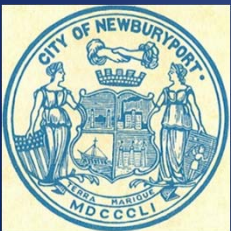


Phillips Drive Neighborhood  
Water Drainage Issues  
Project Update and Recommended Next Steps

**- CITY RESPONSE AND UPDATE -  
PUBLIC MEETING**

**Senior Center  
January 7, 2019**

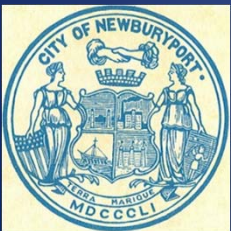


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# What We've Done So Far

## Summer/Fall 2017:

- We received the neighborhood's report titled *Phillips Drive Neighborhood-Water Drainage Issues, Report to Mayor Donna Holaday, June 2017* and was asked to provide responses.
- We researched record Plans, deeds, approved Subdivision documents, from City files and Registry of Deeds. Field-located drainage inlets and outlets and identified watersheds, soil types, ground surface types, and boundaries. Setup hydrologic model of both Phillips Drive and Cherry Hill neighborhoods.
- The City met with residents on multiple occasions, held a public meeting 9-27-17, and collected comments and feedback.

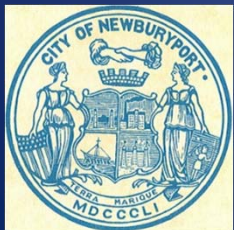
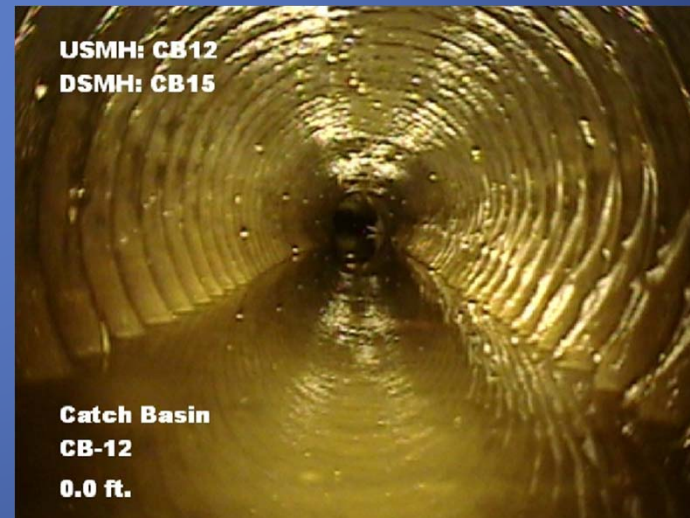


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# What We've Done So Far

## Summer/Fall 2017 (cont.):

- We inspected the conditions of the roads, drainage pipes and structures and performed some limited field survey.
- DPS has cleared debris from stream that runs from the end of Ryan Road through the Phillips Drive culvert and up to the Hoyt's Lane culvert.
- Engineering staff with assistance of a CCTV-contractor inspected approximately 80% of the existing drainage pipes in the neighborhood with a tire-mounted camera and cleaned pipes of any obstructions.



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# What We've Done So Far

Year 2018:

## ***Phillips Drive Neighborhood Drainage and Flooding Problems Evaluation Report and Recommended Solutions***

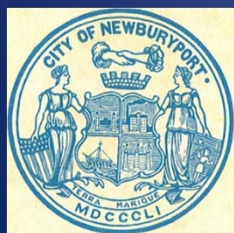
*Prepared by: Jon-Eric White, PE, City Engineer*

*Diane Gagnon, Assistant Engineer*

*January 2018.*

March 27, 2018: Public Meeting

- Discussed highlights of Evaluation Report and Next Steps.



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# What We've Done So Far

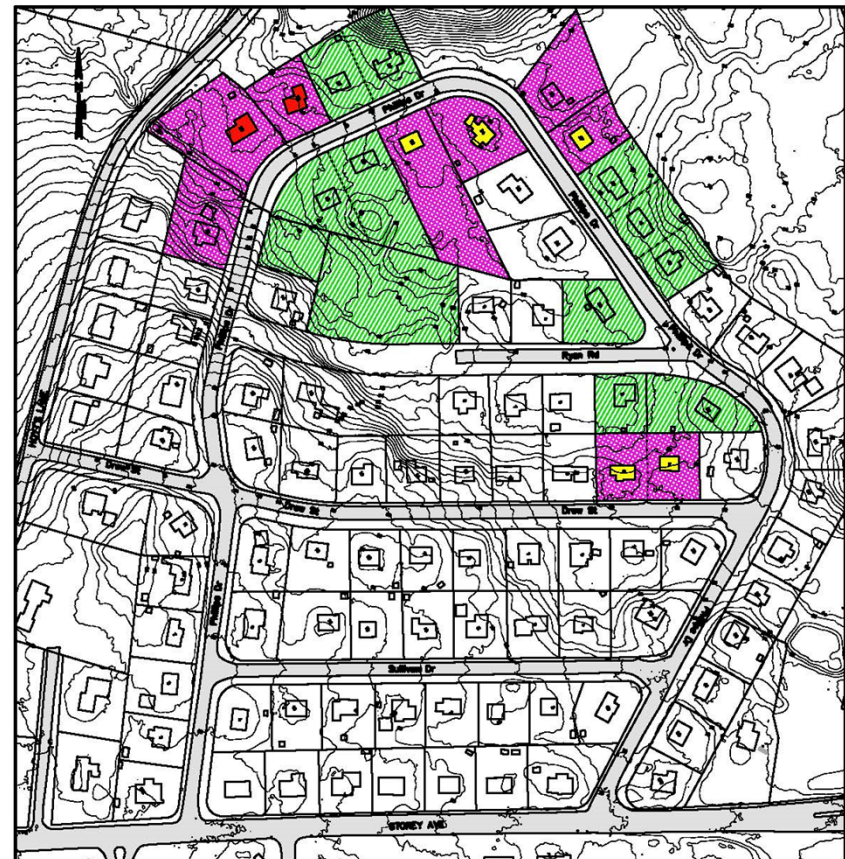
Year 2018 (cont.):

## DRAINAGE PROBLEMS

Problem No. 1: High Groundwater

Problem No. 2: Surface Flooding

Problem No. 3: Deteriorating Roads



### LEGEND

- CHRONIC GROUNDWATER INFILTRATION
- REPORTED YARD FLOODING (PER JUNE 2017 DRAINAGE ISSUES REPORT)
- BASEMENT FLOODING DURING SIGNIFICANT RAINFALL EVENTS
- ADDITIONAL NOTED YARD FLOODING



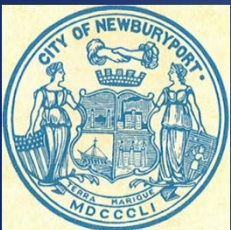
CITY OF NEWBURYPORT  
DEPARTMENT OF PUBLIC SERVICES  
16A PERRY WAY  
NEWBURYPORT, MA 01950

PHILLIPS DRIVE NEIGHBORHOOD  
ROADWAY & DRAINAGE IMPROVEMENTS

FLOODING ASSESSMENT

DATE ISSUED:  
01-24-2018

SCALE: 1"=200'



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# What We've Done So Far

Year 2018 (cont.):

## SOLUTIONS

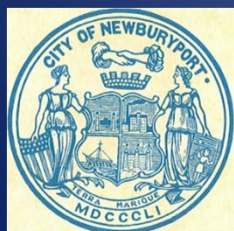
### **Solution No. 1: Complete New Roadway Construction**

Construct new roadways with curbing, drainage systems, swales, and culverts.

### **Solution No. 2: Cleanout Cherry**

#### **Hill's detention pond outlets**

Unclog the outlet pipes from Cherry Hill's detention ponds.



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# What We've Done So Far

Year 2018 (cont.):

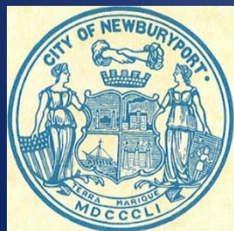
## **Solution No. 3: Install Subdrain to Eliminate Icing on Phillips Drive**

Install perforated pipe subdrains under Phillips Drive from 19 Phillips down to the stream.

## **Solution No. 4: Increase sizes of outlet pipes from Cherry Hill's detention ponds**

To send more runoff downstream during storm events in order to reduce the amount of flow being infiltrated into the ground.

*(only to be implemented if Solutions No. 1-3 have not succeeded)*



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# What We've Done So Far

## Year 2018 (cont.):

In order to accomplish these improvements, the following construction phasing was recommended:

### **Phase I – Test Pits, Solution 2, and Solution 3:**

Excavate or drill to determine soil type and depth to ledge. High ledge will impact drainage and roadway design and construction.

Clean out outlet pipes (Solution 2).

Install subdrain (Solution 3).

### **Phase II – Detailed Topographic Survey:**

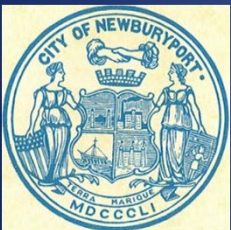
A detailed topographic survey is needed to assist in the design, regardless of which roadway and drainage improvements will be implemented.

### **Phase III – Design:**

The capital improvement projects resulting from this effort will need to be designed by a professional civil engineer.

### **Phase IV – Construction:**

Complete roadway and drainage system construction per Phase III Design.



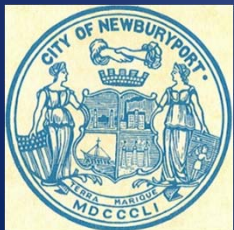
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# What We've Done So Far

Since March 27, 2018 Public Meeting:

- October 2018: DPS installed a catchbasin and a perforated pipe subdrain in Phillips Drive from 19 Phillips down to the stream next to eliminate icing on the road. The Water Department determined it was caused by a leaky service connection and repaired the service. **(Phase 1, Solution 3 Complete)**



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16C Perry Way  
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# What We've Done So Far

## Since March 27, 2018 Public Meeting:

- November 2018: Resident of 6 Drew Street contacted DPS in regards to water actively flowing between the 6 & 8 Drew Street homes, and ends up in their backyards.
  - On November 28, the City of Newburyport's Water Department investigated to determine if the water was a main break or groundwater. The water in question was tested for fluoride and it was determined that the levels were too low of residual to be city water.
  - The water department continued their investigation and found water seeping from landscape timbers at 7 Drew Street (7 Drew Street has had water turned off for a period of time).
  - Sullivan Street was investigated to ensure there was no evidence of a leak in the waterline (Conducted in December by outside contractor, Carl Supper).
  - The Water Department determined that this water in question is groundwater.

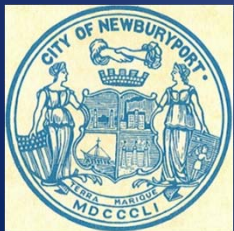
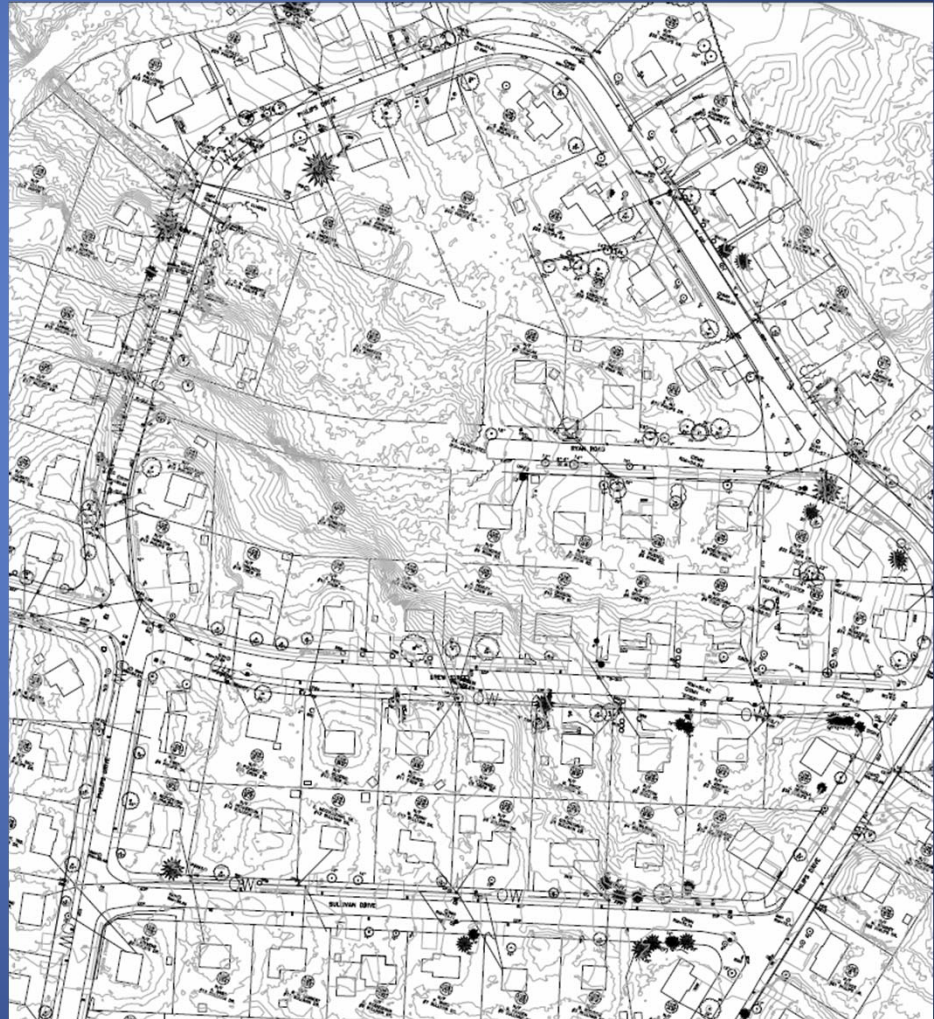


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# What We've Done So Far

Since March 27, 2018 Public Meeting:

- A complete topographic survey of the Philips Neighborhood was completed in the in fall/winter 2018 by Hancock Associates of Danvers, MA and was submitted to the Engineering Division on January 29, 2019.  
**(Phase II Complete)**



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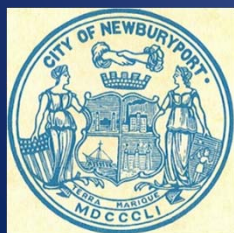


# What We've Done So Far

Since March 27, 2018 Public Meeting:

- May/June 2019: DPS, with the assistance of a private pipe cleaning company, cleaned all of the catch basins in the neighborhood. DPS inspected all of the structures and pipes throughout the neighborhood.

They reported that the drainage pipes and structures were free of debris and were flowing freely. It was also reported that the ground water was high.

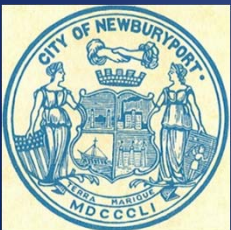


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# What We've Done So Far

## Since March 27, 2018 Public Meeting:

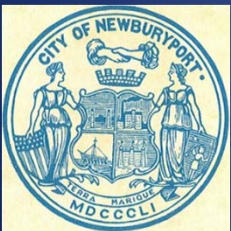
- As part of DPS Water Division's bi-annual water pipe leakage testing, Phillips drive was tested in 2019 and no leaks were detected.
- July 2019, a resident at 24 Phillips contacted the Water Division to investigate what sounded like a leak in her water pipes in her basement. Sump pump was constantly flowing and sending the discharge to the ground surface in her backyard, thereby partially flooding the backyard of 22 Phillips
  - The Water Division closed the valve to her house and the noise stopped so they felt it was a leak after the valve (which is owned by the homeowner)
  - Homeowner contacted a contractor to fix broken pipe connection.
  - No further pumping required and flooding onto 22 Phillips stopped.



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# Latest Developments

- Residents in the neighborhood have informed us that the groundwater issues have been reduced and they have not had the significant flooding problems as they have had in the past.
- Some flooding events were proven to be water main breaks:
  - Ice dam on Phillips Drive (19 Phillips)
  - Water service break at 24 Phillips (4 months flooding)



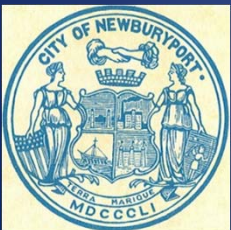
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# Next Steps

- Design:
  - Lower roadway to keep runoff in gutter.
  - Install new drainage structures and larger pipes.
  - Perforated subdrain pipe in roadway (to lower ground water) .
  - Work with residents to connect their foundation drains to main line.
  - Grassed swales to alleviate runoff from heavier storms.
  - Update water lines and additional utility lines as needed.
- Construction:

Construct in Phases, or as funding allows.

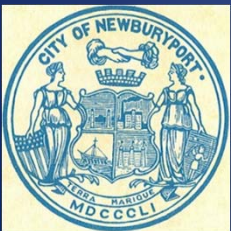


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# Supporting Documentation

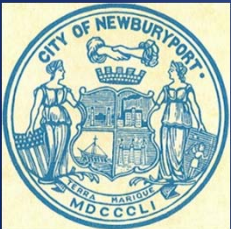
Supporting Evaluation Report, presentation slides and meeting minutes are located on City of Newburyport's Engineering Division Web Page:

<https://www.cityofnewburyport.com/department-of-public-services/engineering-division/pages/phillips-drive-drainage>



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- Q & A
- Any new concerns?



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