Massachusetts Office of Dam Safety (OSD) database indicates that Bullough's Pond Dam is a small size structure with a Significant Hazard Potential. The project website can be found here.

Brief history

- Office of Dam Safety (DCR or ODS) issued a Certificate of Non-Compliance and Dam Safety Order dated July 16, 2018.
- The OSD report recommends rehabilitation of the dam structure. Numerous inspections since 2017 found the dam to be in poor condition. Reported deficiencies in the inspections include:
    - Unwanted vegetation in areas of the dam;
    - Scarping along the upstream slope and bare soils prone to erosion along the downstream slope;
    - Areas of displaced stones from the low-level outlet downstream headwall;
    - Area of scour along the downstream channel including at the low-level outlet and along the left and right banks. If erosion of the left bank continues, it could encroach on the toe of the downstream slope;
    - Mortar missing from some joints of the spillway training walls;
    - Additional unspecified maintenance deficiencies and potential dam safety concerns.
- GZA GeoEnvironmental, Inc., provided engineering services for the City in 2019 and 2020, including 1) an Emergency Action Plan (EAP) required by Dam Safety Regulations; 2) Follow-up inspections necessitated by a prior Poor Condition rating, and 3) a Phase II

investigation, evaluation and report. The findings, *and a recommendation*, of the Phase II Report can be found here.

- Engineering design contract awarded to GEI in February 2022
- 3 alternative designs developed
- Site visit with ODC in March 2023 to discuss tree removal alternatives
- GEI developed conceptual landscaping plans in April 2024

The project website can be found here.

#418-24

CITY OF NEWTON, MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS, ENGINEERING DIVISION

Ruthanne Fuller, Mayor
James McGonagle
Commissioner of Public Works

Telephone (617) 796-1020
E-mail: Ltaverna@newtonma.gov

Date: June 17, 2024

To: James McGonagle, Commissioner
Shawna Sullivan, Deputy Commissioner

From: Louis M. Taverna, P.E. City Engineer

Subject: Bullough's Pond Dam: ,
Responses to Comments from March/April 2024 and DPW Preferred Alternative

Responses to comments received from the Bullough's Pond Dam Working Group, Meeting of March 27, 2024. Full text of the comments is attached as a separate document.

Comment From Councilor Malakie, comments & questions on GEI Bullough's Pond dam options: 4/11/24

Comment, Could the Bullough's Pond Dam be made non-jurisdictional?

Response 1:

GEI, our consulting engineers, did a review to see if making the Bullough's Pond Dam non-jurisdictional would be feasible. If the dam becomes non-jurisdictional, the State Office of Dam Safety's Policy on Trees on Dams would not be an issue, and the City would have more flexibility in how to manage the trees growing on the dam.

Regulations:
302 CMR 10.06, Item (2) covers the size classification.

For a dam to be non-jurisdictional it must meet either of these two criteria:

- Storage – Not in excess of 15 acre-feet regardless of height.
- Height – Not in excess of six feet regardless of storage capacity.

The text further defines the "height of the dam is established as described in 302 CMR 10.06 with respect to maximum water storage elevation." The regulations include the definition of Maximum Water Storage Elevation as, "The water surface elevation reached during the spillway design flood, which could be below the top of the dam or above the top of the dam."

The dam is well in excess of 15-acre-feet, so drawing down to less than that would not be viable.

If the height of the dam were lowered, the impoundment would need to be lowered so that the spillway design flood would not be more than 6-feet.

Current Geometry:
The current concrete weir is ~El. 86. The mudline upstream of the dam has a low spot of about El 78. Downstream of the spillway, the ground surface is about El. 78. The dam is impounding about 8 feet of water. The spillway design flood raises the reservoir up to El. 92, so the dam is impounding about 14-feet of water.

Non-Jurisdiction Geometry:

The weir would need to be lowered such that the spillway design flood has a maximum pool at the weir of 6-feet. It will be very difficult to get the weir low enough to make this work as two things would start to govern the rock elevation under the bridge, and the Walnut Street culvert. The rock elevation under the bridge would govern the low elevation of the pond. The water in the pond would be so low as to render it a stream, not a pond. The design storm raises the water level 14-feet in the current configuration. Even if the weir is dropped completely and the pond becomes a stream, there will be a 14-feet rise in the stream which is choked off by the bridge opening, therefore water is impounded by the embankment at Dexter Street, and the structure would then be considered jurisdictional.

To make this non-jurisdictional, we would need to lower the pond to make it a stream, lower the weir, remove the rock, and widen the bridge to allow enough flow to pass un-restricted. In this scenario, we may be overloading the Walnut Street culvert.

In conclusion, we do not believe this would be acceptable, as the pond would become a stream. In other words, the Bullough's Pond Dam cannot be made non-jurisdictional.

Comment, Alternative 3 (articulated block) should be eliminated from consideration.

Response 2:

Alternative 3 is not eliminated, and DPW has determined it is the preferred alternative.

One concern that was raised about Alternative 3 (articulated block) was the number of trees that would need to be cut down. As you will see in the further explanation below, Alternative 1 requires 172 trees to be removed; Alternative 2 requires 172 trees to be removed; Alternative 3 requires 199 trees to be removed, i.e., an additional 27 trees which is a disadvantage. However, Alternative 3 has several critical advantages over the other two alternatives. Furthermore, 90% of the Laundry Brook Forest remains intact. The 172 or 199 trees that must be removed are on 10% of the site of the Forest.

Comment, If ODS insists on tree cutting on the north side of the street, please provide plans, that we were told could be explored, for inserting sheet pile walls on either side of the cast iron low-level outfall pipes and spillway in order to reduce the 'orange areas' north of Dexter Road.

Response 3:

The City reviewed the idea of sheet pile walls along the low-level outlet pipes with the Office of Dam Safety. The staff in the Office of Dam Safety indicated that the sheet pile walls would not be acceptable as an alternative to tree removal, as there would be no way to stabilize the sheet pile walls (as they would be free standing), and that there would still be a need for the dam inspectors to access the downstream site to visually inspect (with no obstructions from trees) the low-level outlet areas.

Comment, The existing core wall is estimated to run diagonally across the street. Where are the existing utilities: water, sewer, gas, and stormwater, located (north/south) under the street? How deep? How old is each, what materials, and when would they be anticipated to need replacement? How do existing utilities under the street cross through or over the core wall, if they do?

Response 4:

Existing utilities plans, including water main, sewer main, drainage, and gas main, are attached.

Some of these existing utilities would be in the way of the installation and construction of the sheet pile wall (Alternative 1), and the raised core wall (Alternative 2). Utility replacement would require major construction in the area. The Dexter Road water main is a 6-inch diameter cast iron, installed in 1916, cleaned and lined 2013, is about 5 feet deep, extends from Bullough's Park Road to #96, and dead ends at the water service to #96. It does not require replacement at this time. The sewer main is 8-inch diameter clay, about 8 feet deep, installed 1922, cleaned and lined 2018, extends from Bullough's Park Road to #96, then northerly along the brook channel. It does not require replacement at this time. The drainpipes connect catch basins to drain manholes and are perpendicular to the dam. Removal of the gas main would not be needed, as the gas main only goes from Bullough's Park (roadway) to # 96 Dexter Street, with no gas pipe from #96 at the dam to Walnut Street.

Comment, The proposed conditions (1 or 2) view across the pond toward Dexter Road only shows trees on the south side of Dexter Rd removed, not the removal of trees on the north side. All such views should be updated to show realistic 'after' views before options are presented to the public.

Response 5:

The views on Dexter Road looking east across the dam show the tree removal concepts much clearer than the view across the pond. For the view across the pond, trees in the background (north of the downstream embankment) would still be visible. These are "photo shop" views, using existing photos. We will work with our consultant to provide clearer 'after' views.

Comments from Bullough's Pond Association Board of Directors
April 11, 2024:

Comment, Option 3 is unacceptable, a view expressed by most members of the Working Group, as it results in a massive destruction of trees and vegetation at the banks of the Pond and within the Laundry Brook Forest.

Response 6:

See response 2 above and the more detailed response below. The great majority of the "Laundry Brook Forest" will remain untouched during the Dam project. The forested parcel is 47,748 square feet on the Assessor's Database. We estimate this proposed work will impact about 4,440 square feet, or just under 10% of the total area. More than 90% of the area will remain forested. Furthermore, Alternatives 1 and 2 both require 172 trees to be removed while Alternative 3 requires 199 trees to be removed, a difference of 27 trees.

Details Tree removal by Alternative:

Upstream slope:

For each alternative, all trees within the upstream slope are required to be removed.
Upstream required, 0" to 5" diameter = 11; 6" diameter and greater = 6; total 17 (including 4 at 24" diameter).

Downstream slope:

For Alternatives 1 and 2, all trees within 20 feet of the dam features are required to be removed.
Downstream required, 0" to 5" diameter = 65; 6" diameter and greater = 23; total 88 (including 2 at 12", 1 at 14", 1 at 16", 1 at 22", 1 at 24", and 1 at 40" diameter).
Trees outside of the dam features require selective clearing as follows:
Downstream selective, 0" to 5" diameter = 67.

Alternative 3 requires the removal of all trees on the downstream slope, as follows:
Downstream required, 0" to 5" diameter = 132; 6" diameter and greater = 50; total 182 (including 7 at 12", 1 at 14", 4 at 16", 3 at 20", 1 at 22", 3 at 24", 2 at 36", 1 at 40", and 1 at 48").

Total number of tree removals in Alternatives 1 & 2 – 172
Total number of tree removals in Alternative 3 - 199

Comment, Options 1 and 2 should be made better by being combined into a hybrid model. The existing concrete core wall at the Bullough's Pond Dam has served Newton well. It makes sense to extend that wall and build on that strength. Since the underlying bedrock of the historic dam is irregular, concrete would seem to allow for more consistent connection than steel. However, we are aware of GEI and DPW concerns that the dam's existing concrete wall might have become compromised over time. That's why the BPA supports consideration of the hybrid option of combining aspects of Option 1 and 2 by installing a sheet pile wall on one side of the existing concrete wall to protect it *and* to protect an extended concrete core wall as described in Option 2.

Response 7:

The proposed sheet pile wall in Alternative 1 would be installed by vibration hammering, and/or impact hammer driving, the steel sheet piles into the ground, to be seated on the bedrock. As part of exploring that alternative, GEI located the sheet pile wall to be as far away from the existing core wall as possible, on the north side of Dexter Road, within the right of way. Should the proposed sheet pile wall be installed closer to the existing core wall as suggested in the hybrid model which combines Alternatives 1 and 2, we risk permanent damage to the existing core wall from the vibrations of the sheet pile wall installation. A hybrid option is not recommended or considered feasible due to the risk to the structure of the core wall.

Comment, Option 1-2 + A: During the Working Group meeting, GEI agreed to explore the suggestion of reducing the area of tree removal required for inspectional purposes by using sheet pile "liners" around the spillway and the low-level outflow mechanism cast iron pipe.

As noted in Response 3 above, the City reviewed the idea of sheet pile walls along the low-level outlet pipes with the Office of Dam Safety. The staff in the Office of Dam Safety indicated that the sheet pile walls would not be acceptable as an alternative to tree removal, as there would be no way to stabilize the sheet pile walls (as they would be free standing), and that there would still be a need for the dam inspectors to access the downstream site to visually inspect (with no obstructions from trees) the low-level outlet areas.

Comment, Option 1-2 + A + B: The BPA has advocated for GEI to also study the possibility of lowering the spillway weir, to reduce the overall level of water in the pond, and the volume of water in the pond.

As noted in Response 1 above, to achieve the goals as outlined, we would need to lower the pond to make it a stream, lower the weir, remove the rock, and widen the bridge to allow enough flow to pass un-restricted. In this scenario, we may be overloading the Walnut Street culvert. We do not believe this would be acceptable, as the pond would become a stream.

Comment, With respect to the visuals provided the Working Group, there appear to be several misleading or inaccurate renderings of the impact of various options on tree removal and the ultimate aesthetic impact on the surroundings.

As noted in Response 5 above, we will work with our consultant to provide clearer 'after' views.

Comment, The BPA would like to understand the project's timeline, particularly the urgency and the resulting impacts on project costs.

Response 8:

The preliminary schedule is as follows. The engineering design is to be completed by end of 2024 and submitted for permit approval to State and City entities in early 2025. Once permitted (estimated to be 6 months) the project will be put out to bid, awarded and constructed in 2026.

The City of Newton is under a State Dam Safety Order to correct the Dam's deficiencies. Given the predicted ever-increasing intensity of precipitation due to climate change, the City must strengthen this dam that protects a large downstream area of residences, schools, roads, a village center, many businesses, and an inter-state highway. In this inflationary environment, it also serves us well to move forward sooner rather than later.

Comment, The Working Group was advised at the March 27, 2024 meeting that ODS refuses to recognize the outflow mechanism as a part of the dam for the purposes of compliance because it requires DPW staff to operate, and in the event of a Design Storm event it somehow would not be practical to draw down the reservoir pond upstream of the dam in advance of, or in the early stages of a dramatically heavy rain event.

Response 9:

ODS does not factor the operability of the low-level outlet into their decision about dam safety compliance. That said, DPW does not currently operate the low-level outlet as a precaution due to its age. DPW does not want the outlet to get stuck in the "open" position. The rehabilitation of the low-level outlet will be evaluated and may be included in the final design of the dam improvements.

Comment, what pro-active steps might be taken to address the downstream hazard represented by the undergrounding of Laundry Brook at Hull Street? The Bullough's Pond Dam has never been breached nor overtopped. The Laundry Brook Forest and the passage under Walnut Street have been adequate to handle flows and debris from the most serious rain events in Newton's history to date. When downstream flooding has occurred, it has happened where debris and duckweed have blocked the brook's flow into the undergrounded pipe at Hull Street. Although ODS does not consider this part of the dam project, what steps might be taken to address this proven hazard?

Response 10:

The current Order from the State is to bring the dam into compliance with the ODS's requirements.

We have repaired the gate and do regular cleaning at Hull Street. We will continue to pay close attention to this infrastructure.

Comment, Bullough's Pond was last dredged in 1993, more than 30 years ago. Dredging of Bullough's Pond is overdue, is operationally beneficial for downstream flood control, and the BPA strongly recommends this should be done as part of this project.

Response 11:

GEI evaluated dredging accumulated sediment from the reservoir (i.e., Bullough's Pond) to increase reservoir storage. Based on the sediment probing, sediment depths in the reservoir averaged 0.9 feet.

Based on the limited thickness of sediment, normal pool reservoir and spillway crest, dredging by itself would have a minor impact on increasing the overall storage capacity of the reservoir.

Furthermore, the dam's capacity to pass the Spillway Design Flood (SDF) is evaluated based on a starting pond level at the spillway. Dredging has no impact on the storage volume above this level and thus no impact on the capacity to safely pass the SDF. Dredging is not a viable alternative to address the requirements of 302 CMR 10.14 (6).

Comment, Even though the BPA asked repeatedly for ARPA money to be spent on Bullough's Pond, as we saw an explosion of visitors to, and wear and tear on, the pond's banks during the years of the pandemic, no ARPA funds were allocated to Bullough's Pond nor the dam remediation project.

Response 12:

The dam remediation project is a stormwater project funded by the Stormwater Fund. While we received some requests for ARPA funds to dredge Bullough's Pond, DPW determined dredging is not necessary at this time (see Response #10). If there are specific ideas about projects around the pond, please bring those to the attention of the Department of Public Works and Department of Parks, Recreation & Culture. Bullough's Pond is a gem and we believe deeply in preserving and enhancing this special area.

PREFERRED ALTERNATIVE

DPW has looked carefully with the help of consulting engineers at a number of alternatives for improving the safety of the Bullough's Pond Dam. Based on the effectiveness of the alternatives, the impact on the area around the pond (including trees), and the cost-benefit of the choices, DPW is recommending Alternative 3, downstream slope erosion protection.

Discussion:

Our consulting engineers, GEI, have presented three alternatives for the correction of deficiencies of Bullough's Pond Dam. DCR's requirements for this type of dam are as follows:

Requirements
302 CMR 10.14 (6) for Significant Hazard Potential, Intermediate Size, Existing Dams:
• The spillway system shall have a capacity to pass a flow resulting from a design storm, unless the applicant provides calculations, designs, and plans to show that the design flow can be stored, passed through, or passed over the dam without failure occurring.
• SDF = 100-year storm event

Alternative 1, embedded sheet pile wall, involves the driving of approximately 200 feet of vertical sheet pile wall within the existing roadway to bedrock, installation of deadman anchor system by excavation of 5 feet below the roadway surface to install the deadman anchor system above the existing core wall, relocation of 330 feet of water main and 400 feet of sewer main within Dexter Road, re-landscape and re-paving of roadway, and removal of approximately 172 trees.

Alternative 2, raised core wall, involves the excavation within the roadway to a depth of approximately 5 feet to expose the existing core wall, anchor into, form and pour concrete extension for approximately 200 feet along the core wall, excavate 5 feet to install the deadman anchor system, relocation of 330 feet of water main, and 400 feet of sewer main within Dexter Road, re-landscape and re-paving of roadway, and removal of approximately 172 trees.

Alternative 3, downstream slope erosion protection, involves removal of approximately 1 foot of soil from the downstream slope, placement of bedding layers, placement of riprap or articulated concrete block mattresses at approximately 8200 square feet, covering the riprap or articulated concrete block mattresses with topsoil and seed, and removal of approximately 199 trees.

Preferred Alternative:

The Department of Public Works has carefully considered each alternative, and we recommend Alternate 3, downstream slope erosion protection, as the preferred alternative.

Alternative 3, downstream slope erosion protection is a tried-and-true method of correcting deficient earthen dams. This method is used nationwide.

Alternative 3 has little to no risk, and requires no utility relocation, and minimal roadway rehabilitation, and is considerably less costly than Alternatives 1 and 2.

There are inherent risks with Alternatives 1 and 2. Alternative 1 requires the driving of a steel sheet pile wall to bedrock, the location and condition of which may impact the installation of

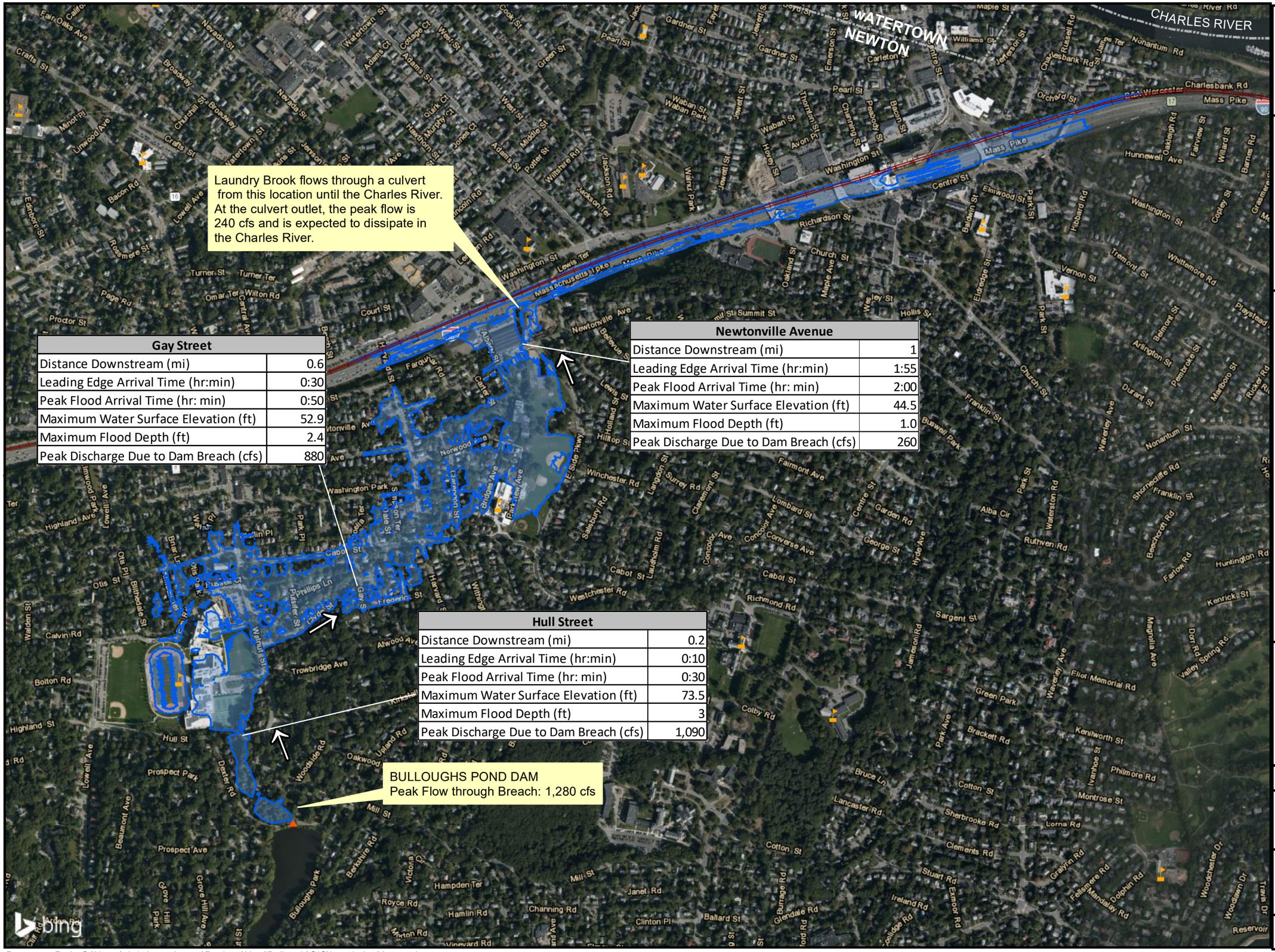
the sheet piles. Alternative 2 involves exposing the existing core wall, and using this core wall to extend upwards, relying on the structural strength of the existing and aged core wall. Alternatives 1 and 2 require the removal and relocation of the water main and sewer main, , and rehabilitation of the roadway.

Alternative 1 & 2 also require major construction and utilities relocations and replacements, which increase costs, require closure of the street during construction and will be impactful to the surrounding residents.

Alternative 3 requires the removal of 199 trees, which is 27 more trees than Alternative 1 & 2. As with school projects, the City will comply with the City's tree ordinance and provide substantial funding to the Tree Replacement Fund for new trees with a focus on placement in the Bullough's Pond region.

The cost of the three Alternatives matter. The Stormwater Fund needs to have resources to fund a massive federally required phosphorus control plan to protect the Charles River as well as addressing flooding and infrastructure work around the entire City. In addition, we always spend each taxpayer dollar carefully.

In summary, Alternative 3 provides excellent safety for the City and has the least construction risks. Funding to the Tree Replacement Fund, in compliance with the newly revised tree protection ordinance, will allow for substantial tree plantings with a focus on the Bullough's Pond region. We encourage the BPA to consult with Newton's Tree Warden on possible planting locations.



Gay Street	
Distance Downstream (mi)	0.6
Leading Edge Arrival Time (hr:min)	0:30
Peak Flood Arrival Time (hr: min)	0:50
Maximum Water Surface Elevation (ft)	52.9
Maximum Flood Depth (ft)	2.4
Peak Discharge Due to Dam Breach (cfs)	880

Newtonville Avenue	
Distance Downstream (mi)	1
Leading Edge Arrival Time (hr:min)	1:55
Peak Flood Arrival Time (hr: min)	2:00
Maximum Water Surface Elevation (ft)	44.5
Maximum Flood Depth (ft)	1.0
Peak Discharge Due to Dam Breach (cfs)	260

Hull Street	
Distance Downstream (mi)	0.2
Leading Edge Arrival Time (hr:min)	0:10
Peak Flood Arrival Time (hr: min)	0:30
Maximum Water Surface Elevation (ft)	73.5
Maximum Flood Depth (ft)	3
Peak Discharge Due to Dam Breach (cfs)	1,090

#418-24

NORTH

0 500 1,000 Feet

LEGEND

- AREA FLOODED BY DAM FAILURE
- FLOW DIRECTION
- TOWN BOUNDARY
- SCHOOLS
- HOSPITALS
- RAILROADS
- DAMS

NOTES:
1. AERIAL PHOTO IS BING MAPS AERIAL BASEMAP (DATE OF IMAGERY IS OCTOBER 2019).
2. SCHOOLS LOCATIONS FROM NEWTON GIS.
3. HOSPITALS LOCATIONS FROM MASS GIS.
4. THE INUNDATION AREAS SHOWN ON THIS MAP REFLECT EVENTS OF AN EXTREMELY REMOTE NATURE. THESE RESULTS ARE NOT IN ANY WAY INTENDED TO REFLECT UPON THE INTEGRITY OF BULLOUGHS POND DAM.
5. THE INUNDATION AREA SHOWN IS APPROXIMATE AND SHOULD BE USED AS A GUIDELINE FOR ESTABLISHING EVACUATION ZONES.
6. ACTUAL INUNDATION AREA WILL DEPEND ON ACTUAL FAILURE CONDITIONS AND MAY DIFFER FROM THIS MAP.
7. INUNDATION AREA WAS CALCULATED BY SIMULATING DAM FAILURE WITH THE HEC-RAS 5.0.7 COMPUTER SOFTWARE.
8. DAM FAILURE WAS SIMULATED WITH IMPOUNDMENT AT TOP OF DAM AND WITHOUT ANTECEDANT DOWNSTREAM FLOODING. HULL STREET CULVERT WAS MODELED AS 75% BLOCKED.
9. ELEVATIONS ARE IN VERTICAL DATUM NAVD88.
10. LEADING EDGE ARRIVAL TIME IS TIME FOR WATER SURFACE ELEVATION TO RAISE 1 FOOT.

INUNDATION MAP FOR BULLOUGHS POND DAM (MA03414)

Newton, MA

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Designed By:	CES		
Reviewed By:	JDA	Job No.:	01.174021.10
Operator:	CES		

Document Path: C:\Users\christine.suhonen\Desktop\Now\Bullough\GIS\InundationMap.mxd

Policy on Trees on Dams

The Massachusetts Office of Dam Safety requires that earth embankment dams be maintained free of the existence of trees and woody growth

Tree and woody vegetation growth on earthen dams and in close proximity to other dams such as concrete dams is undesirable and at a minimum has some level of detrimental impact upon operation, inspection, performance, and safety of dams. Tree roots cause serious structural damage to earth embankment and appurtenant dam features such as gate wells, spillway walls and other components.

It is recommended that earth embankment dams be maintained with a healthy uniform cover of desirable vegetation such as an appropriate variety of grasses. Dam embankment grass should be mowed periodically to promote healthy cover and prevent infestation of undesirable woody growth and weeds.

Trees and woody growth can make it difficult to conduct inspections of dams. Tree roots can cause leaks, damage concrete joints and overturn during high wind events causing large voids due to pull out of root balls and cause many other problems that will be very costly to repair. Trees and woody growth located in spillways will dramatically reduce spillway flow capacity. Trees are known to accelerate deterioration of dams and can lead to dam failure.

It is recommended that the area at least 20 feet downstream from the entire downstream toe of earth embankment dams be maintained free of trees and woody growth. This is necessary to prevent root systems from growing into the dam embankment causing damage to this area of the dam.

For concrete dams and appurtenant features of all dams it is recommended that tree growth not be allowed to occur within 20 feet of such features. In some cases it may be necessary to maintain a greater distance to ensure roots do not adversely impact dam components. Do not allow tree growth in areas located above buried conduits/pipes.

Prior to removal of existing trees and woody growth from dams, part A of a Chapter 253 Dam Safety Permit Application must be submitted to the Office of Dam Safety. Permit applications should be prepared by a qualified dam engineer for larger projects involving removal of trees in excess of 4 inches and where there is planned excavation of roots. The Office of Dam Safety will review applications and determine if the planned work requires a permit. If the project involves removal of brush and trees 4 inches and less in diameter the Office of Dam Safety may find a permit is not necessary to conduct the work. In general routine maintenance activity does not require a Dam Safety permit.

Please note the dam owner is responsible for ensuring that all other local, state and federal agency permits that may apply to planned work are obtained prior to conducting work.

Sources of information about trees and vegetation on dams

Dam Owner's Guide to Plant Impact on Earthen Dams, FEMA Publication L-263, September 2005 (/doc/fema-publication-l-263/download)

This brochure is intended to help dam owners nationwide identify and mitigate problem vegetation before adverse effects occur.

Technical Manual for Dam Owners, Impacts of Plants on Earthen Dams, FEMA Publication 534, September 2005 (/doc/fema-publication-534/download)

Damage to earthen dams and dam safety issues associated with tree and woody vegetation penetrations of earthen dams is all too often believed to be routine maintenance situations by many dam owners and engineers.

Contrary to this belief, tree and woody vegetation penetrations of earthen dams and their appurtenances have been demonstrated to be causes of serious structural deterioration and distress that can result in failure of earthen dams.

Contact

Office of Dam Safety