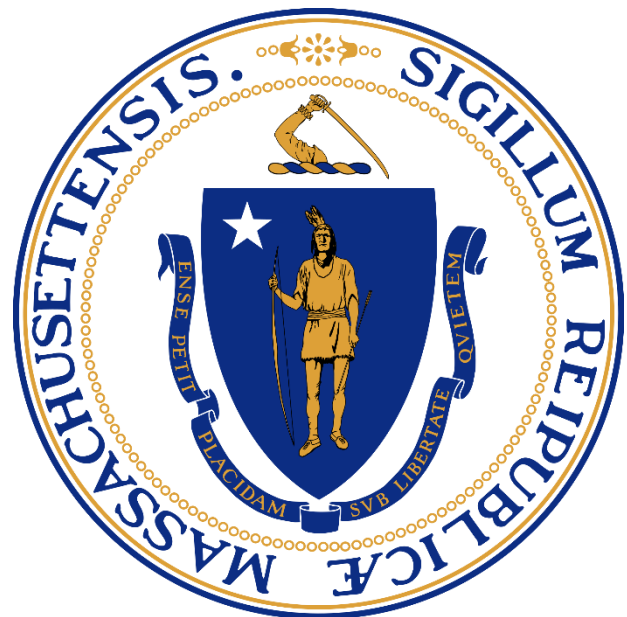


JANUARY 1, 2023

Updated June 28, 2023



TOWNLINE & LINDEN BROOK CULVERT ONE-YEAR REPORT

OFFICE OF STATE REPRESENTATIVE STEVEN ULTRINO &
SENATOR JASON LEWIS

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Issue Area

Starting on the week of September 5, 2021, the Office of State Representative Steven Ultrino began receiving an influx of calls from residents regarding severe flooding along Delta Terrace in the city of Malden. After extensive discussion and communications between the office and the Department of Conservation and Recreation (DCR), Massachusetts Department of Transportation (MassDOT), and the surrounding municipalities of Revere, Everett, and Malden, it was concluded that a working group would be established to continue investigating ownership and maintenance responsibilities for the Linden Brook and Town Line Brook Culverts as well as the corresponding tide gates and stormwater structures.

The Linden and Town Line Brook Culvert Working Group (henceforth referred to as “the Working Group”) comprised of state and local legislators, municipal representatives from Revere, Everett, and Malden, DCR, and MassDOT has been meeting on a monthly basis starting December 2021. This report serves as a follow-up to the previously compiled 2021 Malden Flooding Report (“flooding report”) and aims to provide a comprehensive summary and updates on the following areas of concern identified in the prior report:

- Permanent ownership and maintenance responsibilities of Town Line and Linden Brook Culvert, including but not limited to the respective tide gates, pathways, stormwater structure, drainage infrastructure, and more;
- Preventative measures to mitigate future flooding;
- Immediate, temporary repairs of the damaged tide gates and relevant drainage infrastructure;
- Long-term, permanent improvements and repair plans;
- Accumulation of debris in culverts.

Timeline

Unknown, 2000-2001 - DCR and DOT collaborated to implement a project to rehabilitate the majority of conventional tide gates and stop logs, as well as install three Self Regulating Tidegates (SRT) to restore and improve water flow conditions. The SRTs were included in the final project at the urging of the DEP and EPA in an effort to improve salt marsh conditions on the west side of Route 1. Project costed around \$900,000 according to information provided by MassDOT

Unknown, 2009 - DCR Chief Engineer Noel Baratta sends a letter to Frank Strangi (Revere City Planner) granting the City of Revere "permission and all rights and privileges for access, operation, maintenance and repair for purposes of flood control and other feasible reasons," required per permit conditions. This letter was not dated.

August 17, 2009 - MassDOT Highway District 4 implements repairs on Town Line Brook tide gates. An Extra Work Order (EWO) was contracted to Newport Construction Corp., Inc. for the replacement of bottom floats to the SRTs. The EWO stated that the repairs were needed to ensure proper operation of the SRTs since the floats could not accommodate for the newly-replaced heavier SRT doors. Additionally, four of the six float release rods were in disrepair due to oxidation and saltwater erosion. It also cited a request from the EPA that repairs be made so the SRTs will be fully functional.

November 2, 2009 - MassDOT and DCR agree to a memorandum of understanding that transfers the ownership, care, and control of several vehicular bridges and their adjoining structure.

November 16, 2009 - Strangi acknowledges DCR's authorization, but notes that while the City appreciates the permission to "access and operate the tidegates during storm events" and "under[take] any temporary emergency repairs," the City maintains that "permanent maintenance and repairs shall fall under the responsibility of DCR as required under the original permit conditions." See Appendix C, Exhibit 2.

December 17, 2009 - DCR Chief Engineer Noel Baratta acknowledges 12/14/09 letter from the City of Revere and grants Revere permission to operate tide gates in the winter setting from December 1, 2009 through March 31, 2010.

August 24, 2017 - EPA Rumney Marsh Restoration Areas map identifies: a) 1 leaking flap gate at the Linden Brook tide gate and b) 3 self-regulating tide gates not being operated per permit conditions (3 missing bottom floats). See Appendix II, Exhibit 1 and hyperlinked full map.

February 2020 - Malden resident Roy Watson, Esq. thanks DCR Deputy Chief Engineer Rob Lowell for recent removal of fallen trees in Town Line Brook culvert/Pine River which led to decreased drainage capacity. DCR commits to

monitoring and addressing such concerns with debris in the culvert in an ongoing fashion.

May 3, 2021 - John Ellis, General Manager of Weston and Sampson visits Rt. 1 flood gates and reports to Don Ciaramella (Chief of Infrastructure and Public Works in the City of Revere's Water, Sewer and Drain Division) that 2 of 3 self-regulating tide gates were not functioning properly. City of Revere retains records of this communication, which cannot be included here because of proprietary information contained therein.

May 6, 2021 - Ciaramella (Revere) submits a letter to DCR requesting that they undertake regular maintenance and repairs.

June 8, 2021 - Ciaramella (Revere) requests that DCR respond to his 05/06/21 letter requesting that DCR conduct regular maintenance on the Town Line Brook Culvert.

June 14, 2021 - According to Commissioner Montgomery's letter (Exhibit 7), DCR Engineer Tom Valton contacts City of Revere via phone to confirm that DCR is "researching response options" and "evaluate remedies" to the problems noted in 05.03.21 letter from Ciarmella. See Appendix C, Exhibit 7.

June 28, 2021 - Ciaramella again requests that DCR respond to his 05.06.21 letter requesting that DCR conduct regular maintenance and repairs on the Town Line Brook Culvert. See Appendix C, Exhibit 5.

September 6, 2021 - Rep. Ultrino begins to receive reports of severe flooding on Delta Terrace in Malden. Rep. Ultrino emails Craig Cashman, DCR Director of Gov't Affairs, and Dan Fielding, MassDOT Legislative Liaison. See Appendix C, Exhibit 8 for full email, Appendix A, Flood Site 1 for attached photos.

September 10, 2021 - Rep. Ultrino receives word via phone from DCR, noting that staff had visited the Town Line Brook tide gates and reported no dysfunction. Rep. Ultrino, the same day, receives word via phone from the City of Revere that staff had visited and identified at least one dysfunctional tide gate.

September 14, 2021 - DCR staff sends letter from Commissioner Montgomery dated 09.10.21 informing Revere that "DCR will continue its due diligence to locate prior authorizations, commitments, or obligations for maintenance to the Town Line Brook channel." See Appendix C, Exhibit 7.

September 23, 2021 - DCR, MassDOT, and City of Malden officials and staff meet with Rep. Ultrino and staff at Delta Terrace to survey flooding on-site. DCR identifies the area's problem culvert as Linden Brook culvert, notes Rt.1 tide gates not functioning properly. DCR, MassDOT commit to resolving questions of ownership and maintenance responsibility ASAP. DCR commits to beginning process of culvert assessment to ascertain need for dredging.

September 30, 2021 - Rep. Ultrino, having heard no updates, sends reminder to MassDOT, DCR staff on-site at 9.23.21 meeting, sends reminder of next-step commitments made by meeting attendees, including further research compiled by staff. See Appendix C, Exhibit 9.

October 6, 2021 - Rep. Ultrino, again having heard no updates from MassDOT or DCR, send another reminder to site-visit attendees and other Department staff involved. Ultrino presents maps found in DCR and DOT GIS systems which indicate infrastructure ownership, asks if these clarify confusion, and asks what further information is needed. See Appendix C, Exhibit 9.

October 8, 2021 - Rep. Ultrino again follows up with MassDOT and DCR to ask for updates on next-steps to which they committed on 9.23.21. See Appendix C, Exhibit 10.

October 13, 2021 - Malden and Revere City staff and officials meet alongside Reps Ultrino and Giannino to discuss next steps. Malden Ward 8 Councilor Jadeane Sica raises flooding concerns on Hadley Street in Malden as potentially connected to Town Line Brook tide gate malfunction. The Town Line Culvert directly abuts Hadley Street and residents observed tidal flooding patterns similar to those observed at Delta Terrace by both residents and DCR staff.

October 13, 2021 - MassDOT conducts a site visit with District 4 drainage contractor. Findings include: Town Line Brook self-regulating tide gate #2 is listing due to a broken hinge; self-regulating tide gate #3 is fully detached and lying submerged downstream. See Appendix C, Exhibit 12.

October 14, 2021 - MassDOT commits to emergency action repair as they plan with DCR and City of Revere to conduct permanent repairs. Emergency action repair expected before weekend of 10.16.21. See Appendix C, Exhibit 12.

October 14, 2021 - City of Revere Water and Sewer staff conduct emergency action repair. See Exhibit X, Appendix I.

February 25, 2022 - Representative Ultrino received calls from constituents at Delta Terrace along with videos of the frozen flood water in their back yards.

March 8, 2022 - MassDOT indicated that a contractor will be completing some prep work to the tide gates in the Linden area of Malden. Replacement of the two damaged tide gates was completed by the contractor and MassDOT's Dive Team on Thursday, March 10, 2022.

July 21, 2022 - The Malden Engineering Department released an invite for bids for Contact 2022-SW-1 as part of its 2022 Stormwater Cleaning Program. The work of the

contract includes cleaning debris, sediment disposal, and video inspection of stormwater drains throughout the city, including the Linden Brook culverts.

January 19, 2023 - Rob Lowell and Mark Kratman shared contacts of DCR and MassDOT's counsel with legislative staff during monthly meeting. Louis Ross from DCR and MaryBeth Boivin were named as the assigned attorneys for this case.

February 13, 2023 - First meeting between MassDOT counsel (Albert Caldarelli and MaryBeth Boivin), DCR representative (Rob Lowell), and legislative staff (Sarah Zeiberg, Ayla Thorntona, Claudia Chung, Chris DeFilippis) regarding the ownership and maintenance responsibilities of tide gates located on Route 1's Cutler Highway Bridge. Al and MaryBeth insisted that MassDOT does not have the capacity to maintain or repair the tide gates located on the bridge, and stated that the tide gates are the same as equipment that other state agencies install on MassDOT highways (such as cameras for State Police etc.) - as such, MassDOT does not have a responsibility to maintain the structure. Ownership question remain unanswered and a second meeting was scheduled for March 13, 2023.

February 15, 2023 - The first version of the Responsibilities & Ownership Memo including pertinent legal questions compiled by legislative staffers was shared with MaryBeth Boivin and Louis Ross as well as legislative staff from Representatives Steve Ultrino and Jessica Giannino, and Senators Jason Lewis and Sal DiDomenico's offices. The memo lists questions for both DCR and MassDOT counsel pertinent to solving key ownership and long-term maintenance issues.

March 14, 2023 - In an email exchange between Claudia Chung and MaryBeth Boivin, MassDOT counsel maintains that the tide gates are not covered under the 2009 MOU between DCR and MassDOT or Section 178, Chapter 25 of the Acts of 2009 which deeds over previously MDC owned structures to MassDOT, including Cutler Highway Bridge. MassDOT reasoning is that the flood gates are not necessary for the operation, management, maintenance, reconstruction or repair of the bridges identified in the MOU and Acts of 2009. In our prior meeting, Al discussed that it might be best to set up a separate side agreement between MassDOT and DCR to clarify that DCR retains ownership of the flood gates and to allow access to the flood gates for maintenance, reconstruction etc.

March 30, 2023 - MaryBeth Boivin indicated via email that MassDOT and DCR were trying to meet separately prior to the Working Group meeting in April to resolve outstanding issues.

April 5, 2023 - MaryBeth Boivin confirmed via email that MassDOT and DCR had met to discuss issues involving tide gates on Cutler Bridge. The email indicated that a preliminary agreement had been reached and the resolution needs to be approved by "highway division and other internal business clients". MaryBeth also stated that

Claudia Chung will be advised when the agreement receives full sign off and will attempt to get internal sign off of the resolution by April 13, 2023. As of June 28, 2023, this is the last correspondence between MassDOT counsel and legislative staff regarding this issue.

May 16, 2023 - Follow up email sent by Claudia Chung to Albert Caldarelli, MaryBeth Boivin, Rob Lowell, and Louis Ross requesting a status update on the previously mentioned agreement. This email was unanswered.

May 30, 2023 - Malden City Councilor Stephen Winslow completed the final report titled "Malden Storm Drain State of Repair Update", which was compiled by the Malden ARPA subcommittee consisting of Yem Lip from the Malden Engineering Department, Isaac Slavitt from the Malden Conservation Commission, consultants from Hayner/Swanson Inc., and Councilor Winslow himself. The report was shared with Claudia Chung on June 20, 2023. The report identifies locations along the Linden Brook and Town Line Brook that has been cleaned by the City of Malden and DCR as of May 2023. The maps included in the report also identifies areas that need permanent repair work and proposed locations for future further studies and improvements to mitigate flooding and sediment build-up.

June 20, 2023 - Claudia Chung emailed Craig Cashman on behalf of Representative Ultrino requesting a follow-up on the legal discussions and outstanding issues about Town Line and Linden Brook Culvert issues.

June 21, 2023 - Craig responded stating he will coordinate with Commissioner Arrigo and brief the Commissioner on the issue prior to an in-person meeting scheduled for June 28, 2023 in the State House.

June 22, 2023 - Rob Lowell indicated that the Linden Brook sediment removal project has been completed and all debris and sediment has been removed offsite. DCR team will now be looking into permitting requirements to conduct maintenance work within the Town Line Brook channel with the DEP and perhaps Army Corp. Bill Gode will be putting the ball floats of the SRTs back to the position it was found prior to DCR's project around July 4th. Ed Reiner and Don Ciaramella will be consulted in the process but Bill notes that the nose floats are still missing from the structure, and it is unlikely that the SRTs will be fully functional without them.

June 28, 2023 - In-person meeting at the State House between Representatives Steven Ultrino, Paul Donato, Kate Lipper-Garabedian, Senator Jason Lewis, Craig Cashman and DCR Commissioner Arrigo.

Summary of Findings

Malden

Starting in January, the City has been working with the Ward Councilor, Stephen Winslow, and an engineering consultant to investigate the flooding issues in Delta Terrace, Route 99, and Hadley Street. The initial observations concluded that while there were no debris obstructions, there was sediment and silt accumulated that led to flooding issues in the area. Additionally, the culverts in question have a number of unidentified outfalls, where water is not designed to leave the culvert, which contributes to flooding issues.

The City of Malden and DCR been coordinating the efforts to conduct investigations and clean up projects in the Linden Brook culverts. Using state funds made available through federal funds allocated to the Commonwealth through American Rescue Plan Act (ARPA) in March 2021, the city has begun a project to address the issues within the stormwater drainage system of Linden Brook contributing flooding within the City. On July 21, 2022, the Malden Engineering Department released an invite for bids for Contract 2022-SW-1 as part of its 2022 Stormwater Cleaning Program. The work of the contract includes cleaning of drainage pipes, debris and sediment disposal, and video inspection of stormwater drains throughout the City, including the aforementioned area of Linden Brook culverts.¹

As of November 2022, Green Mountain has been hired as the contractor to complete work on the project, including but not limited to sediment removal and clean-up of storm drain areas of the culvert, and camera work to assess the conditions of the drainage infrastructure once accessibility has been gained. The City of Malden expects the project to begin in December 2022 and end in February 2023, subject to delays caused by weather or other logistical challenges. DCR has also released a bid for a project to remove sediment and conduct maintenance at Linden Brook, with the geographic region beginning at the upper reach of the DCR property. As of November 2022, the project is anticipated to be conducted over the course of the winter season through early 2023.

One of the challenges faced by both the City and DCR in the process of finalizing respective project specifications is the handling of dewatering materials and related sediment removed from the drainage system. The City and DCR both dedicated significant time looking for suitable sites for temporary storage of dewatering materials which were limited due to the lack of suitable sites in the vicinity as well as the need to avoid additional costs of excessive trucking and moving of the materials. While preliminary sites have been identified, this reflects a long-term challenge for all

¹ The Invitation to Bid for Contract 2022-SW-1 can be found on the City of Malden website's "Bid Posting" page: <https://cityofmalden.org/bids.aspx?bidID=65>

relevant agencies and municipalities should the need for clean-up activity arise again in the future.

Both projects are progressing as planned, while regular updates and collaboration has been a crucial part of the working group's monthly meetings.

Revere

As identified in the Flooding Report, some of the failed drainage infrastructure that contributed to the flooding issue includes the self-regulating tide gates and the timber tide gate at the Town Line Bridge tide gates adjacent to Rt. 1 in Revere. When surveyed in May 2021, both sets of tide gates were non-operational and in disrepair, subsequently allowing sea water to surcharge through inland drains and contribute to severe flooding issues at Delta Terrace, Hadley Street and surrounding areas.²

Temporary emergency repairs have been made by the City of Revere in order to address the dysfunctional drainage infrastructures shortly after the issue was identified. As of March 21, 2022, MassDOT has fabricated and replaced four hinges of the tide gates involved. Since the repairs, both the self-regulating tide gates and timber tide gate have been functioning as intended.

Weston and Sampson has been a closely partnering with the City of Revere as an engineering and environmental services consultant. In conjunction with the issues raised in the working group's discussions, the company has provided details regarding their 2016 Stormwater Outfall Inspection report, identified the most recent hydraulics study done in the region (which was conducted in 2002), and has since led multiple ongoing studies and projects relating to storm water drainage and related infrastructure within the Revere city limits.

State Representative Jessica Giannino and her staff has also worked closely with the working group to secure funding from the Legislature for maintenance and repairs of the stormwater drainage system in Revere. Earmarks released from the Chapter 102 of the Acts of 2021 ("The ARPA Bill"), which allocated \$145 billion in unspent surplus revenue from FY2021 and around \$2.5 billion of federal ARPA funds, included:

- An earmark that allowed "not less than \$50,000 [shall be] expended to the city of Revere for the purpose of dredging and rehabilitation of Sales creek and Green's creek"
- An additional "\$50,000 [shall be] expended for repairs for the Town Line brook floodgate between the cities of Malden and Revere"

Since the release of the earmarks, the City of Revere has planned and begun several projects so to clean and clear trash in smaller culvert under Route 1, conduct studies

² See item 5 under the section titled "Findings" from the **Malden Flooding Report 2021**.

investigating the outfalls and sediment levels of Townline Brook, as well as installing level trawls on SRT's, clean trash racks. The City will enter into a contract with Weston and Sampson to complete the work described as part of these projects. The City of Revere has also been conducting regular Trash Rack cleaning along Route 1 for the past three years and will continue to do so. As discussed in the working group meetings, the projects located in Revere is intricately linked to the clean-up efforts upstream of Townline Brook in Malden and Everett. Hence, the working group has concluded and affirmed that the success and effectiveness of the current projects involving debris and sediment removal are contingent on collaborative efforts between DCR, MassDOT, and all the municipalities involved.

Everett

Everett has been moving forward with water-oriented projects that include updating and expanding undersized infrastructure; Redesigning Spring Pond; continuing to focus on Seven Acre Park; and analysis of how the current stormwater management systems function in order to know how to move ahead.

In addition, the city received funding from the Gaming Commission to design a boardwalk at Gateway Park and are considering incorporating pedestrian and bicycle trails to encourage diverse use of the area. Everett has also received funding for wetland conservation and invasive species removal work, plus a canoe and kayak launch into the Malden River.

As questions of ownership continue to be answered by the legal teams at DCR and MassDOT, Everett is ready to assist once it's clarified what parties are responsible for what portions of the regional culvert network. Everett's emphasis on park design and maintenance is helpful for stormwater management and is a useful tool as the region adapts to the impacts of climate change.

Appendix I: Site Photos

Flood Site 1 – Delta Terrace, Malden



Exhibit A: The extent of the flooding problem located in residential areas of Delta Terrace in Malden. [Click here](#) for video of Linden Brook Culvert's drop inlet surcharging during high tide.

Flood Site 2 – Hadley Street



Exhibit B: The extent of the flooding problem located in residential areas of Delta Terrace in Malden.

Gate Site 1 - Town Line Brook tide gates





Exhibit A: Late September, 2021. Photos showing the status of Town Line Brook tide gates **prior to** emergency repair completed by the City of Revere. [Click here](#) for video of leaking tide gates at Town Line Brook tide gates.



Exhibit B: Late October, 2021. Town Line Brook tide gates **after** emergency repair completed by the City of Revere.

Gate Site 2 - Linden Brook tide gate



Exhibit C: September, 2021. The approximate location of the Linden Brook tide gate is indicated by the red circle.

NB: The Linden Brook tide gate is a simple flap gate. The flap gate can be seen through the surrounding brush in the red circled area. Better pictures weren't possible when Ultrino staff visited without significant impact on Marshlands.

Appendix II: Maps

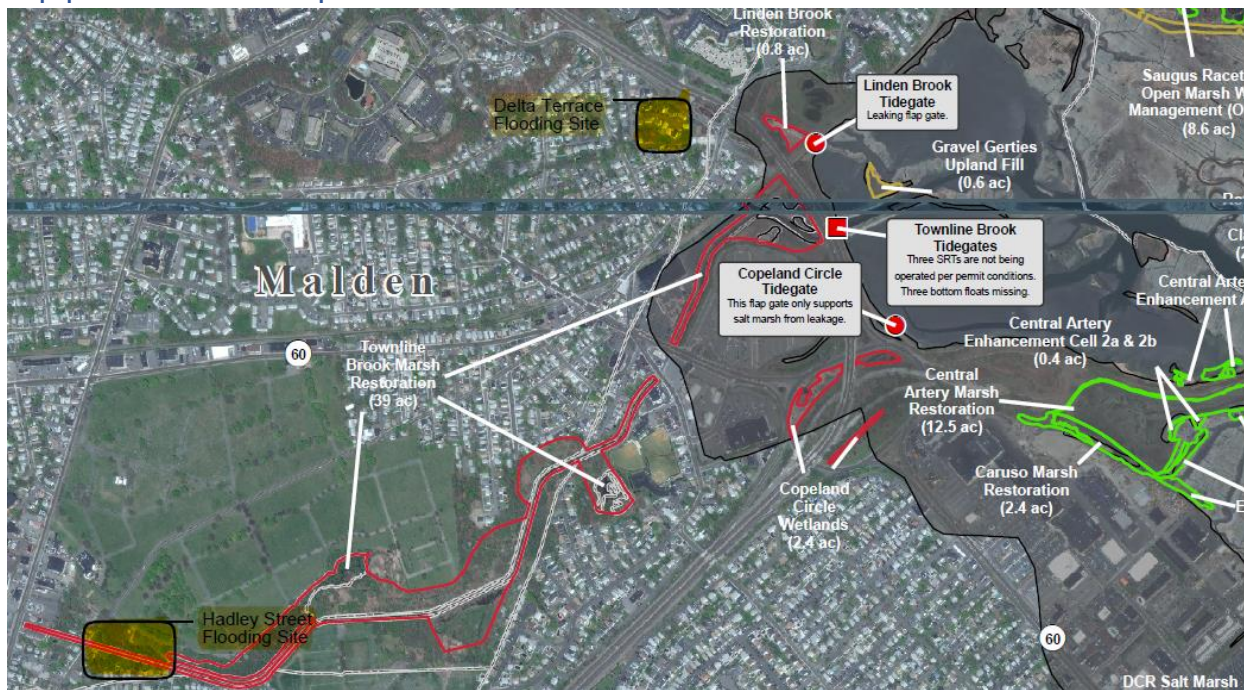


Exhibit 1 - Map of Rumney Marsh Restoration Area, EPA, August 24, 2017. Full unmarked map available online [here](#).

NB: This map indicates that the Linden Brook tide gate and the Townline Brook tide gates have been in disrepair since 2017. In the case of the Townline Brook tide gates, the EPA found that this disrepair led to a violation of the gates' permit conditions. In the absence of any claims or evidence of recent repair, we can reasonably conclude that no repairs have been made since identification of these problems between 2017 and 2021.

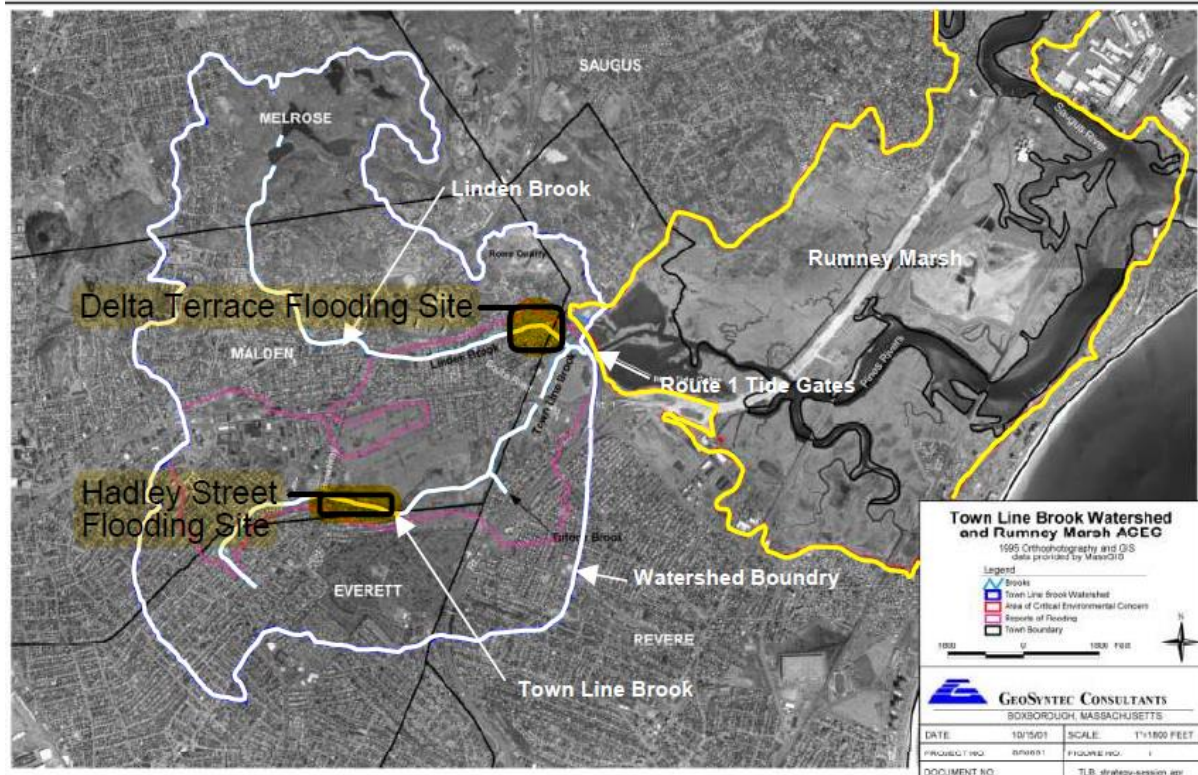


Exhibit 2 - Map of Linden Brook and Town Line Brook culverts and watersheds, GeoSyntec Consultants (Quigley, Roy, and Gill) Town Line Brook Urban Watershed Study Modeling Incremental Improvements, 2002. Full study and unmarked map available [here](#).

NB: Both flooding sites border state-owned culverts.

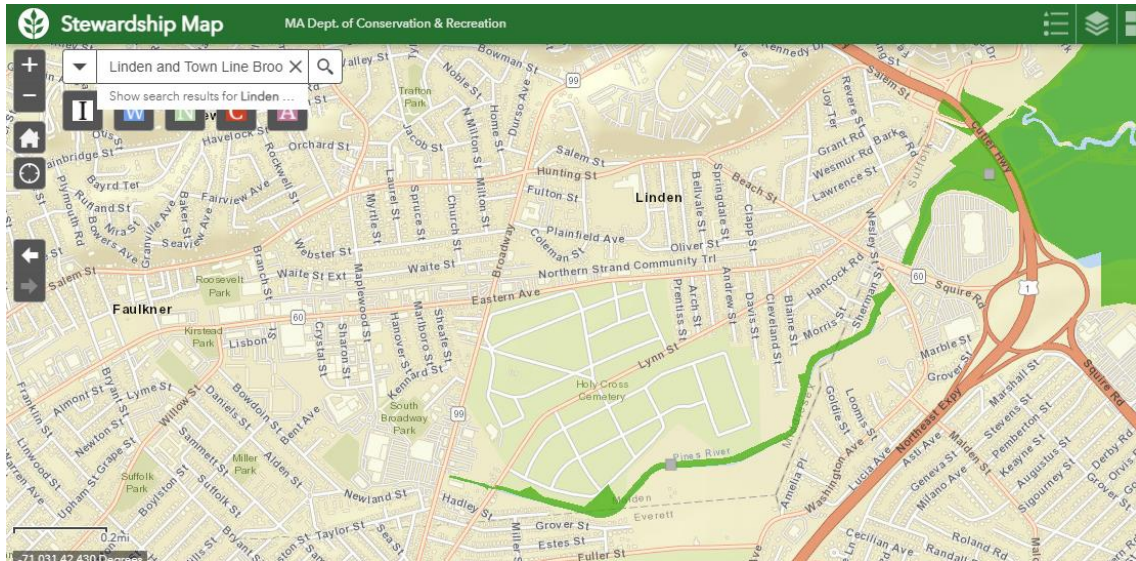


Exhibit 3 - DCR's Stewardship Map, which indicates ownership and maintenance of land surrounding the Town Line Brook by virtue of listing the space as "DCRS Owned and Managed Land. View full map [here](#)

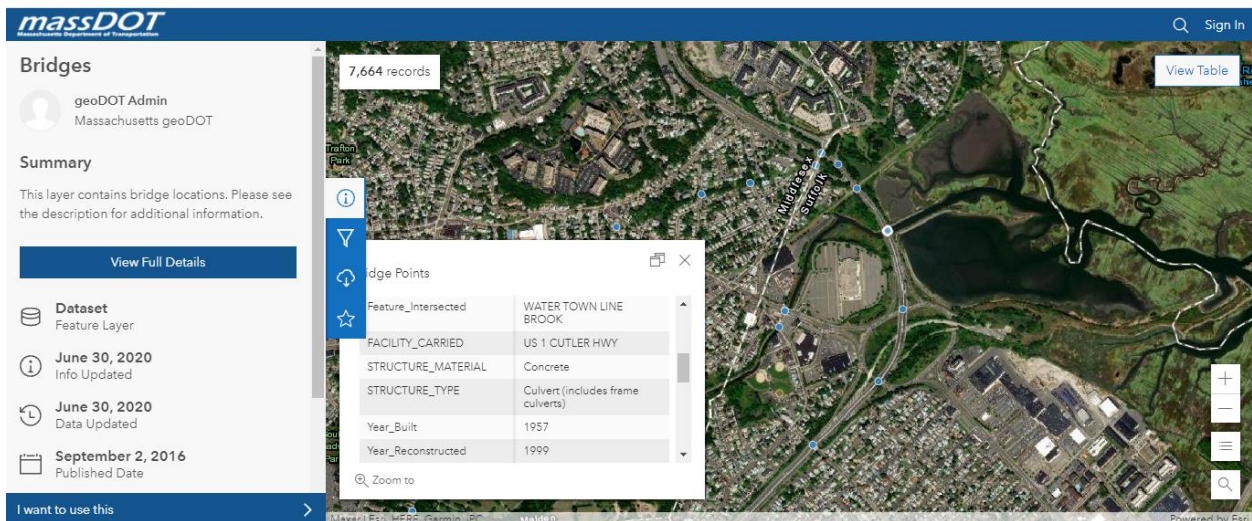


Exhibit 4 - MassDOT's Bridge inventory tool in GIS, which indicates that ownership and maintenance of the Cutler Highway Bridge rest with MassDOT, specifically including frame culverts in the asset description. Other culverts along the path of the Linden Brook Culvert are also marked as MassDOT assets on the map. View full map [here](#).