

Catchment Complete

OF_206

1) Screen KJMH - please bring supplies to be able to sample potential flow in a deep manhole.

2) May 2023 field staff indicated catchment is connected to UNK-13 catchment. Please confirm the direction of flow - i.e. is OF_206 the correct outfall or UNK-13? Which way is the direction of flow?

3) Does there appear to be an unmapped BMP in the region of UNK-13, OF_207, OF_208, etc.? No need to spend too much time here, Town can investigate further.

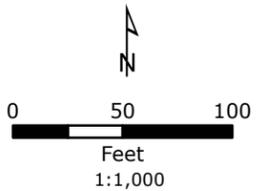
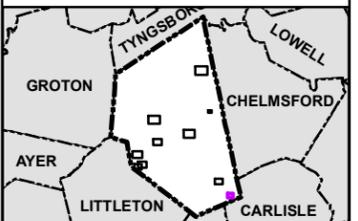


CATCHMENT INVESTIGATIONS GROUP ONE

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- ⊙ Junction Manhole
- Manhole
- Key Junction Catch Basin
- ▣ Junction Catch Basin
- ▤ Catch Basin
- ⊖ Inlet/Water Quality Inlet
- ⦿ Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ✱ BMP Point
- Drain Pipe
- Culvert
- ▨ BMP Polygon
- ▭ Catchment Area
- ▭ Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

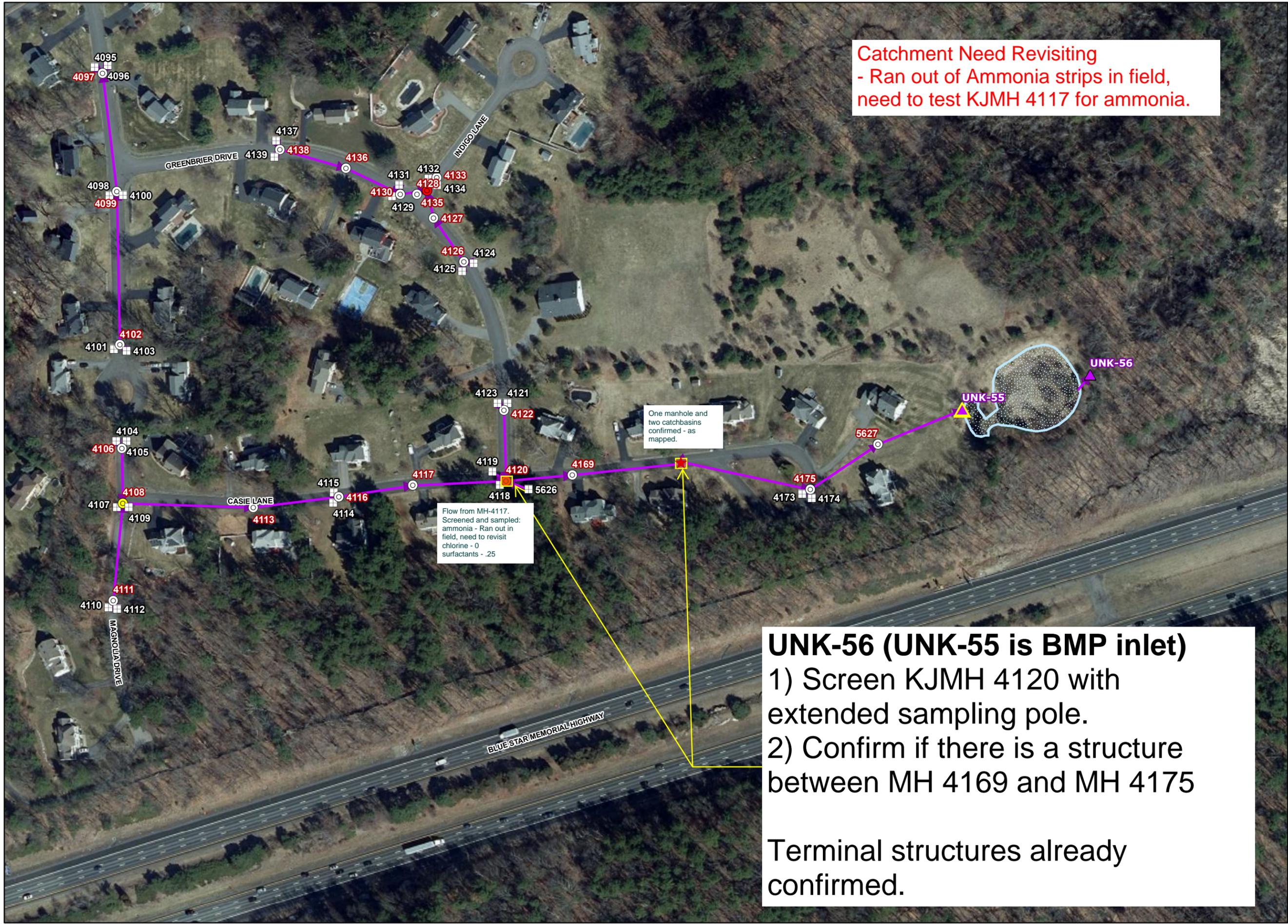
Catchment Area of Outfall: OF_206

Outside Receiving

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**Westford, Massachusetts
November 2023**





Catchment Need Revisiting
 - Ran out of Ammonia strips in field,
 need to test KJMH 4117 for ammonia.

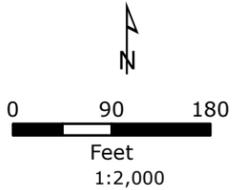
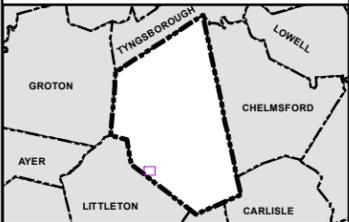
UNK-56 (UNK-55 is BMP inlet)
 1) Screen KJMH 4120 with
 extended sampling pole.
 2) Confirm if there is a structure
 between MH 4169 and MH 4175
 Terminal structures already
 confirmed.

CATCHMENT INVESTIGATIONS GROUP 4

LEGEND

- ▲ Outfall
- ✱ BMP Structure
- Culvert Outlet
- Key Junction Catch Basin
- ▣ Junction Catch Basin
- Catch Basin
- Key Junction Manhole
- Junction Manhole
- Manhole
- Culvert
- Drain Pipe
- ▨ BMP Area
- ▭ Catchment Area
- ▭ Town Boundary

LOCUS MAP



NOTES

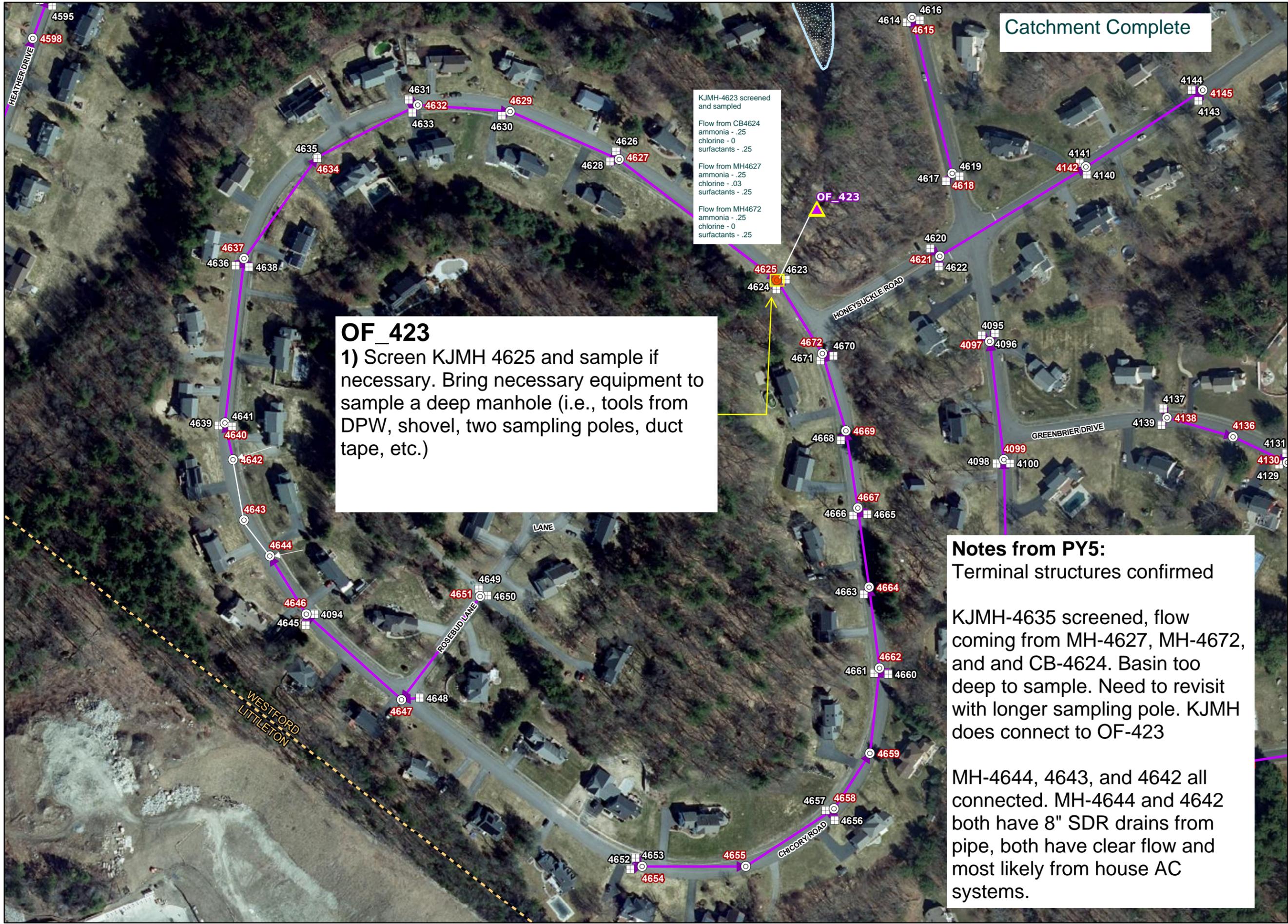
1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.
3. Structure Labels Refer to GIS ID, Outfall Labels Refer to Fieldwork ID.

Catchment Area of UNK-56

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Westford, Massachusetts
 May 2023





Catchment Complete

KJMH-4623 screened and sampled
 Flow from CB4624
 ammonia - .25
 chlorine - 0
 surfactants - .25
 Flow from MH4627
 ammonia - .25
 chlorine - .03
 surfactants - .25
 Flow from MH4672
 ammonia - .25
 chlorine - 0
 surfactants - .25

OF_423
 1) Screen KJMH 4625 and sample if necessary. Bring necessary equipment to sample a deep manhole (i.e., tools from DPW, shovel, two sampling poles, duct tape, etc.)

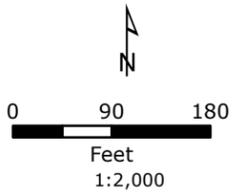
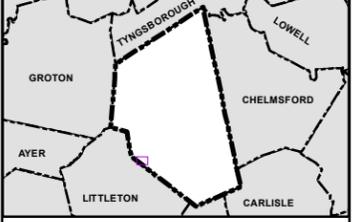
Notes from PY5:
 Terminal structures confirmed
 KJMH-4635 screened, flow coming from MH-4627, MH-4672, and and CB-4624. Basin too deep to sample. Need to revisit with longer sampling pole. KJMH does connect to OF-423
 MH-4644, 4643, and 4642 all connected. MH-4644 and 4642 both have 8" SDR drains from pipe, both have clear flow and most likely from house AC systems.

CATCHMENT INVESTIGATIONS GROUP 4

LEGEND

- Outfall
- BMP Structure
- Culvert Outlet
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Key Junction Manhole
- Junction Manhole
- Manhole
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.
3. Structure Labels Refer to GIS ID, Outfall Labels Refer to Fieldwork ID.

Catchment Area of OF_423

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Westford, Massachusetts
 May 2023



SVF?

Yes - _____

No

Unknown

Police detail needed? Yes No

Notes:

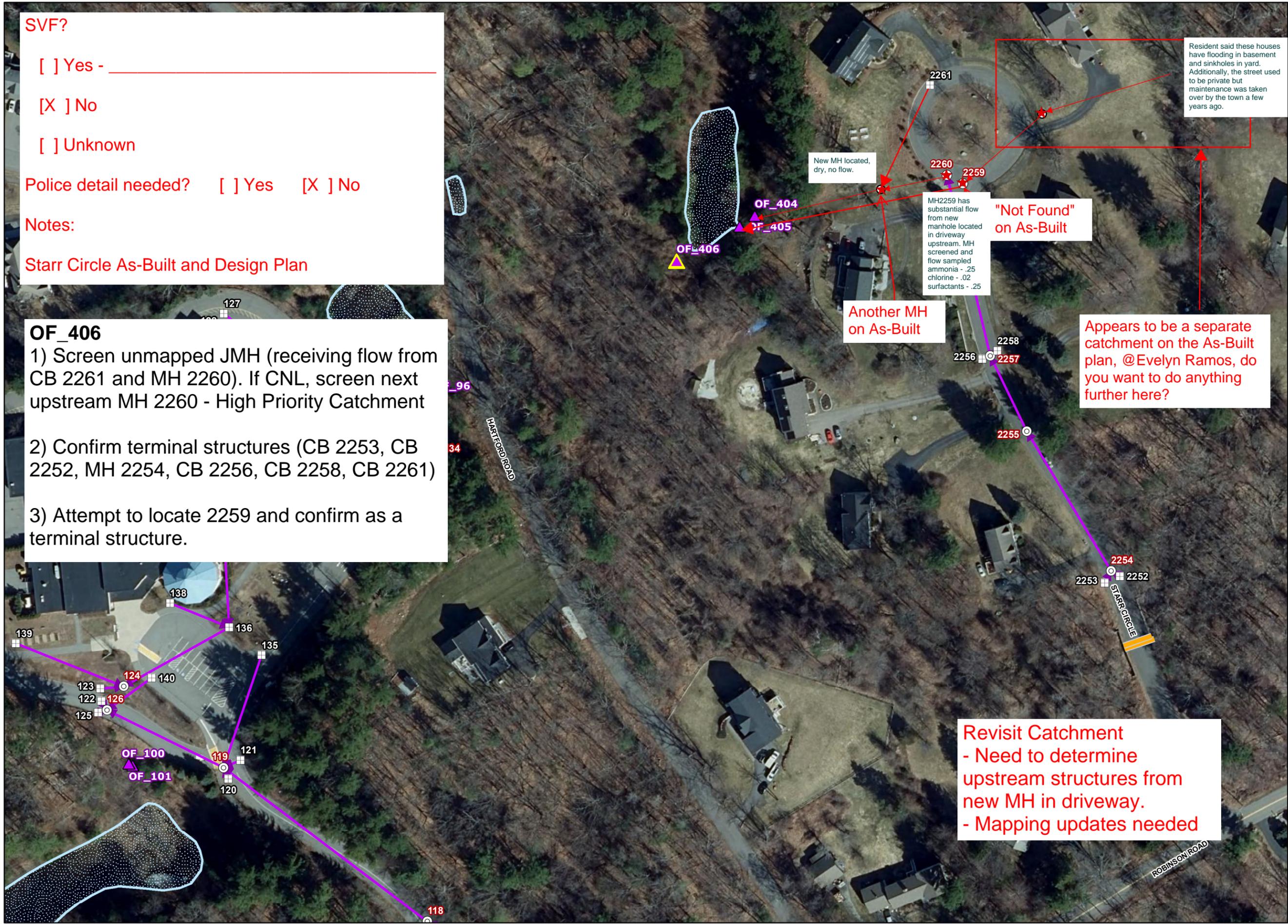
Starr Circle As-Built and Design Plan

OF_406

1) Screen unmapped JMH (receiving flow from CB 2261 and MH 2260). If CNL, screen next upstream MH 2260 - High Priority Catchment

2) Confirm terminal structures (CB 2253, CB 2252, MH 2254, CB 2256, CB 2258, CB 2261)

3) Attempt to locate 2259 and confirm as a terminal structure.

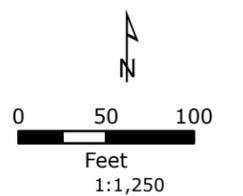
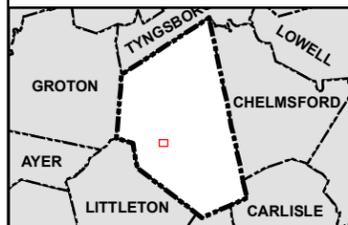


CATCHMENT INVESTIGATIONS MAPPING ISSUES

LEGEND

- Outfall
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Key Junction Manhole
- Junction Manhole
- Manhole
- Drain Pipe
- Culvert
- BMP Point
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of Outfall: OF_406

Westford, Massachusetts
April 2023



Revisit Catchment
- Need to determine upstream structures from new MH in driveway.
- Mapping updates needed

SVF?

Yes - _____

No

Unknown

Police detail needed? Yes No

Notes:

See Overlook Circle Plan

OF_375 (High Priority Catchment) - OF_375 appears to be BMP inlet, Town should investigate correct outfall structure.

- 1) Screen MH upstream of OF_375
- 2) Confirm terminal structure (CB 4553) and confirm drainage is as mapped in the record plan.

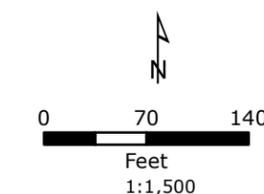
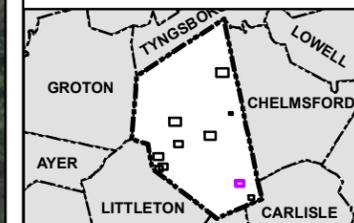
Catchment Complete
- Mapping updates needed

CATCHMENT INVESTIGATIONS GROUP ONE

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of
Outfall: OF_375

Outside Receiving

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Westford, Massachusetts
November 2023

Tighe & Bond

Detail from Town and based on record plan

Terminal structures confirmed

One MH and CB located, mapped as new data points. flow sampled at MH:
ammonia - .25
chlorine - .01
surfactants - .25

Catchment Complete

OF_206

1) Screen KJMH - please bring supplies to be able to sample potential flow in a deep manhole.

2) May 2023 field staff indicated catchment is connected to UNK-13 catchment. Please confirm the direction of flow - i.e. is OF_206 the correct outfall or UNK-13? Which way is the direction of flow?

3) Does there appear to be an unmapped BMP in the region of UNK-13, OF_207, OF_208, etc.? No need to spend too much time here, Town can investigate further.

flow from CB1899 flowing towards OF screened and sampled ammonia - 0 chlorine - .03 surfactants - .25

Previously known as UNK-13 catchment, connects to OF_206 catchment

As per field investigations in May 2023 - these DNE.

According to May 2023 field staff, this is the location of the outfall. *Flow goes*

No flow south of MH1900, but all structures from MH1895 go towards OF_206.

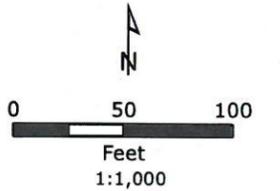
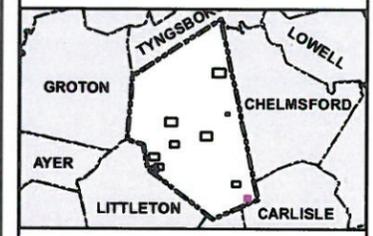
LEP - please confirm if there appears to be a BMP structure here (UNK-13 and OF_207 appear to be BMP inlets and OF_208 appears to be an outlet?) and confirm terminal structures (CB 1901). Record plan attached on the next page.

CATCHMENT INVESTIGATIONS GROUP ONE

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- ▣ Junction Catch Basin
- ▣ Catch Basin
- ⊙ Inlet/Water Quality Inlet
- ⊙ Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ⊙ BMP Point
- Drain Pipe
- Culvert
- ▭ BMP Polygon
- ▭ Catchment Area
- ▭ Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_206

Outside Receiving

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Westford, Massachusetts
November 2023



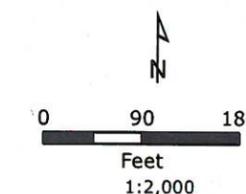
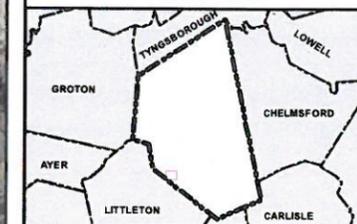
OF-208 is the BMP outlet

CATCHMENT INVESTIGATIONS GROUP 4

LEGEND

- ▲ Outfall
- ⊗ BMP Structure
- ⊙ Culvert Outlet
- ⊕ Key Junction Catch Basin
- ⊞ Junction Catch Basin
- ⊠ Catch Basin
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.
3. Structure Labels Refer to GIS ID, Outfall Labels Refer to Fieldwork ID.

Catchment Area of UNK-56

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Westford, Massachusetts
May 2023



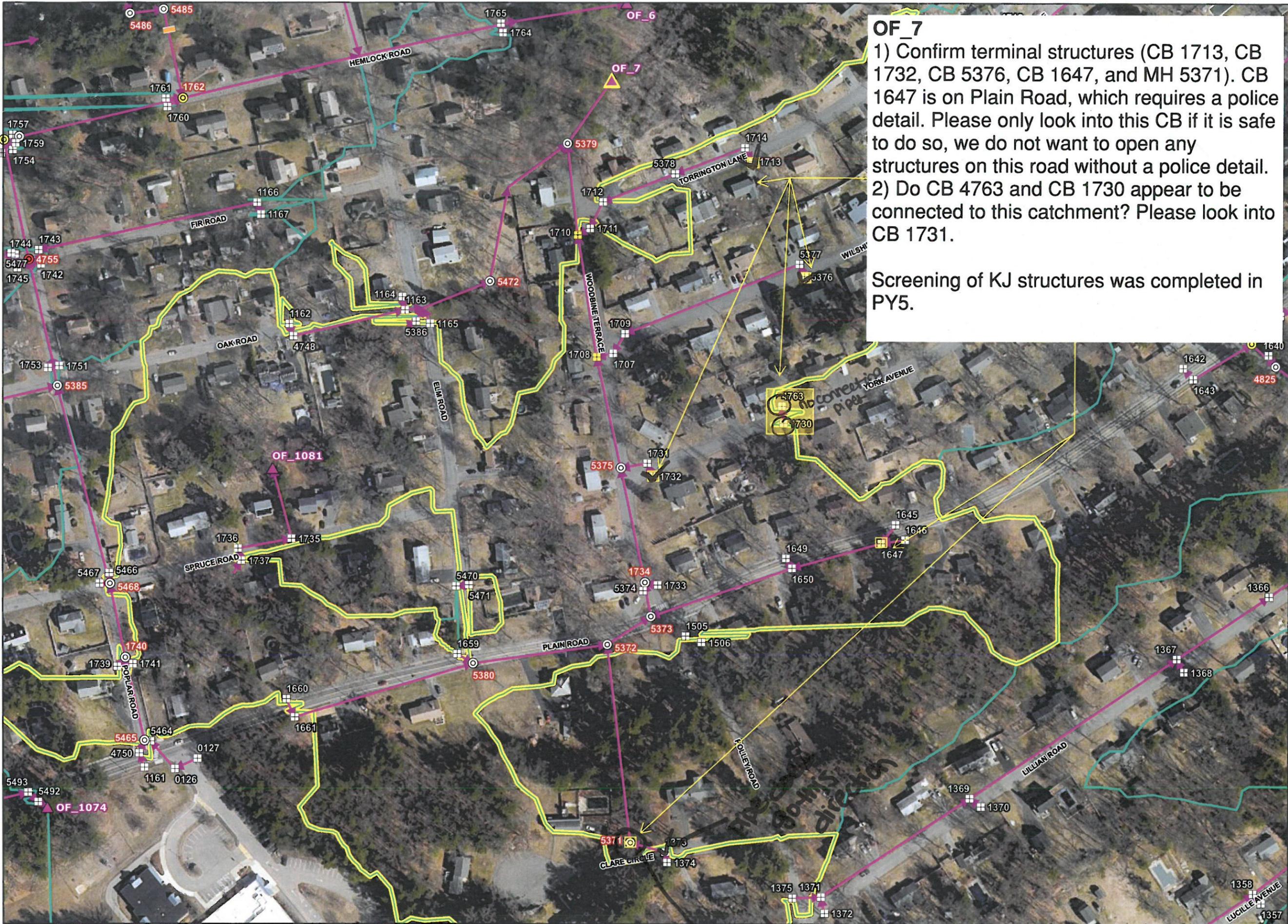
Catchment Need Revisiting
- Ran out of Ammonia strips in field, need to test KJMH 4117 for ammonia.

One manhole and two catchbasins confirmed - as mapped.

Flow from MH-4117. Screened and sampled: ammonia - Ran out in field, need to revisit chlorine - 0 surfactants - .25

LEP - please screen MH again and test for ammonia if flowing

UNK-56 (UNK-55 is BMP inlet)
1) Screen KJMH 4120 with extended sampling pole.
2) Confirm if there is a structure between MH 4169 and MH 4175
photos of MH-4120 @ 8:30 AM
Terminal structures already confirmed.

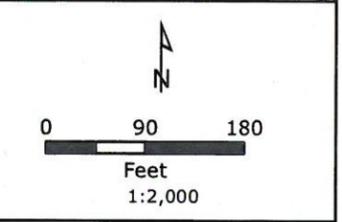
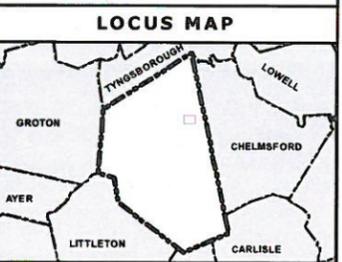


OF_7
 1) Confirm terminal structures (CB 1713, CB 1732, CB 5376, CB 1647, and MH 5371). CB 1647 is on Plain Road, which requires a police detail. Please only look into this CB if it is safe to do so, we do not want to open any structures on this road without a police detail.
 2) Do CB 4763 and CB 1730 appear to be connected to this catchment? Please look into CB 1731.
 Screening of KJ structures was completed in PY5.

CATCHMENT INVESTIGATIONS GROUP 4

LEGEND

- Outfall
- BMP Structure
- Culvert Outlet
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Key Junction Manhole
- Junction Manhole
- Manhole
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.
3. Structure Labels Refer to GIS ID, Outfall Labels Refer to Fieldwork ID.

Catchment Area of OF_7

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Westford, Massachusetts
 May 2023



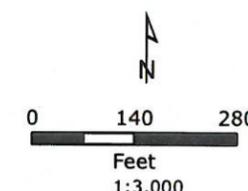
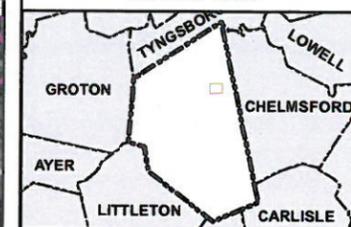
buried curb used leaf blower + could not find

CATCHMENT INVESTIGATIONS SCHOOL PROPERTY

LEGEND

-  Outfall
-  Key Junction Catch Basin
-  Junction Catch Basin
-  Catch Basin
-  Key Junction Manhole
-  Junction Manhole
-  Manhole
-  Culvert
-  Drain Pipe
-  BMP Point
-  BMP Area
-  Catchment Area
-  Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Nabnasset School

Catchment Area of KJM_H_4920

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Westford, Massachusetts

April 2023

Tighe & Bond



OF_6
Screen potential KJ structure at Hemlock and Elm Street. If that does not exist, please screen MH 1806.
no structure at intersection screened 1806.
All terminal structures confirmed
ammonia = 0.0
surfactants = 0.25
chlorine = 0.6

SVF?

Yes - _____

No

Unknown

Police detail needed? Yes No

Notes:

True Bean Subdivision As-Built Plans

OF_571

1) Screen KJMH 4277.

2) Confirm terminal structures (MH 4282, CBs 4283, 4284, 4286, 4269, 4268, 4273, 4272, 4276, 4275, 4278, 4289, 4288, MH 4290, CBs 4292, 4293, MH 4295)

visited woodland drive.

Can confirm terminal structures for OF_530 while we are there - CBs 4262 & 4261, and MH 4261 (not pictured in this mapbook)

ONLY THIS MAP - DIFFERENT IDS??

BMP Inlets as per record plan

OF_565 appears to be BMP outlet to MH 4282 as per record plan and 2019 survey data

OF_565 appears to be BMP outlet to MH 4291 as per record plan and 2019 survey data

CNL OF_566 in record plan. 2019 survey data indicates it may be an overflow structure for BMP. Difficult to tell in photos

Likely the correct outfall - stone spillway from BMP as per 2019 survey data

Likely the correct outfall - BMP overflow as per record plan and survey data from 2019

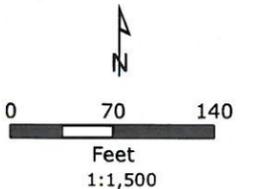
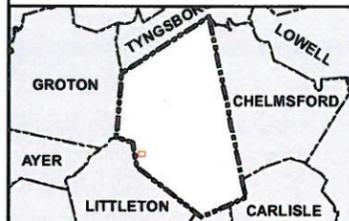
BMP Inlets as per record plan

CATCHMENT INVESTIGATIONS MAPPING ISSUES

LEGEND

- Outfall
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Key Junction Manhole
- Junction Manhole
- Manhole
- Drain Pipe
- Culvert
- BMP Point
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of Outfall: OF_564

Westford, Massachusetts
April 2023



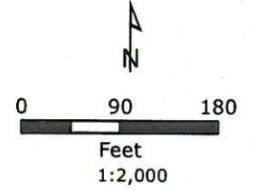


CATCHMENT INVESTIGATIONS MAPPING ISSUES

LEGEND

- Outfall
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Key Junction Manhole
- Junction Manhole
- Manhole
- Drain Pipe
- Culvert
- BMP Point
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of Outfall: OF_1043

**Westford, Massachusetts
April 2023**



OF_1043
 1) Screen KJMH
 ↳ buried; visited DMH-5302 photo at 12:10PM
 2) Confirm terminal structures (CB 1397, 1419, 1434, 4918, 1435, 1430, 1449, 1447)
 3) Investigate CB1429, does it connect to the catchment? - connects to CB1431

As per Town, these three structures appear to be buried. **BURIED**

manhole bunch

SVF?
 Yes - _____
 No
 Unknown
 Police detail needed? Yes No
 Notes: **DMH-5499**
KJMH Buried opened MH-5362 & saw pipe 3734; pipe partially submerged no flow

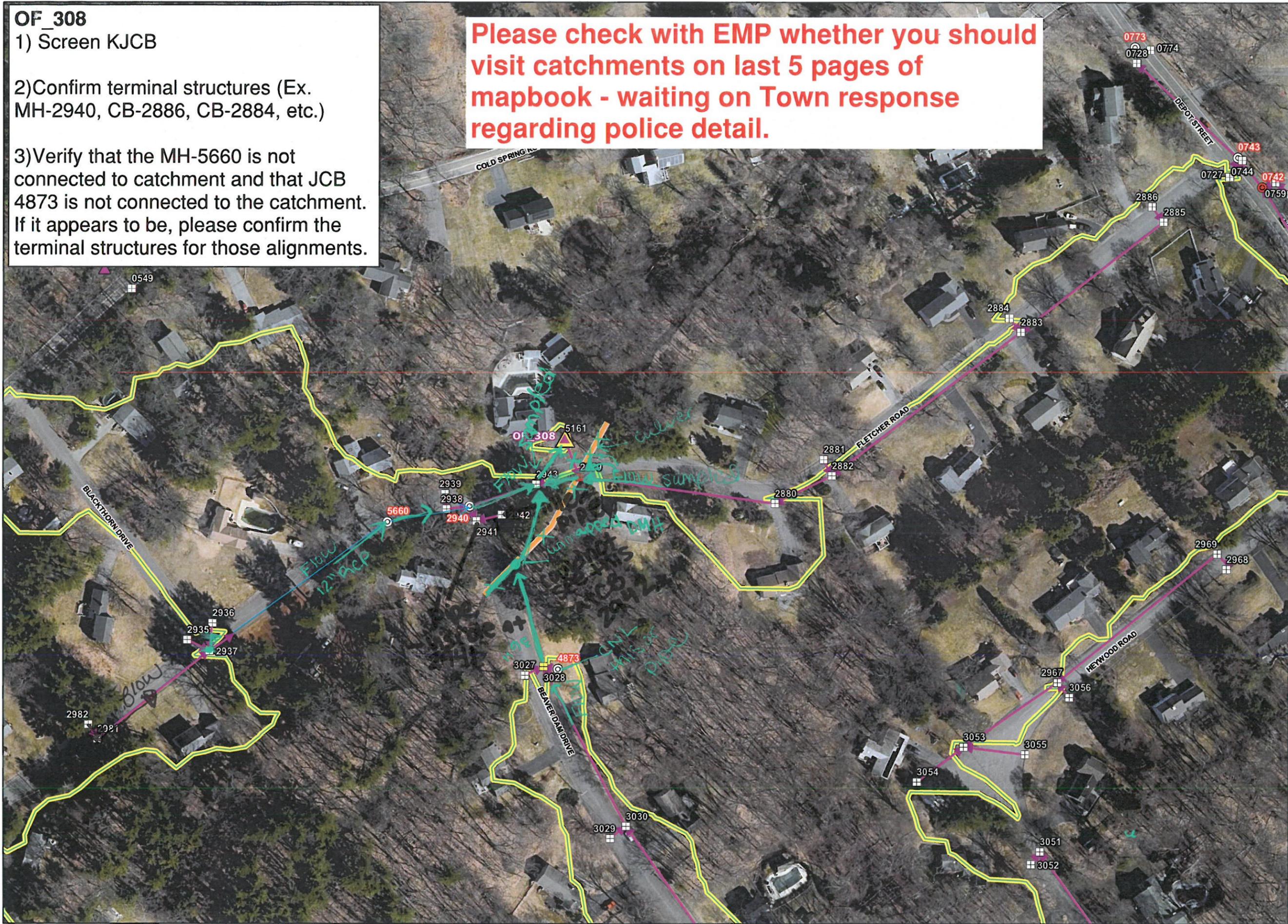
OF_308

1) Screen KJCB

2) Confirm terminal structures (Ex. MH-2940, CB-2886, CB-2884, etc.)

3) Verify that the MH-5660 is not connected to catchment and that JCB 4873 is not connected to the catchment. If it appears to be, please confirm the terminal structures for those alignments.

Please check with EMP whether you should visit catchments on last 5 pages of mapbook - waiting on Town response regarding police detail.

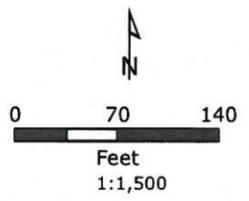
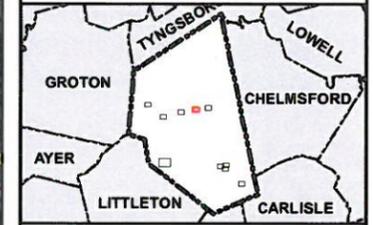


CATCHMENT INVESTIGATIONS GROUP 1A

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- ⊙ Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- ⊙ Inlet/Water Quality Inlet
- ⊙ Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ⊙ BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- ▭ Catchment Area
- ▭ Town Boundary

LOCUS MAP



NOTES

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2. Stormwater data provided by the Town of Westford (2023).

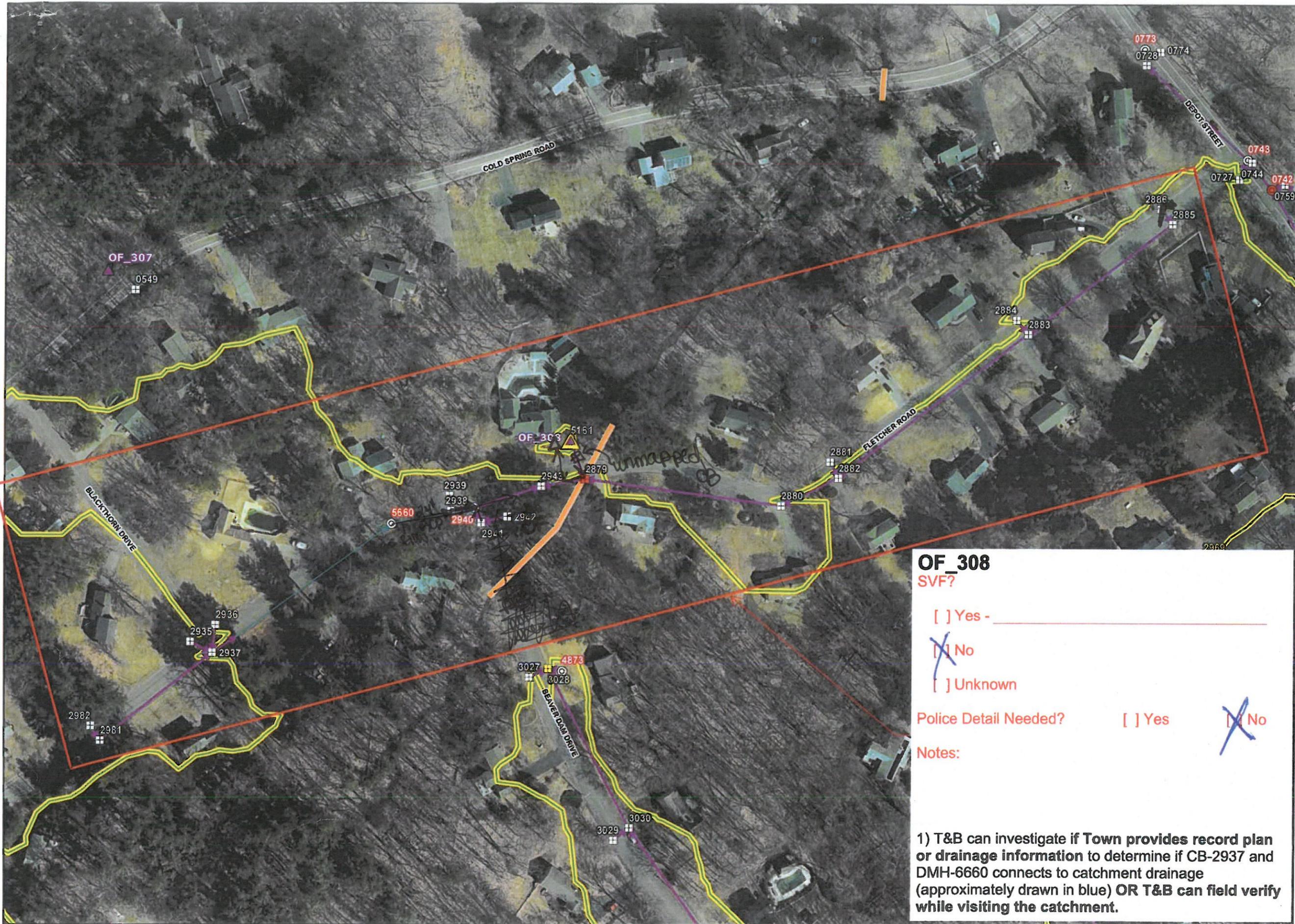
Catchment Area of Outfall: OF_308

Outside Receiving

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**Westford, Massachusetts
December 2023**



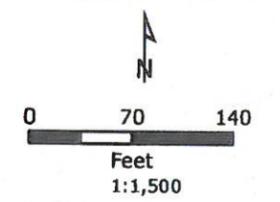
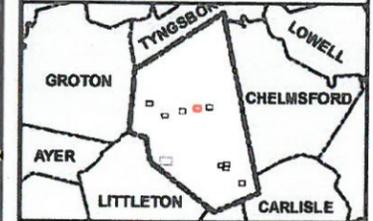


CATCHMENT INVESTIGATIONS GROUP 1A

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

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2. Stormwater data provided by the Town of Westford (2023).

OF_308 SVF?

- Yes - _____
- No
- Unknown

Police Detail Needed? Yes No

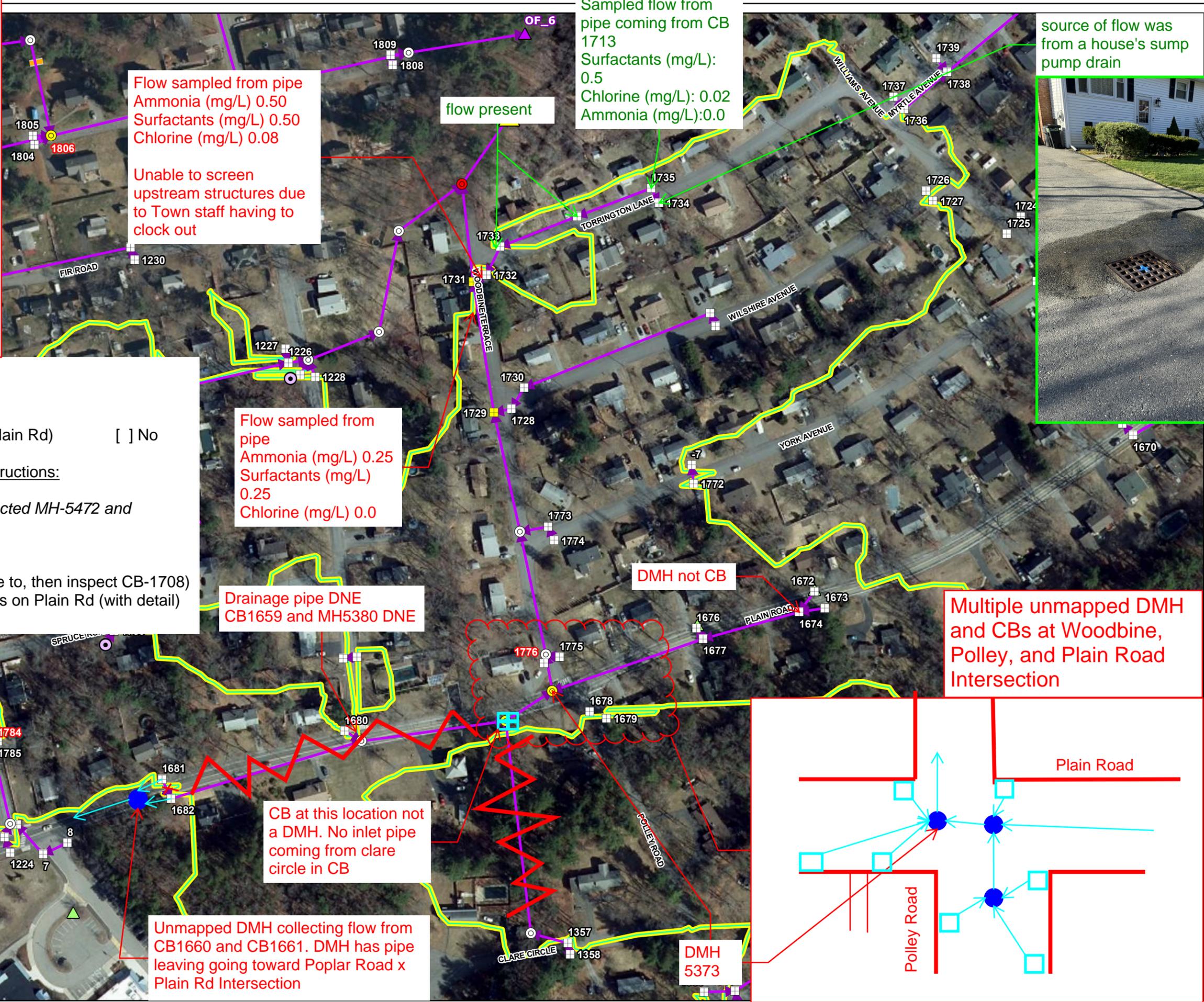
Notes:

1) T&B can investigate if Town provides record plan or drainage information to determine if CB-2937 and DMH-6660 connects to catchment drainage (approximately drawn in blue) OR T&B can field verify while visiting the catchment.

Catchment Area of Outfall: OF_308
 Outside Receiving
 Page 2 out of 10
 Westford, Massachusetts
 December 2023



On this page only red markups indicate work done on 4/16/24. Green indicates work done on 4/17/2024



Flow sampled from pipe
 Ammonia (mg/L) 0.50
 Surfactants (mg/L) 0.50
 Chlorine (mg/L) 0.08

Unable to screen upstream structures due to Town staff having to clock out

Sampled flow from pipe coming from CB 1713
 Surfactants (mg/L): 0.5
 Chlorine (mg/L): 0.02
 Ammonia (mg/L): 0.0

source of flow was from a house's sump pump drain



Flow sampled from pipe
 Ammonia (mg/L) 0.25
 Surfactants (mg/L) 0.25
 Chlorine (mg/L) 0.0

Drainage pipe DNE
 CB1659 and MH5380 DNE

Multiple unmapped DMH and CBs at Woodbine, Polley, and Plain Road Intersection

CB at this location not a DMH. No inlet pipe coming from clare circle in CB

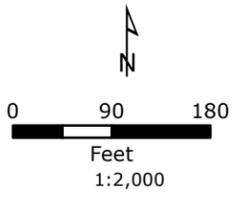
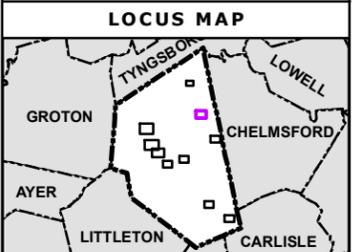
Unmapped DMH collecting flow from CB1660 and CB1661. DMH has pipe leaving going toward Poplar Road x Plain Rd Intersection

DMH 5373

CATCHMENT INVESTIGATIONS GROUP THREE

LEGEND

- Catchment Area
- Manhole
- Catch Basin
- Catch Basin Inlet
- Stormwater Structure
- Inlet
- Structure
- Road Section
- Stormwater Structure
- Inlet
- Polygon
- Catchment Area
- Town Boundary



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_7

Outside Receiving

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Westford, Massachusetts
 November 2023

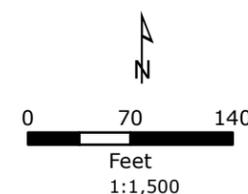
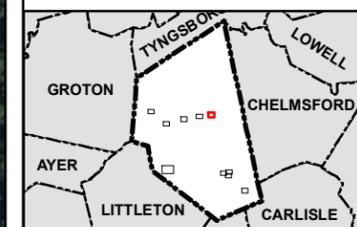


CATCHMENT INVESTIGATIONS GROUP 1A

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: UNK-49

Outside Receiving

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**Westford, Massachusetts
December 2023**



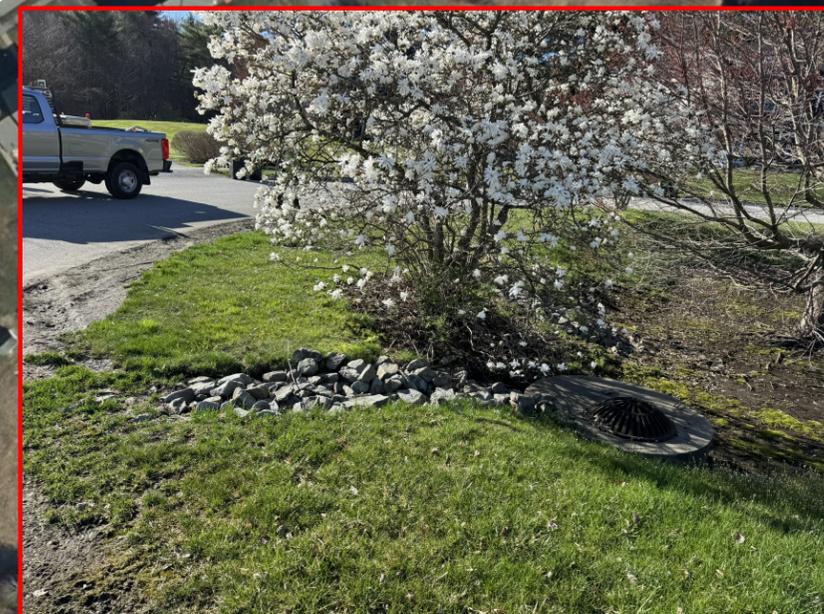
UNK-49

13 Boxwood Rd

Town describes structures as clean-outs, confirm terminal structure is possible. If not possible, try to confirm orange feature, described as an outlet structure

No junction / KJ

See data issue point for Town provided recording drawing.



Orange figure is bmp outlet structure

riprap at this location, did not see any other drainage structure

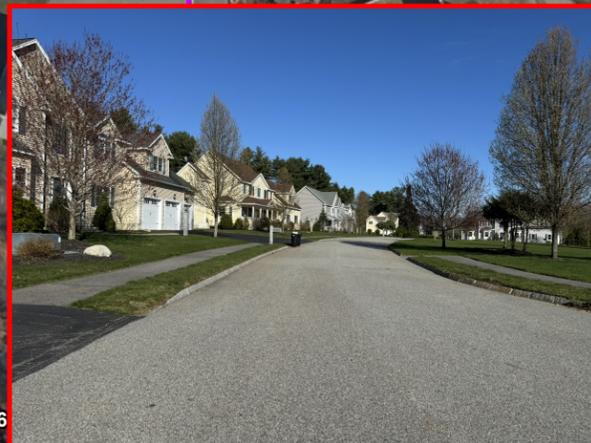


Photo of this area, did not see any drainage structure



Photo of this area, did not see any drainage structure

#11 Boxwood Rd

#15 Boxwood Rd

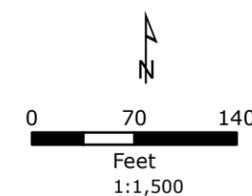
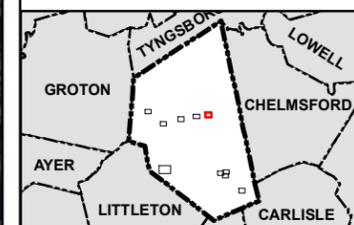


CATCHMENT INVESTIGATIONS GROUP 1A

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: UNK-49

Outside Receiving

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**Westford, Massachusetts
December 2023**



OF_308

13 Beaver Dam Drive

Need to inspect KJ CB3034 and confirm terminal structures on Beaver Dam Drive

Some work already completed on 12/15/24

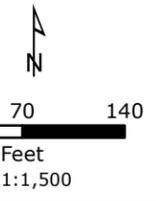
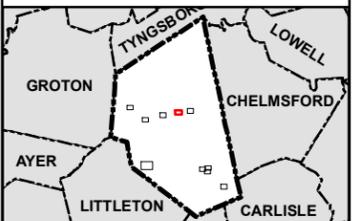


CATCHMENT INVESTIGATIONS GROUP 1A

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ✱ BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_308

Outside Receiving

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Westford, Massachusetts
December 2023

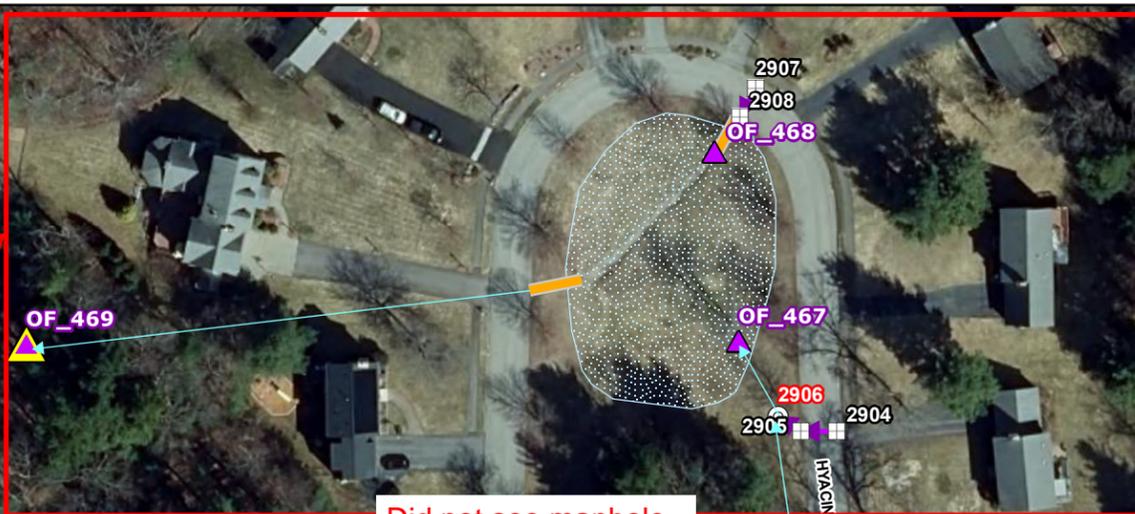


OF_469
15 Hyacinth Dr

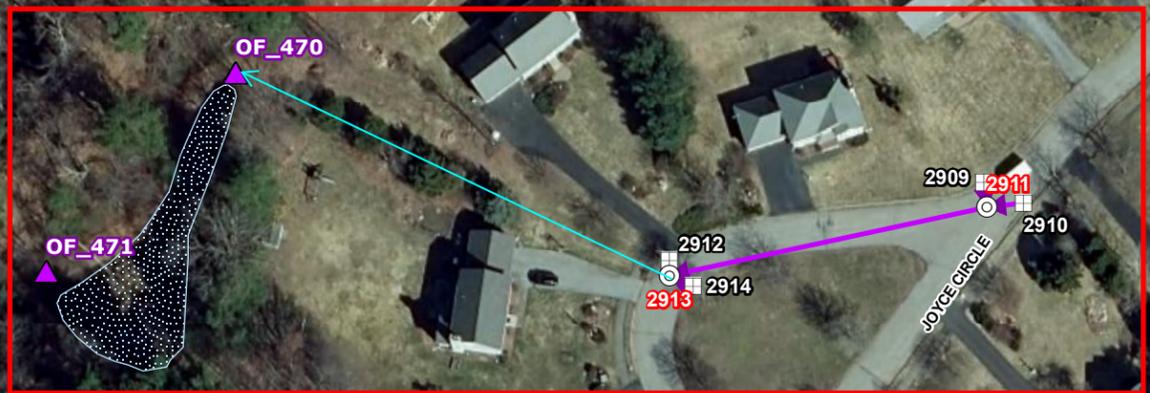
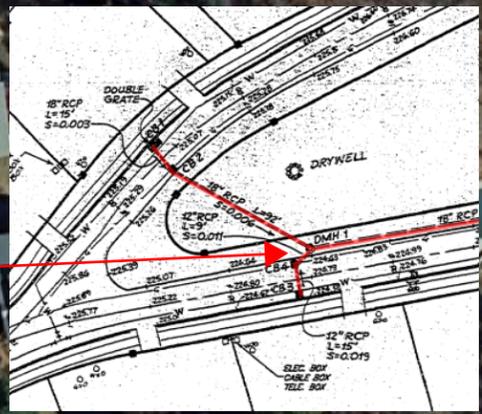
Confirm terminal structures: CB2907, CB2904, CB2902 and CB2916 - **all confirmed**

KJ structure inspection: DMH-2906

See data issue point for Town provided recording drawing.



Did not see manhole mapped in record drawings otherwise mapping appeared accurate at CB 2903 and 2915. There were pipes directed toward mapped DMH location.



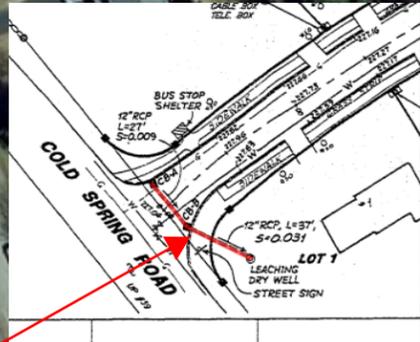
OF_471
7 Joyce Circle

Confirm terminal structures: CB2909, DMH 2911, and CB2910 - **all confirmed**

No junction / KJ

See data issue point for Town provided recording drawing.

There was a pipe leaving CB2900 as mapped in record drawings, did not see outlet

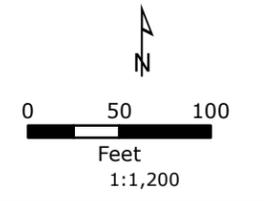
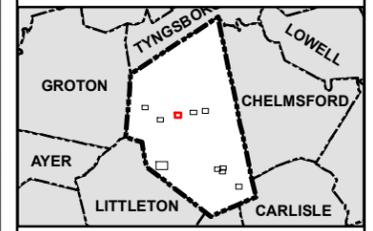


CATCHMENT INVESTIGATIONS GROUP 1A

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- ▣ Catch Basin
- ⊕ Inlet/Water Quality Inlet
- Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ⊗ BMP Point
- Drain Pipe
- Culvert
- ⬢ BMP Polygon
- ⬢ Catchment Area
- ⬢ Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_469
Outside Receiving
Page 3 out of 10
Westford, Massachusetts
December 2023





Area where pipe was directed coming from

Inlet 8" HDPE, could not locate where this was coming from



Unmapped pipe leaving CB2317 directed toward OF_386

Located outfall that appeared to be leaving CB2317 - unsure if this is OF_386 that was previously inspected

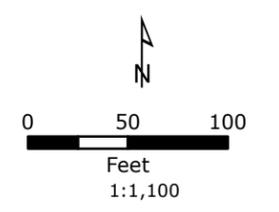
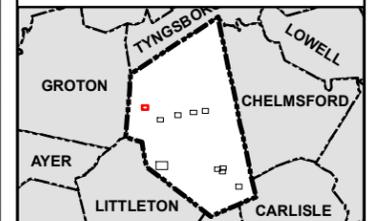


CATCHMENT INVESTIGATIONS GROUP 1A

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- ▣ Junction Catch Basin
- ▣ Catch Basin
- ⊙ Inlet/Water Quality Inlet
- Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ⊙ BMP Point
- Drain Pipe
- Culvert
- ▨ BMP Polygon
- ▭ Catchment Area
- ▭ Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_383

Outside Receiving

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Westford, Massachusetts
December 2023



OF_383
4 Stoneview Dr
Confirm terminal structures: DMH-2312, CB2313, CB2314, CB2315 - **confirmed**
No junction / KJ

OF_385
2 Stoneview Dr
Confirm terminal structure: CB2299 - **confirmed**
No junction / KJ

OF_386
11 Stoneview Dr
Confirm terminal structure: CB2316
Check CB2317 for mapping, as-built doesn't appear to show an outlet for it
No junction / KJ

See data issue points for Town provided recording drawing.

Unmapped Outfall

9 Misty Lane

KJ inspection: DMH-4383
Confirm terminal structures

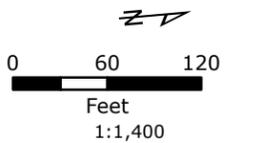
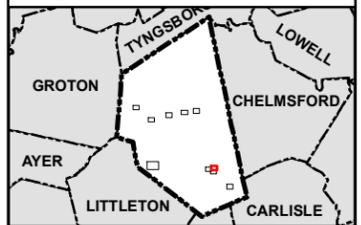
See data issue points for Town provided recording drawing.

CATCHMENT INVESTIGATIONS GROUP 1A

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_179

Outside Receiving

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Westford, Massachusetts

December 2023



Pipe leaving DMH was dry.
Pipes entering from CBs were both dry

Pipe leaving DMH (to 4390) was dry.
Pipes entering from CBs were both dry

Flow sampled from pipe coming from DMH 4392
Surfactants (mg/L): 0.5
Chlorine (mg/L): 0.10
Ammonia (mg/L): 0.0

Pipe from DMH had trickle flow but manhole was too deep to sample with pole

Flow sampled from pipe coming from DMH 4392
Surfactants (mg/L): 0.5
Chlorine (mg/L): 0.02
Ammonia (mg/L): 0.0

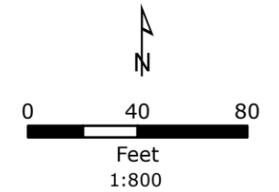
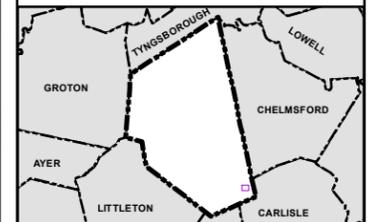
Unmapped outfall that appears on Town provided as-built plans

CATCHMENT INVESTIGATIONS GROUP 4

LEGEND

-  Outfall
-  BMP Structure
-  Culvert Outlet
-  Key Junction Catch Basin
-  Junction Catch Basin
-  Catch Basin
-  Key Junction Manhole
-  Junction Manhole
-  Manhole
-  Culvert
-  Drain Pipe
-  BMP Area
-  Catchment Area
-  Town Boundary

LOCUS MAP



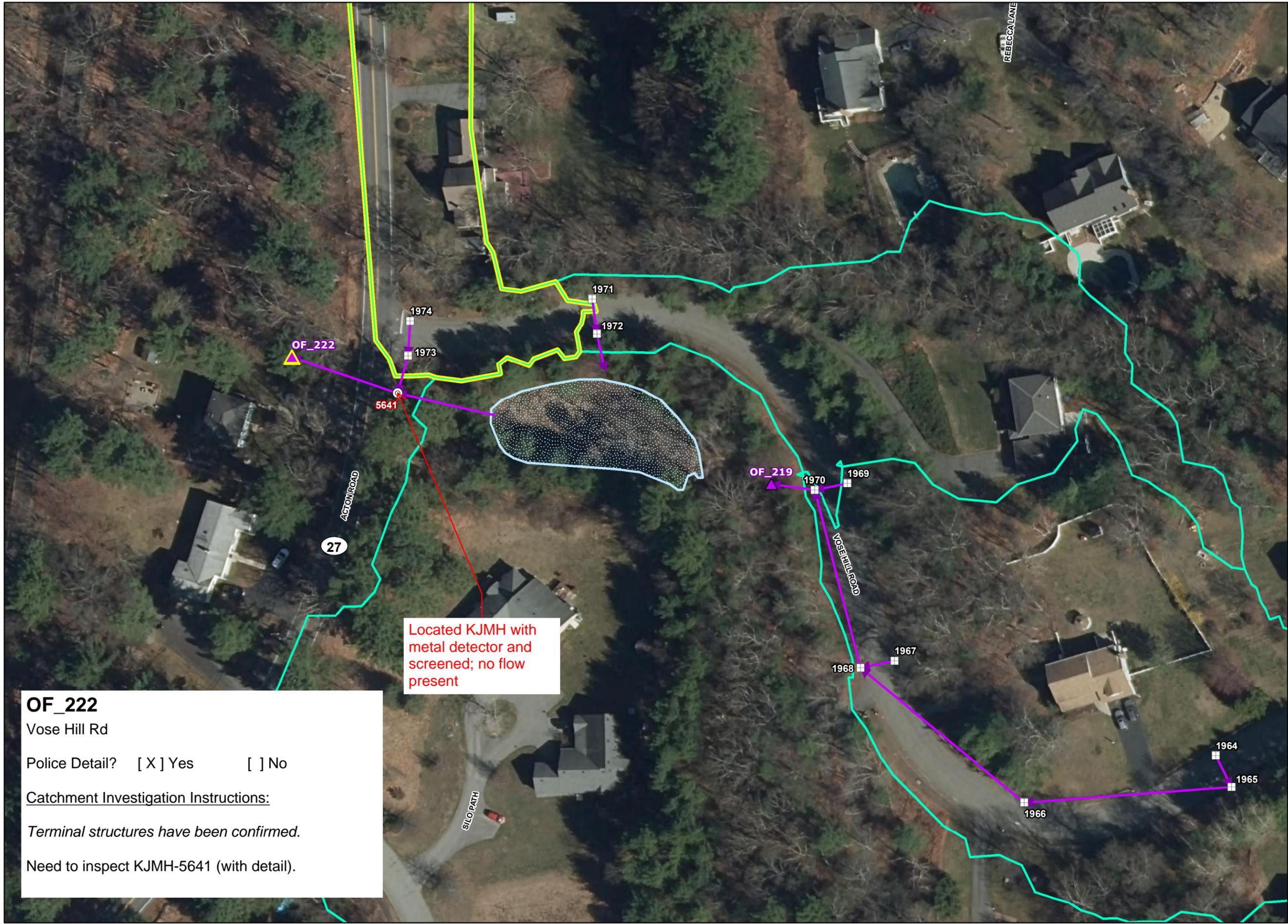
NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.
3. Structure Labels Refer to GIS ID, Outfall Labels Refer to Fieldwork ID.

Catchment Area of OF_222

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**Westford, Massachusetts
May 2023**



Located KJMH with metal detector and screened; no flow present

OF_222
Vose Hill Rd

Police Detail? Yes No

Catchment Investigation Instructions:
Terminal structures have been confirmed.

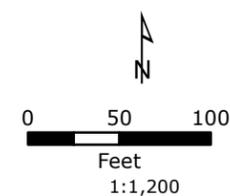
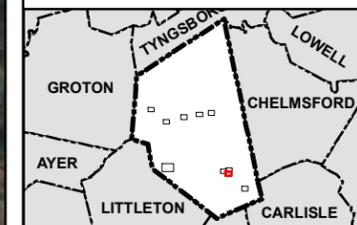
Need to inspect KJMH-5641 (with detail).

CATCHMENT INVESTIGATIONS GROUP 1A

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

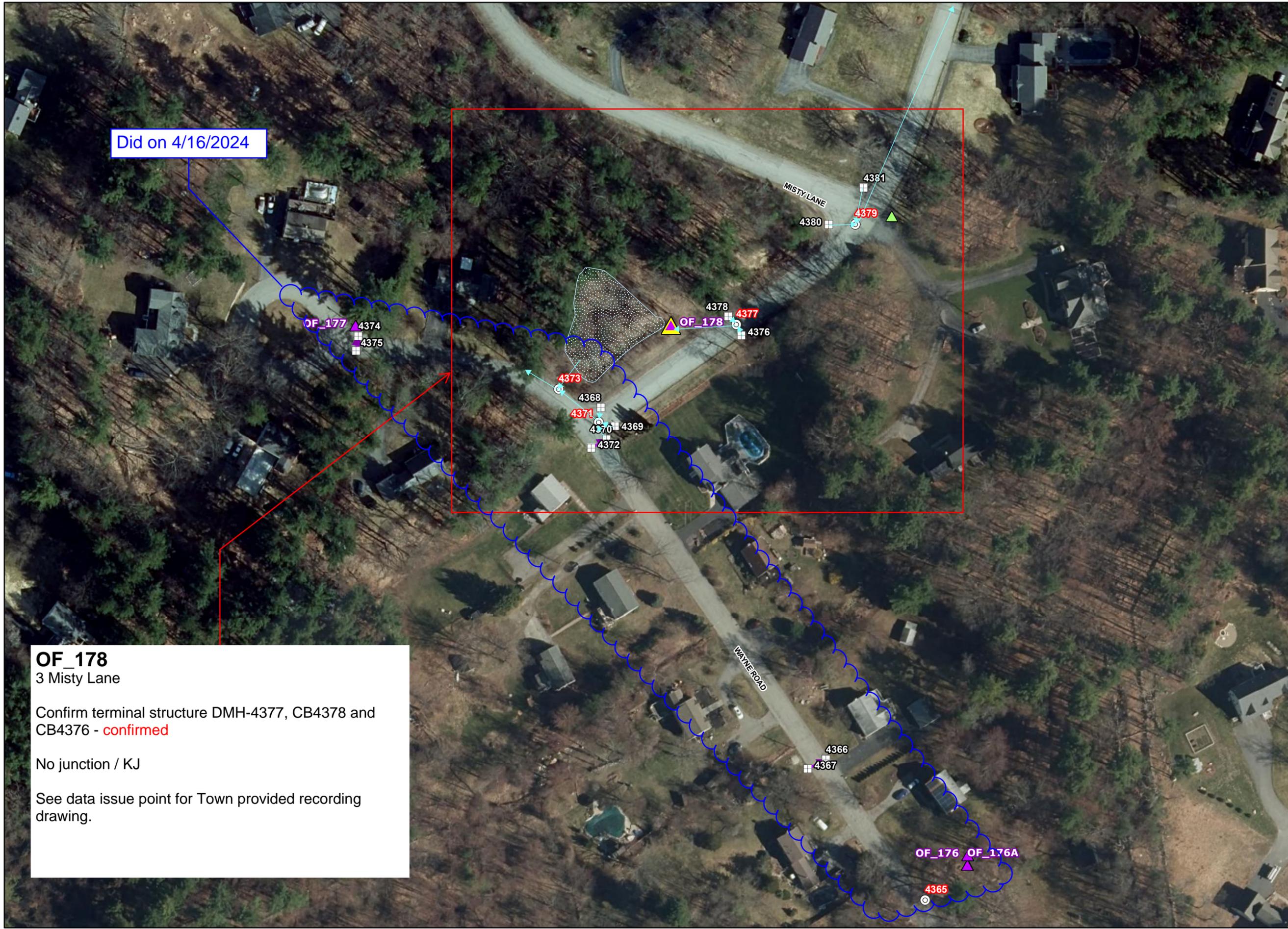
1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_178

Outside Receiving

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**Westford, Massachusetts
December 2023**



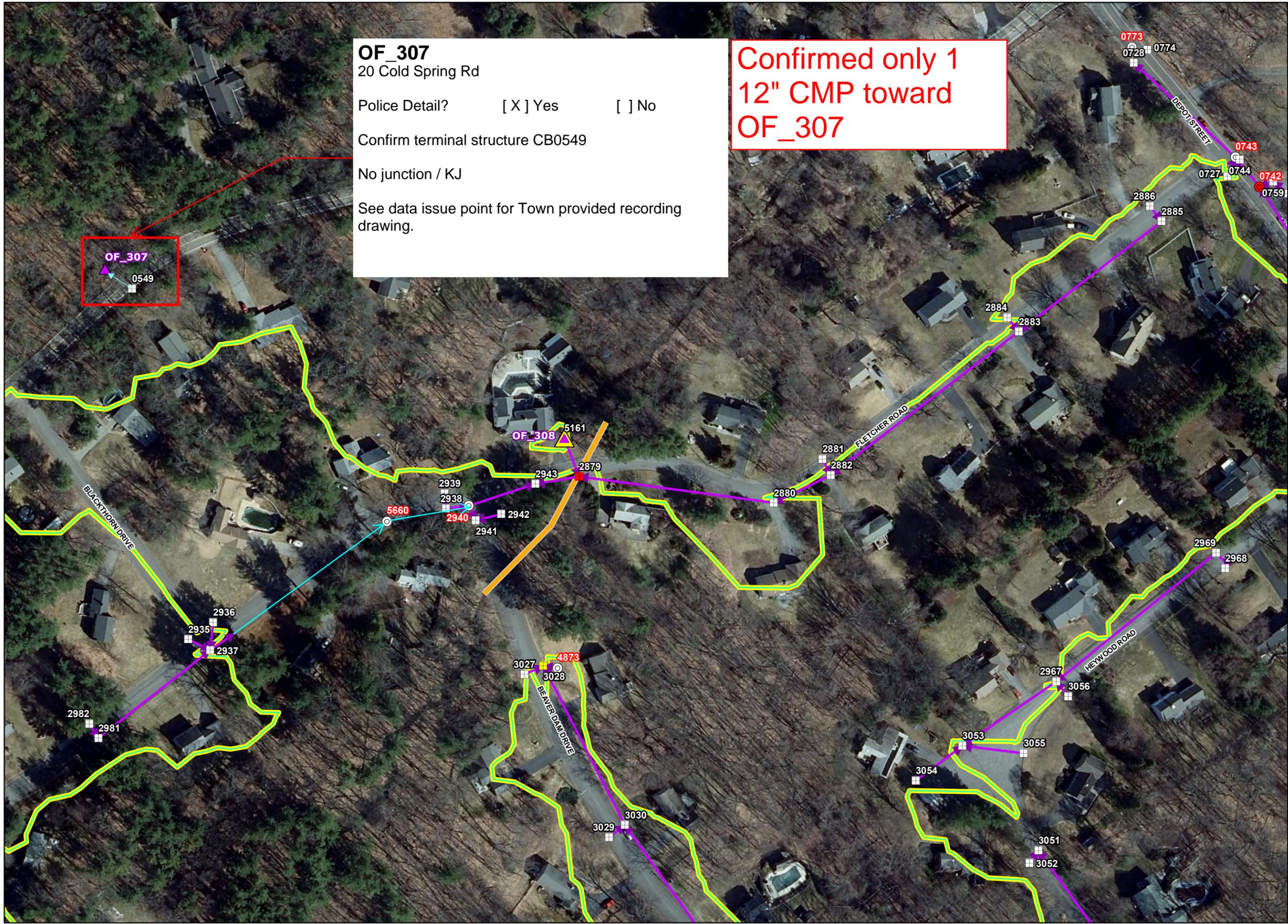
OF_178

3 Misty Lane

Confirm terminal structure DMH-4377, CB4378 and CB4376 - **confirmed**

No junction / KJ

See data issue point for Town provided recording drawing.



OF_307
 20 Cold Spring Rd

Police Detail? Yes No

Confirm terminal structure CB0549

No junction / KJ

See data issue point for Town provided recording drawing.

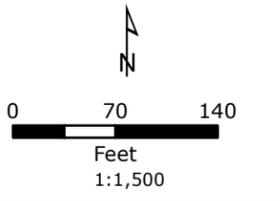
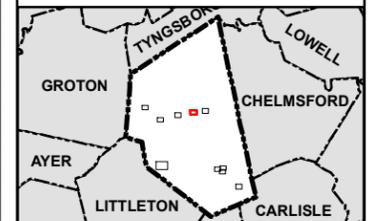
**Confirmed only 1
 12" CMP toward
 OF_307**

OF_307
 0549

CATCHMENT INVESTIGATIONS GROUP 1A

- LEGEND**
- ▲ Outfall
 - ⊗ Interconnection
 - Key Junction Manhole
 - Junction Manhole
 - ⊙ Manhole
 - Key Junction Catch Basin
 - ▣ Junction Catch Basin
 - ▤ Catch Basin
 - ⊖ Inlet/Water Quality Inlet
 - ⊕ Outlet
 - ▲ Overflow Structure
 - ▲ Flared End Section
 - ▲ Other Stormwater Structure
 - ✱ BMP Point
 - Drain Pipe
 - Culvert
 - ▨ BMP Polygon
 - ▭ Catchment Area
 - ▭ Town Boundary

LOCUS MAP



- NOTES**
1. Based on MassGIS Color Orthophotography (2021).
 2. Stormwater data provided by theTown of Westford (2023).

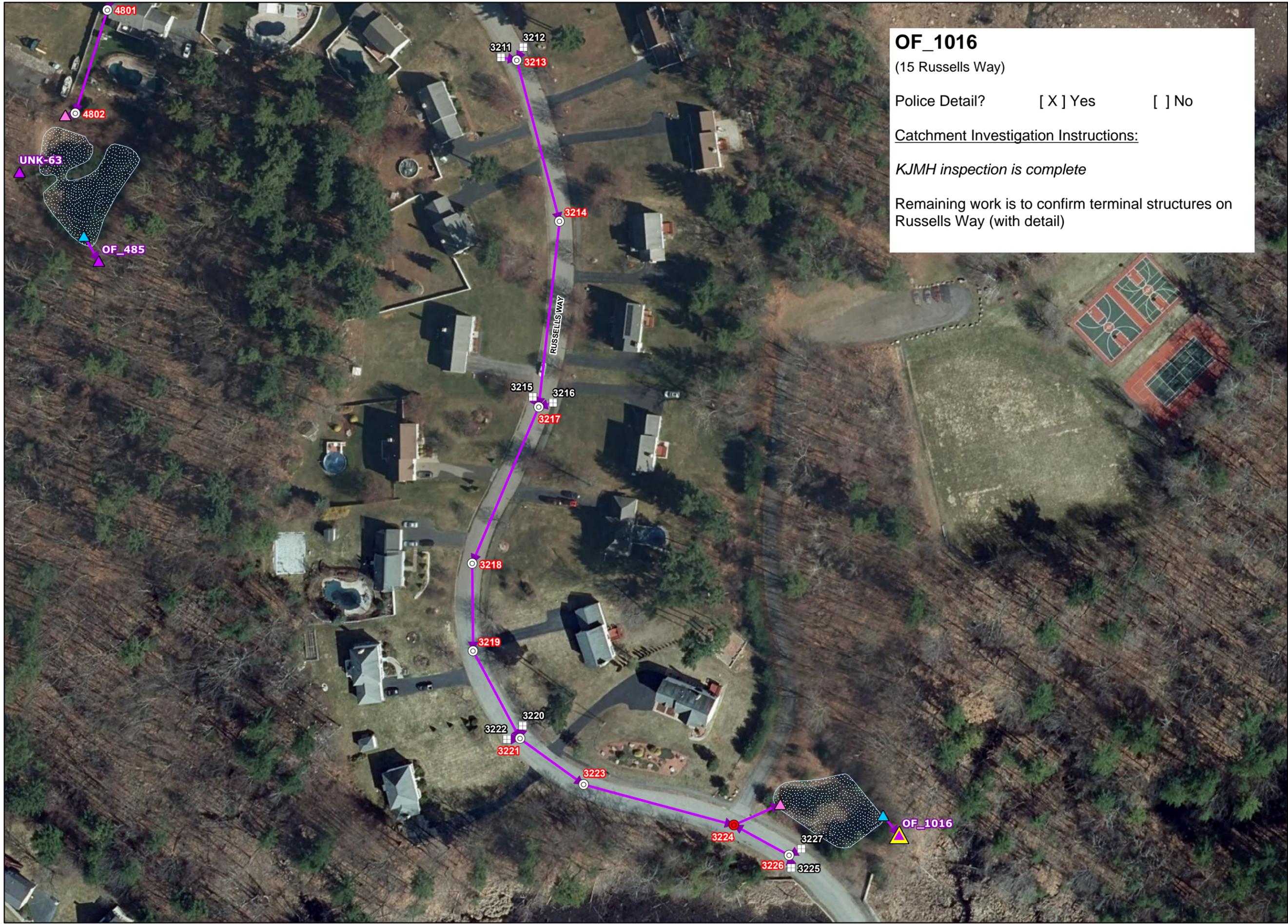
**Catchment Area of
 Outfall: OF_308**

Outside Receiving

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Westford, Massachusetts
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OF_1016
 (15 Russells Way)

Police Detail? Yes No

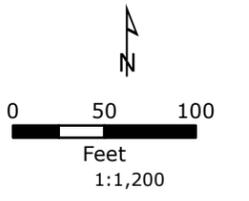
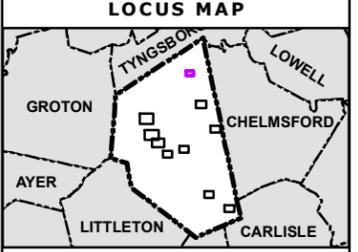
Catchment Investigation Instructions:

KJMH inspection is complete

Remaining work is to confirm terminal structures on Russells Way (with detail)

CATCHMENT INVESTIGATIONS GROUP THREE

- LEGEND**
- Outfall
 - Interconnection
 - Key Junction Manhole
 - Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - Catch Basin
 - Inlet/Water Quality Inlet
 - Outlet
 - Overflow Structure
 - Flared End Section
 - Other Stormwater Structure
 - BMP Point
 - Drain Pipe
 - Culvert
 - BMP Polygon
 - Catchment Area
 - Town Boundary



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by theTown of Westford (2023).

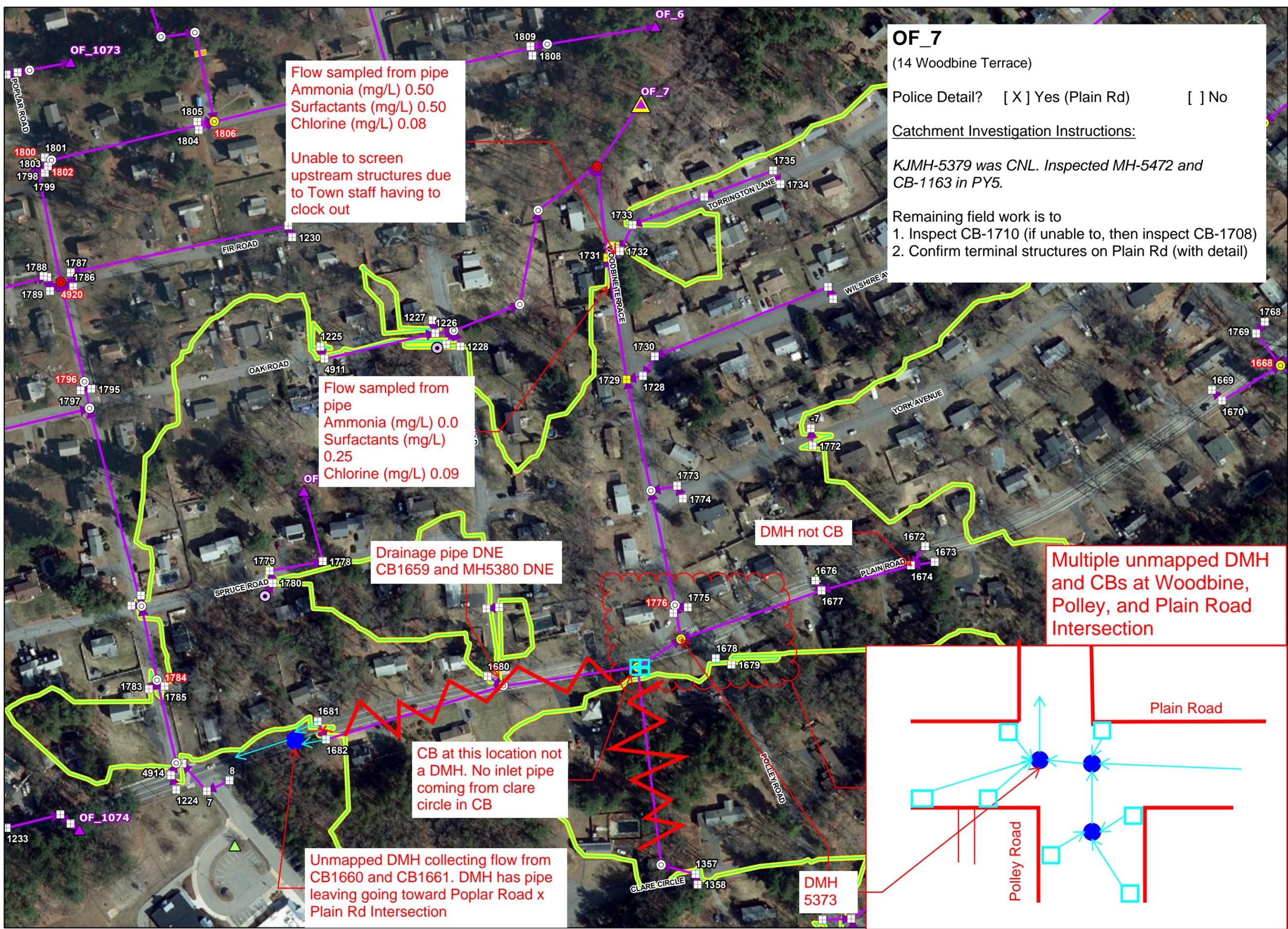
Catchment Area of Outfall: OF_1016

Tributary/Wetland to Gilson Brook

Page 1 out of 10

Westford, Massachusetts
November 2023





Flow sampled from pipe
 Ammonia (mg/L) 0.50
 Surfactants (mg/L) 0.50
 Chlorine (mg/L) 0.08

Unable to screen
 upstream structures due
 to Town staff having to
 clock out

Flow sampled from
 pipe
 Ammonia (mg/L) 0.0
 Surfactants (mg/L)
 0.25
 Chlorine (mg/L) 0.09

Drainage pipe DNE
 CB1659 and MH5380 DNE

CB at this location not
 a DMH. No inlet pipe
 coming from clare
 circle in CB

Unmapped DMH collecting flow from
 CB1660 and CB1661. DMH has pipe
 leaving going toward Poplar Road x
 Plain Rd Intersection

OF_7
 (14 Woodbine Terrace)

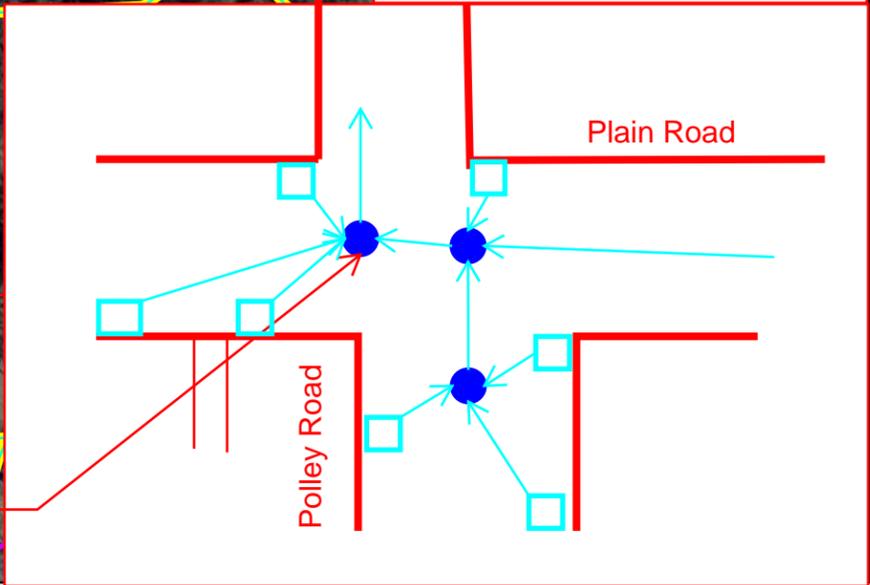
Police Detail? Yes (Plain Rd) No

Catchment Investigation Instructions:
*KJMH-5379 was CNL. Inspected MH-5472 and
 CB-1163 in PY5.*

Remaining field work is to
 1. Inspect CB-1710 (if unable to, then inspect CB-1708)
 2. Confirm terminal structures on Plain Rd (with detail)

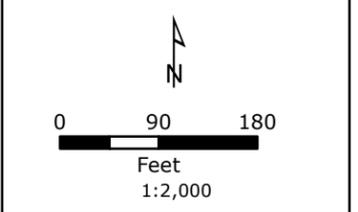
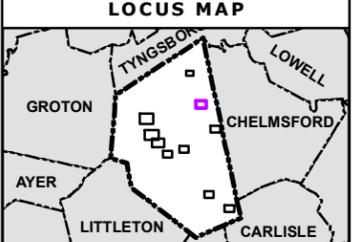
DMH not CB

Multiple unmapped DMH
 and CBs at Woodbine,
 Polley, and Plain Road
 Intersection



CATCHMENT INVESTIGATIONS GROUP THREE

- LEGEND**
- ▲ Outfall
 - ⊗ Interconnection
 - Key Junction Manhole
 - ⊙ Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - ▣ Junction Catch Basin
 - ▤ Catch Basin
 - ⊖ Inlet/Water Quality Inlet
 - ⦿ Outlet
 - ▲ Overflow Structure
 - ▲ Flared End Section
 - ▲ Other Stormwater Structure
 - ⊗ BMP Point
 - Drain Pipe
 - Culvert
 - ▨ BMP Polygon
 - ▭ Catchment Area
 - ▭ Town Boundary



- NOTES**
1. Based on MassGIS Color Orthophotography (2021).
 2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of
 Outfall: OF_7

Outside Receiving

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Westford, Massachusetts
 November 2023



OF_251 high priority

(30 North St)

Police Detail? Yes No

Catchment Investigation Instructions:

See mapping provided by Town

- 1. Inspect manhole called out by orange arrow
- 2. Attempt to locate / confirm a terminal structure

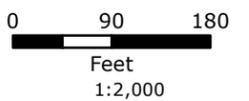
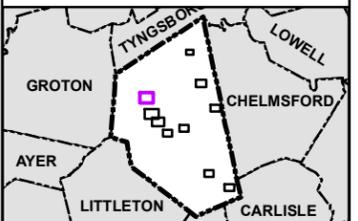
Stick to 251 for this investigation, 252, 253 and potential new / unmapped outfall need further mapping updates and are tentatively planned for investigation in PY7

CATCHMENT INVESTIGATIONS GROUP THREE

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- ⊙ Junction Manhole
- Manhole
- Key Junction Catch Basin
- ▣ Junction Catch Basin
- ▤ Catch Basin
- ⊖ Inlet/Water Quality Inlet
- ⦿ Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ✱ BMP Point
- Drain Pipe
- Culvert
- ▨ BMP Polygon
- ▭ Catchment Area
- ▬ Town Boundary

LOCUS MAP



NOTES

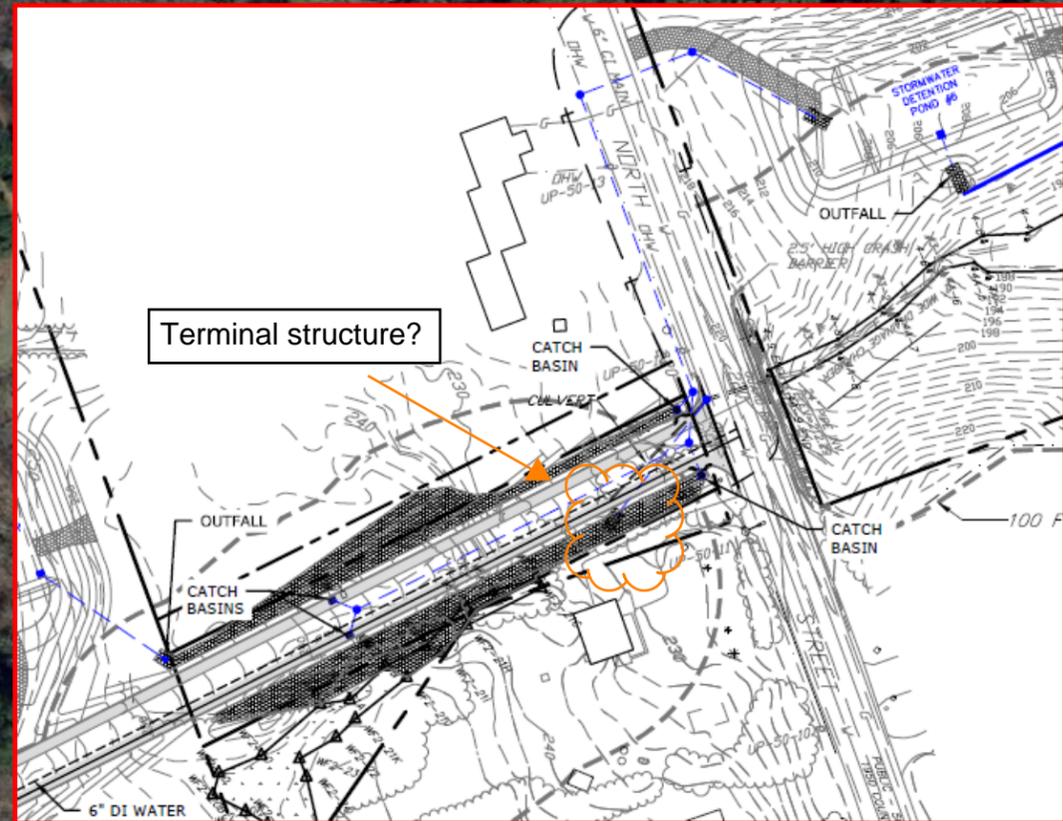
- 1. Based on MassGIS Color Orthophotography (2021).
- 2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_251

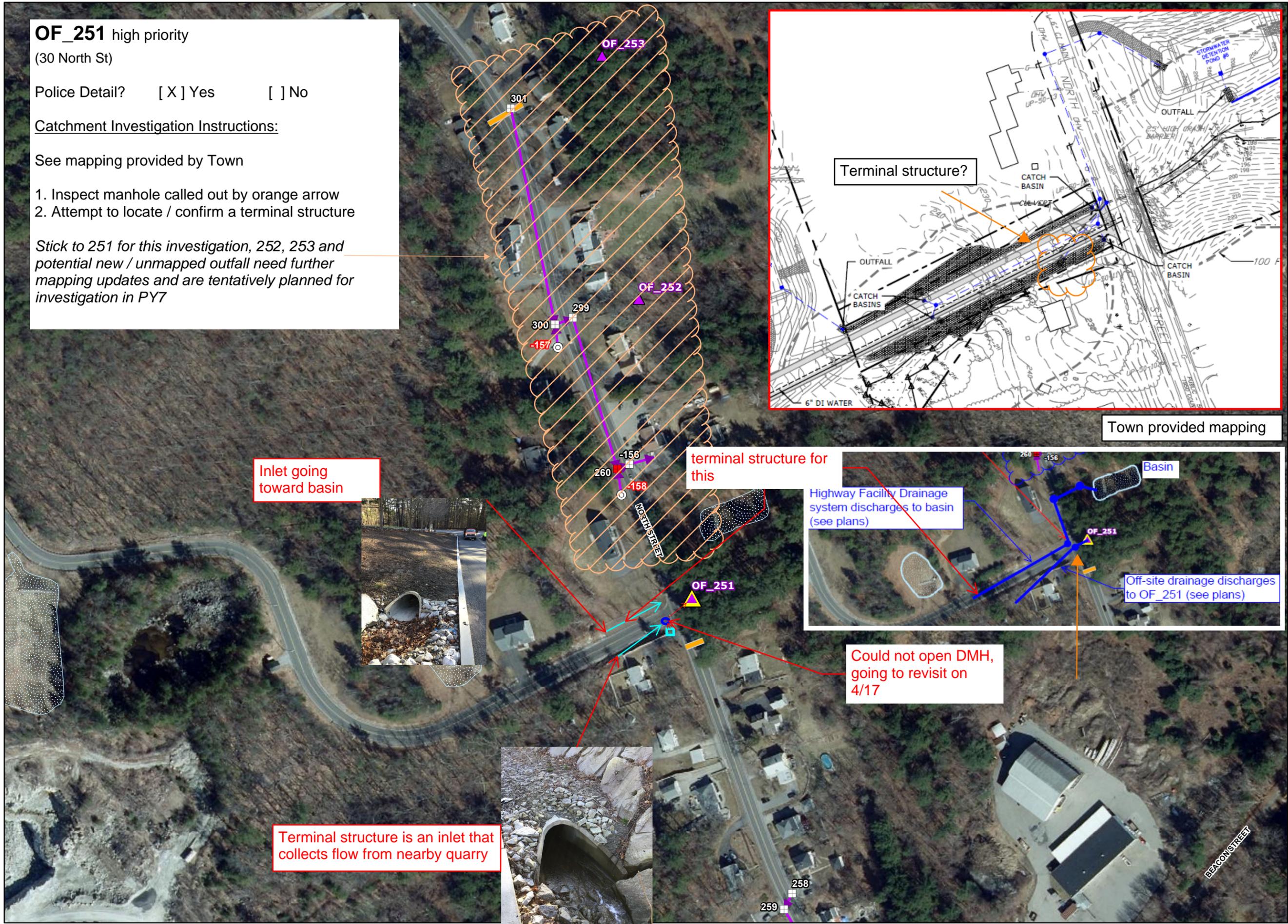
Outside Receiving

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**Westford, Massachusetts
November 2023**



Town provided mapping



Inlet going toward basin

terminal structure for this

Highway Facility Drainage system discharges to basin (see plans)

Off-site drainage discharges to OF_251 (see plans)

Could not open DMH, going to revisit on 4/17

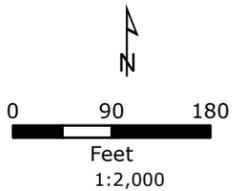
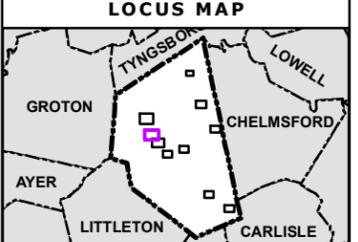
Terminal structure is an inlet that collects flow from nearby quarry



CATCHMENT INVESTIGATIONS GROUP THREE

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_372

Tributary/Wetland to Boutwell Brook

Page 4 out of 10

Westford, Massachusetts
November 2023

OF_372 high priority
(18 Bridge St)

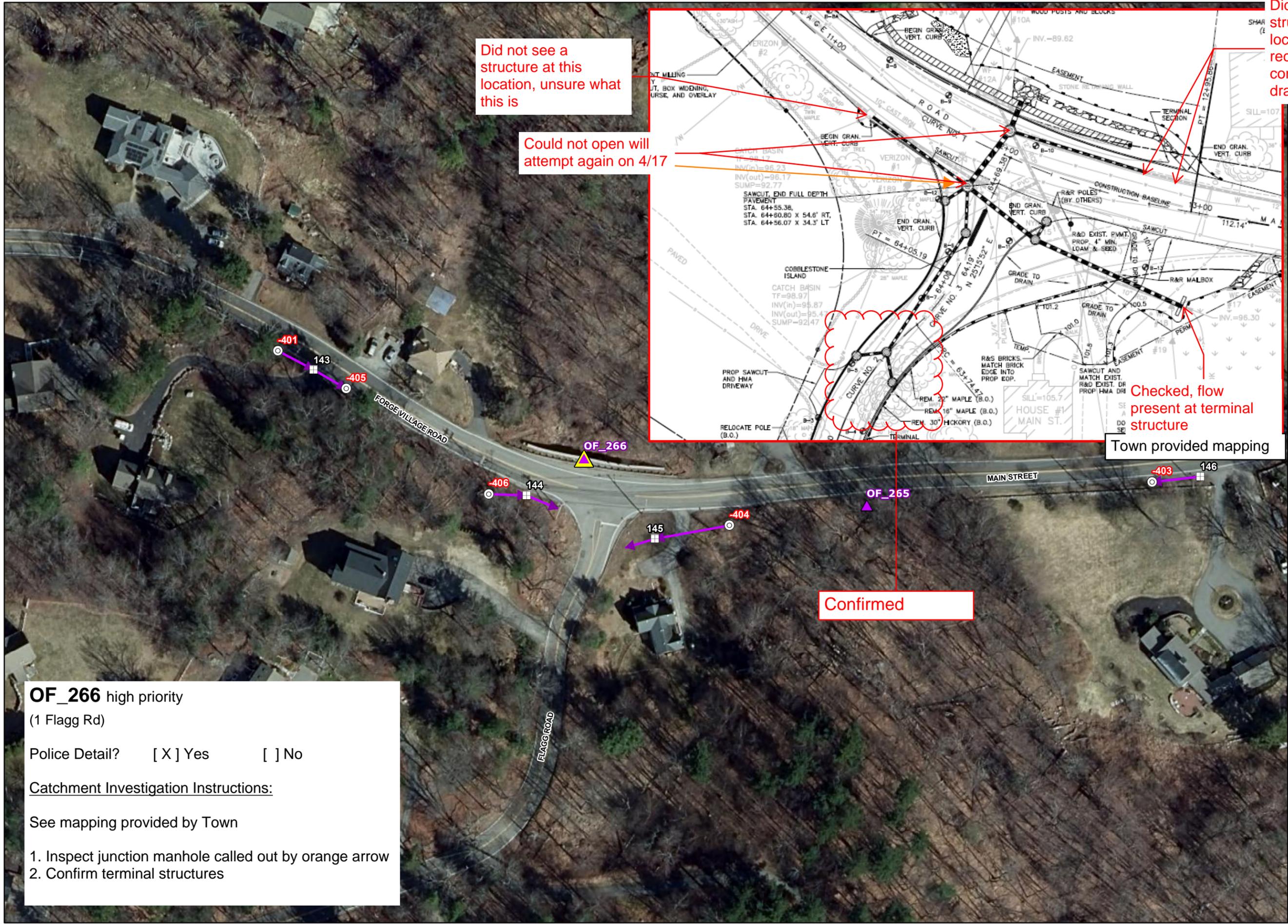
Police Detail? Yes No

Town confirmed that CB-2095 drains to CB-2096 which outlets to OF_372. (Data issue point added)

Catchment Investigation Instructions:

1. Inspect CB-2096 - **sampled**
2. Confirm terminal structure - **confirmed**





Did not see a structure at this location, unsure what this is

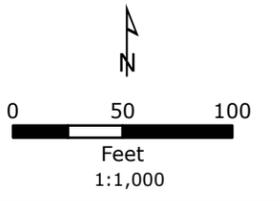
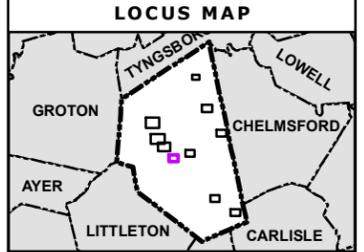
Could not open will attempt again on 4/17

Checked, flow present at terminal structure
Town provided mapping

Confirmed

Did not see a structure at this location. Based on record drawings connects to existing drainage

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- Manhole
- Key Junction Catch Basin
- ▣ Junction Catch Basin
- ▤ Catch Basin
- ⊙ Inlet/Water Quality Inlet
- Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ✱ BMP Point
- Drain Pipe
- Culvert
- ▨ BMP Polygon
- ▭ Catchment Area
- ▭ Town Boundary



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_266

Tributary/Wetland to Boutwell Brook

Page 6 out of 10

**Westford, Massachusetts
November 2023**



OF_266 high priority
(1 Flagg Rd)

Police Detail? Yes No

Catchment Investigation Instructions:

See mapping provided by Town

1. Inspect junction manhole called out by orange arrow
2. Confirm terminal structures



Submitted inspection for this unmapped DMH

unmapped CB

CB 1519 (CB1531) location

8" PVC

12" HDPE

Unmapped DMHs

No connecting structures - no dry weather catchment investigation needed for OF_85 and OF_86.

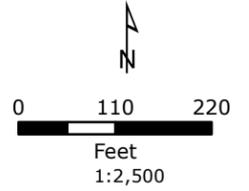
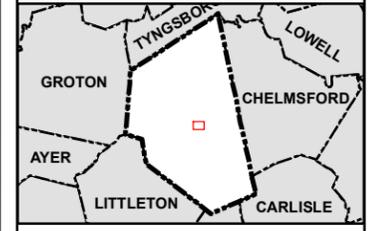
OF_10 high priority
 (70 Main St)
 Police Detail? Yes No
 Town confirmed that CB-1531 connects to OF-10
 Catchment Investigation Instructions:
 1. Inspect CB-1531 - **screened unmapped DMH at current mapped CB location**
 2. Confirm terminal structure - **confirmed**

CATCHMENT INVESTIGATIONS MAPPING ISSUES

LEGEND

- Outfall
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Key Junction Manhole
- Junction Manhole
- Manhole
- Drain Pipe
- Culvert
- BMP Point
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



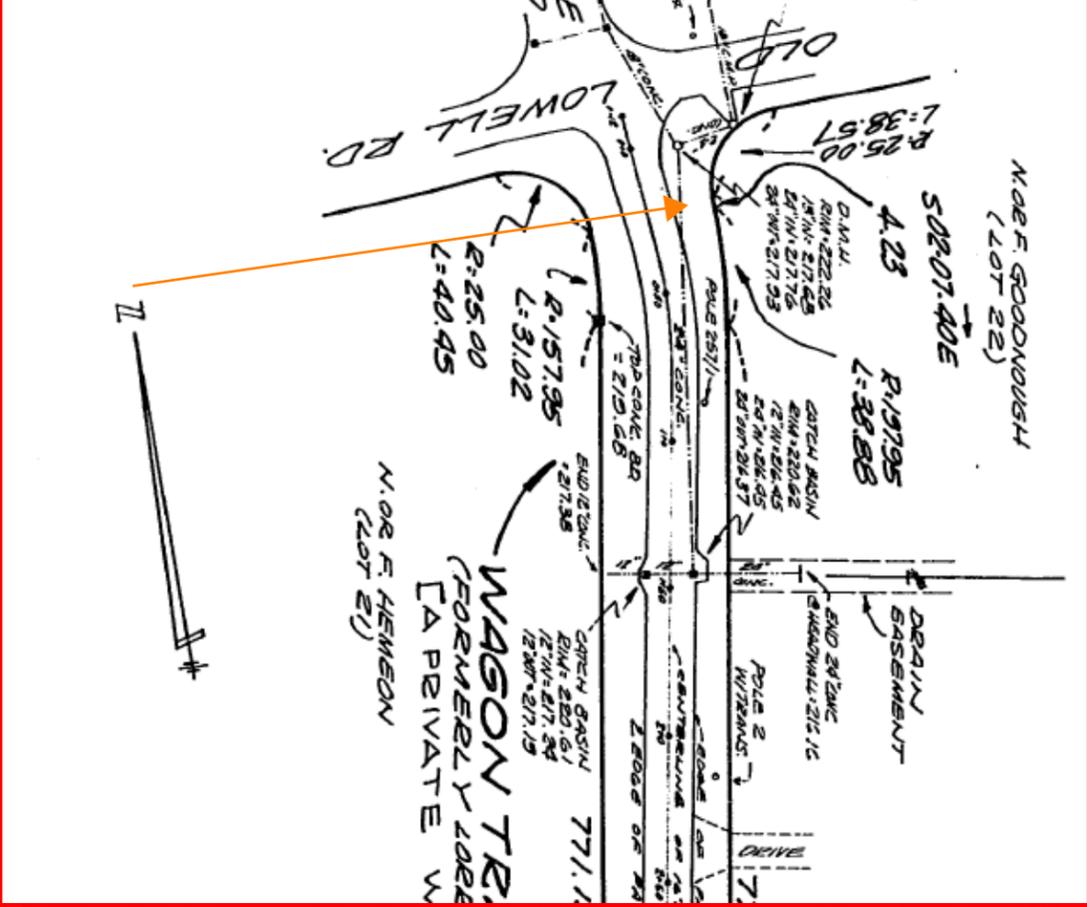
NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of Outfall: OF_10

**Westford, Massachusetts
 April 2023**

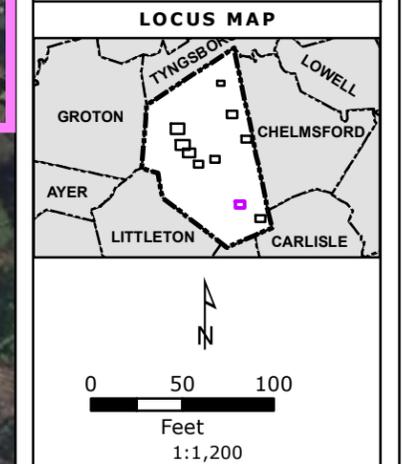




CATCHMENT INVESTIGATIONS GROUP THREE

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- ▭ Catch Basin
- ⊙ Inlet/Water Quality Inlet
- ▲ Other Stormwater Structure
- ✱ BMP Point
- Drain Pipe
- ▬ Culvert
- ▭ BMP Polygon
- ▭ Catchment Area
- ▭ Town Boundary



NOTES

- Based on MassGIS Color Orthophotography (2021).
- Stormwater data provided by the Town of Westford (2023).

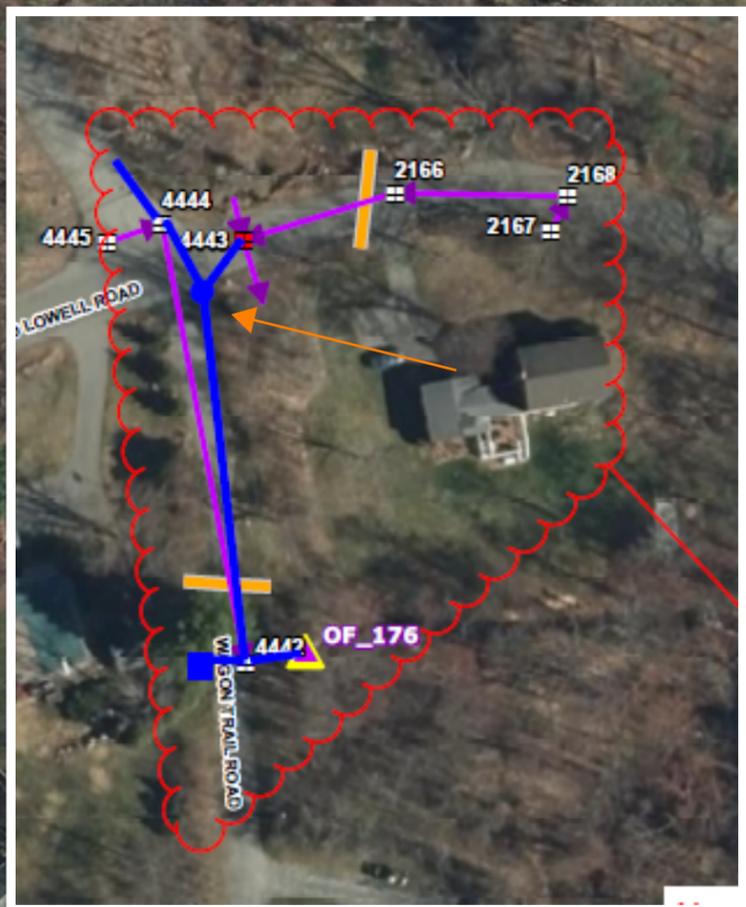
Catchment Area of Outfall: OF_176

Outside Receiving

Page 9 out of 10
Westford, Massachusetts
November 2023



Town provided mapping



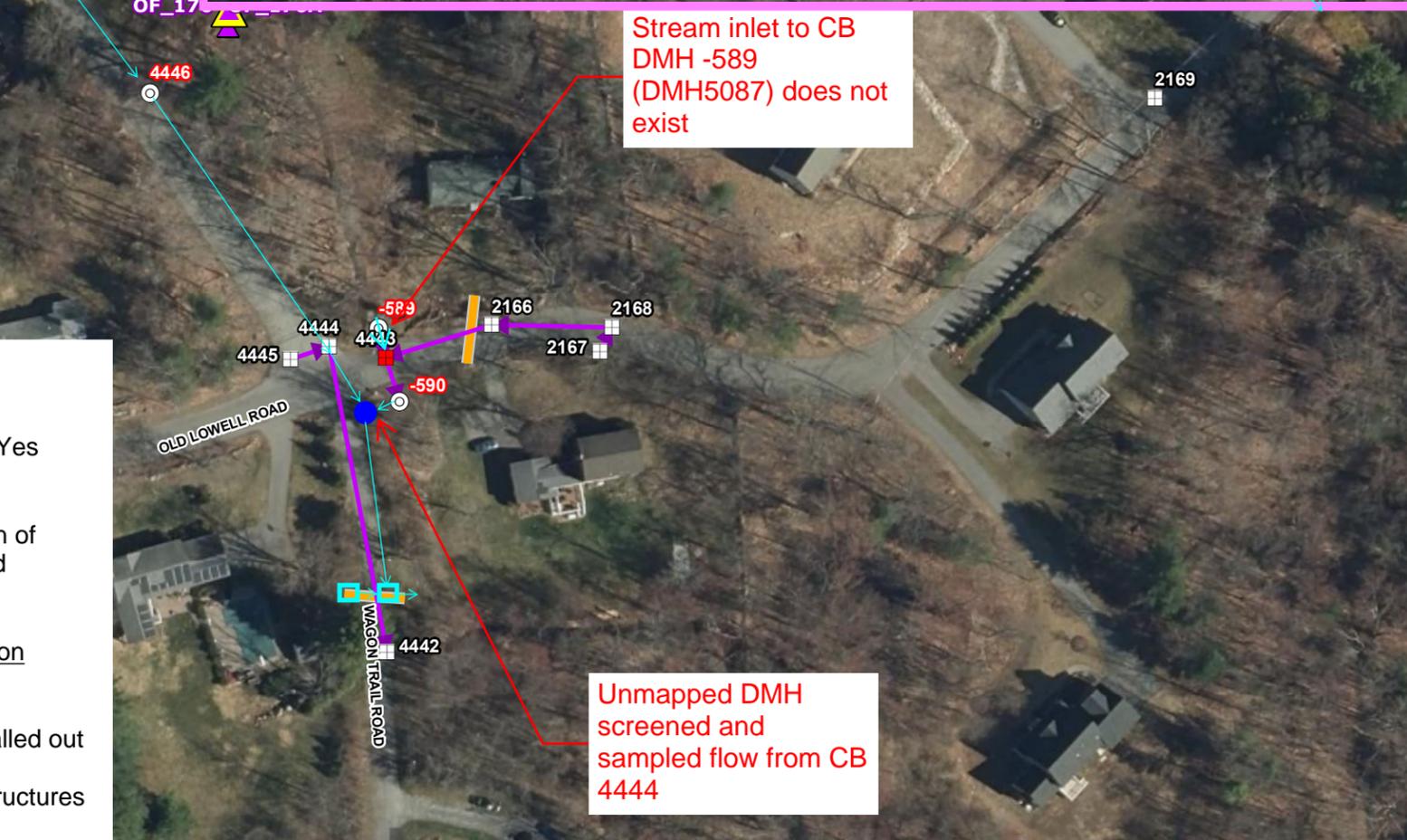
OF_176 high priority (25 Old Lowell Rd)

Police Detail? Yes
 No

Town updated position of OF-176 and confirmed connectivity.

Catchment Investigation Instructions:

- Inspect structure called out by orange arrow
- Confirm terminal structures

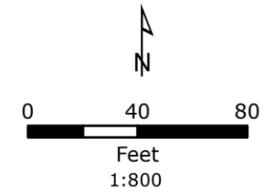
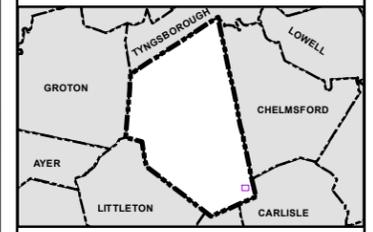


CATCHMENT INVESTIGATIONS GROUP 4

LEGEND

-  Outfall
-  BMP Structure
-  Culvert Outlet
-  Key Junction Catch Basin
-  Junction Catch Basin
-  Catch Basin
-  Key Junction Manhole
-  Junction Manhole
-  Manhole
-  Culvert
-  Drain Pipe
-  BMP Area
-  Catchment Area
-  Town Boundary

LOCUS MAP



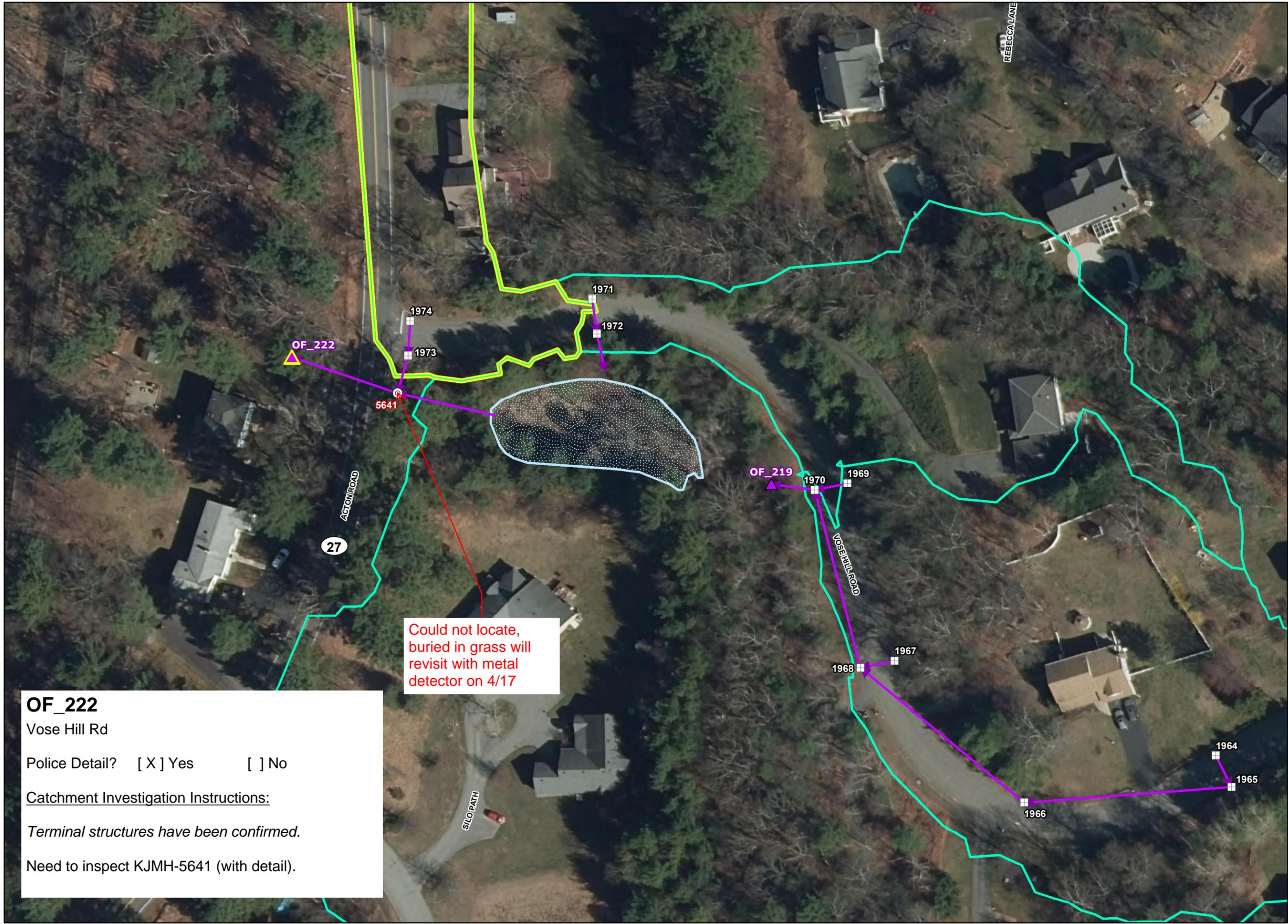
NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.
3. Structure Labels Refer to GIS ID, Outfall Labels Refer to Fieldwork ID.

Catchment Area of OF_222

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**Westford, Massachusetts
May 2023**



Could not locate, buried in grass will revisit with metal detector on 4/17

OF_222
Vose Hill Rd

Police Detail? Yes No

Catchment Investigation Instructions:
Terminal structures have been confirmed.
Need to inspect KJMH-5641 (with detail).

OF_451 and 2 Unmapped Outfalls

164 Main St

Police Detail? Yes No

KJ structure: CB0572

Confirm terminal structures: **confirmed all**
CB0034

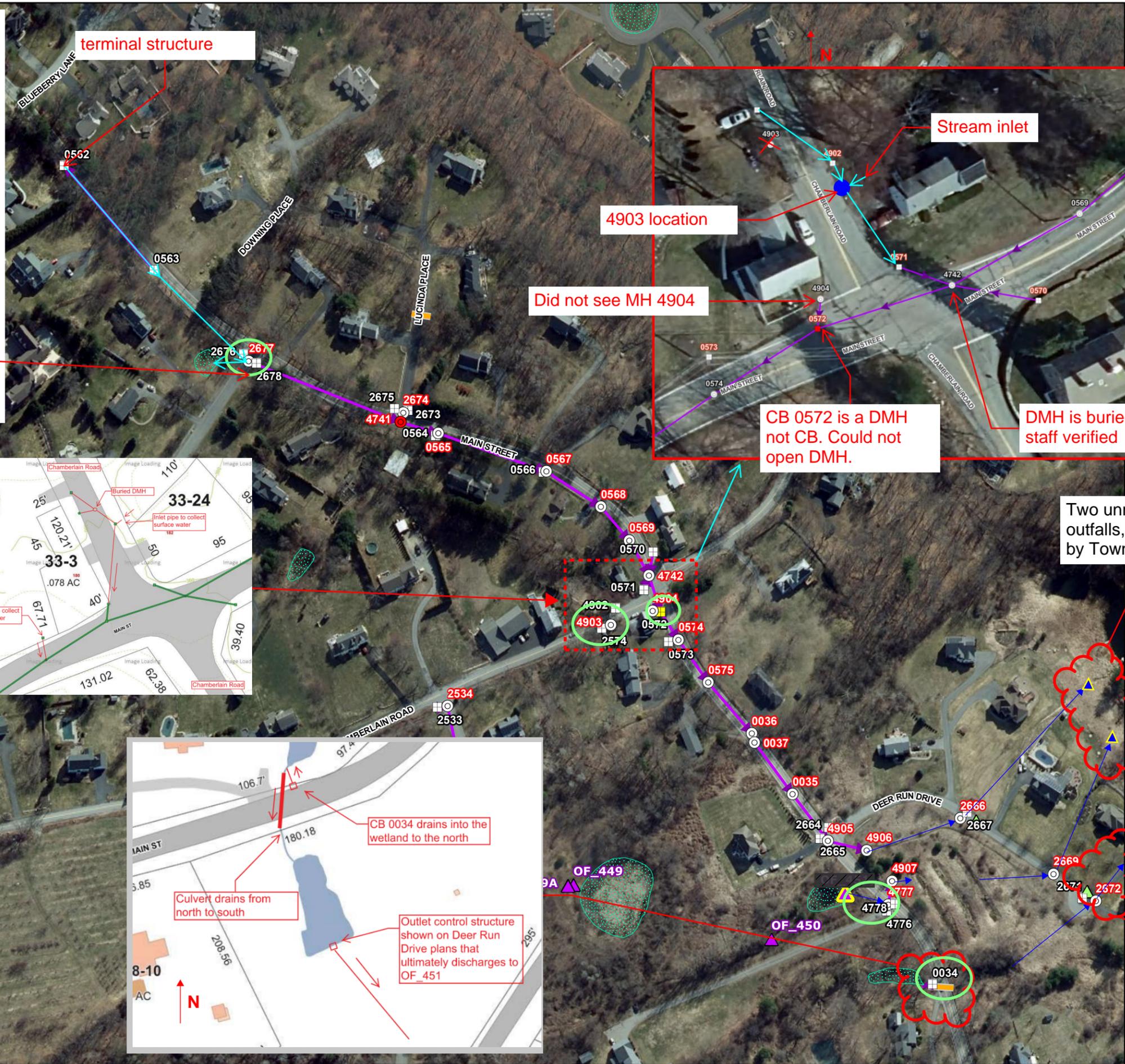
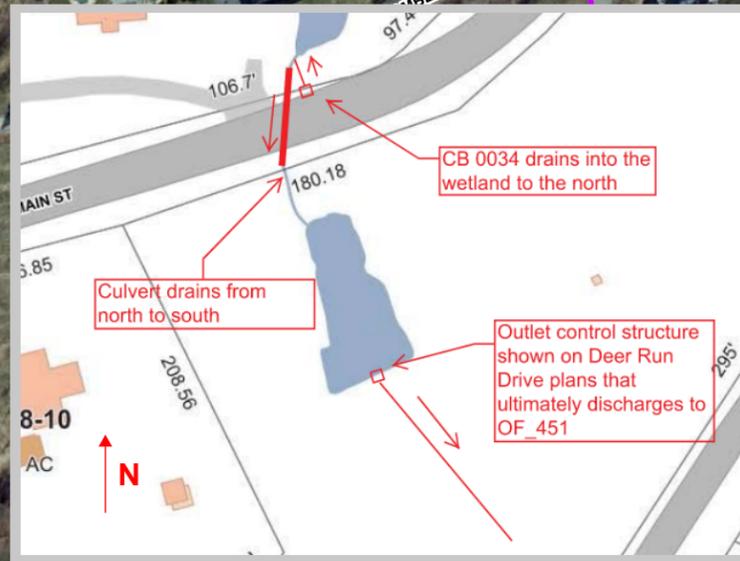
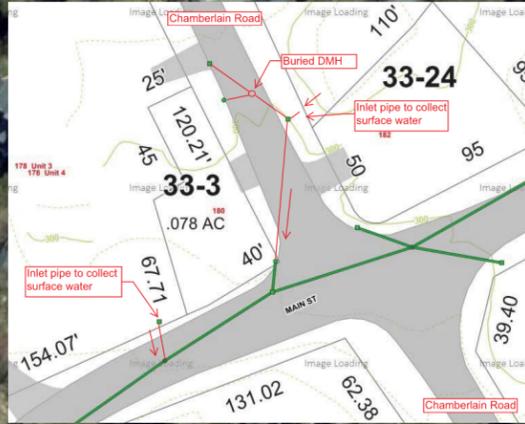
DMH-4777, CB4778 and CB4776

CB2574 and DMH-4903

DMH-2677, CB2676 and CB2678

See data issue points for Town provided mapping.

DMH2677 drains to BMP and further down Main Street

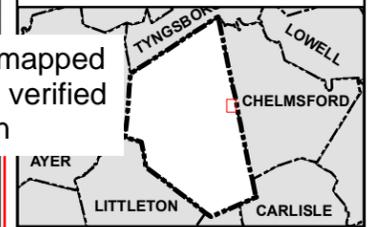


CATCHMENT INVESTIGATIONS

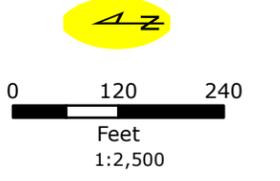
LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- ⊙ Inlet/Water Quality Inlet
- Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ⊙ BMP Point
- Drain Pipe
- Culvert
- ▭ Polygon
- ▲ Outfall Label
- ▭ Catch Basin Label

LOCUS MAP



Two unmapped outfalls, verified by Town



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2024).

Catchment Area of Outfall: OF_451

Page 1 out of 2

Westford, Massachusetts
February 2024





Did not see a structure at this location, unsure what this is

All incoming/outgoing pipes shown in record drawing were seen at KJMH

Did not see a structure at this location. Based on record drawings connects to existing drainage

Screened unmapped KJMH.

Flow at KJMH coming from this pipe.
 Ammonia (mg/L): 0.25
 Surfactants (mg/L): 0.25
 Chlorine (mg/L): 0.02

Checked, flow present at terminal structure
 Town provided mapping

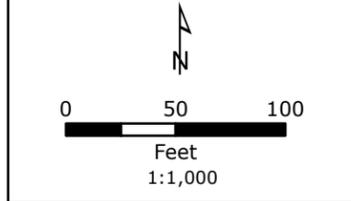
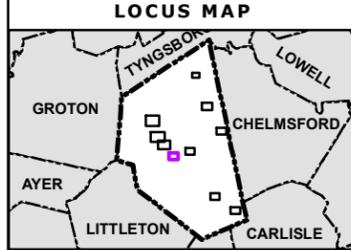
On this page only notes in red are from 4/16 inspections.
 Notes in green are from inspection done on 4/26/24

Confirmed

Flow at KJMH coming from this pipe leaving CB 145.
 Ammonia (mg/L): 0.0
 Surfactants (mg/L): 0.25
 Chlorine (mg/L): 0.01

OF_266 high priority
 (1 Flagg Rd)
 Police Detail? Yes No
 Catchment Investigation Instructions:
 See mapping provided by Town
 1. Inspect junction manhole called out by orange arrow - **screened**
 2. Confirm terminal structures - **confirmed**

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- Manhole
- Key Junction Catch Basin
- ▣ Junction Catch Basin
- ▤ Catch Basin
- ⊙ Inlet/Water Quality Inlet
- Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ✪ BMP Point
- Drain Pipe
- Culvert
- ▨ BMP Polygon
- ▭ Catchment Area
- ▭ Town Boundary



NOTES
 1. Based on MassGIS Color Orthophotography (2021).
 2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_266
Tributary/Wetland to Boutwell Brook
Page 6 out of 10
Westford, Massachusetts
November 2023



OF_451 and 2 Unmapped Outfalls

164 Main St

Police Detail? Yes No

KJ structure: CB0572

Confirm terminal structures: **confirmed all**
CB0034

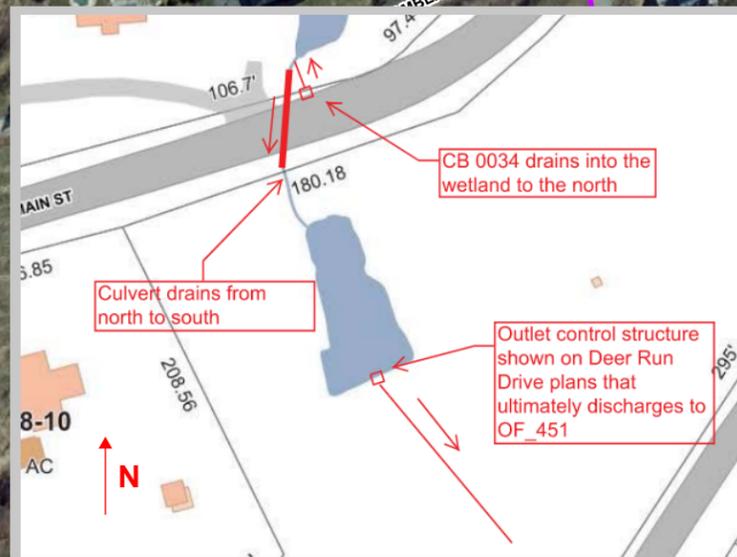
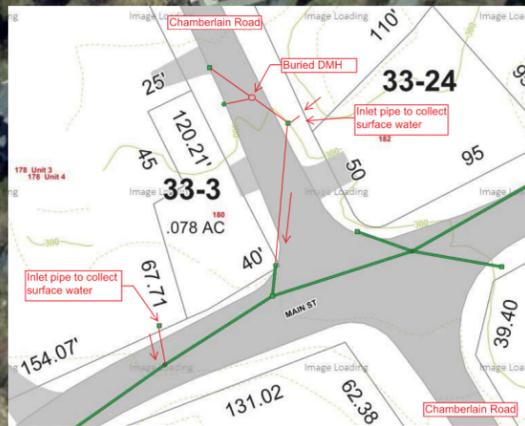
DMH-4777, CB4778 and CB4776

CB2574 and DMH-4903

DMH-2677, CB2676 and CB2678

See data issue points for Town provided mapping.

DMH2677 drains to BMP and further down Main Street



terminal structure

MH 4904 is not present. But an 8" PVC pipe is seen in KJMH that seems to be draining from 180 Main Street

Flow from 8" PVC was sampled at KJMH.
Ammonia (mg/L): 0.0
Surfactants (mg/L): 0.25
Chlorine (mg/L): 0.04

Opened KJMH and screened flow.

4903 location

CB 0572 is a DMH not CB.

Flow from DMH 4742 was sampled at KJMH.
Ammonia (mg/L): 0.0
Surfactants (mg/L): 0.25
Chlorine (mg/L): 0.0

DMH is buried, town staff verified

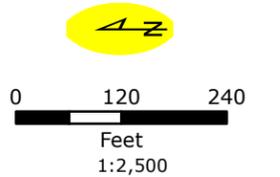
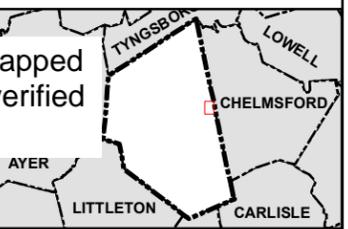
Two unmapped outfalls, verified by Town

CATCHMENT INVESTIGATIONS

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- ⊙ Inlet/Water Quality Inlet
- Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ⊙ BMP Point
- Drain Pipe
- Culvert
- ▭ Polygon
- ▲ Outfall Label
- ▭ Catch Basin Label

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2024).

Catchment Area of Outfall: OF_451

Page 1 out of 2

Westford, Massachusetts
February 2024



On this page only notes in red are from 4/16 inspections.
Notes in green are from inspection done on 4/26/24

Visited area at request of Jeremy since the first two catchments did not take the full 4 hours.

ADDITIONAL FIELD INVESTIGATION STILL NEEDED

OF_12

SVF?

Yes - _____

No

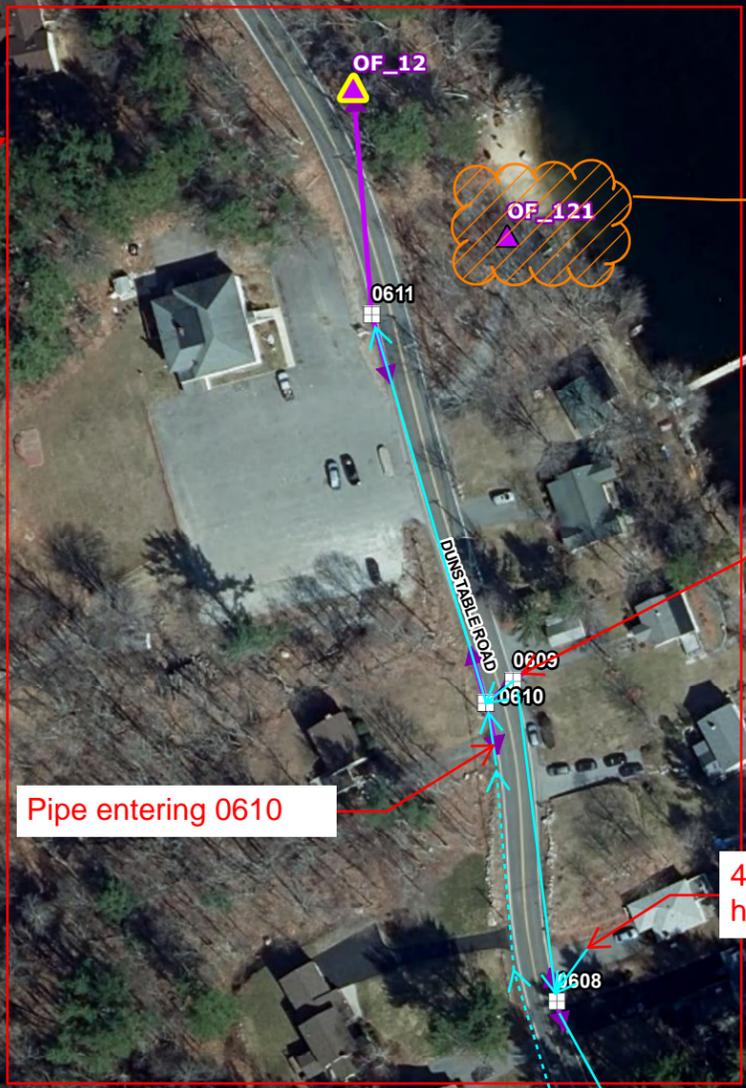
Unknown

Police Detail Needed? Yes No

Notes:

T&B can investigate if Town provides record plan or drainage information to determine connectivity to outfall. May be able to call catchment complete once terminal structures can be confirmed.

Town suspects pipe leaving CB0607 drains to 0610 this area of town has extremely old drainage which they believe may be why the drainage goes in this path



Dry weather catchment investigation not needed for OF_121.

No inlet pipe in this CB besides the outgoing pipe to 0610.

Pipe entering 0610

4" PVC coming from house

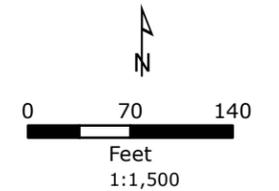
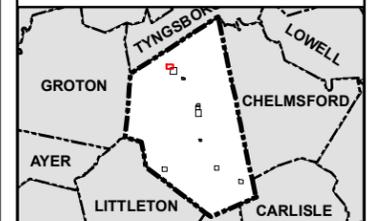
12" CMP leaving CB

CATCHMENT INVESTIGATIONS

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

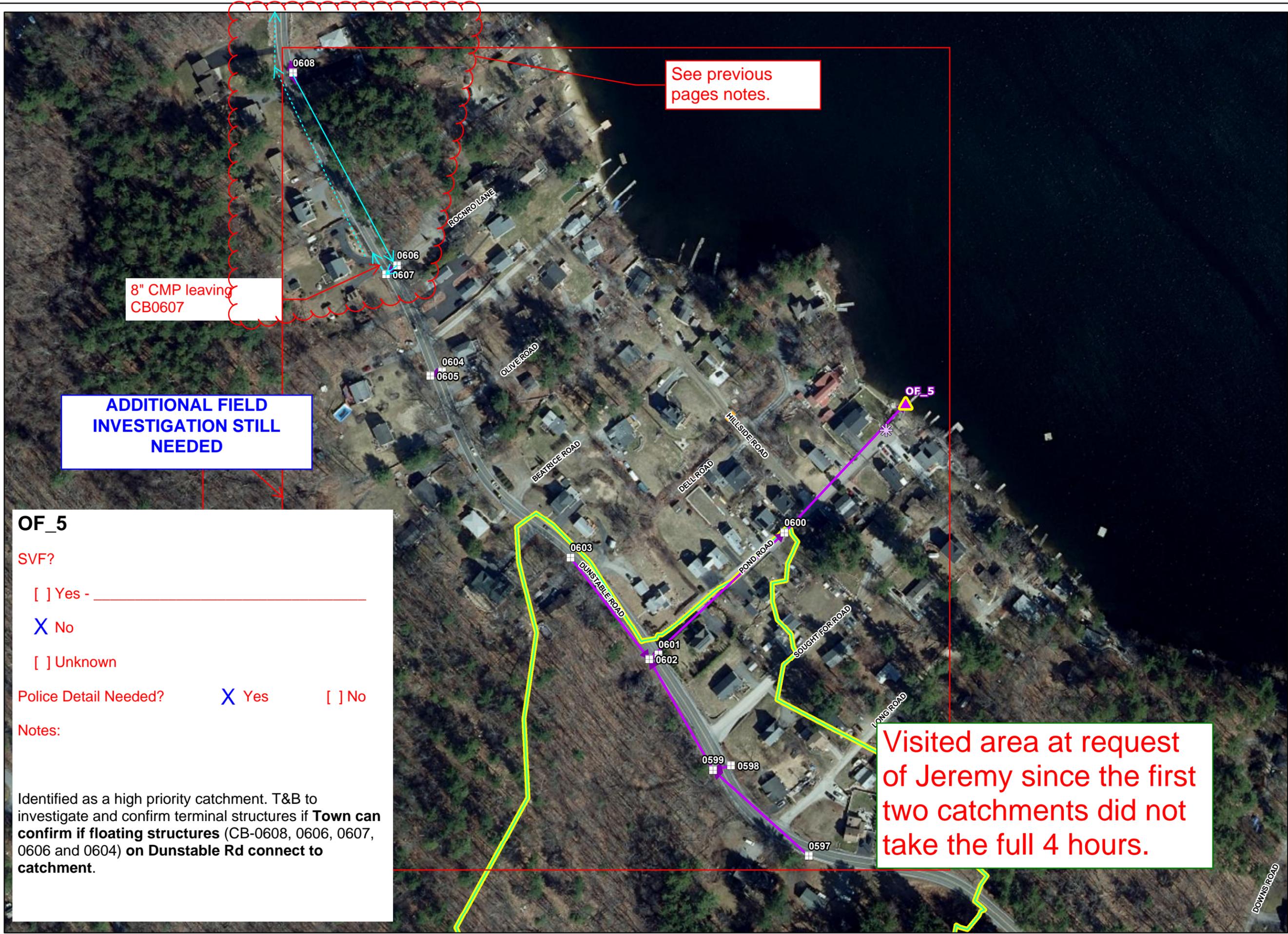
1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_12

Page 2 out of 10

Westford, Massachusetts
January 2024





See previous pages notes.

8" CMP leaving CB0607

ADDITIONAL FIELD INVESTIGATION STILL NEEDED

OF_5

SVF?

Yes - _____

No

Unknown

Police Detail Needed? Yes No

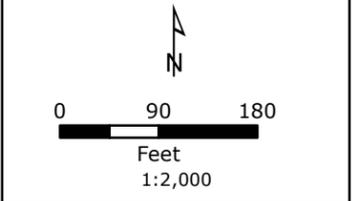
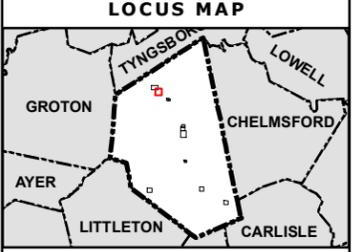
Notes:

Identified as a high priority catchment. T&B to investigate and confirm terminal structures if **Town can confirm if floating structures** (CB-0608, 0606, 0607, 0606 and 0604) on Dunstable Rd connect to catchment.

Visited area at request of Jeremy since the first two catchments did not take the full 4 hours.

CATCHMENT INVESTIGATIONS

- LEGEND**
- Outfall
 - Interconnection
 - Key Junction Manhole
 - Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - Catch Basin
 - Inlet/Water Quality Inlet
 - Outlet
 - Overflow Structure
 - Flared End Section
 - Other Stormwater Structure
 - BMP Point
 - Drain Pipe
 - Culvert
 - BMP Polygon
 - Catchment Area
 - Town Boundary



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_5

Page 1 out of 10

Westford, Massachusetts
January 2024





Symbol added by T&B for suspected location of UNK-67

Visited area since had extra time at the end of the day.

Mapping seen in the field matches Jeremy's markups on the next page.

Screened KJMH. Confirmed terminal structures circled.

ADDITIONAL FIELD INVESTIGATION STILL NEEDED

UNK-67

SVF?

Yes - _____

No

Unknown

Police Detail Needed? Yes No

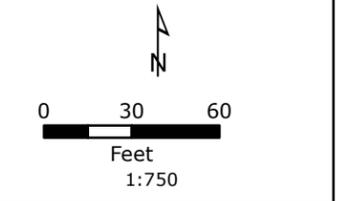
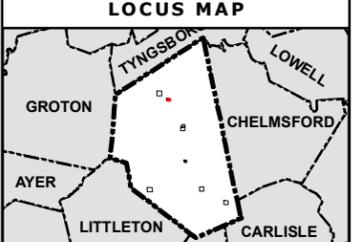
Notes:

T&B can investigate if **Town provides record plan or drainage information** for outfall UNK-67 location and potential connectivity of floating structures on Holly Lane.

Potential location of outfall UNK-67 drawn in blue.

CATCHMENT INVESTIGATIONS

- LEGEND**
- Outfall
 - Interconnection
 - Key Junction Manhole
 - Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - Catch Basin
 - Inlet/Water Quality Inlet
 - Outlet
 - Overflow Structure
 - Flared End Section
 - Other Stormwater Structure
 - BMP Point
 - Drain Pipe
 - Culvert
 - BMP Polygon
 - Catchment Area
 - Town Boundary



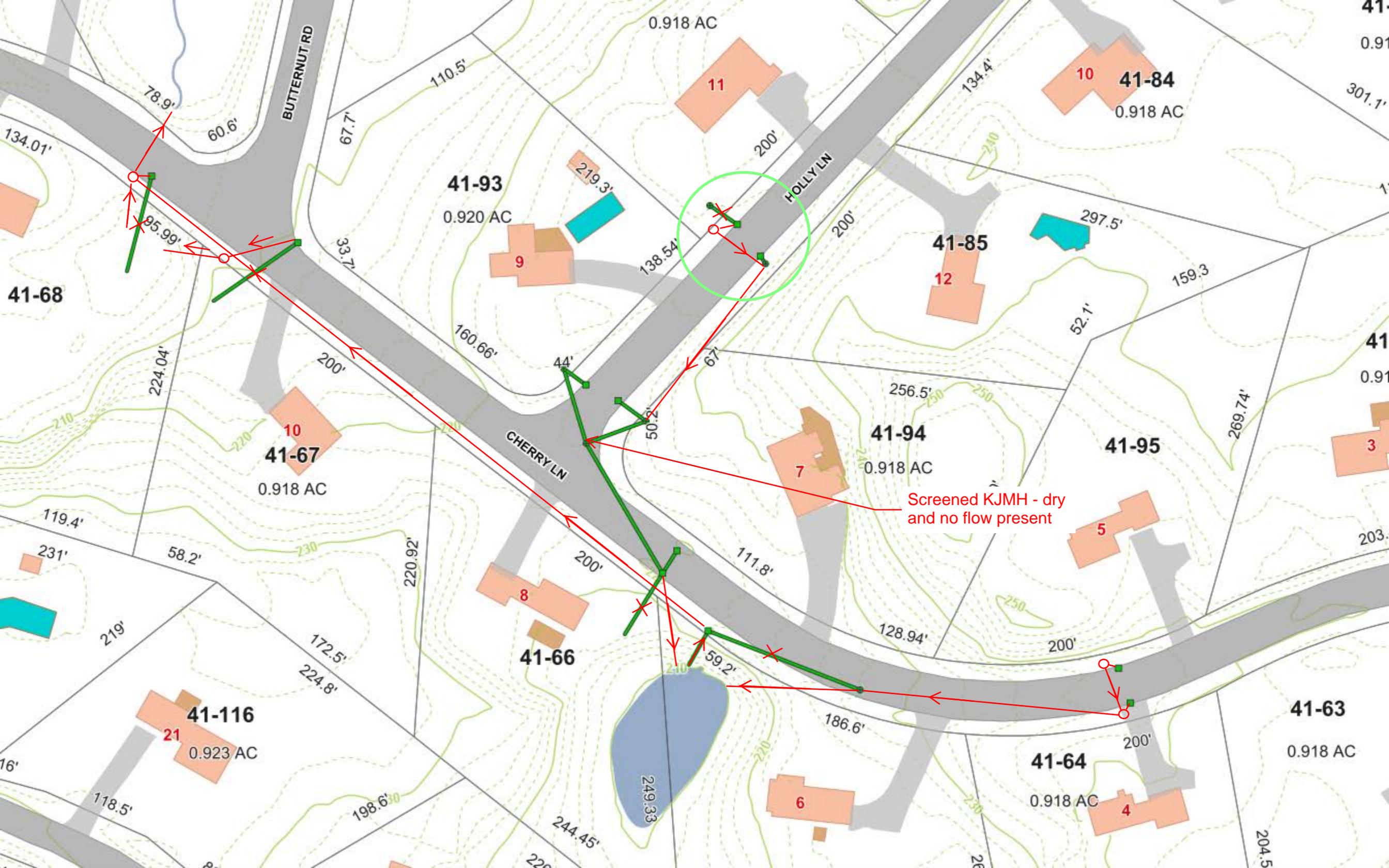
- NOTES**
1. Based on MassGIS Color Orthophotography (2021).
 2. Stormwater data provided by the Town of Westford (2023).

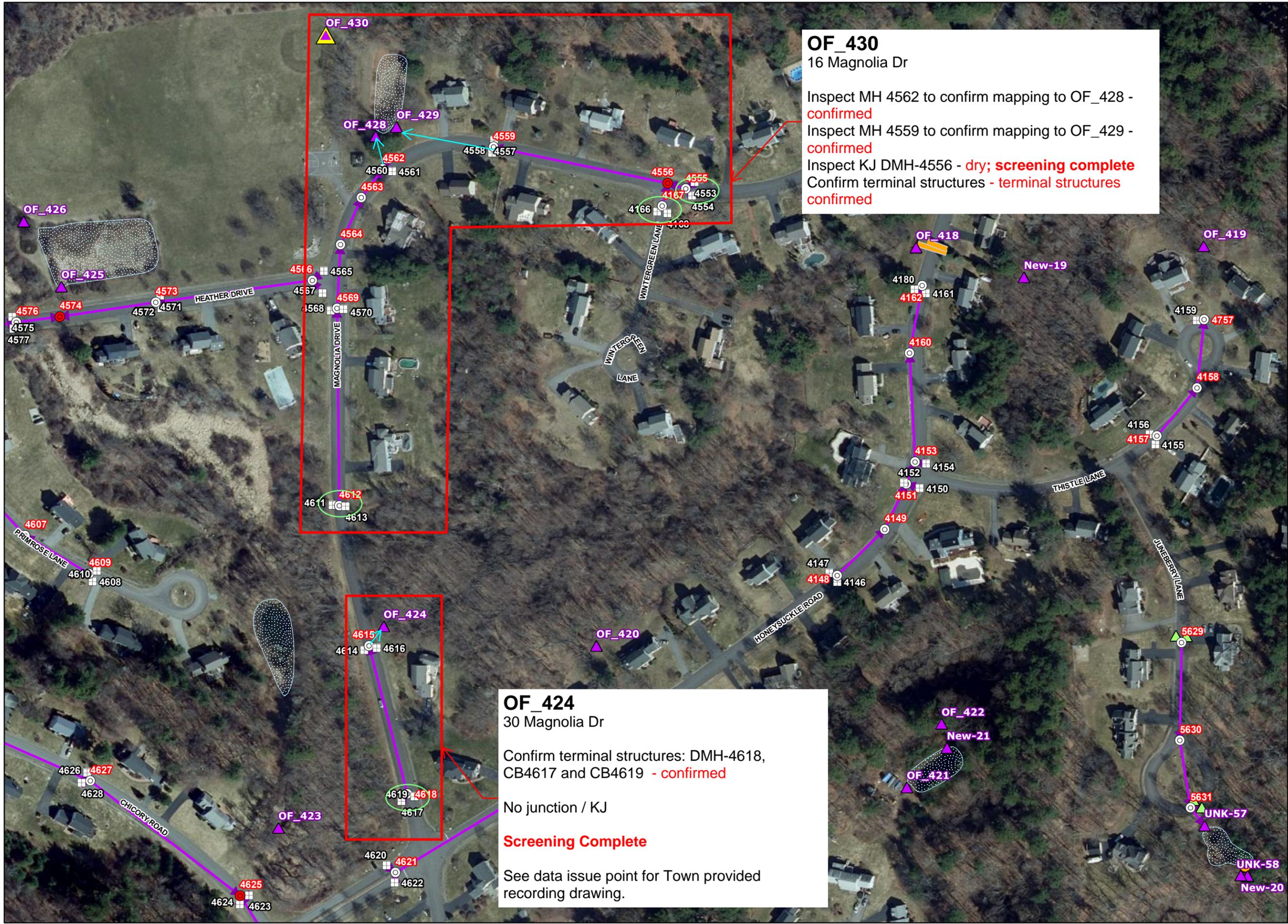
Catchment Area of Outfall: UNK-67

Page 8 out of 10

Westford, Massachusetts
December 2023







OF_430
 16 Magnolia Dr

Inspect MH 4562 to confirm mapping to OF_428 - **confirmed**
 Inspect MH 4559 to confirm mapping to OF_429 - **confirmed**
 Inspect KJ DMH-4556 - **dry; screening complete**
 Confirm terminal structures - **terminal structures confirmed**

OF_424
 30 Magnolia Dr

Confirm terminal structures: DMH-4618, CB4617 and CB4619 - **confirmed**

No junction / KJ

Screening Complete

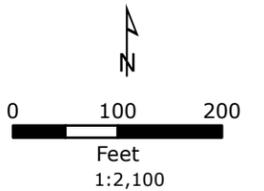
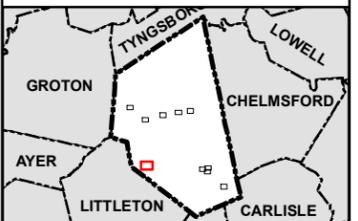
See data issue point for Town provided recording drawing.

CATCHMENT INVESTIGATIONS GROUP 1A

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ✱ BMP Point
- Drain Pipe
- Culvert
- ▭ BMP Polygon
- ▭ Catchment Area
- ▭ Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_430

Outside Receiving

Page 6 out of 10

Westford, Massachusetts

December 2023





Unmapped outfall located and flow was present.

Referring to this as Unmapped Outfall 7 on my tracking spreadsheet ECO 5/1/24
I think this still needs SVF review and dry weather outfall screening



Flow present leaving DMH going to OF.

Unmapped Outfall - Located by LEP on 4/24/24 in the field

Magnolia Drive

Confirm terminal structures - confirmed, visited structures circled in green

No junction / KJ

OF_179

31 Misty Lane

KJ inspection: DMH-3970
Confirm terminal structures

Unmapped Outfall - Screening Completed on 4/17

Dry at DMH3968

Pipes inletting from CB were dry and pipe outletting DMH were dry

Dry inlet and outlet pipes at DMH.

Flow from DMH 3968 sampled at KJMH 3963
Surfactants (mg/L): 0.75
Chlorine (mg/L): 0.06
Ammonia (mg/L): 0.0

Flow from CB 3969 sampled at KJMH 3963
Surfactants (mg/L): 0.25
Chlorine (mg/L): 0.01
Ammonia (mg/L): 0.0

Flow from DMH 3972 sampled at KJMH 3963
Surfactants (mg/L): 0.50
Chlorine (mg/L): 0.06
Ammonia (mg/L): 0.0

Trickle flow leaving DMH 3977 was sampled at DMH 3975
Surfactants (mg/L): 0.25
Chlorine (mg/L): 0.03
Ammonia (mg/L): 0.0

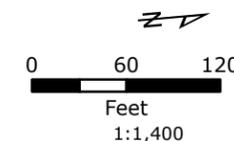
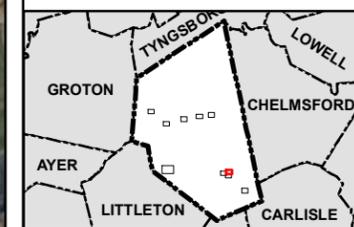
Unmapped outfall that appears on Town provided as-built plans

CATCHMENT INVESTIGATIONS GROUP 1A

LEGEND

- Manhole Connection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_179

Outside Receiving

Page 8 out of 10

Westford, Massachusetts
December 2023

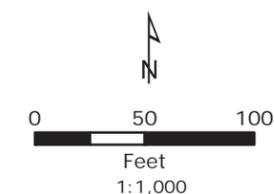
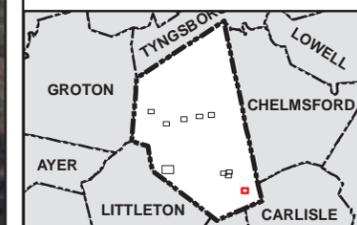


CATCHMENT INVESTIGATIONS GROUP 1A

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

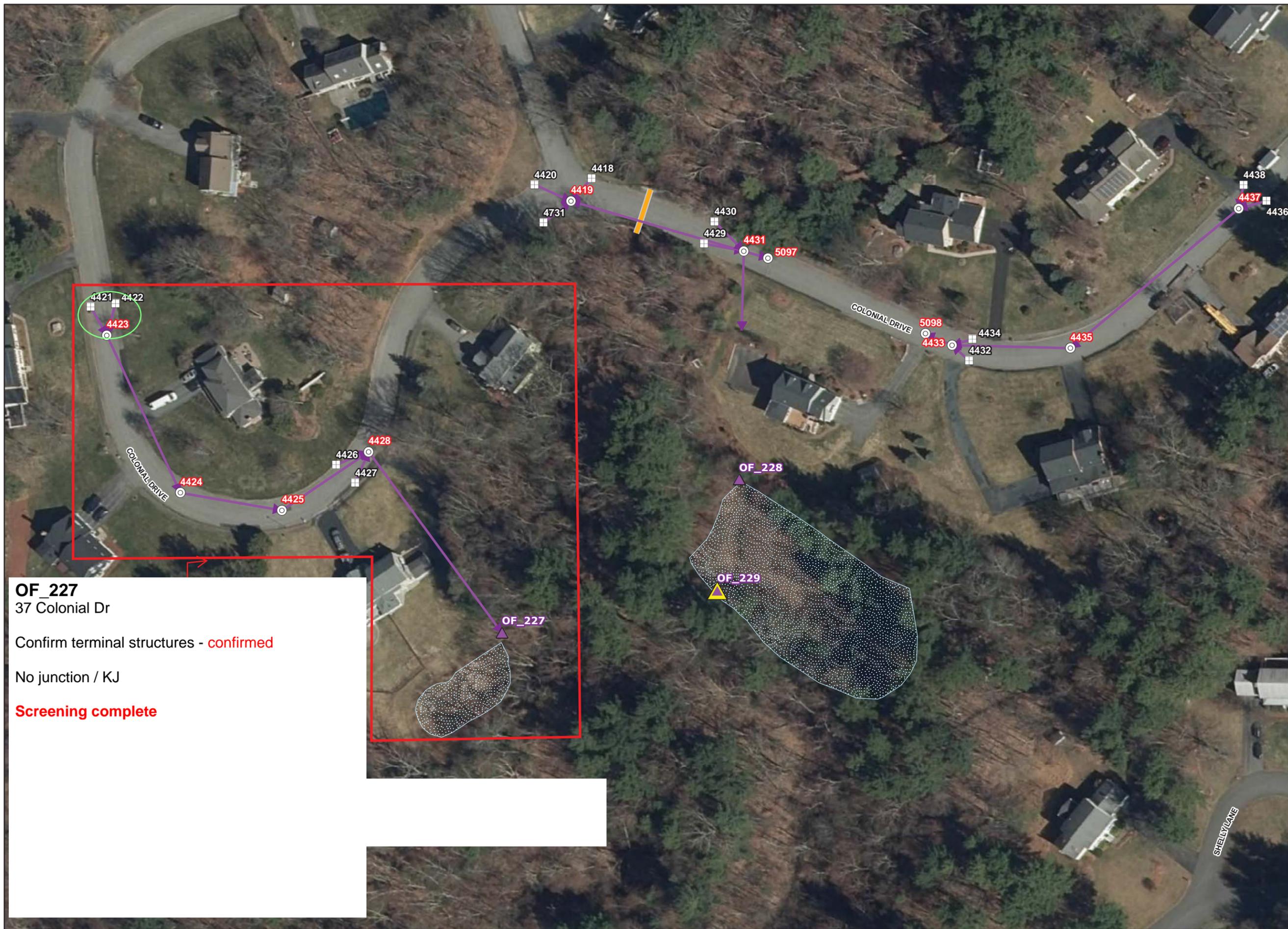
1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by theTown of Westford (2023).

Catchment Area of
Outfall: OF_229

Outside Receiving

Page 10 out of 10

Westford, Massachusetts
December 2023

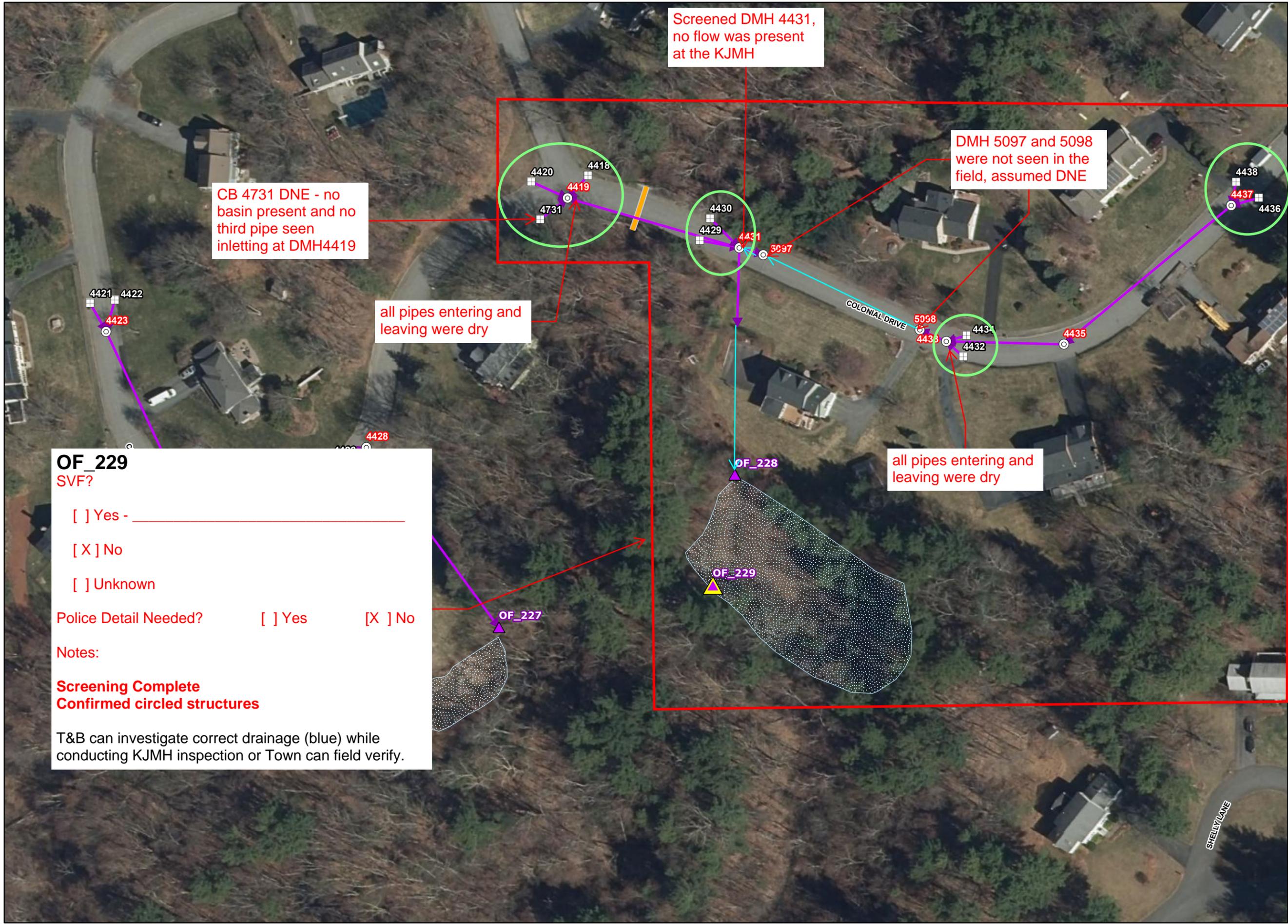


OF_227
37 Colonial Dr

Confirm terminal structures - **confirmed**

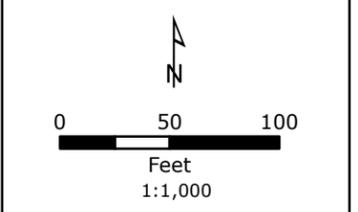
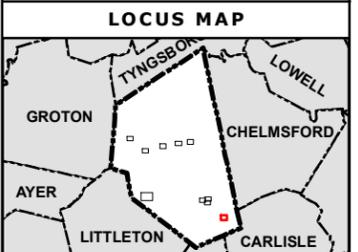
No junction / KJ

Screening complete



CATCHMENT INVESTIGATIONS GROUP 1A

- LEGEND**
- Outfall
 - Interconnection
 - Key Junction Manhole
 - Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - Catch Basin
 - Inlet/Water Quality Inlet
 - Outlet
 - Overflow Structure
 - Flared End Section
 - Other Stormwater Structure
 - BMP Point
 - Drain Pipe
 - Culvert
 - BMP Polygon
 - Catchment Area
 - Town Boundary



- NOTES**
1. Based on MassGIS Color Orthophotography (2021).
 2. Stormwater data provided by theTown of Westford (2023).

Catchment Area of Outfall: OF_229

Outside Receiving

Page 10 out of 10

Westford, Massachusetts

December 2023



OF_229
SVF?

Yes - _____

No

Unknown

Police Detail Needed? Yes No

Notes:

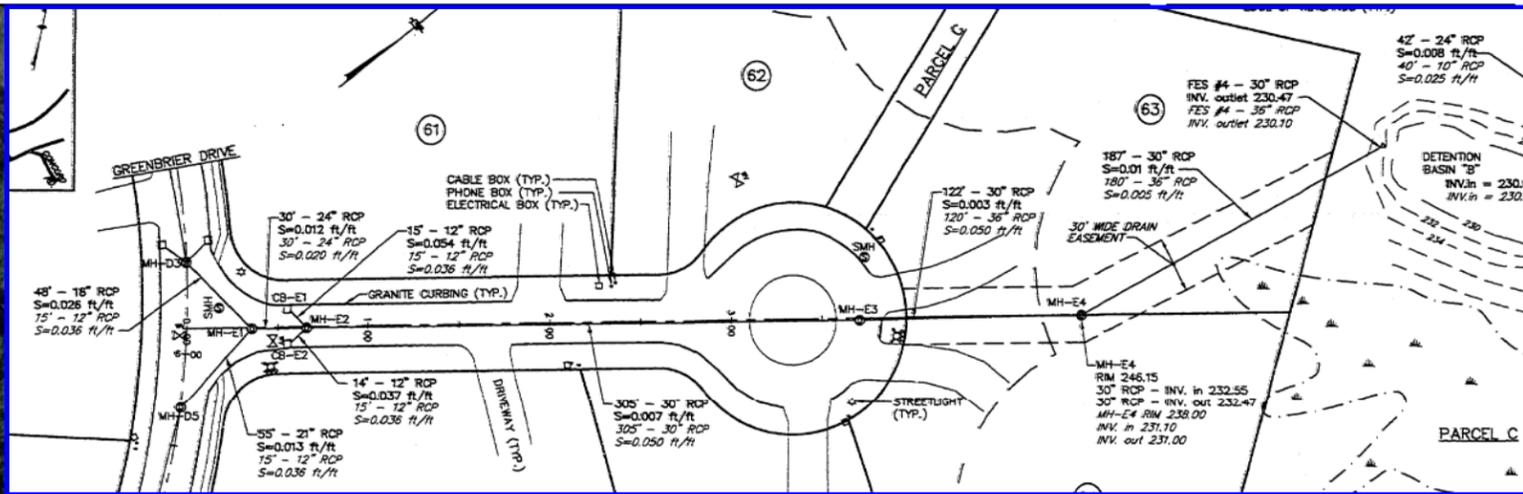
Screening Complete
Confirmed circled structures

T&B can investigate correct drainage (blue) while conducting KJMH inspection or Town can field verify.



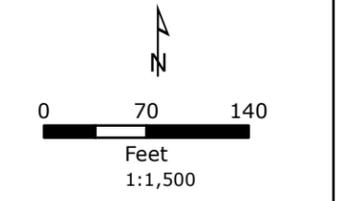
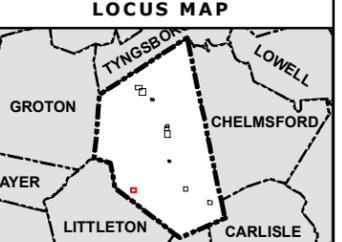
Blue dashed line added by T&B to represent potential connectivity

Screened KJMH - dry



See as-built plan

- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

OF_421

SVF?

Yes - _____

No

Unknown

Police Detail Needed? Yes No

Notes:

Confirmed terminal structures
KJMH screened
Screening Complete

T&B can investigate if **Town provides record plan or drainage information** to determine if DMH-4133 connects to outfall OF_421.

Potential connectivity from DMH-4133 to outfall OF_421 drawn by T&B in blue.

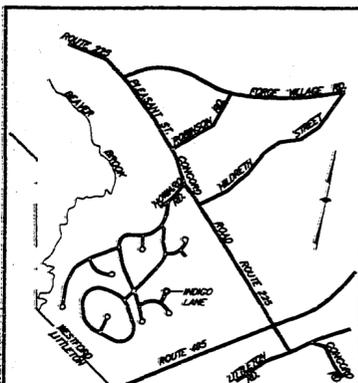
Catchment Area of Outfall: OF_421

Page 9 out of 10

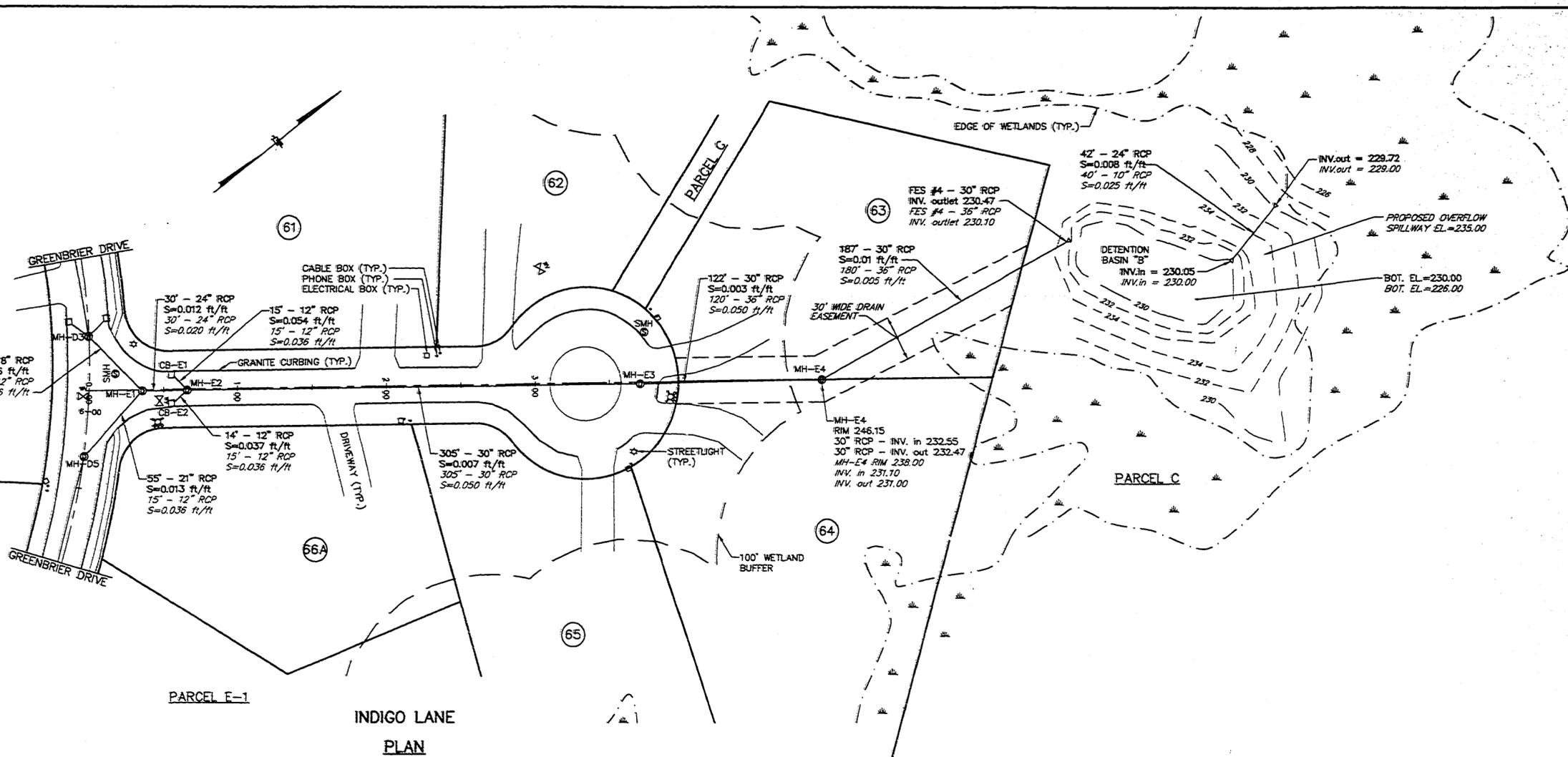
Westford, Massachusetts

January 2024

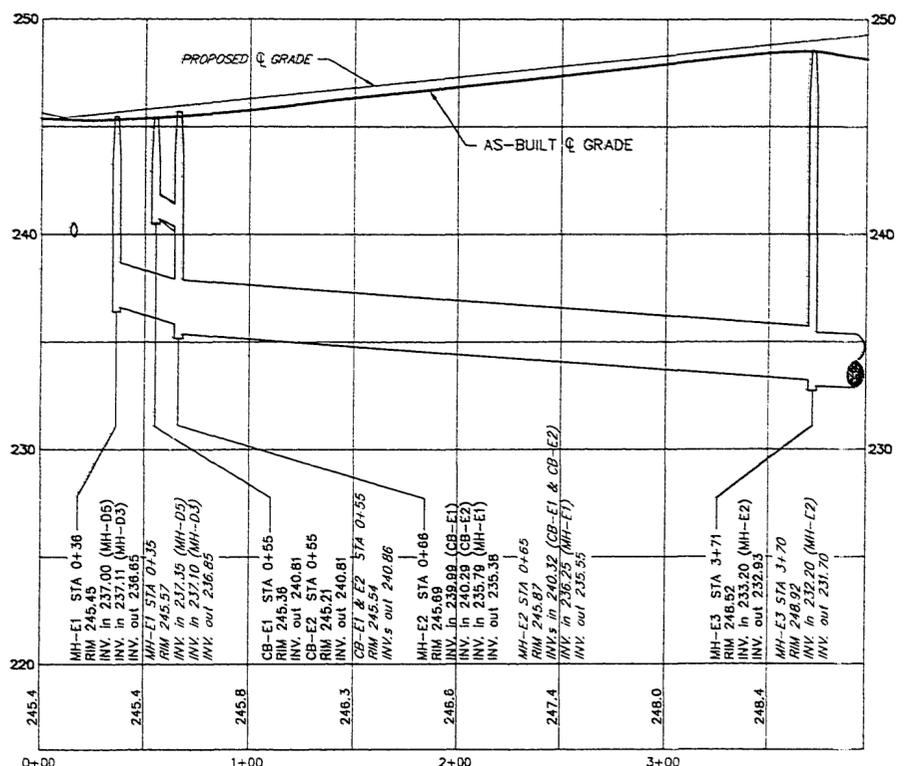




LOCUS MAP
SCALE NOT DETERMINED



PLAN
SCALE: 1"=40'

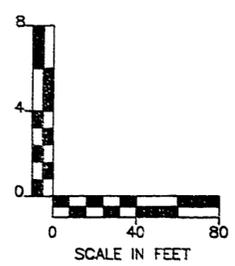


PROFILE
SCALE: HORIZ.: 1"=40'
VERT.: 1"=4'

FOOTING DRAINS AND HOUSE LOCATIONS ARE APPROXIMATE AND NOT TO SCALE

NOTES

- SEE SHEET 1 FOR LEGEND AND PLAN REFERENCES.
- "AMENDED DEFINITIVE SUBDIVISION GRADING & DRAINAGE", PREPARED BY VISNIEWSKI ENGINEERING ASSOC., INC., DATED OCTOBER 31, 1988, REVISED JANUARY 16, 1989.



AS-BUILT PLAN & PROFILE INDIGO LANE			Draft SAR
SCALE: AS SHOWN			JULY 11, 1995
"HITCHIN' POST GREENS" WESTFORD, MA			Check CML
DATE	REVISION	BY	Job. No.
			90-517
Prepared for: R.M. HICKS 124 MAIN STREET WESTFORD, MA 01886			Sheet 16 of 18 Dwg. No. 2220
LANDTECH Consultants, Inc. Civil Engineers, Land Surveyors, Project Management 7 Doris Drive, Suite 68 No. Chalmersford, MA 01863 (508) 251-9838			



Inlet and outlet pipe at KJCB were submerged.

Pipe coming from #22 Alcorn Crossing. Flow sampled at CB-1811.
Surfactants (mg/L): 0.25
Ammonia (mg/L): 0.0
Chlorine (mg/L): 0.03

Pipe GISID 1023 was partially submerged at CB-1811 as well, also slightly clogged with leaves/debris.

OF_409
22 Alcorn Crossing

KJ inspection: CB-1810
Confirmed terminal structures
Screening complete

OF_251 high priority

(30 North St)

Police Detail? Yes No

Catchment Investigation Instructions:

See mapping provided by Town

1. Inspect manhole called out by orange arrow
2. Attempt to locate / confirm a terminal structure

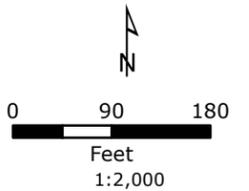
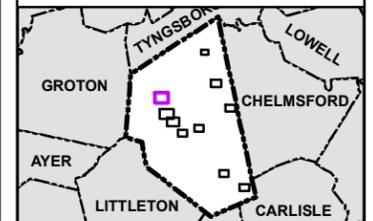
Stick to 251 for this investigation, 252, 253 and potential new / unmapped outfall need further mapping updates and are tentatively planned for investigation in PY7

CATCHMENT INVESTIGATIONS GROUP THREE

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- ⊙ Junction Manhole
- Manhole
- Key Junction Catch Basin
- ▣ Junction Catch Basin
- ▭ Catch Basin
- ⊕ Inlet/Water Quality Inlet
- ⊙ Outlet
- ▲ Overflow Structure
- ▽ Flared End Section
- ▽ Other Stormwater Structure
- ✱ BMP Point
- Drain Pipe
- Culvert
- ▨ BMP Polygon
- ▭ Catchment Area
- ▭ Town Boundary

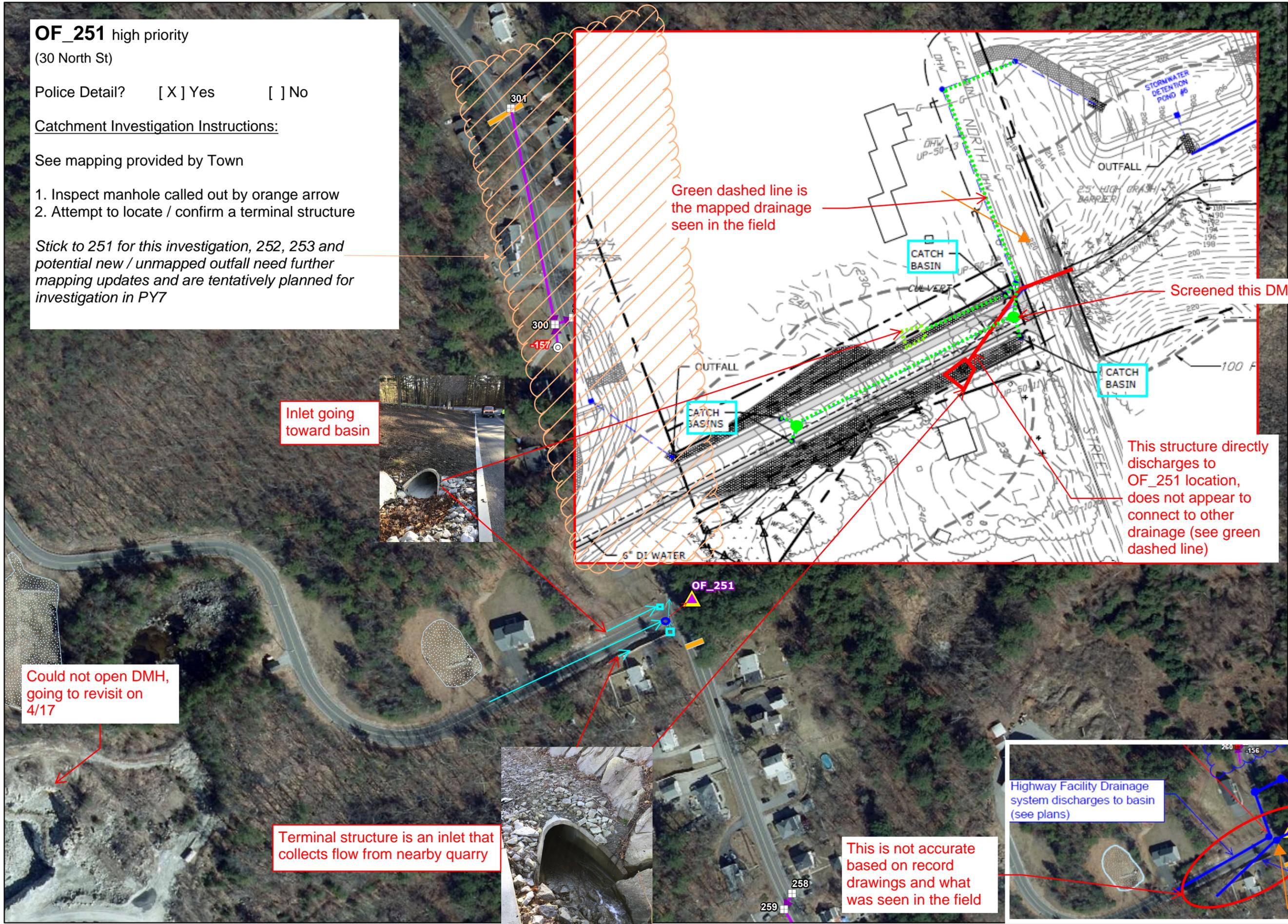
LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Town provided mapping



Inlet going toward basin



Could not open DMH, going to revisit on 4/17

Terminal structure is an inlet that collects flow from nearby quarry



Green dashed line is the mapped drainage seen in the field

This structure directly discharges to OF_251 location, does not appear to connect to other drainage (see green dashed line)

This is not accurate based on record drawings and what was seen in the field

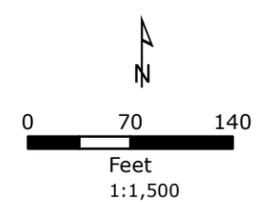
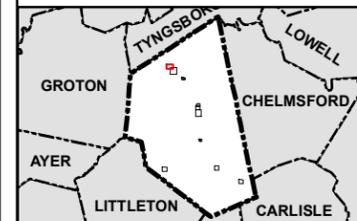


CATCHMENT INVESTIGATIONS

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_12

Page 2 out of 10

Westford, Massachusetts
January 2024



Mapping investigated by Town & LP on 4/26 - no inspections conducted at that time (mapping for OF_12 extends on to next page with the map for OF_5)

Please inspect CB0610 (technically not KJ but there's a long stretch on in-line drainage)
ECO 5/1

ESM: Inspected CB0610, no flow, survey complete. Confirmed two inlets and one out as shown in blue.

OF_12

SVF?

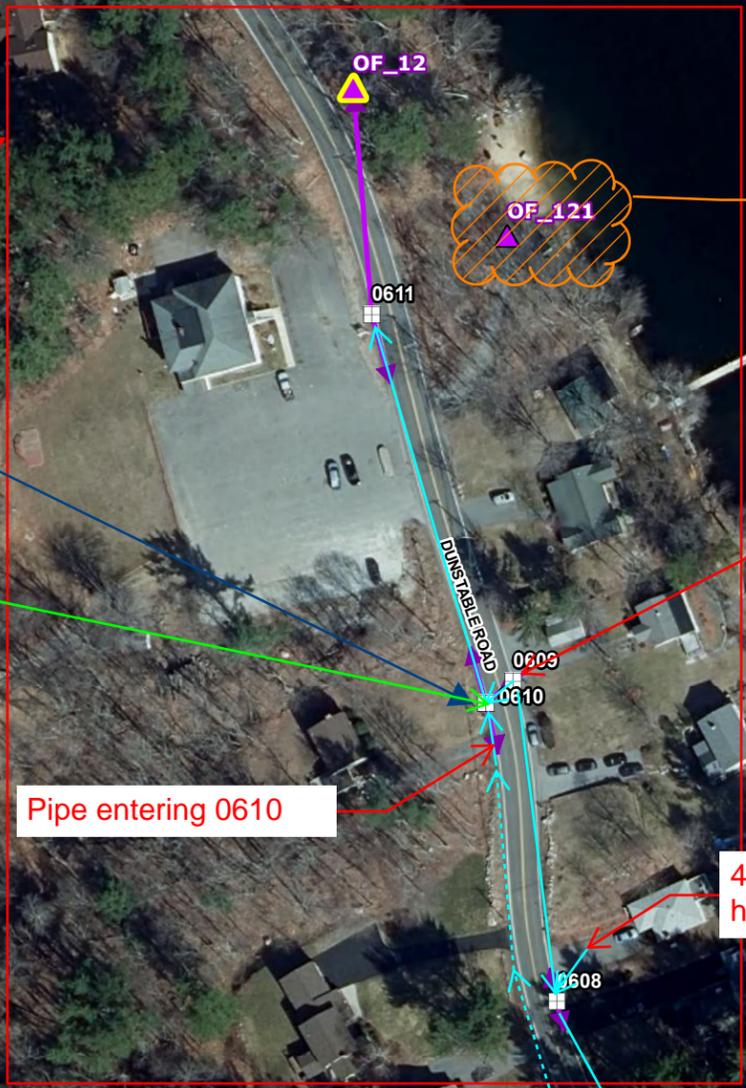
Yes - _____

No

Unknown

Police Detail Needed? Yes No

Notes:



Dry weather catchment investigation not needed for OF_121.

No inlet pipe in this CB besides the outgoing pipe to 0610.

Pipe entering 0610

4" PVC coming from house

12" CMP leaving CB

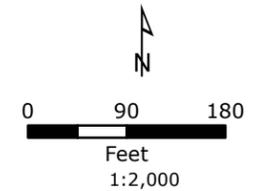
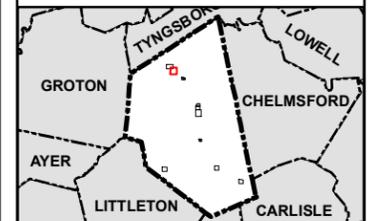
Town suspects pipe leaving CB0607 drains to 0610 this area of town has extremely old drainage which they believe may be why the drainage goes in this path

CATCHMENT INVESTIGATIONS

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



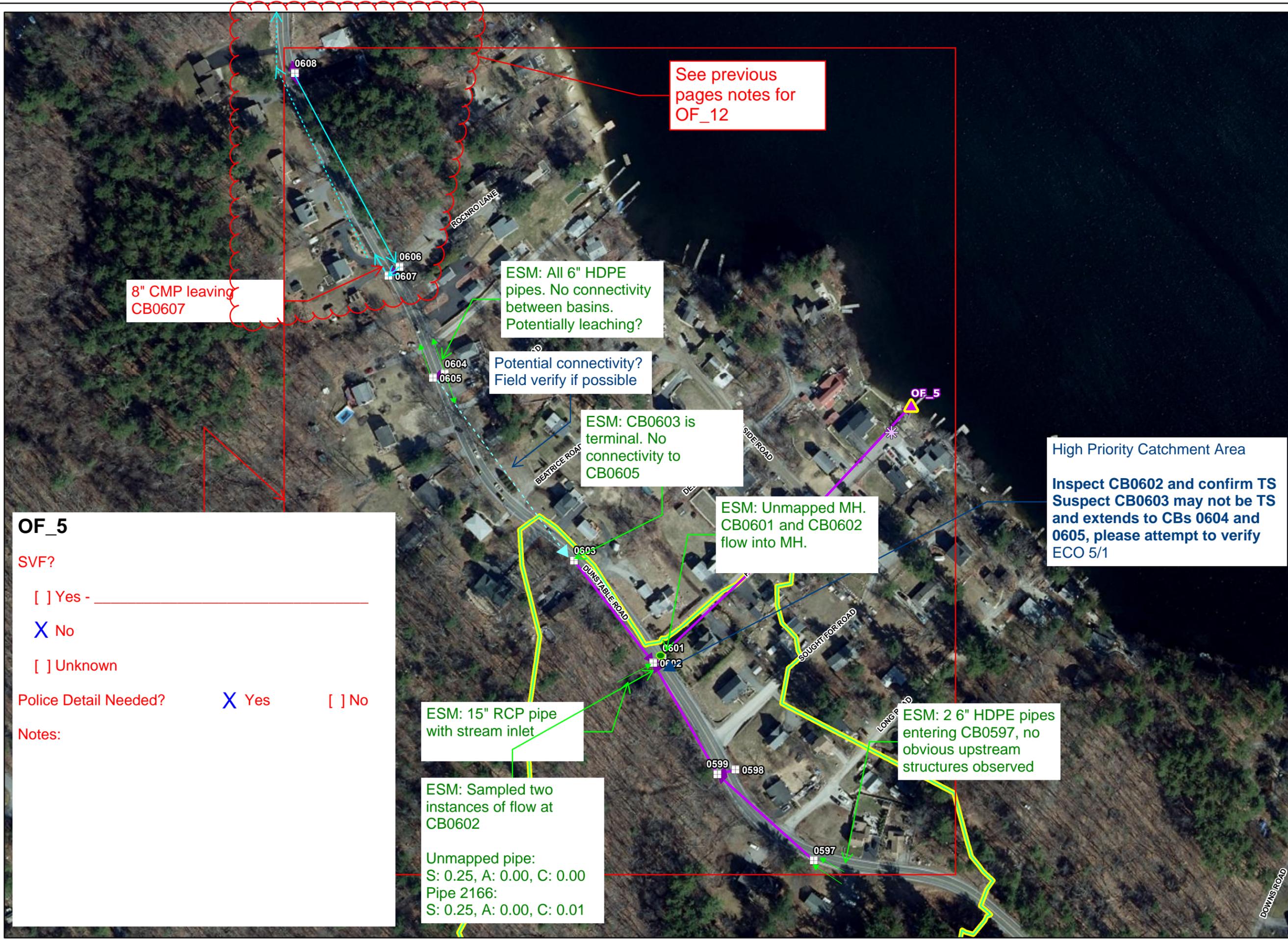
NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_5

Page 1 out of 10

**Westford, Massachusetts
January 2024**



See previous pages notes for OF_12

8" CMP leaving CB0607

ESM: All 6" HDPE pipes. No connectivity between basins. Potentially leaching?

Potential connectivity? Field verify if possible

ESM: CB0603 is terminal. No connectivity to CB0605

ESM: Unmapped MH. CB0601 and CB0602 flow into MH.

High Priority Catchment Area
Inspect CB0602 and confirm TS
Suspect CB0603 may not be TS and extends to CBs 0604 and 0605, please attempt to verify ECO 5/1

OF_5

SVF?

Yes - _____

No

Unknown

Police Detail Needed? Yes No

Notes:

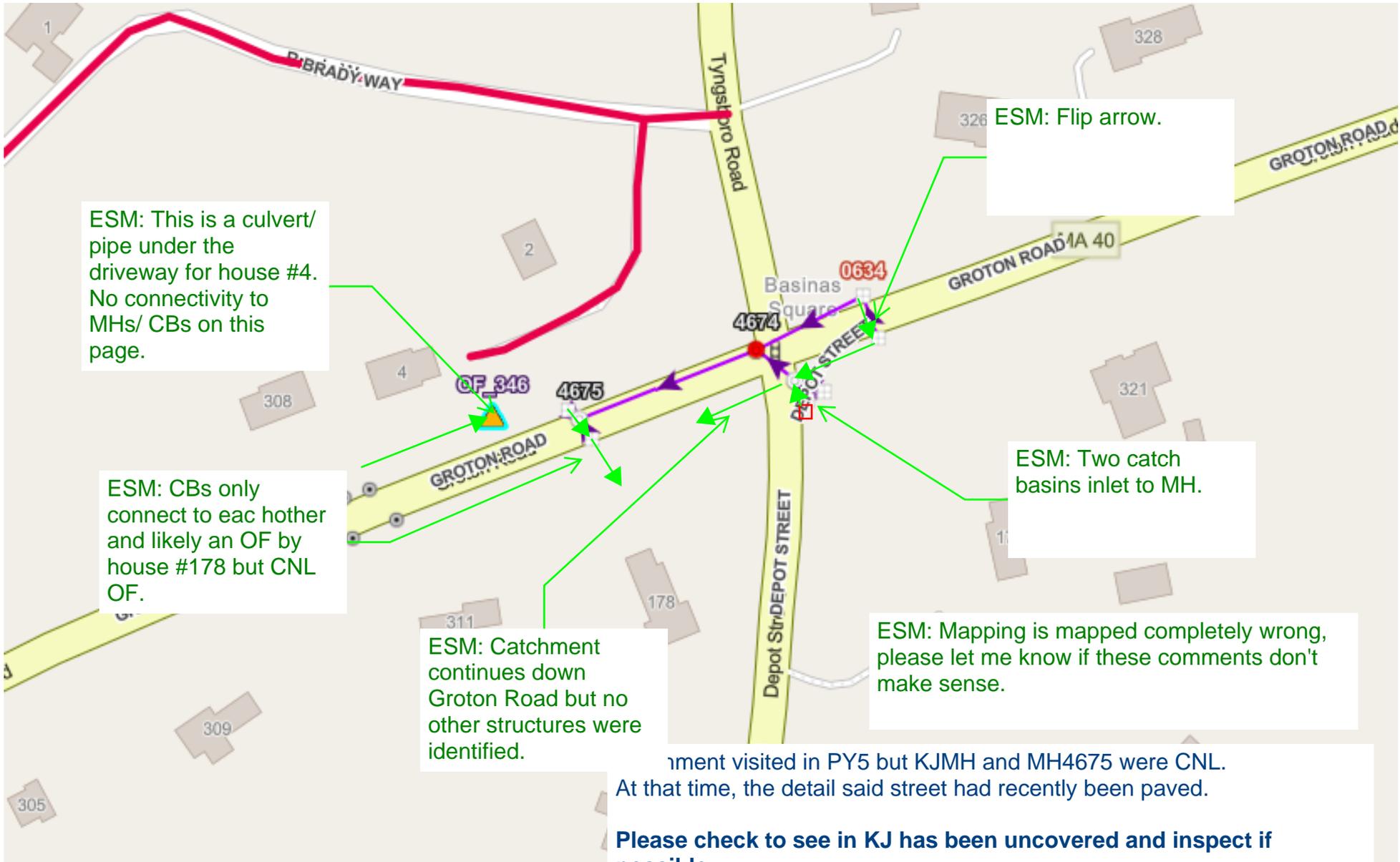
ESM: 15" RCP pipe with stream inlet

ESM: Sampled two instances of flow at CB0602

Unmapped pipe:
S: 0.25, A: 0.00, C: 0.00
Pipe 2166:
S: 0.25, A: 0.00, C: 0.01

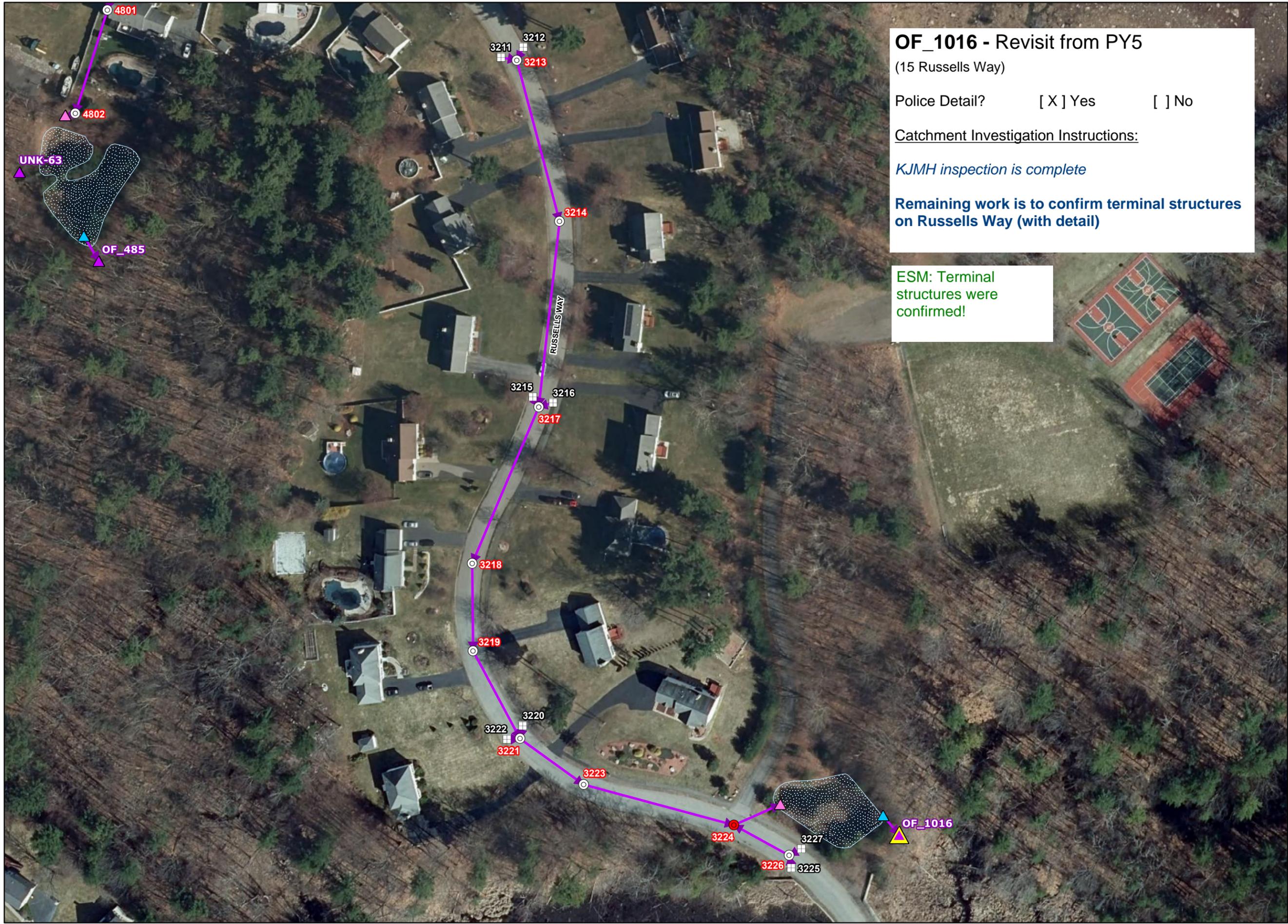
ESM: 2 6" HDPE pipes entering CB0597, no obvious upstream structures observed

OF_346 - Revisit from PY5
Detail needed



ment visited in PY5 but KJMH and MH4675 were CNL.
At that time, the detail said street had recently been paved.

Please check to see in KJ has been uncovered and inspect if possible
Also check for MH4675 to verify connection to outfall
Confirm TS CB0635
Other TS and MH0638 already inspected in PY5
ECO 5/1



OF_1016 - Revisit from PY5
 (15 Russells Way)

Police Detail? Yes No

Catchment Investigation Instructions:

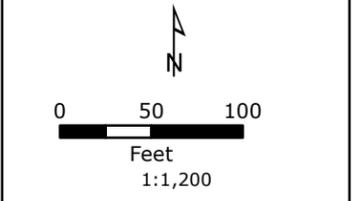
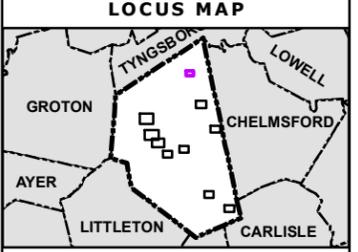
KJMH inspection is complete

Remaining work is to confirm terminal structures on Russells Way (with detail)

ESM: Terminal structures were confirmed!

CATCHMENT INVESTIGATIONS GROUP THREE

- LEGEND**
- Outfall
 - Interconnection
 - Key Junction Manhole
 - Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - Catch Basin
 - Inlet/Water Quality Inlet
 - Outlet
 - Overflow Structure
 - Flared End Section
 - Other Stormwater Structure
 - BMP Point
 - Drain Pipe
 - Culvert
 - BMP Polygon
 - Catchment Area
 - Town Boundary



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by theTown of Westford (2023).

Catchment Area of Outfall: OF_1016

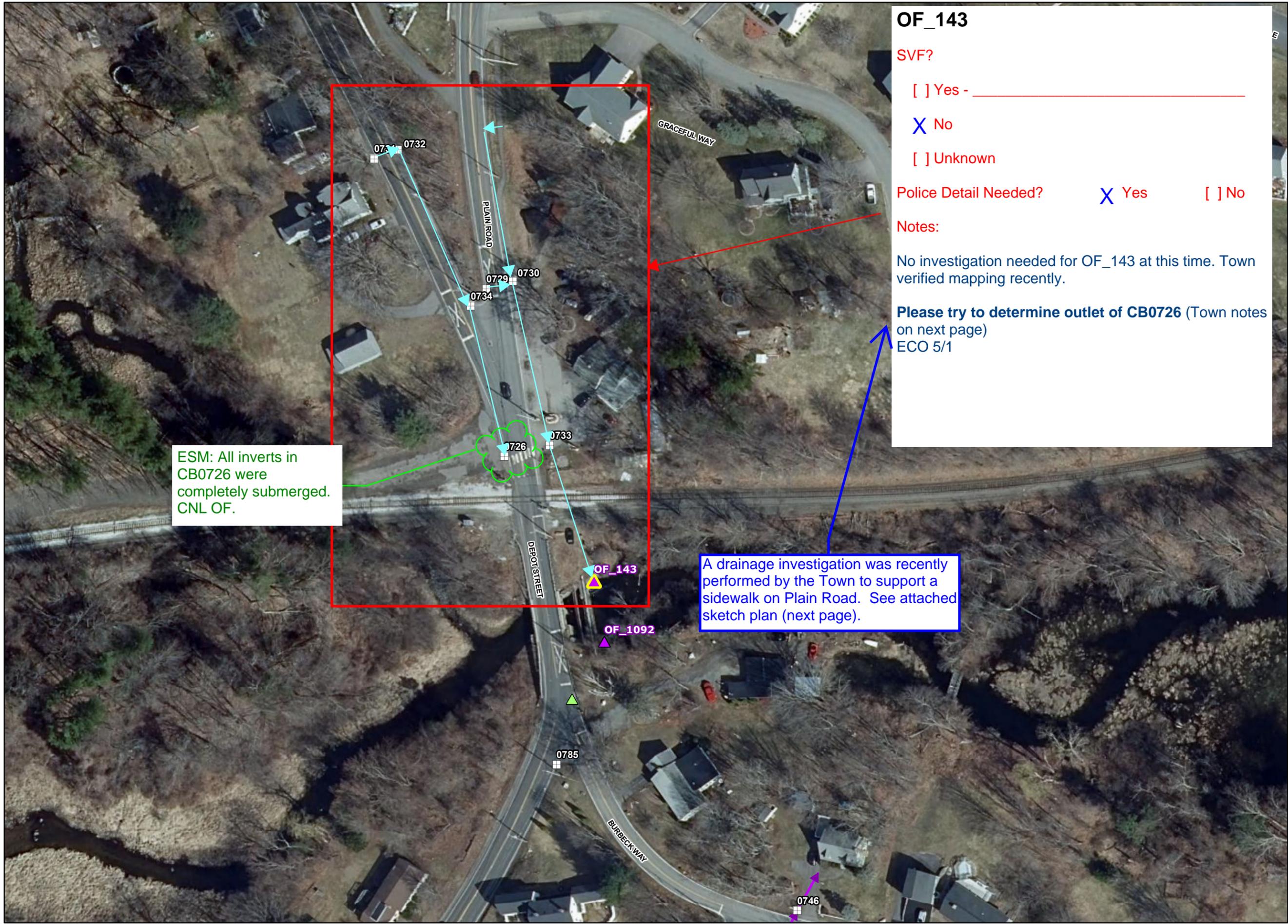
Tributary/Wetland to Gilson Brook

Page 1 out of 10

Westford, Massachusetts

November 2023





ESM: All inverts in CB0726 were completely submerged. CNL OF.

A drainage investigation was recently performed by the Town to support a sidewalk on Plain Road. See attached sketch plan (next page).

OF_143

SVF?

Yes - _____

No

Unknown

Police Detail Needed? Yes No

Notes:

No investigation needed for OF_143 at this time. Town verified mapping recently.

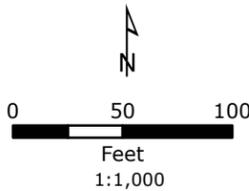
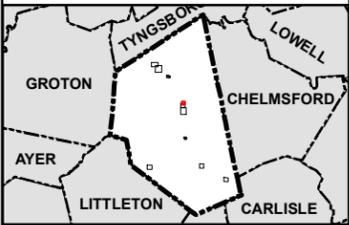
Please try to determine outlet of CB0726 (Town notes on next page)
ECO 5/1

CATCHMENT INVESTIGATIONS

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_143

Page 4 out of 10

Westford, Massachusetts
January 2024



PHASE 2 PLAIN ROAD

Westford, MA 01886

PREPARED FOR:

**TEC,
INC.**

282 Merrimack St, 2nd Floor
Lawrence, Massachusetts 01843

**HANCOCK
ASSOCIATES**

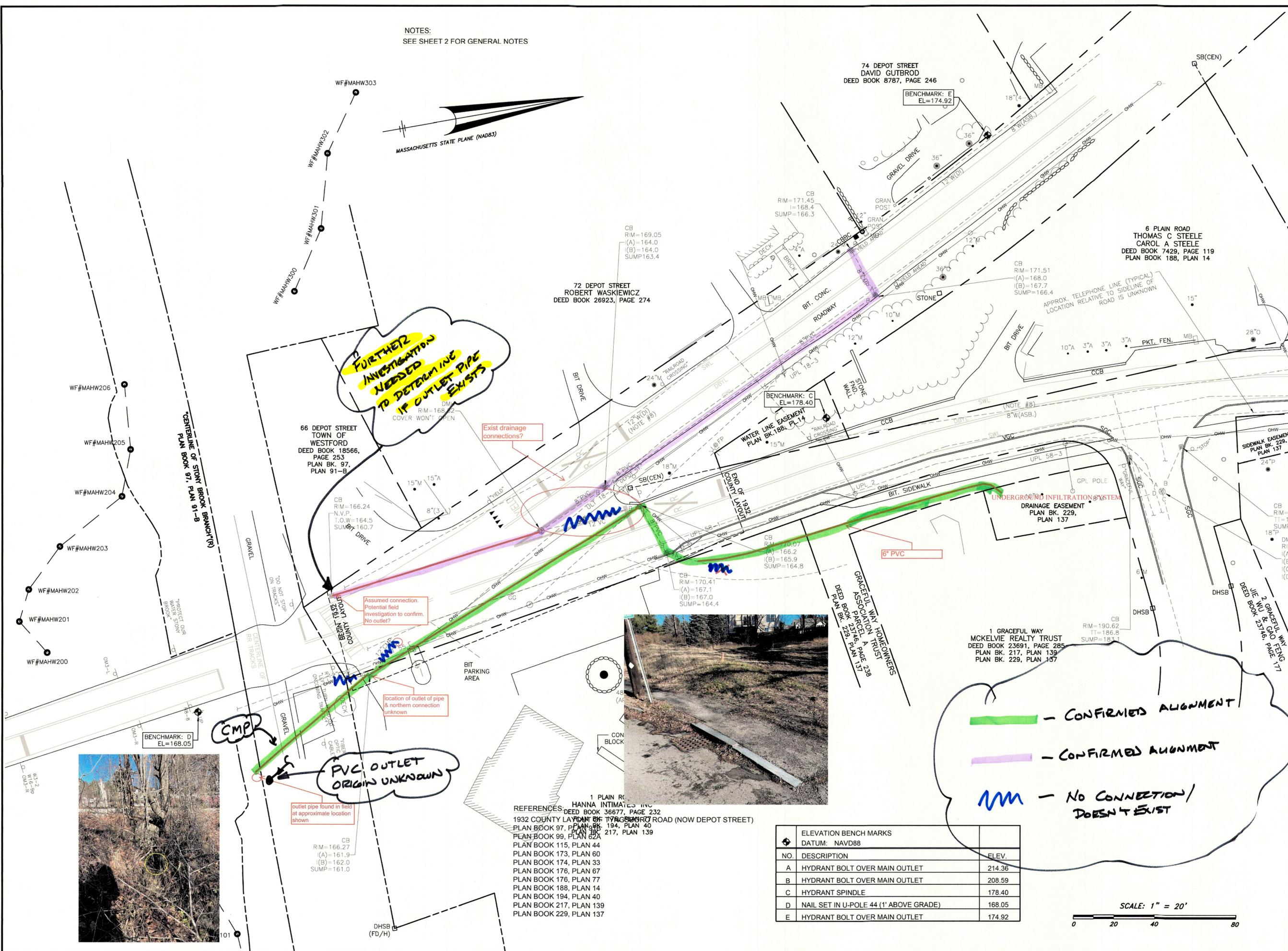
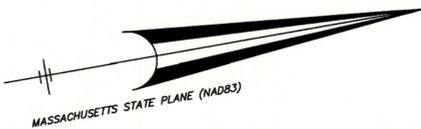
Civil Engineers

Land Surveyors

Wetland Scientists

121 EAST BERKELEY STREET, BOSTON, MA 02118
VOICE (617) 357-8145, FAX (617) 357-9495
WWW.HANCOCKASSOCIATES.COM

NOTES:
SEE SHEET 2 FOR GENERAL NOTES



FURTHER INVESTIGATION NEEDED TO DETERMINE IF OUTLET PIPE EXISTS

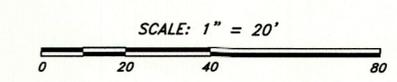
PVC OUTLET ORIGIN UNKNOWN

— CONFIRMED ALIGNMENT
— CONFIRMED ALIGNMENT
— NO CONNECTION / DOESN'T EXIST



- REFERENCES:
- HANNA INTIMATES, INC. DEED BOOK 36677, PAGE 232
 - 1932 COUNTY LANE BIT TRUCKS ROAD (NOW DEPOT STREET) PLAN BOOK 97, PLAN 253, PLAN 91-B
 - 1932 COUNTY LANE BIT TRUCKS ROAD (NOW DEPOT STREET) PLAN BOOK 99, PLAN 62A
 - PLAN BOOK 115, PLAN 44
 - PLAN BOOK 173, PLAN 60
 - PLAN BOOK 174, PLAN 33
 - PLAN BOOK 176, PLAN 67
 - PLAN BOOK 176, PLAN 77
 - PLAN BOOK 188, PLAN 14
 - PLAN BOOK 194, PLAN 40
 - PLAN BOOK 217, PLAN 139
 - PLAN BOOK 229, PLAN 137

ELEVATION BENCH MARKS		DATUM: NAVD88
NO.	DESCRIPTION	ELEV.
A	HYDRANT BOLT OVER MAIN OUTLET	214.36
B	HYDRANT BOLT OVER MAIN OUTLET	208.59
C	HYDRANT SPINDLE	178.40
D	NAIL SET IN U-POLE 44 (1' ABOVE GRADE)	168.05
E	HYDRANT BOLT OVER MAIN OUTLET	174.92



EXISTING CONDITIONS
PLAN OF LAND
IN
WESTFORD, MA

DATE: 11/21/2022 DRAWN BY: SCH
SCALE: 1"=20' CHECK BY: JAE

DWG: T1276_SV.dwg
LAYOUT: SHEET 1
SHEET: 1 OF 3
PROJECT NO.: 24922 C

OF_1092 (page 1 of 2)

SVF?

Yes - _____

No

Unknown

Police Detail Needed? Yes No

Notes:

Please attempt to verify mapping / connectivity in field and add data issue points as needed
Potential / estimate connectivity drawn in light blue dashes.

Inspect KJs: MH0776 and MH0742

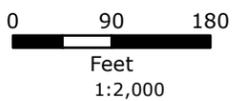
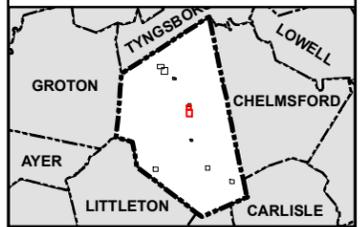
Catchment continues on to next page
ECO 5/1

CATCHMENT INVESTIGATIONS

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ✱ BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- ▭ Catchment Area
- ▭ Town Boundary

LOCUS MAP



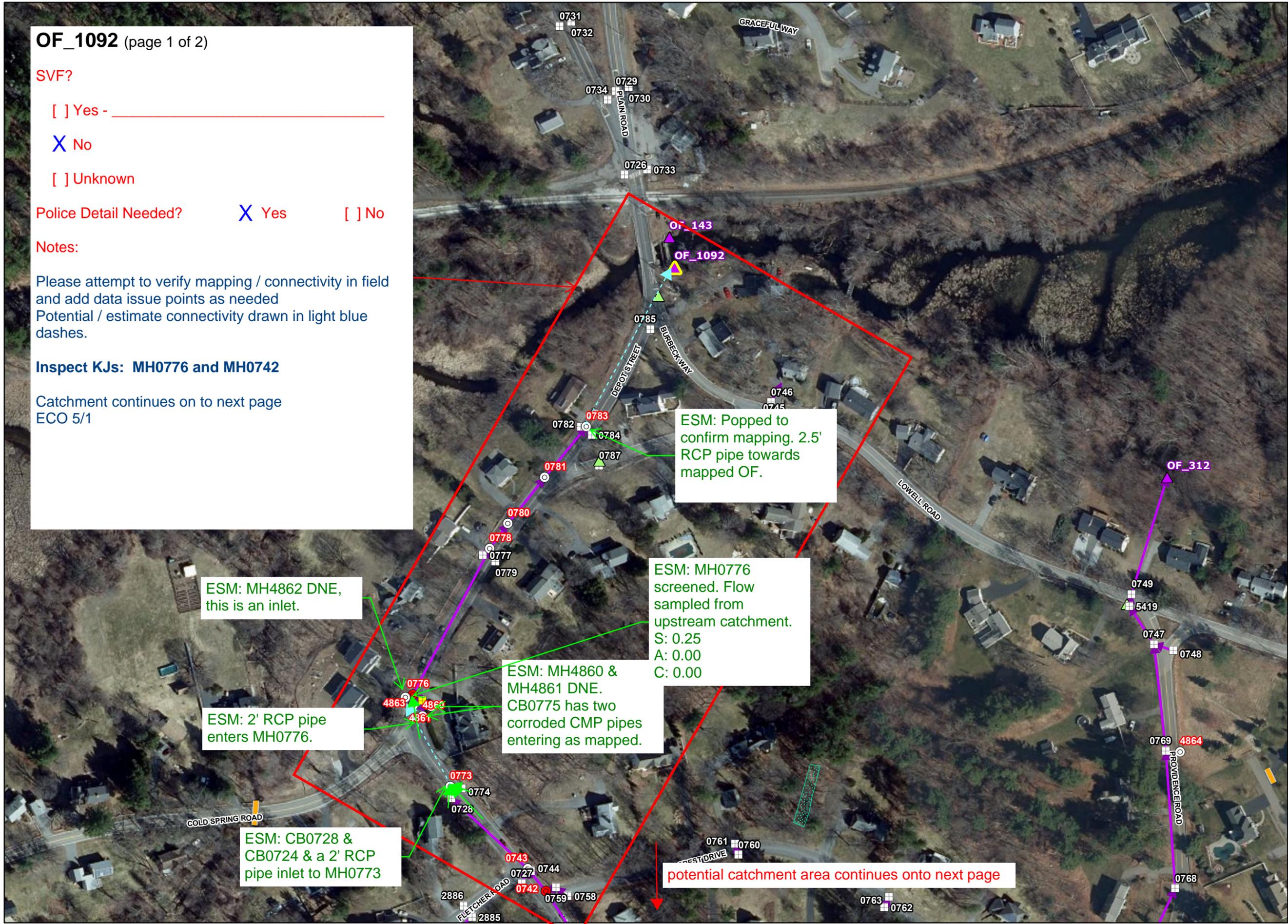
NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_1092

Page 5 out of 10

Westford, Massachusetts
January 2024



potential catchment area continues on from previous page

ESM: Unmapped CMP pipe entering CB0758

ESM: Sampled two instances of flow at MH0742

Pipe 1108:
S: 0.25, A: 0.00, C: 0.00
Pipe 1106:
S: 0.25, A: 0.00, C: 0.05

ESM: Unmapped MH in front of house #33

ESM: Unmapped CMP pipe entering MH0798 and no obvious upstream structures observed.

OF_1092 (page 2 of 2)

SVF?

Yes - _____

No

Unknown

Police Detail Needed? Yes No

Notes:

Please attempt to verify mapping / connectivity in field and add data issue points as needed
Potential / estimate connectivity drawn in light blue dashes.

Inspect KJs: MH0776 and MH0742
Confirm TS

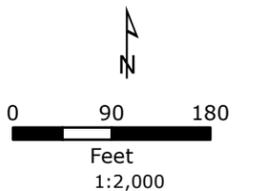
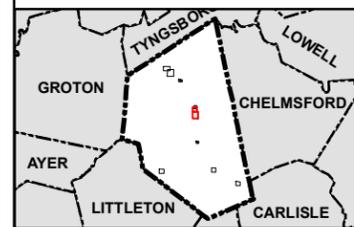
ECO 5/1

CATCHMENT INVESTIGATIONS

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_1092

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Westford, Massachusetts
January 2024

Tighe & Bond

OF_41 - Revisit from PY5

No detail

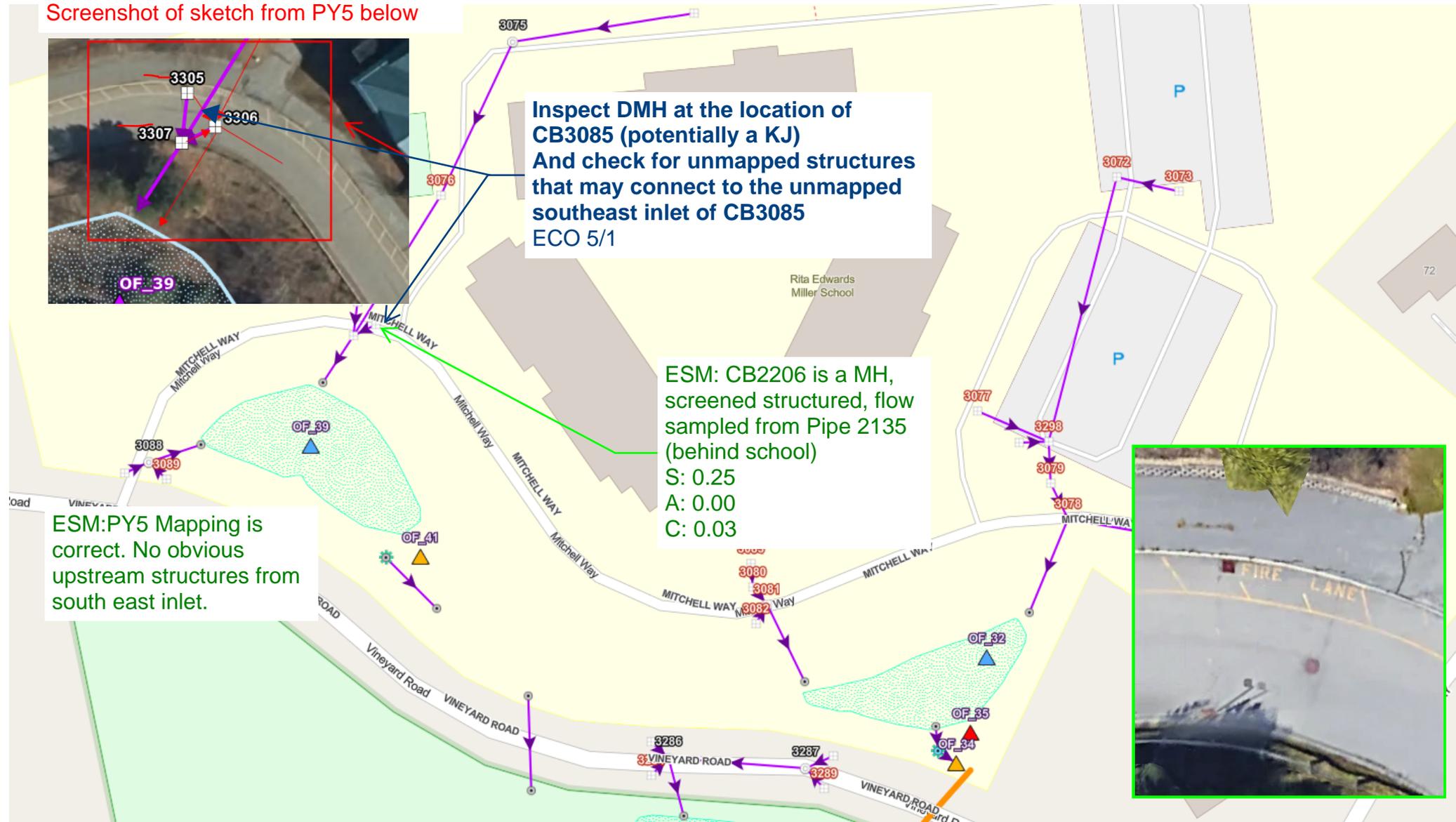
Screenshot of sketch from PY5 below



Inspect DMH at the location of CB3085 (potentially a KJ)
And check for unmapped structures that may connect to the unmapped southeast inlet of CB3085
ECO 5/1

ESM: CB2206 is a MH, screened structured, flow sampled from Pipe 2135 (behind school)
S: 0.25
A: 0.00
C: 0.03

ESM:PY5 Mapping is correct. No obvious upstream structures from south east inlet.



OF_231A SVF? Yes - No
 Unknown Police Detail Needed? Yes
 No Notes: T&B to confirm terminal structures.

No SVFs. Police Detail not required.

ADDITIONAL FIELD INVESTIGATION STILL NEEDED

Is this accurate based on as-built plan?

Symbol added by T&B based on AGOL record drawing for location of OF_231B

ESM: Terminal structures confirmed

Id verify location of OF_231B respect KJ MH-4444 confirm TS for both OF-231B and OF_231A ECO 5/1

ESM: MH4710 DNE and OF_231B is mapped correctly in AGOL. BlueBeam OF is a small pipe to manage driveway runoff.

ESM: Terminal structures confirmed

ESM: Screened DMH-4444 and sampled three instances of flow
 Pipe 587: S: 0.25, A: 0.00, C: 0.02
 Pipe 591: S: 0.25, A: 0.00, C: 0.01
 Pipe 3046: S: 0.25, A: 0.00, C: 0.00

OF_231B

SVF? Yes - _____ No

Unknown

Police Detail Needed? Yes No

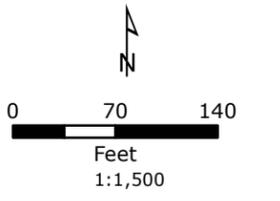
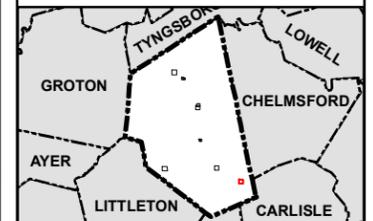
Notes:
 Based on record drawings in AGOL updated OF_231B location is drawn in blue. T&B can investigate correct drainage while conducting KJM inspection.

CATCHMENT INVESTIGATIONS

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_231B and OF_231A

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Westford, Massachusetts
 December 2023

27

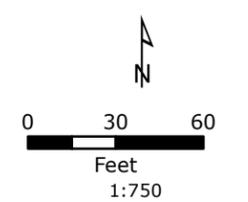
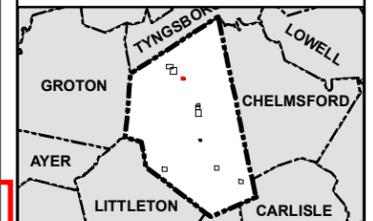


CATCHMENT INVESTIGATIONS

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



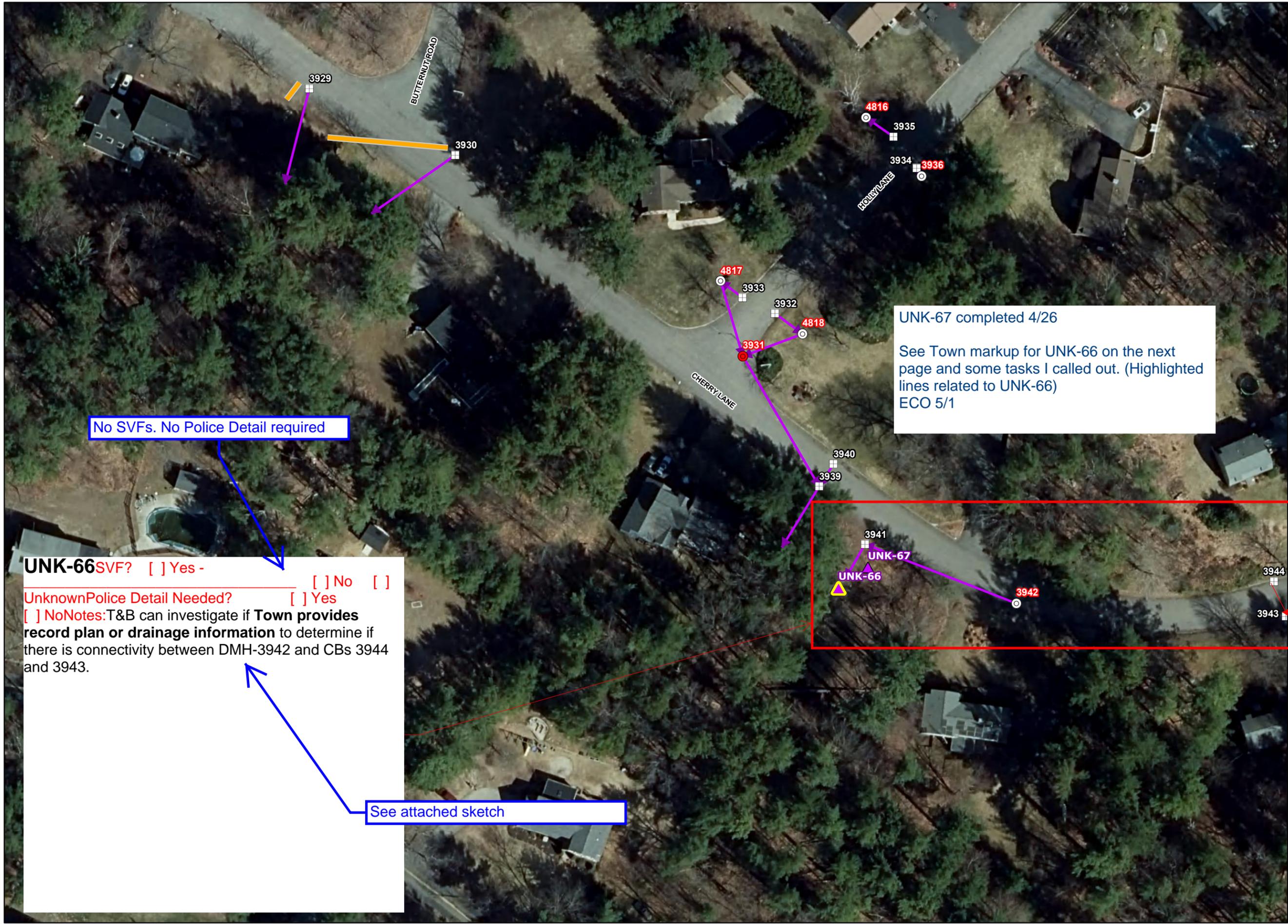
NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: UNK-66

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Westford, Massachusetts
January 2024

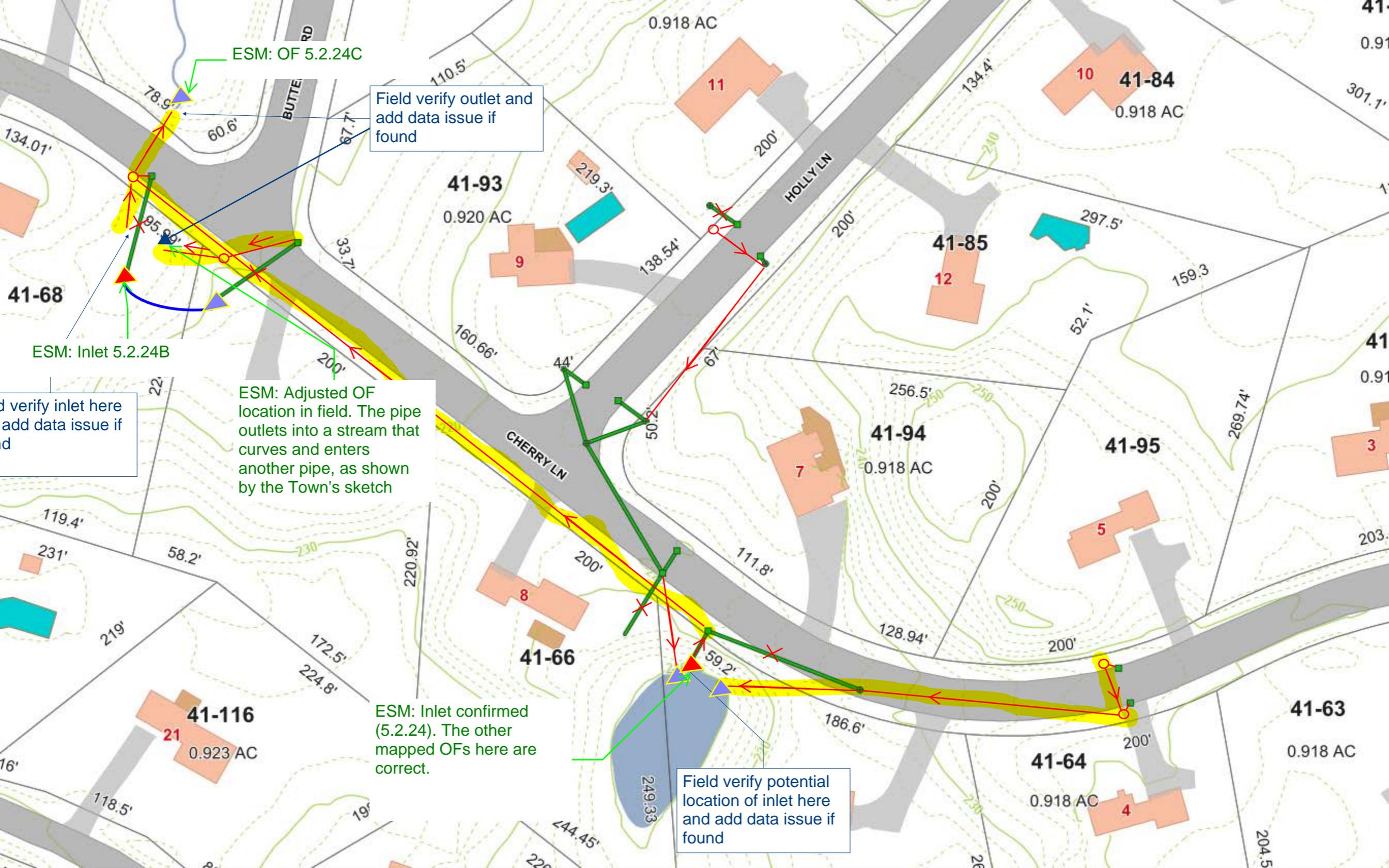


UNK-67 completed 4/26
See Town markup for UNK-66 on the next page and some tasks I called out. (Highlighted lines related to UNK-66) ECO 5/1

No SVFs. No Police Detail required

UNK-66 SVF? Yes - No
 Unknown Police Detail Needed? Yes No
 Notes: T&B can investigate if Town provides record plan or drainage information to determine if there is connectivity between DMH-3942 and CBs 3944 and 3943.

See attached sketch



ESM: OF 5.2.24C

Field verify outlet and add data issue if found

ESM: Inlet 5.2.24B

Field verify inlet here and add data issue if found

ESM: Adjusted OF location in field. The pipe outlets into a stream that curves and enters another pipe, as shown by the Town's sketch

ESM: Inlet confirmed (5.2.24). The other mapped OFs here are correct.

Field verify potential location of inlet here and add data issue if found

41-68

41-93

0.920 AC

0.918 AC

11

10

41-84

0.918 AC

41-85

12

41

0.91

3

41-94

0.918 AC

41-95

41-66

41-116

0.923 AC

21

41-63

0.918 AC

41-64

0.918 AC

4

BUTTE RD

HOLLY LN

CHERRY LN

134.01'

60.6'

78.9'

67.7'

110.5'

219.3'

138.54'

200'

134.4'

297.5'

159.3'

52.1'

269.74'

160.66'

44'

50.5'

256.5'

203'

119.4'

231'

58.2'

220.92'

200'

111.8'

128.94'

200'

172.5'

224.8'

200'

186.6'

249.33'

244.45'

118.5'

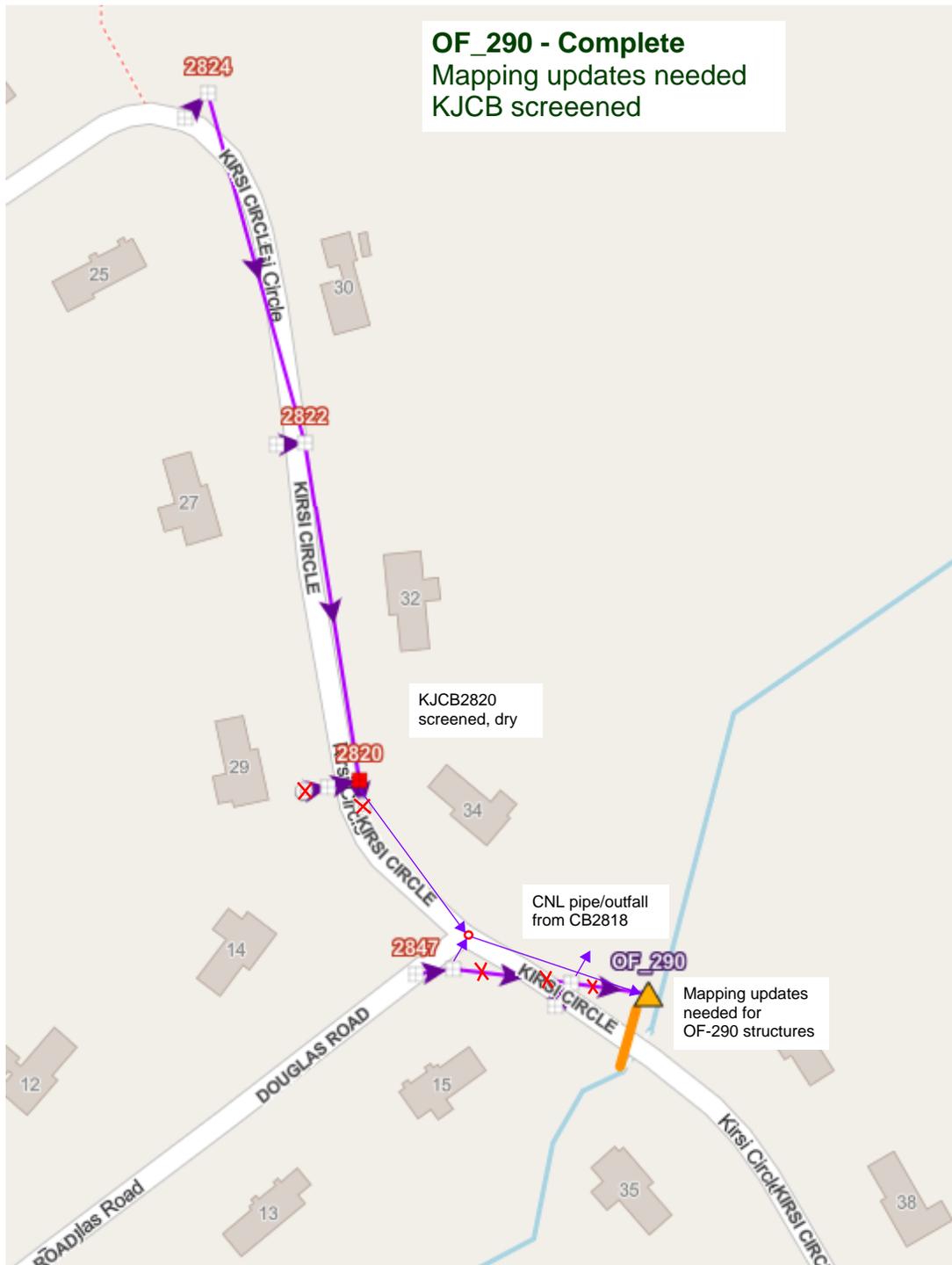
19'

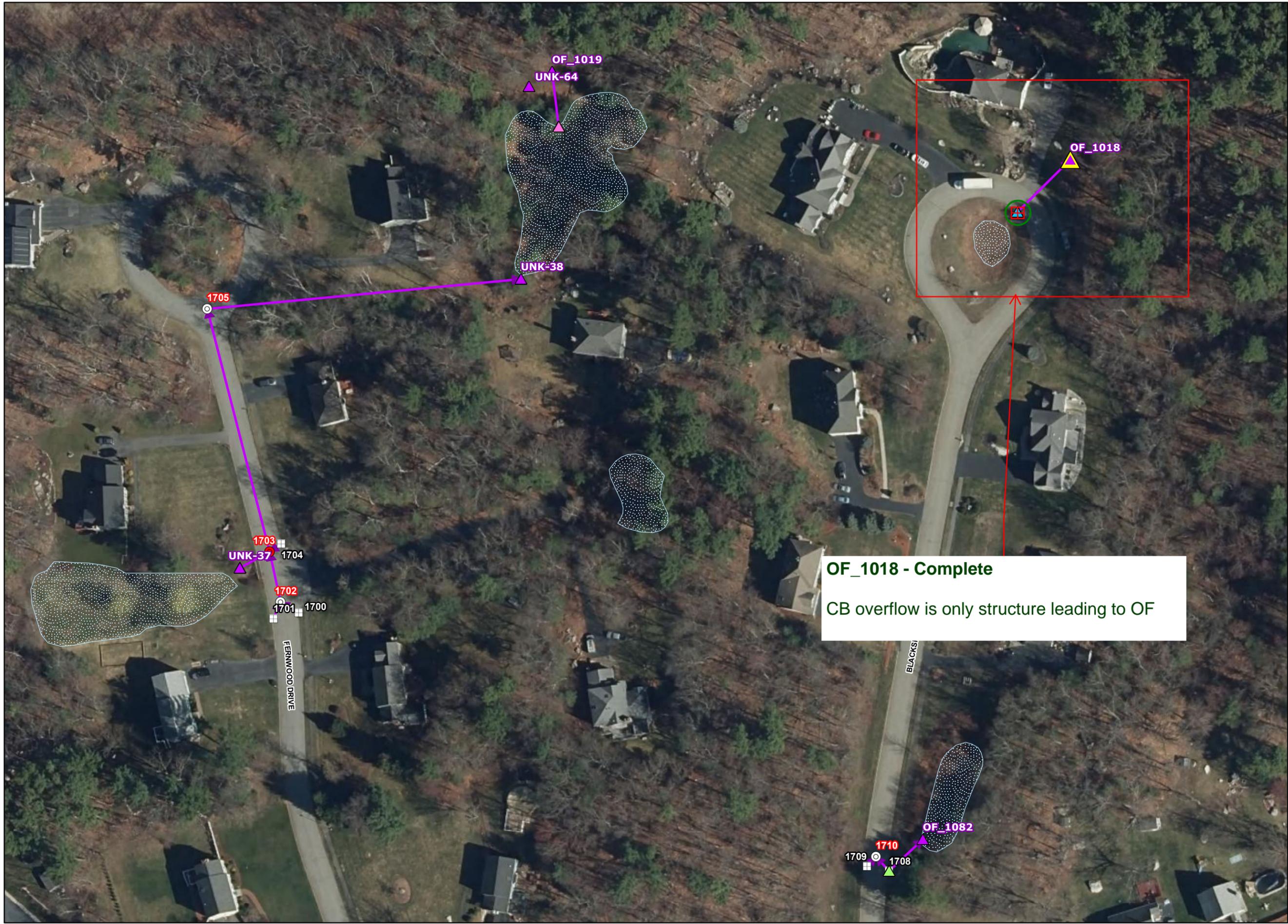
204.5'



OF_20 -
Mapping updates needed
Terminal structures found







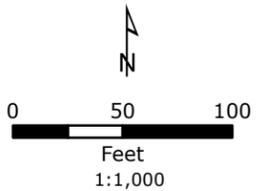
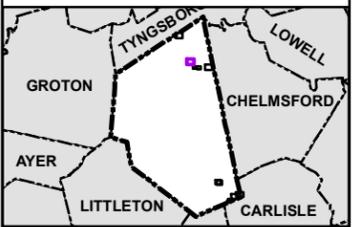
OF_1018 - Complete
 CB overflow is only structure leading to OF

CATCHMENT INVESTIGATIONS GROUP TWO

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- ▣ Junction Catch Basin
- ▤ Catch Basin
- ⊖ Inlet/Water Quality Inlet
- ⦿ Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ✱ BMP Point
- Drain Pipe
- ▬ Culvert
- ▨ BMP Polygon
- ▭ Catchment Area
- ▬ Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by theTown of Westford (2023).

Catchment Area of Outfall: OF_1018

Outside Receiving

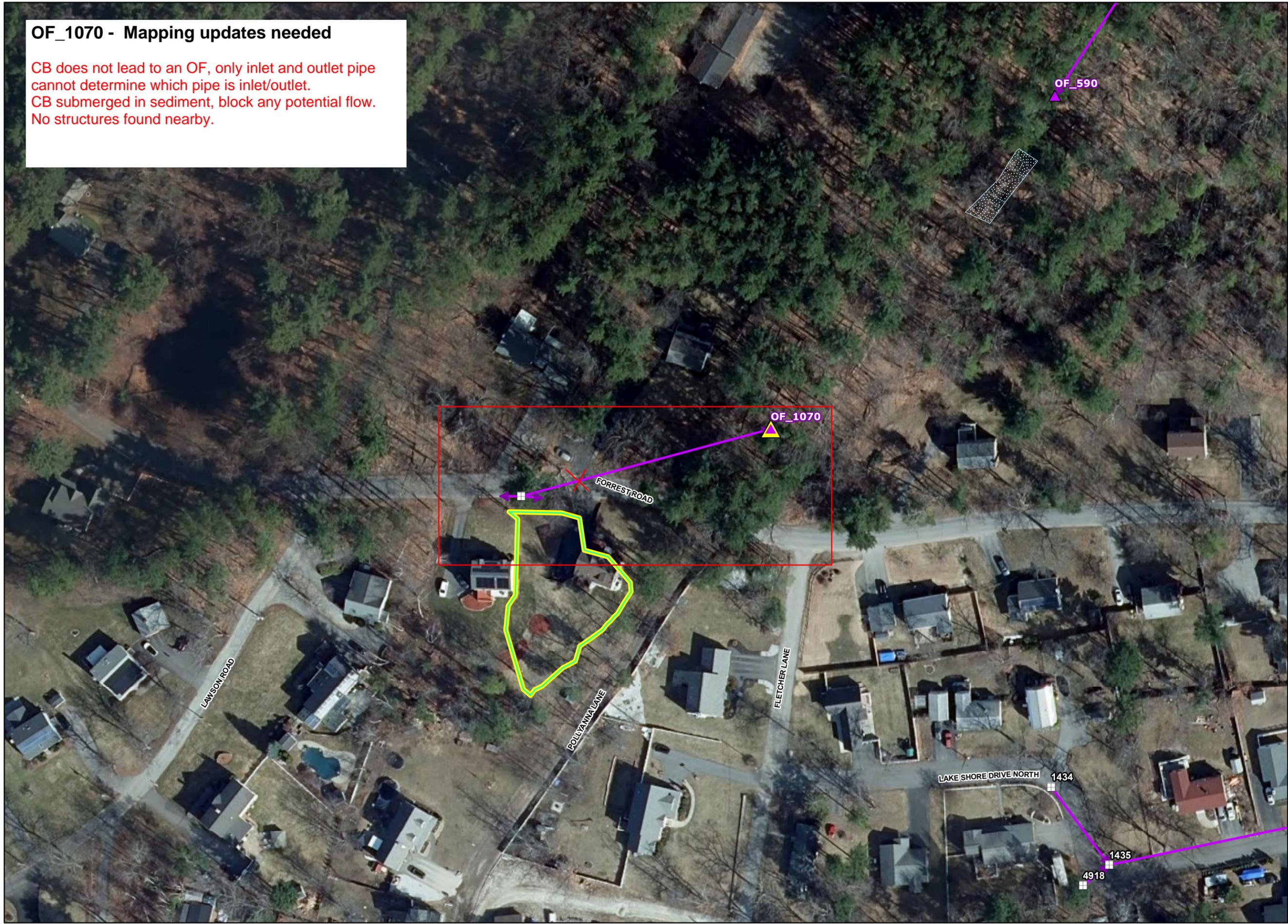
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**Westford, Massachusetts
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OF_1070 - Mapping updates needed

CB does not lead to an OF, only inlet and outlet pipe cannot determine which pipe is inlet/outlet.
 CB submerged in sediment, block any potential flow.
 No structures found nearby.

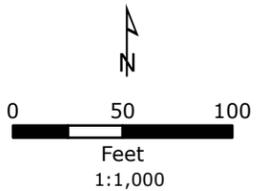
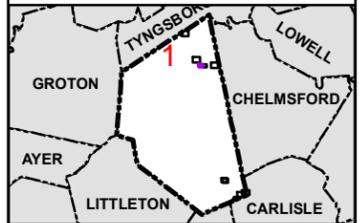


CATCHMENT INVESTIGATIONS GROUP TWO

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

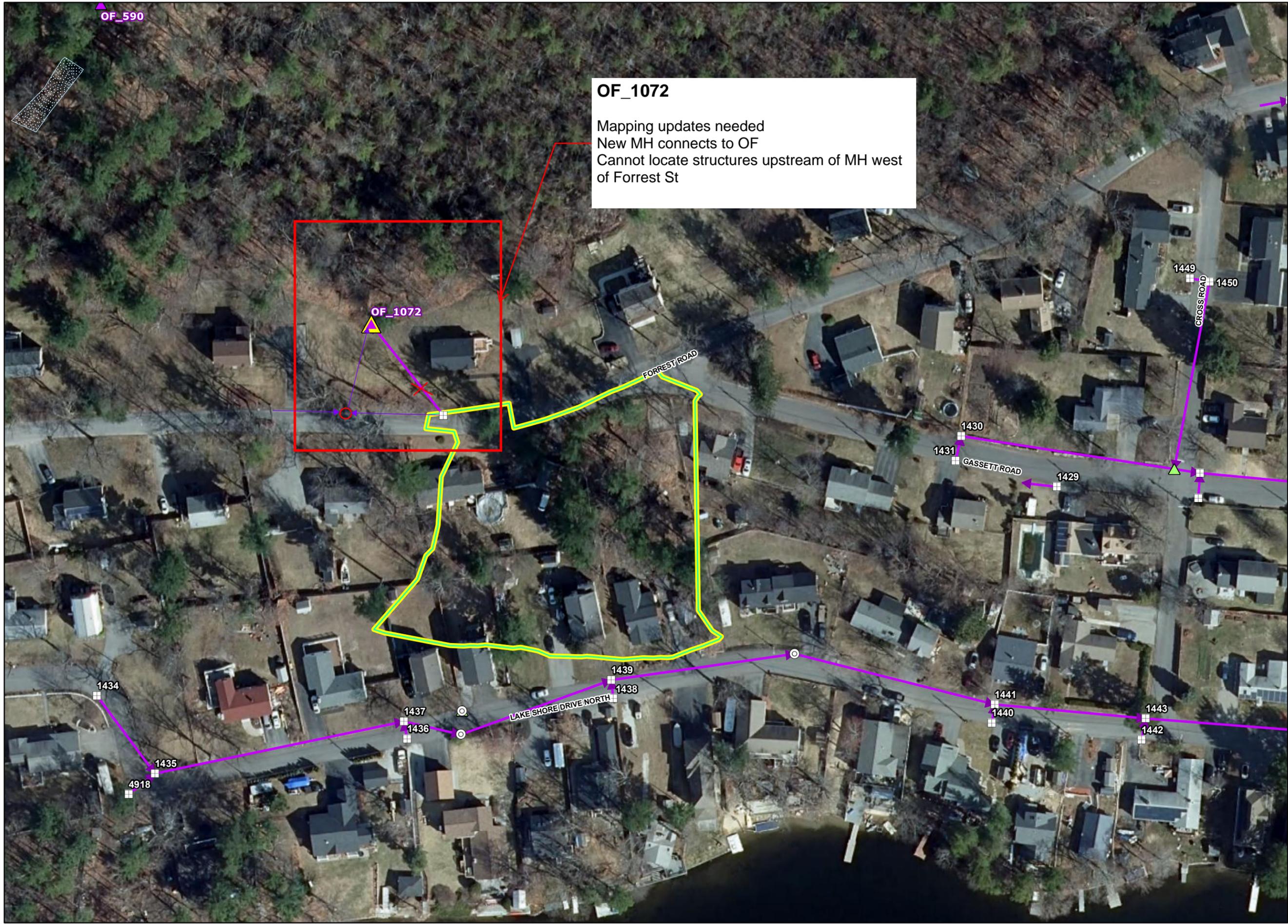
Catchment Area of Outfall: OF_1070

Outside Receiving

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**Westford, Massachusetts
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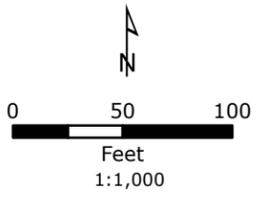
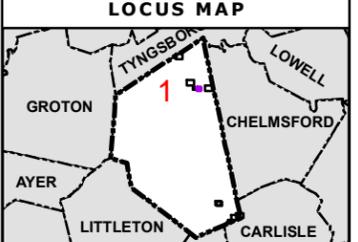




OF_1072
 Mapping updates needed
 New MH connects to OF
 Cannot locate structures upstream of MH west of Forrest St

CATCHMENT INVESTIGATIONS GROUP TWO

- LEGEND**
- ▲ Outfall
 - ⊗ Interconnection
 - Key Junction Manhole
 - ⊙ Junction Manhole
 - ⊙ Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - ▣ Catch Basin
 - ⊙ Inlet/Water Quality Inlet
 - ⊙ Outlet
 - ▲ Overflow Structure
 - ▲ Flared End Section
 - ▲ Other Stormwater Structure
 - ✱ BMP Point
 - Drain Pipe
 - Culvert
 - ▨ BMP Polygon
 - ▭ Catchment Area
 - ▭ Town Boundary



- NOTES**
1. Based on MassGIS Color Orthophotography (2021).
 2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_1072

Outside Receiving

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Westford, Massachusetts

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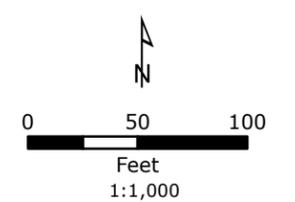
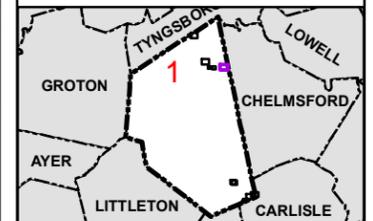


CATCHMENT INVESTIGATIONS GROUP TWO

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_1040

Outside Receiving

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**Westford, Massachusetts
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OF_1040 Complete
CB 1441 screened, no flow
TS confirmed



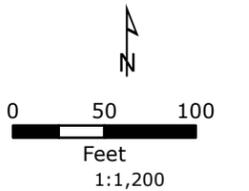
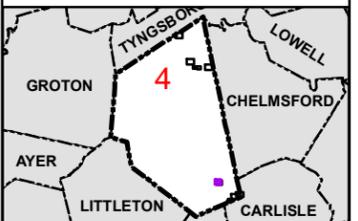
OF_376
 Confirmed connectivity to OF
 TS Confirmed

CATCHMENT INVESTIGATIONS GROUP TWO

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- ⊙ Junction Manhole
- ⊙ Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- ⊙ Inlet/Water Quality Inlet
- ⊙ Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ✱ BMP Point
- Drain Pipe
- Culvert
- ▨ BMP Polygon
- ▭ Catchment Area
- - - Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

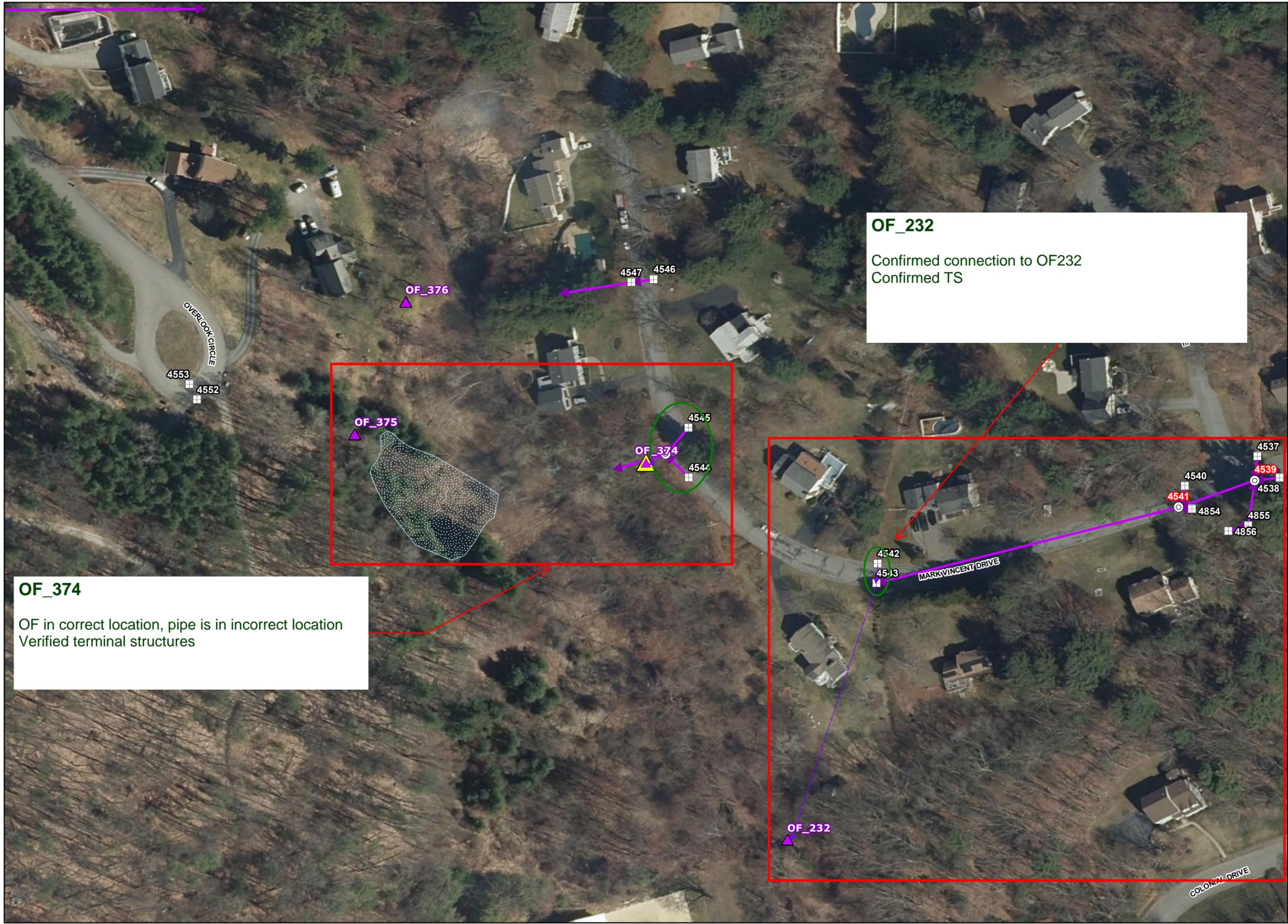
Catchment Area of Outfall: OF_376

Tributary/Wetland to Butter Brook

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**Westford, Massachusetts
 November 2023**





OF_232
 Confirmed connection to OF232
 Confirmed TS

OF_374
 OF in correct location, pipe is in incorrect location
 Verified terminal structures

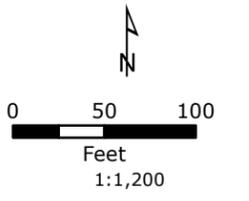
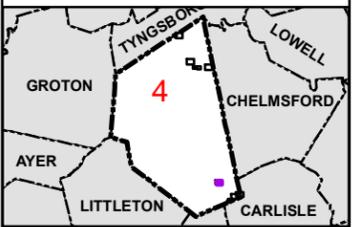
OF_374
 OF in correct location, pipe is in incorrect location
 Verified terminal structures

CATCHMENT INVESTIGATIONS GROUP TWO

LEGEND

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ✱ BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



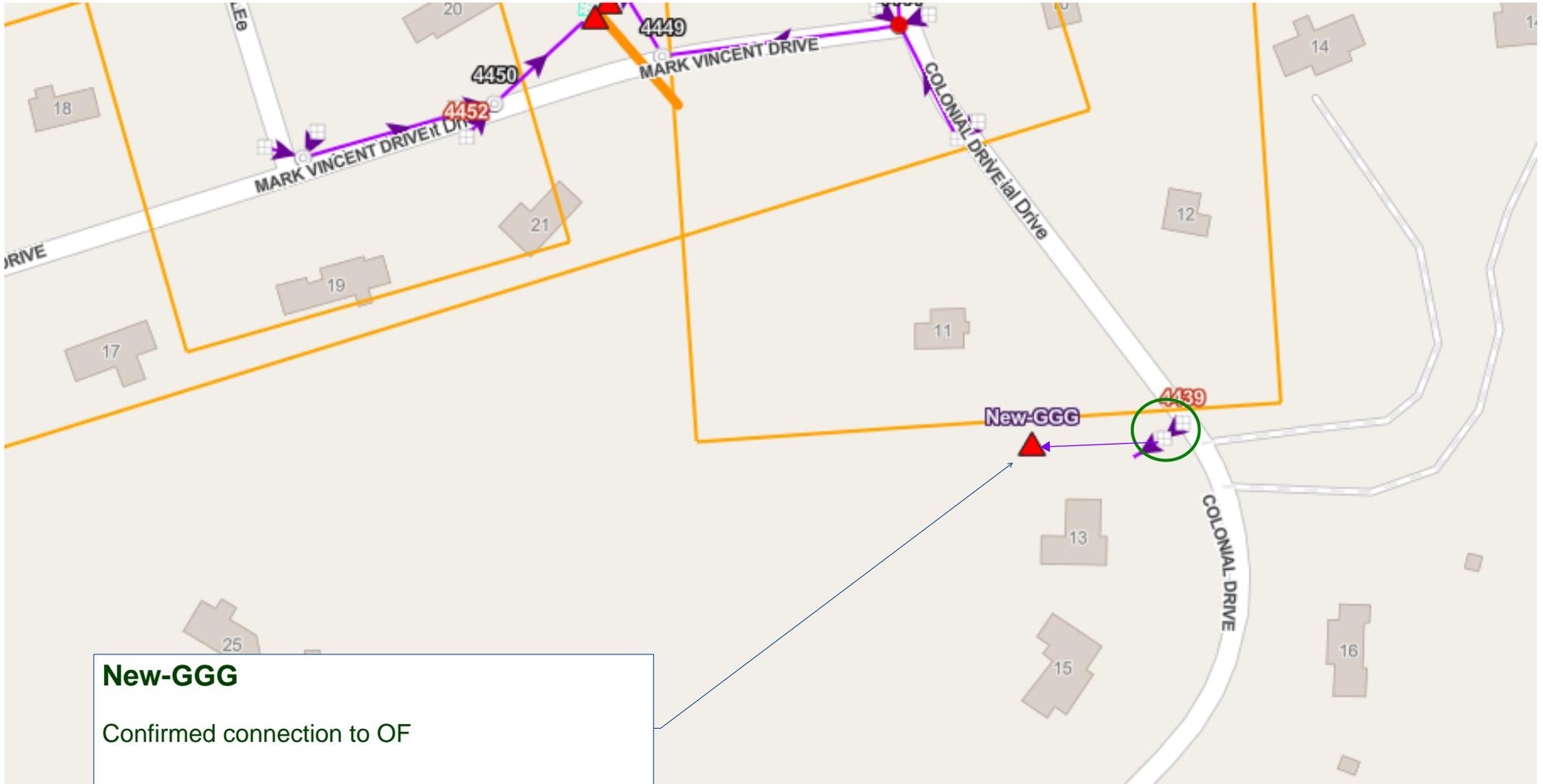
NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by theTown of Westford (2023).

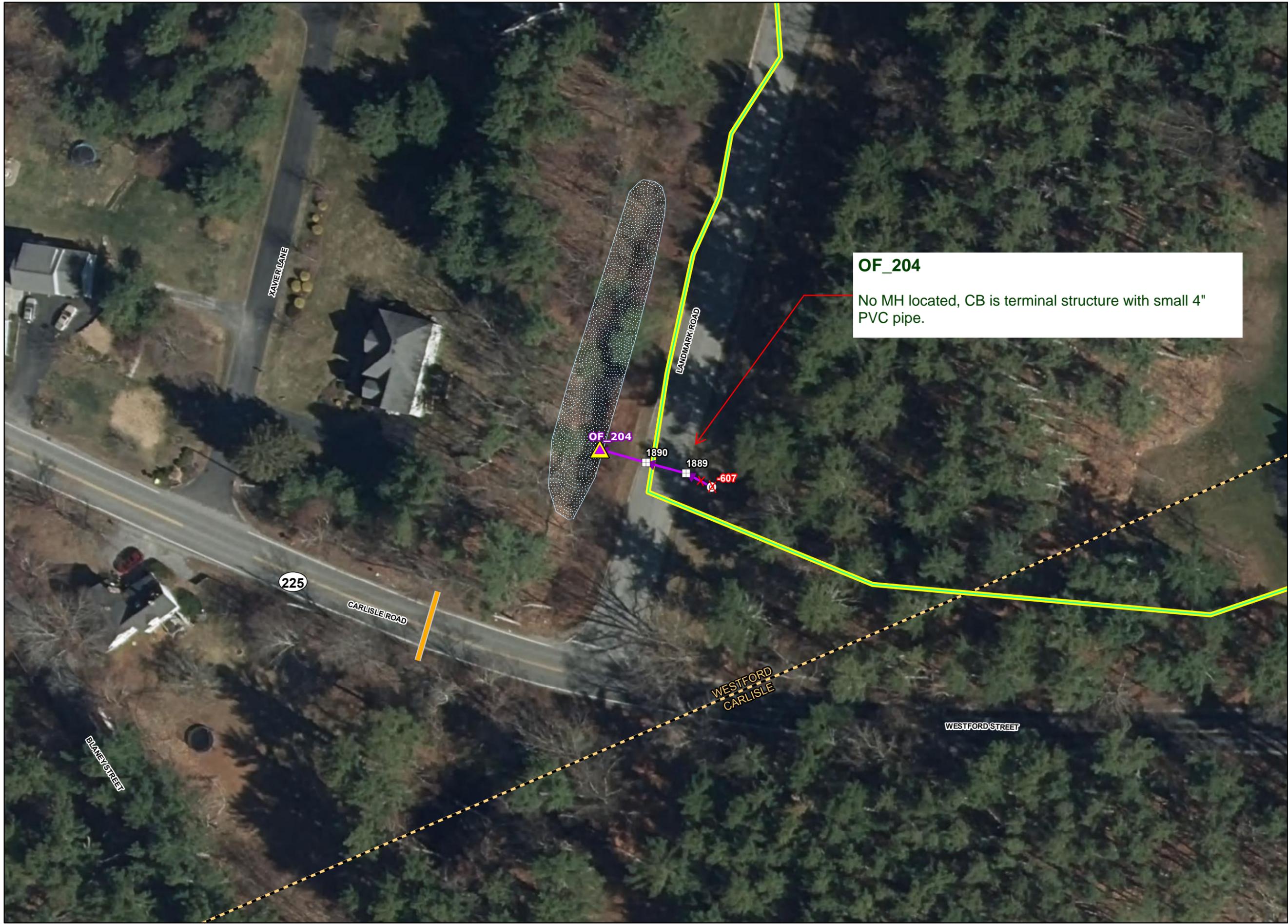
**Catchment Area of
 Outfall: OF_374
 and OF_232
 Outside Receiving**

**Page 7 out of 11
 Westford, Massachusetts
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New-GGG
Confirmed connection to OF



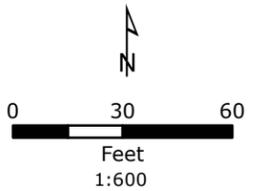
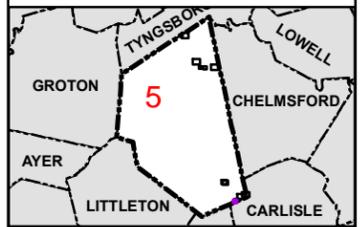
OF_204
 No MH located, CB is terminal structure with small 4" PVC pipe.

CATCHMENT INVESTIGATIONS GROUP TWO

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

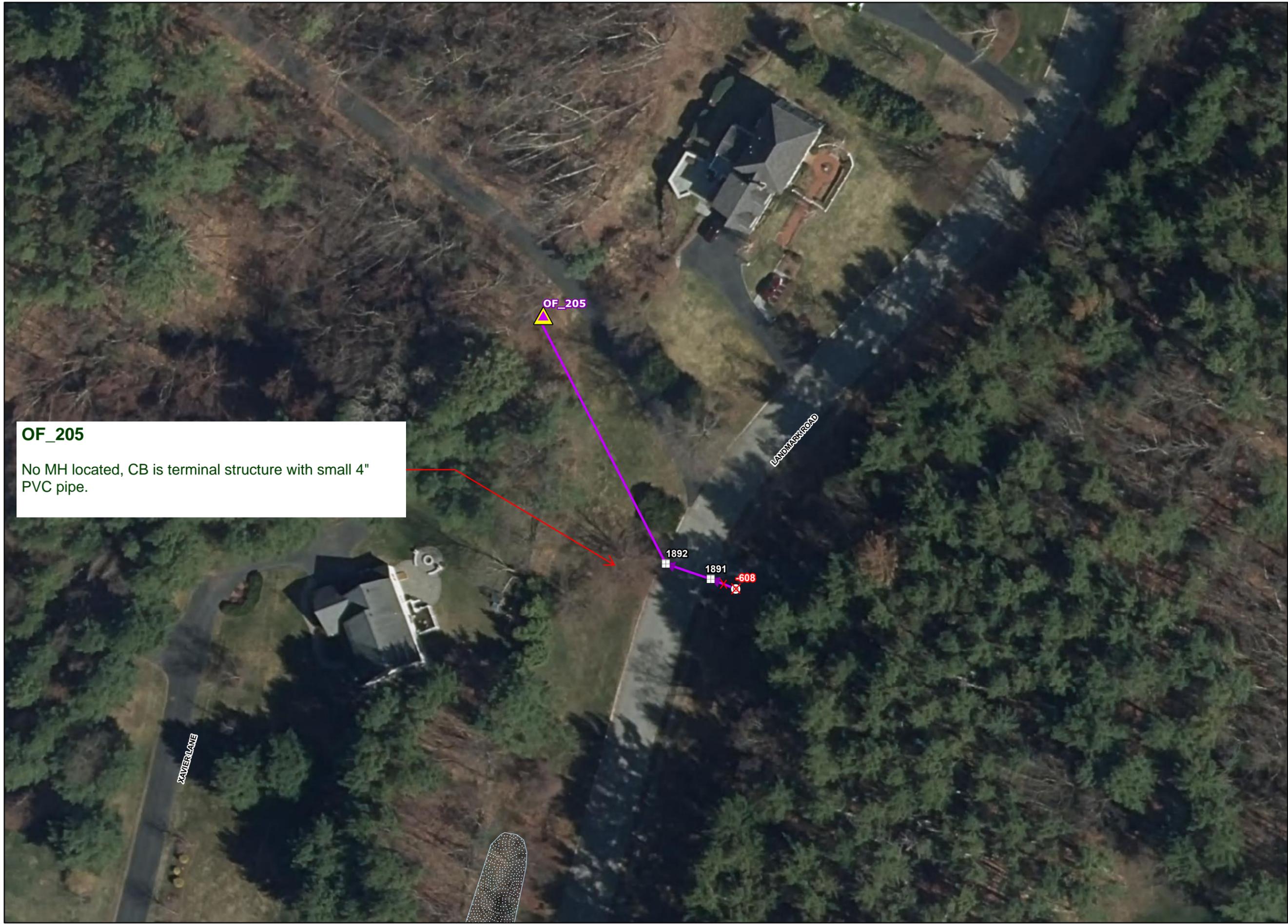
Catchment Area of Outfall: OF_204

Outside Receiving

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**Westford, Massachusetts
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OF_205

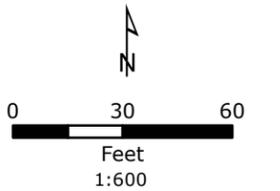
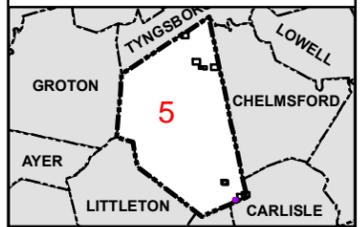
No MH located, CB is terminal structure with small 4" PVC pipe.

CATCHMENT INVESTIGATIONS GROUP TWO

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_205

Outside Receiving

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**Westford, Massachusetts
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OF_212 Complete

CB1926 screened, flow from new MH. Sampled, no exceeded levels.
 TS confirmed
 Mapping updates needed

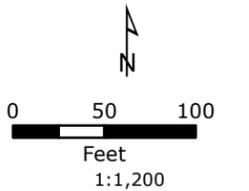
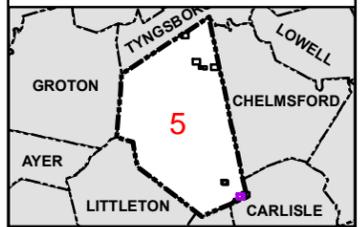
KJMH1919 screened
 am - .25
 cl - 0
 sf - .25

CATCHMENT INVESTIGATIONS GROUP TWO

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by theTown of Westford (2023).

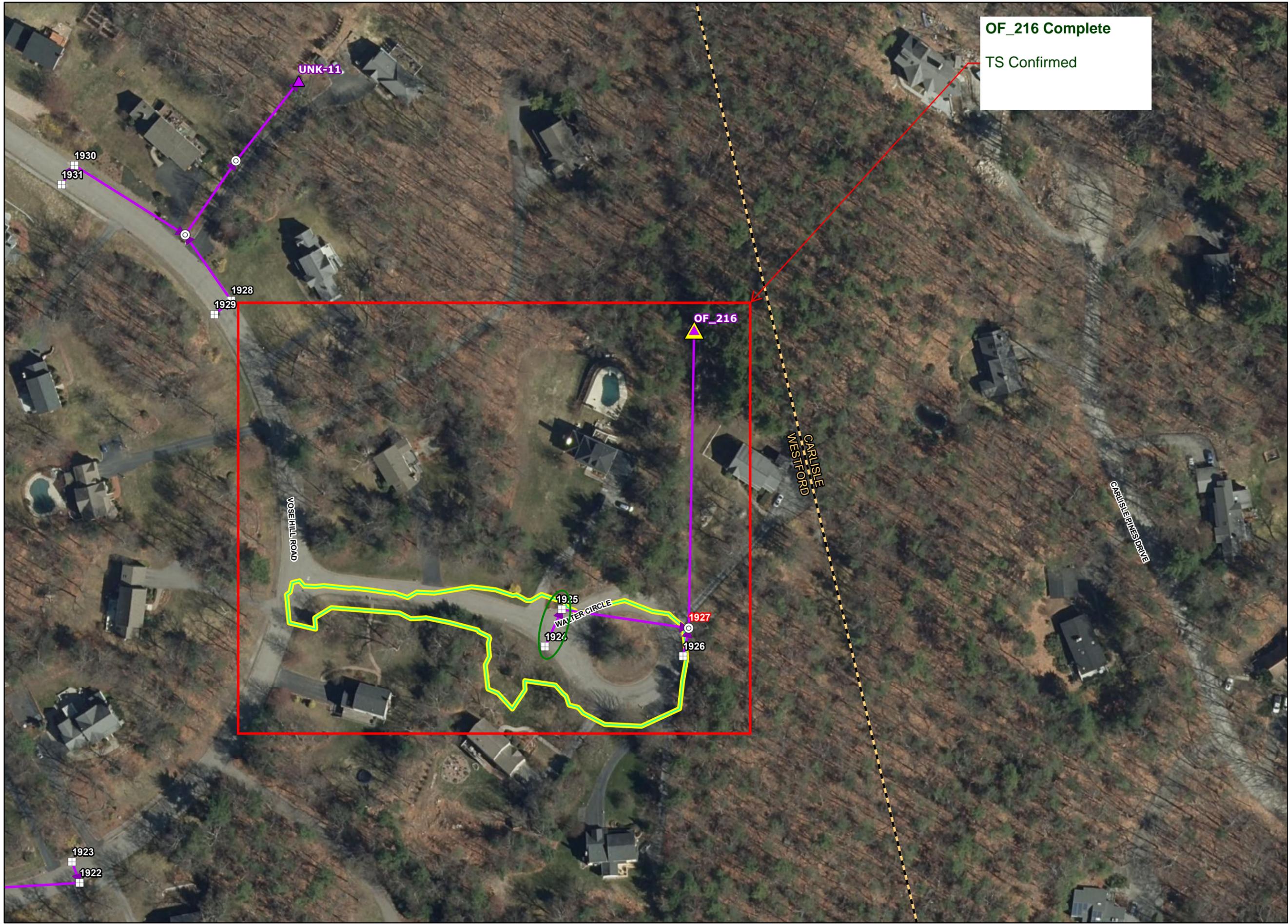
Catchment Area of Outfall: OF_212

Outside Receiving

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**Westford, Massachusetts
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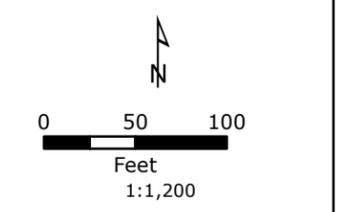
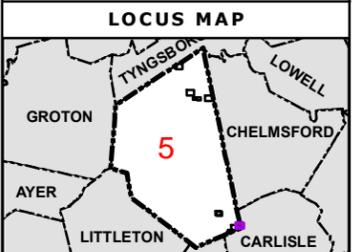




OF_216 Complete
 TS Confirmed

CATCHMENT INVESTIGATIONS GROUP TWO

- LEGEND**
- ▲ Outfall
 - ⊗ Interconnection
 - Key Junction Manhole
 - ⊙ Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - ▣ Junction Catch Basin
 - ▤ Catch Basin
 - ⊖ Inlet/Water Quality Inlet
 - ⦿ Outlet
 - ▲ Overflow Structure
 - ▲ Flared End Section
 - ▲ Other Stormwater Structure
 - ✻ BMP Point
 - Drain Pipe
 - ▬ Culvert
 - ▭ BMP Polygon
 - ▭ Catchment Area
 - - - Town Boundary



- NOTES**
1. Based on MassGIS Color Orthophotography (2021).
 2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_216

Outside Receiving

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Westford, Massachusetts
November 2023





OF_18
2 Wilson Farm Rd

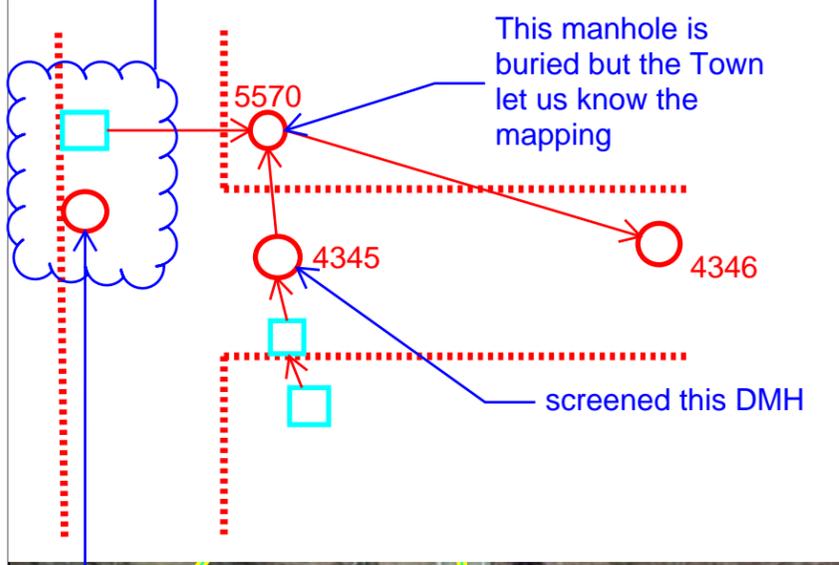
Police Detail Needed? Yes No

Inspect KJ DMH-4345 and confirm TS

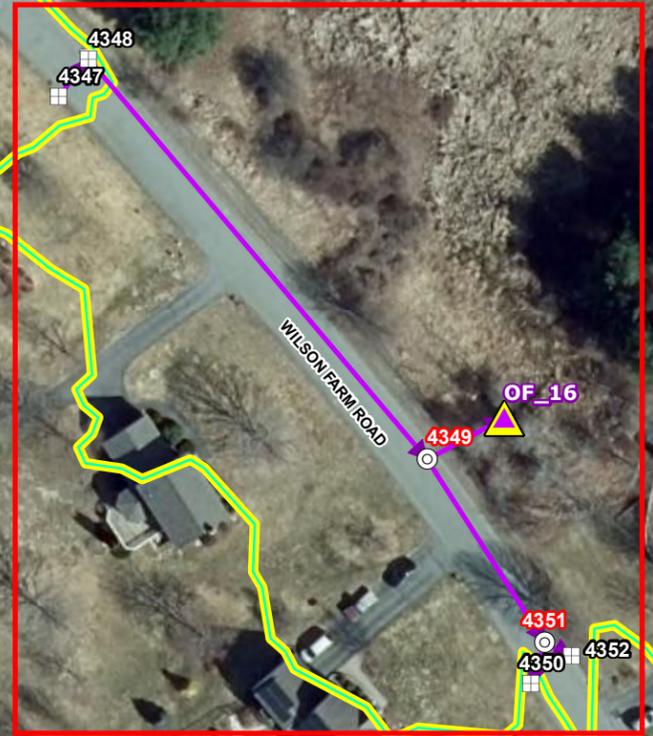
Revisit Screened DMH-4345

Could not open due to traffic

CB 5569 DNE



unmapped manhole

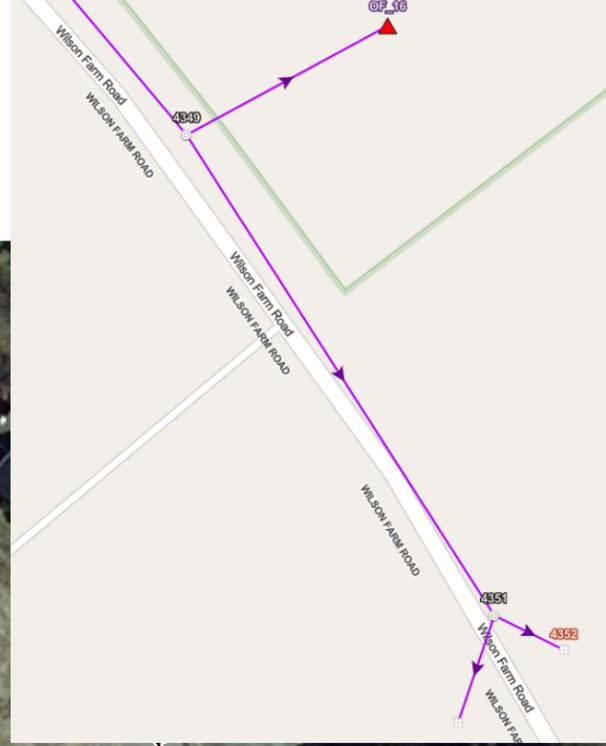


OF_16
5 Wilson Farm Rd

Police Detail Needed? Yes No

Confirm TS

Check mapping / flow direction - if MH4351 and connected CBs flow toward OF_16. If so, then MH4349 should be marked as KJ and inspected



OF_17
9 Wilson Farm Rd

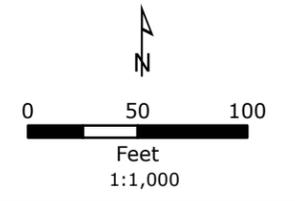
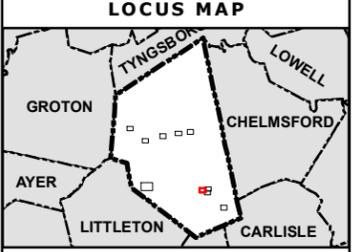
Police Detail Needed? Yes No

Confirm TS

Check if DMH-4353, CB-4358, and CB-4357 connect to DMH-4354, if so DMH-4354 should be marked as a KJ and inspected

CATCHMENT INVESTIGATIONS GROUP 1A

- LEGEND**
- ▲ Outfall
 - ⊗ Interconnection
 - Key Junction Manhole
 - ⊙ Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - ▣ Junction Catch Basin
 - Catch Basin
 - ⊖ Inlet/Water Quality Inlet
 - ⊕ Outlet
 - ▲ Overflow Structure
 - ▲ Flared End Section
 - ▲ Other Stormwater Structure
 - ✱ BMP Point
 - Drain Pipe
 - Culvert
 - ▨ BMP Polygon
 - ▭ Catchment Area
 - ▭ Town Boundary



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_16

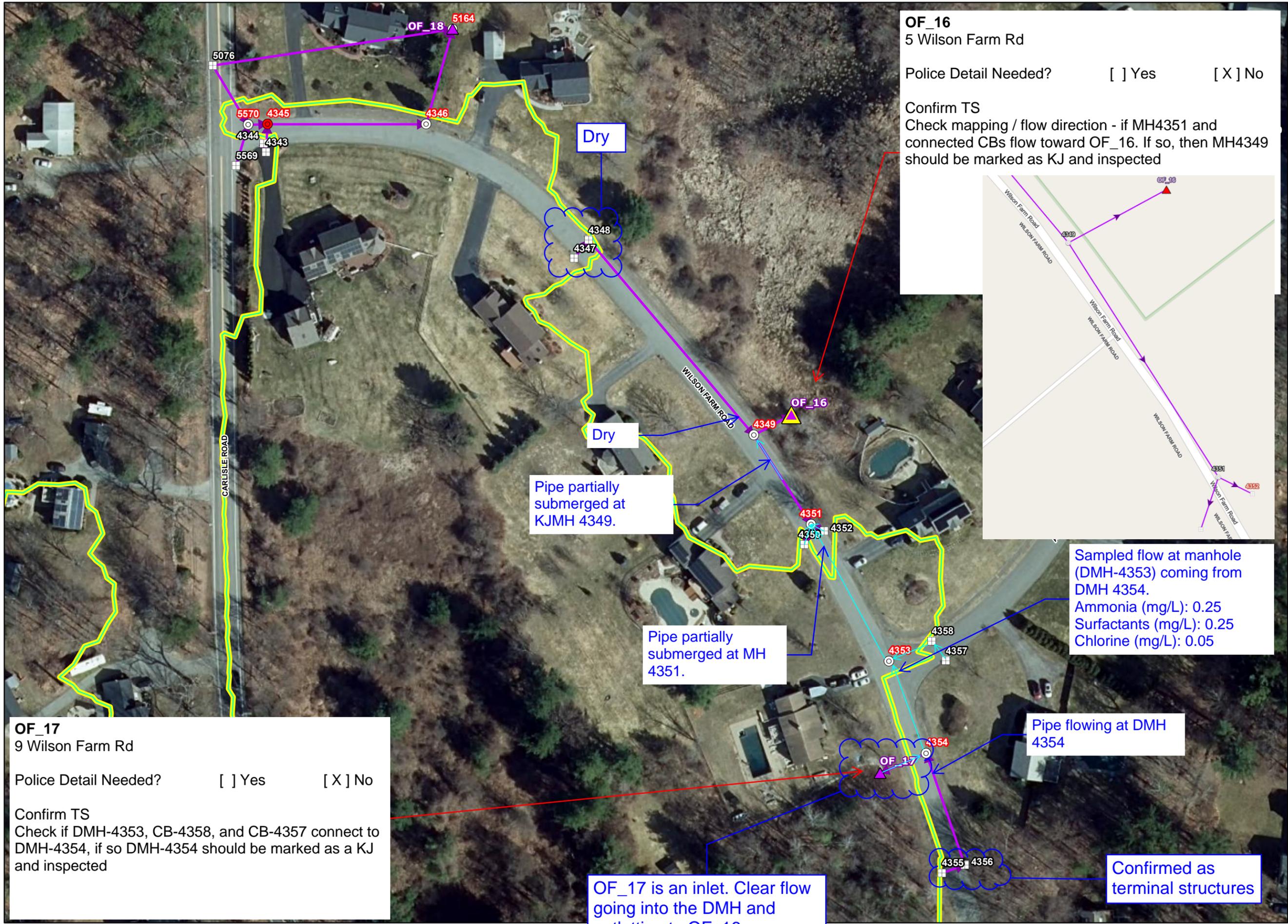
Outside Receiving

Page 7 out of 10

Westford, Massachusetts

December 2023

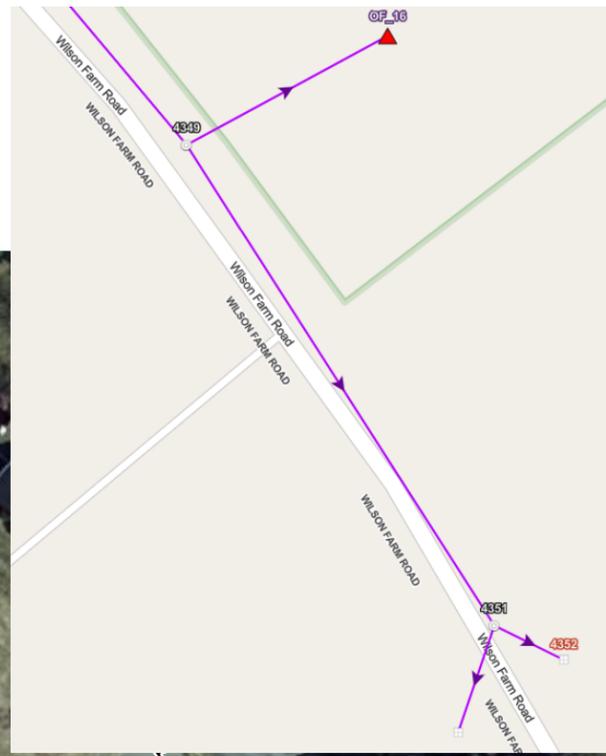




OF_16
5 Wilson Farm Rd

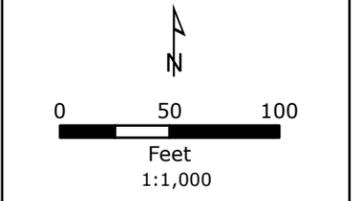
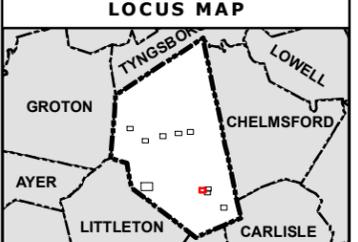
Police Detail Needed? Yes No

Confirm TS
Check mapping / flow direction - if MH4351 and connected CBs flow toward OF_16. If so, then MH4349 should be marked as KJ and inspected



CATCHMENT INVESTIGATIONS GROUP 1A

- LEGEND**
- ▲ Outfall
 - ⊗ Interconnection
 - Key Junction Manhole
 - ⊙ Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - ▣ Junction Catch Basin
 - ▢ Catch Basin
 - ⊖ Inlet/Water Quality Inlet
 - ⦿ Outlet
 - ▲ Overflow Structure
 - ▲ Flared End Section
 - ▲ Other Stormwater Structure
 - ✱ BMP Point
 - Drain Pipe
 - ▬ Culvert
 - ▨ BMP Polygon
 - ▭ Catchment Area
 - ▭ Town Boundary



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_16

Outside Receiving

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Westford, Massachusetts
December 2023



OF_17
9 Wilson Farm Rd

Police Detail Needed? Yes No

Confirm TS
Check if DMH-4353, CB-4358, and CB-4357 connect to DMH-4354, if so DMH-4354 should be marked as a KJ and inspected

OF_17 is an inlet. Clear flow going into the DMH and outletting to OF_16.

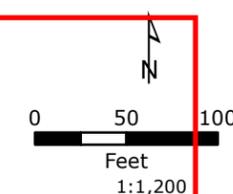
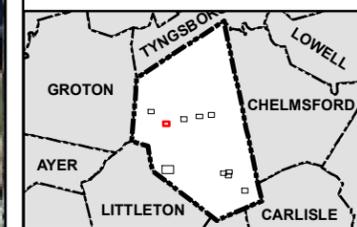
Confirmed as terminal structures

CATCHMENT INVESTIGATIONS GROUP 1A

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: UNK-59

Outside Receiving

Page 4 out of 10

**Westford, Massachusetts
December 2023**



OF_369
16 Patriot Lane

Police Detail Needed? Yes No

Inspect KJ CB3005 and confirm connectivity to outfall
Confirm TS

Confirmed Terminal Structures, confirmed outfall mapping, and screened KJCB. No flow present at KJ.

OF_247
16 Patriot Lane

Police Detail Needed? Yes No

Confirm connectivity between CB3009 and outfall
Confirm TS

Confirmed Terminal Structures and confirmed outfall mapping,

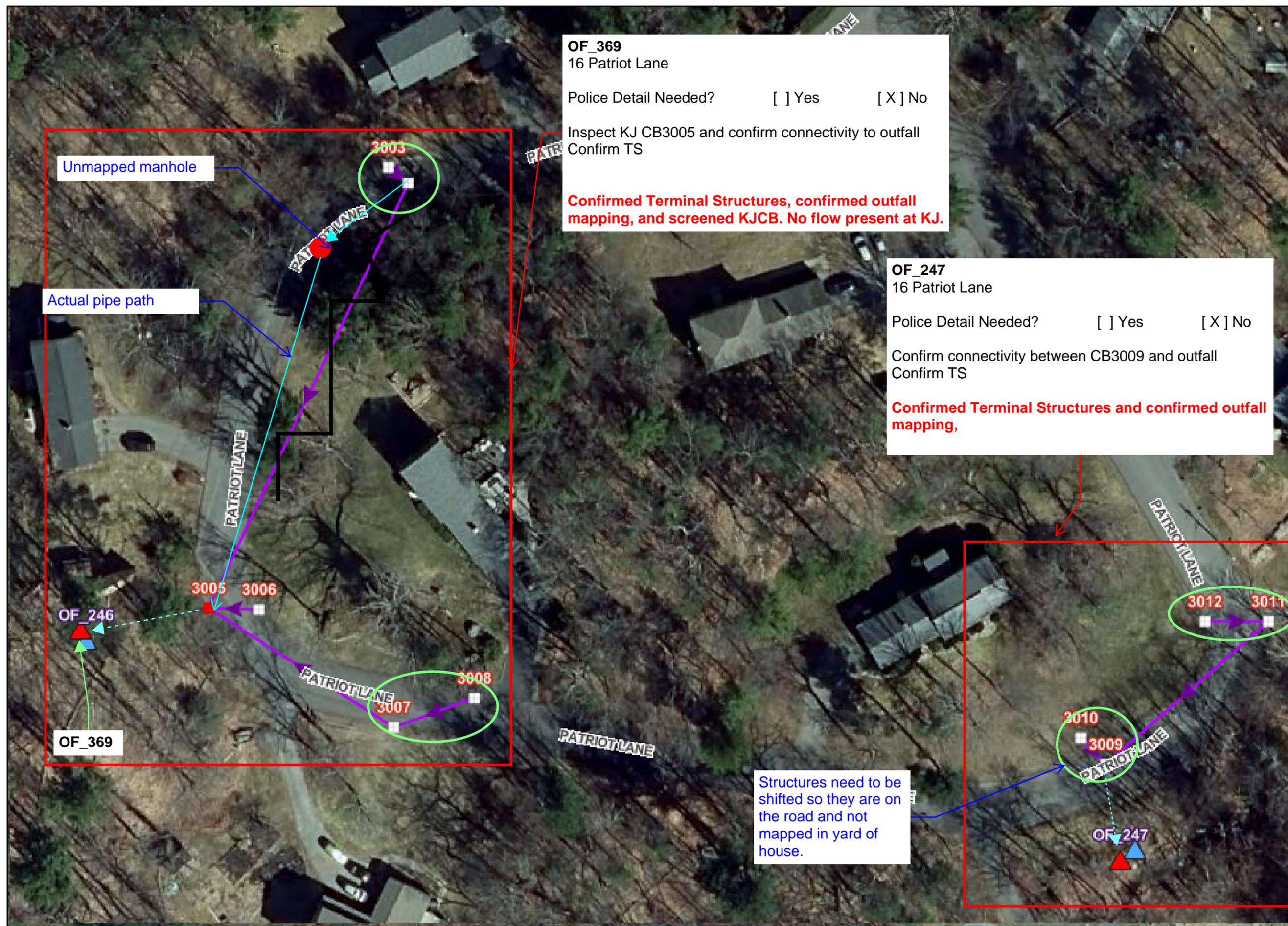
Structures need to be shifted so they are on the road and not mapped in yard of house.

Unmapped manhole

Actual pipe path

OF_246

OF_369



OF_183
 8 Banbury Dr

Police Detail Needed? Yes No

Check MHs 5068 and 5067 to see if they connect
 Confirm TS and check that MH5069 doesn't connect to 5070

Check MHs 5071 and 5072 to see if they connect and there may be an unmapped outfall nearby

Unmapped outfall?
 And/or unmapped MH connecting structures?
 Try to complete mapping

Did not see an outfall at this location

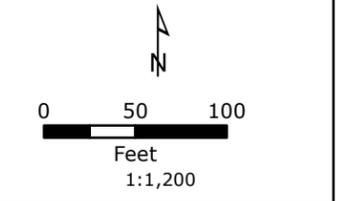
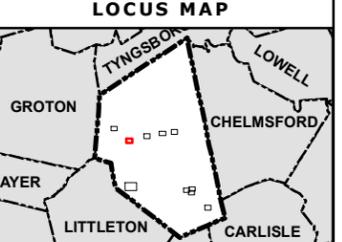
DMH were paved over or DNE

DMH were paved over or DNE



CATCHMENT INVESTIGATIONS GROUP 1A

- LEGEND**
- ▲ Outfall
 - ⊗ Interconnection
 - Key Junction Manhole
 - Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - ▣ Catch Basin
 - Inlet/Water Quality Inlet
 - Outlet
 - ▲ Overflow Structure
 - ▲ Flared End Section
 - ▲ Other Stormwater Structure
 - ✱ BMP Point
 - Drain Pipe
 - Culvert
 - ▨ BMP Polygon
 - ▭ Catchment Area
 - ▭ Town Boundary



- NOTES**
1. Based on MassGIS Color Orthophotography (2021).
 2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: UNK-59

Outside Receiving

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Westford, Massachusetts
December 2023

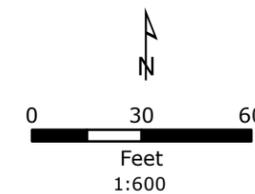
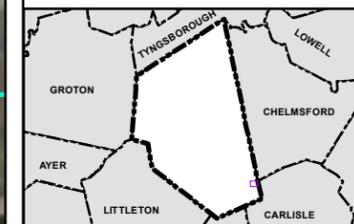


CATCHMENT INVESTIGATIONS GROUP 4

LEGEND

- Outfall
- BMP Structure
- Culvert Outlet
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Key Junction Manhole
- Junction Manhole
- Manhole
- Culvert
- Drain Pipe
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



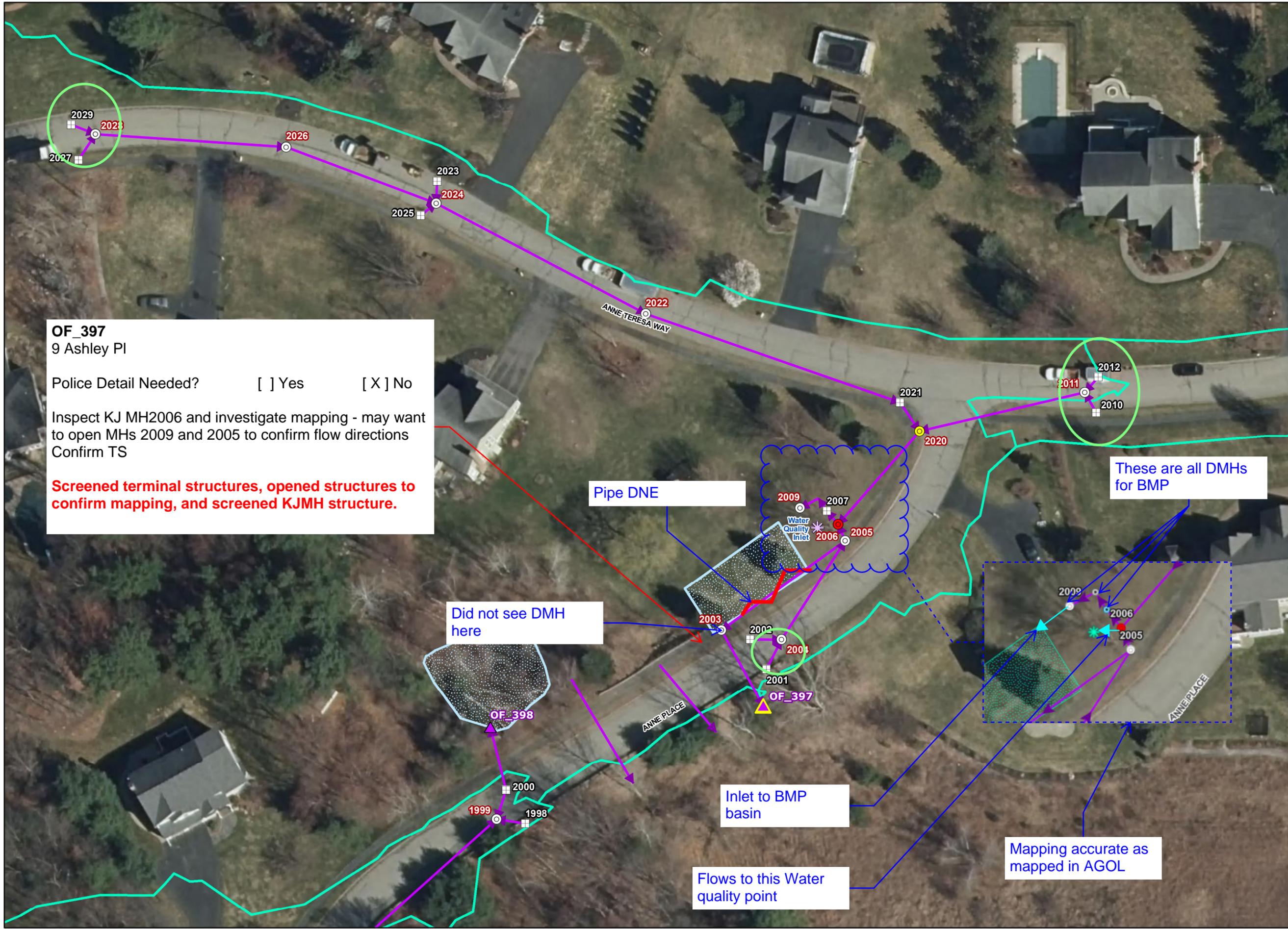
NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.
3. Structure Labels Refer to GIS ID, Outfall Labels Refer to Fieldwork ID.

Catchment Area of OF_397

Page 35 out of 40

**Westford, Massachusetts
May 2023**



OF_397
9 Ashley Pl

Police Detail Needed? Yes No

Inspect KJ MH2006 and investigate mapping - may want to open MHs 2009 and 2005 to confirm flow directions
Confirm TS

Screened terminal structures, opened structures to confirm mapping, and screened KJMH structure.

Pipe DNE

These are all DMHs for BMP

Did not see DMH here

Inlet to BMP basin

Flows to this Water quality point

Mapping accurate as mapped in AGOL

CATCHMENT INVESTIGATIONS GROUP 4

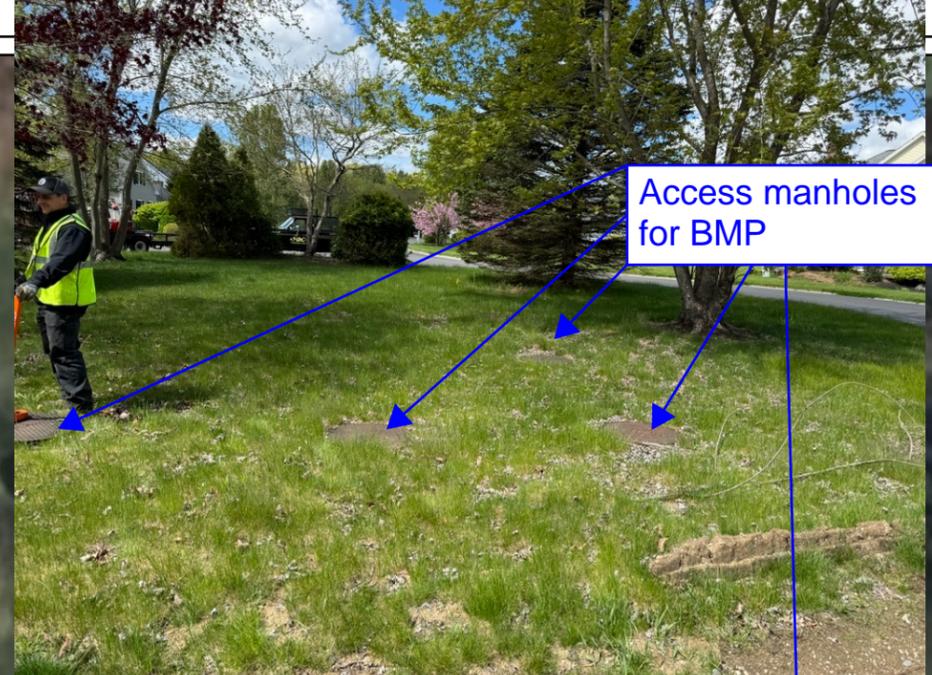
LEGEND

-  Outfall
-  BMP Structure
-  Culvert Outlet
-  Key Junction Catch Basin
-  Junction Catch Basin
-  Catch Basin
-  Key Junction Manhole
-  Junction Manhole
-  Manhole
-  Culvert
-  Drain Pipe
-  BMP Area
-  Catchment Area

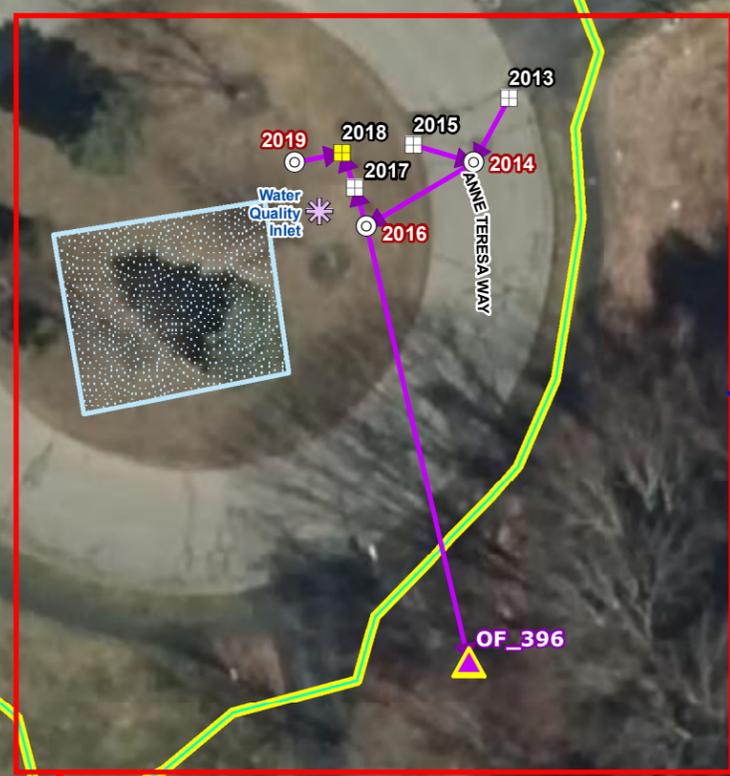
NEW_PPP
7 Anne Teresa Way

Police Detail Needed? Yes No

Note on tracking spreadsheet suggests this may be culvert, attempt to verify in field.



Located this outfall, did not see inlet of culvert or any connecting structures in the road. Inlet of culvert may just be farther in woods then we looked.



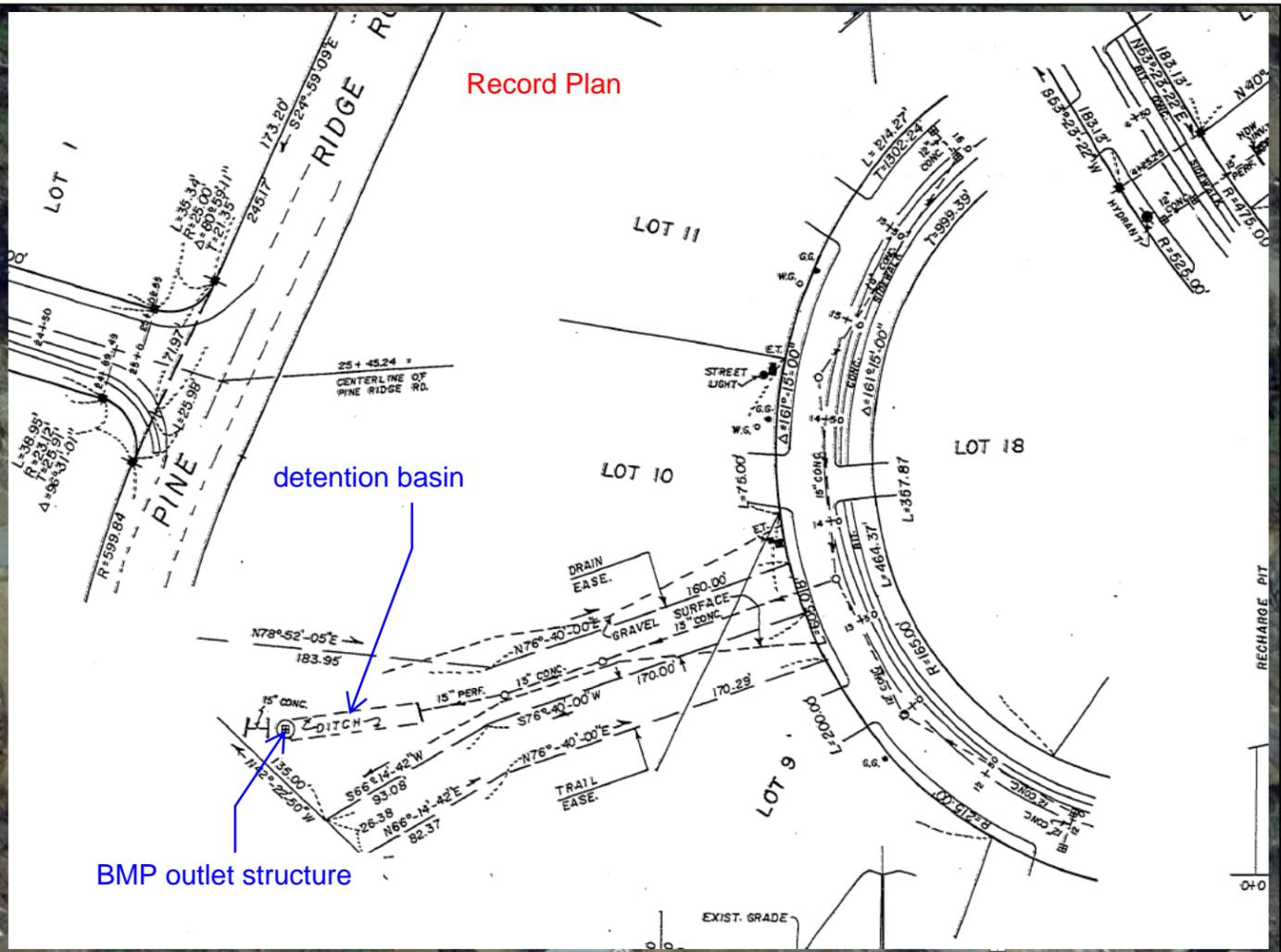
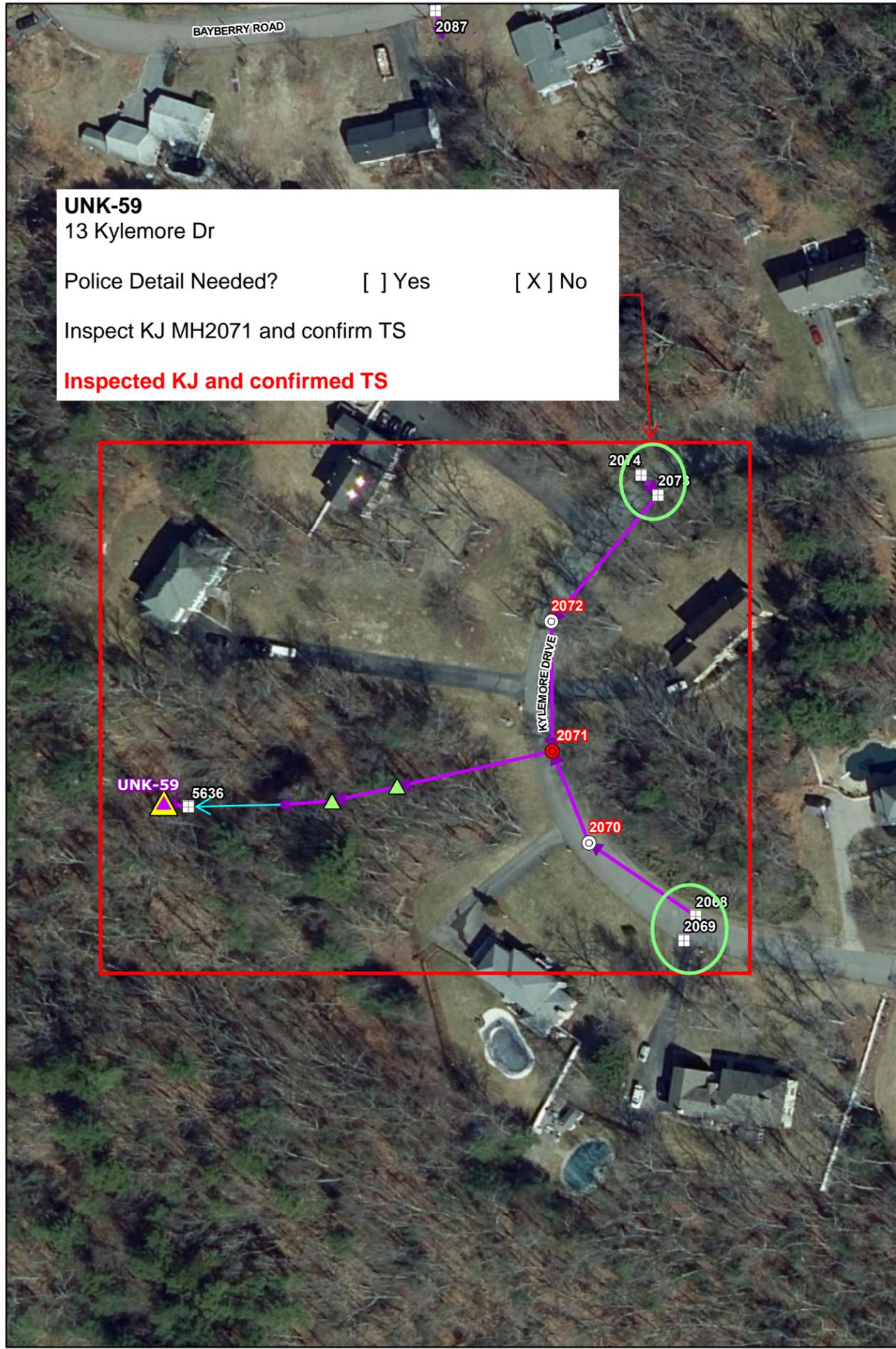
OF_396
9 Anne Teresa Way

Police Detail Needed? Yes No

Confirm TS and check MH2016 for mapping / flow direction

Mapping appeared accurate to what is shown





UNK-59
 13 Kylemore Dr

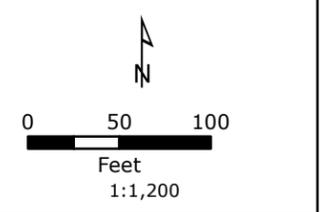
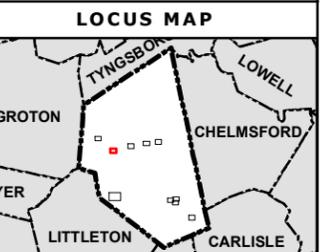
Police Detail Needed? Yes No

Inspect KJ MH2071 and confirm TS

Inspected KJ and confirmed TS

CATCHMENT INVESTIGATIONS GROUP 1A

- LEGEND**
- Outfall
 - Interconnection
 - Key Junction Manhole
 - Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - Catch Basin
 - Inlet/Water Quality Inlet
 - Outlet
 - Overflow Structure
 - Flared End Section
 - Other Stormwater Structure
 - BMP Point
 - Drain Pipe
 - Culvert
 - BMP Polygon
 - Catchment Area
 - Town Boundary



- NOTES**
1. Based on MassGIS Color Orthophotography (2021).
 2. Stormwater data provided by theTown of Westford (2023).

Catchment Area of Outfall: UNK-59

Outside Receiving

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Westford, Massachusetts

December 2023



Light blue lines drawn by ECO to show connectivity based on as-built drawings.

These DMHs were too deep to sample with sampling pole

Flow sampled at DMH 2622. Flow from upstream DMH marked as "unknown in GIS"
 Surfactants (mg/L): 0.25
 Ammonia (mg/L): 0.25
 Chlorine (mg/L): 0.12

Looks like these structures connect in as-built but the scale / mapped positions might be a little off in GIS.

Location of OF_455 based on as-built and Town comments

Structure here marked as unknown in GIS but looks to just be a regular drain MH in as-built

Is a DMH. Opened and mapping is accurate for the incoming CBs.

Inspect MH2537 technically not a KJ but there's a long stretch of in-line drainage

2' RCP pipe with flow could not locate where it comes from. No other drainage structures at end of culsedac

Flow sampled at DMH 2537. Flow from MH 2625.
 Surfactants (mg/L): 0.25
 Ammonia (mg/L): 0.25
 Chlorine (mg/L): 0.34

MH2606 potentially has 2 outlets. There appears to be an outfall or overflow structure here but it also might of been abandoned - as-built difficult to read.

Structure here that looks to be an inlet to drain MH on Main St

OF_455
 160 Main St

Police Detail Needed? Yes No
 Yes - only for Main St

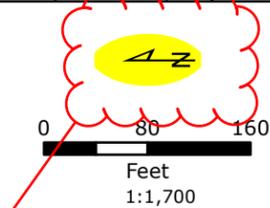
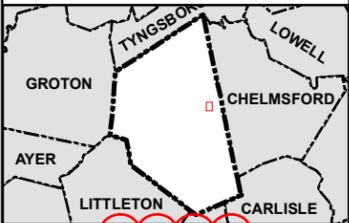
Inspect MH2537
 Confirm TS
 Confirm mapping of MH2606

CATCHMENT INVESTIGATIONS

LEGEND

- Outfall
 - Interconnection
 - Key Junction Manhole
 - Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - Catch Basin
 - Inlet/Water Quality Inlet
 - Outlet
 - Overflow Structure
 - Flared End Section
 - Other Stormwater Structure
 - BMP Point
 - Drain Pipe
 - Culvert
 - BMP Polygon
- Manhole Label Outfall Label Catch Basin Label

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2024).

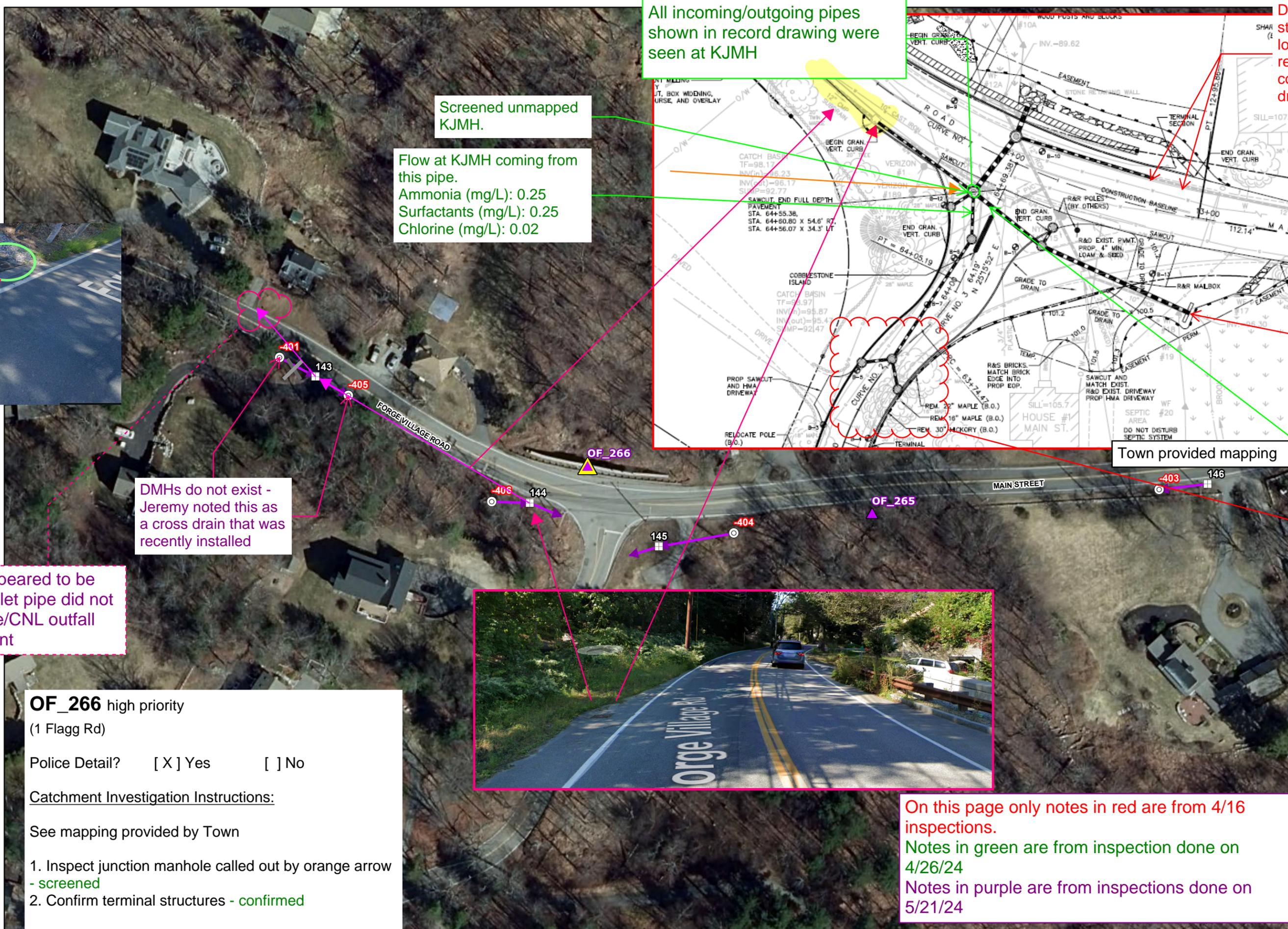
Catchment Area of Outfall: OF_455

Page 2 out of 2

**Westford, Massachusetts
 February 2024**



Please note that to fit all structures on one page, the map orientation has been rotated.



All incoming/outgoing pipes shown in record drawing were seen at KJMH

Screened unmapped KJMH.

Flow at KJMH coming from this pipe.
 Ammonia (mg/L): 0.25
 Surfactants (mg/L): 0.25
 Chlorine (mg/L): 0.02

Did not see a structure at this location. Based on record drawings connects to existing drainage

DMHs do not exist - Jeremy noted this as a cross drain that was recently installed

Appeared to be outlet pipe did not see/CNL outfall point

Town provided mapping

Confirmed

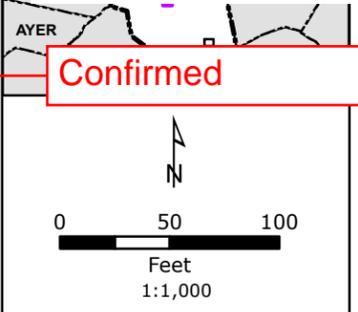


On this page only notes in red are from 4/16 inspections.
 Notes in green are from inspection done on 4/26/24
 Notes in purple are from inspections done on 5/21/24

OF_266 high priority
 (1 Flagg Rd)
 Police Detail? Yes No
Catchment Investigation Instructions:
 See mapping provided by Town
 1. Inspect junction manhole called out by orange arrow - **screened**
 2. Confirm terminal structures - **confirmed**

- ▲ Outfall
- ⊗ Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- ▣ Catch Basin
- ⊙ Inlet/Water Quality Inlet
- Outlet
- ▲ Overflow Structure
- ▲ Flared End Section
- ▲ Other Stormwater Structure
- ✱ Checked, flow present at terminal structure
- Catchment Area

Flow at KJMH coming from this pipe leaving CB 145.
 Ammonia (mg/L): 0.0
 Surfactants (mg/L): 0.25
 Chlorine (mg/L): 0.01



NOTES
 1. Based on MassGIS Color Orthophotography (2021).
 2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_266
Tributary/Wetland to Boutwell Brook
 Page 6 out of 10
 Westford, Massachusetts
 November 2023



potential catchment area continues on from previous page

ESM: Sampled two instances of flow at MH0742

Pipe 1108:
S: 0.25, A: 0.00, C: 0.00
Pipe 1106:
S: 0.25, A: 0.00, C: 0.05

ESM: Unmapped CMP pipe entering CB0758

LEP (5/21/24): 4" CMP appears to be sump pump drain from nearby house

OF_1092 (page 2 of 2)

SVF?

Yes - _____

No

Unknown

Police Detail Needed? Yes No

Notes:

Please attempt to verify mapping / connectivity in field and add data issue points as needed
Potential / estimate connectivity drawn in light blue dashes.

Inspect KJs: MH0776 and MH0742
Confirm TS

ECO 5/1

Do these CBs connect to the unmapped inlet in CB0758?
ECO 5/17/24

Catch basins do not connect to Depot Street

Needs to be screened / inspected

LEP (5/21/24): Sampled flow
A= 0.0, S = 0.50, C= 0.05

ESM: Unmapped MH in front of house #33

No incoming flow. Some flow leaving manhole from the sump

ESM: Unmapped CMP pipe entering MH0798 and no obvious upstream structures observed.

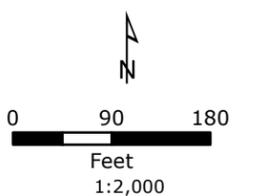
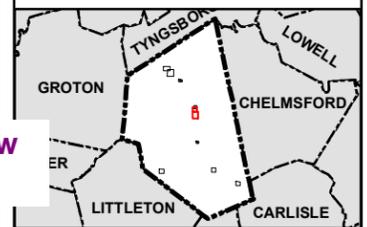
Do these connect?

CATCHMENT INVESTIGATIONS

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_1092

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Westford, Massachusetts
January 2024

Tighe & Bond

drainage connects to DMH 0798



unmapped CB

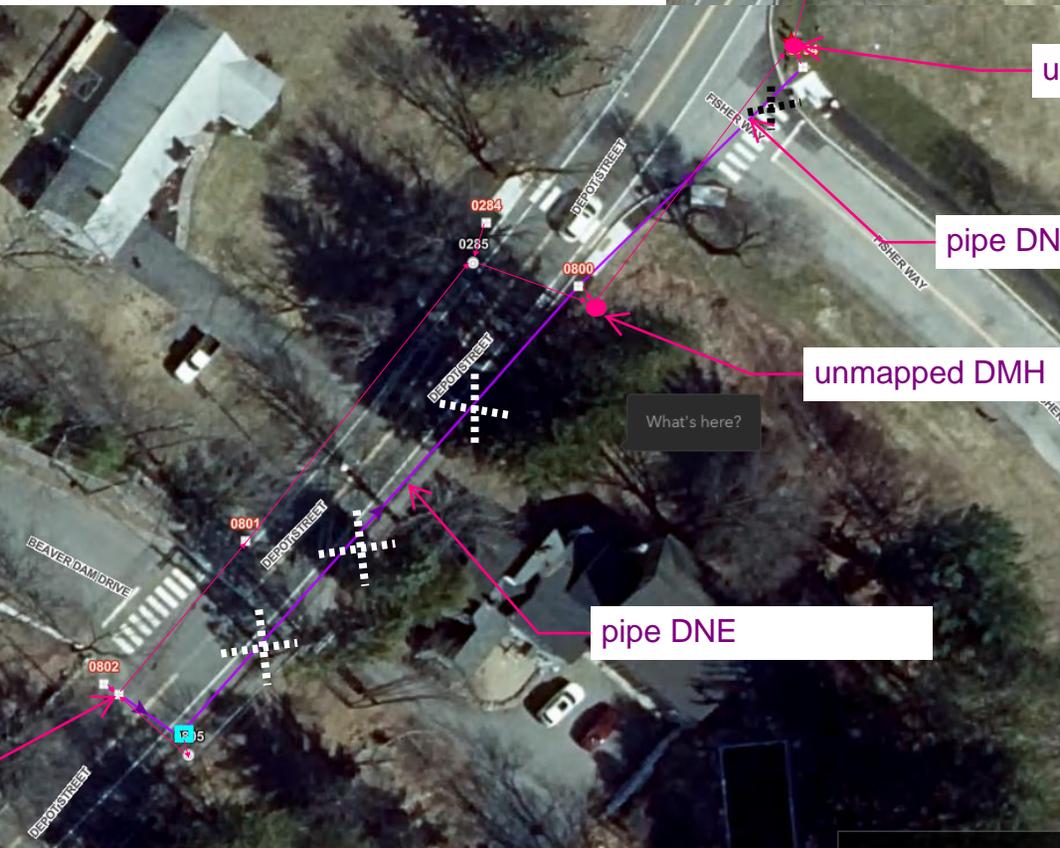
unmapped DMH

pipe DNE

unmapped DMH

What's here?

pipe DNE



If this CB isn't a terminal structure and more structures connect to it then DMH-5570 should be called a KJ and inspected ECO 5/17/24



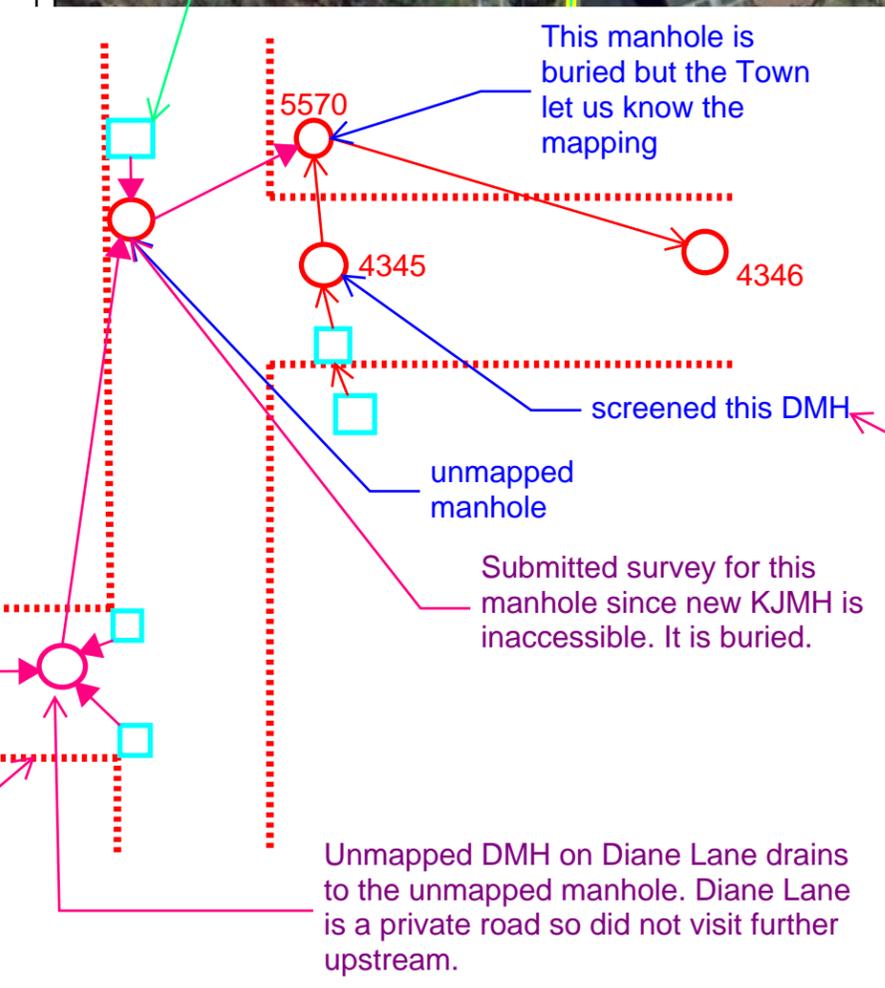
CB 5569 DNE

OF_18
2 Wilson Farm Rd

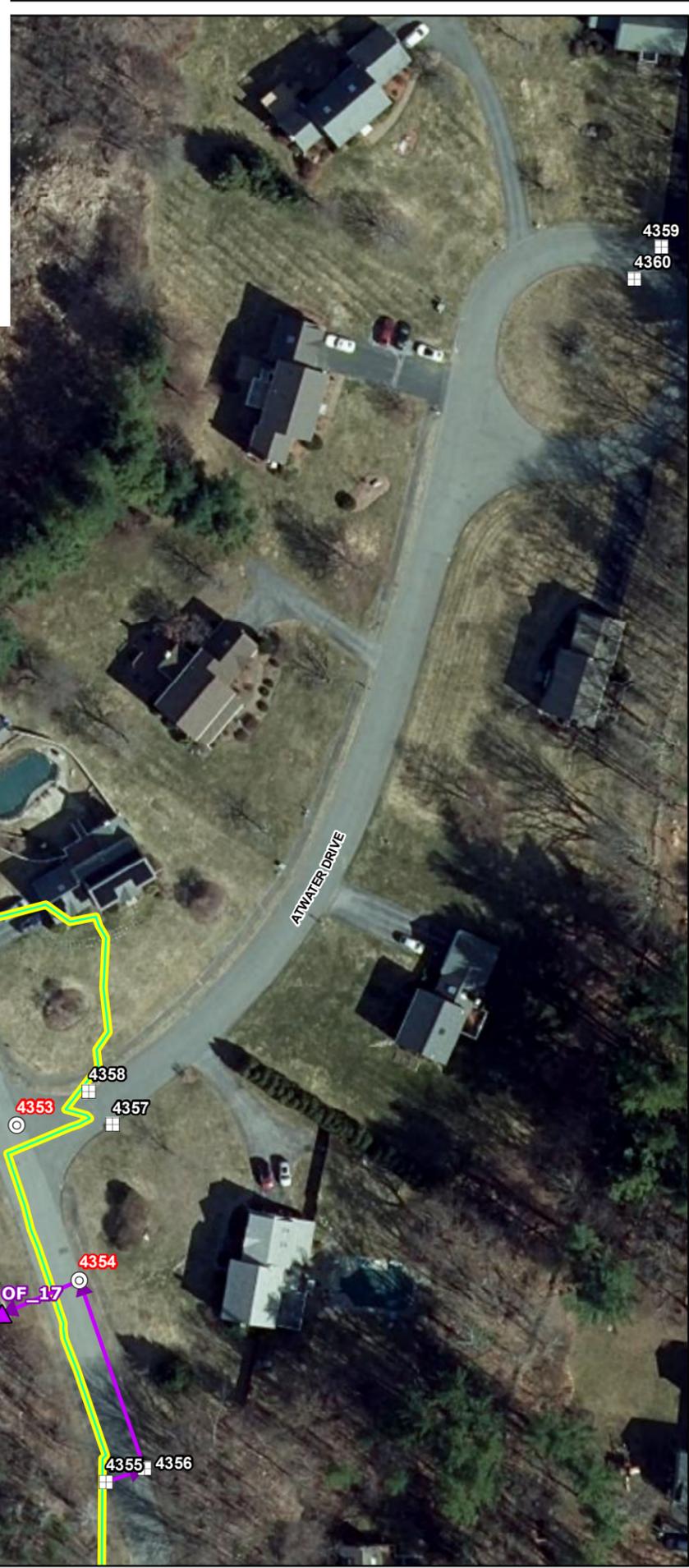
Police Detail Needed? Yes No

Inspect KJ DMH-4345 and confirm TS

Revisit Screened DMH-4345



Survey was also previously submitted for this DMH.

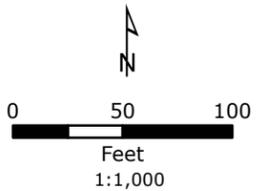
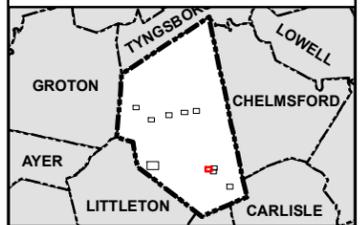


CATCHMENT INVESTIGATIONS GROUP 1A

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2023).

Catchment Area of Outfall: OF_16

Outside Receiving

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**Westford, Massachusetts
December 2023**



OF_20 -
Mapping updates needed
Terminal structures found

Flow from CB 0851
sampled.
Surfactants
(mg/L)=0.25
Ammonia
(mg/L)=0.25
Chlorine (mg/L)=0.0

New BMP

New inlet

0851

0850

OF_20

New CB

New CB is a KJ,
please inspect/screen
ECO 5/17/24



Light blue lines drawn by ECO to show connectivity based on as-built drawings.

These DMHs were too deep to sample with sampling pole

Flow sampled at DMH 2622. Flow from upstream DMH marked as "unknown in GIS"
 Surfactants (mg/L): 0.25
 Ammonia (mg/L): 0.25
 Chlorine (mg/L): 0.12

Looks like these structures connect in as-built but the scale / mapped positions might be a little off in GIS.

Location of OF_455 based on as-built and Town comments

Structure here marked as unknown in GIS but looks to just be a regular drain MH in as-built

Is a DMH. Opened and mapping is accurate for the incoming CBs.

Confirmed terminal structures

Inspect MH2537 technically not a KJ but there's a long stretch of in-line drainage

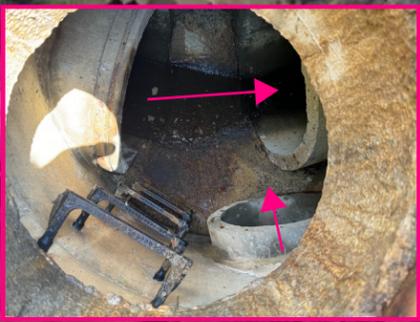
Flow sampled at DMH 2537. Flow from MH 2625.
 Surfactants (mg/L): 0.25
 Ammonia (mg/L): 0.25
 Chlorine (mg/L): 0.34

MH2606 potentially has 2 outlets. There appears to be an outfall or overflow structure here but it also might of been abandoned - as-built difficult to read.

Structure here that looks to be an inlet to drain MH on Main St

Searched end of culdesac and the woods based on record drawings and still could not locate an inlet

2' RCP pipe with flow could not locate where it comes from. No other drainage structures at end of culdesac



OF_455
 160 Main St

Police Detail Needed? Yes No

Yes - only for Main St

Inspect MH2537
 Confirm TS
 Confirm mapping of MH2606

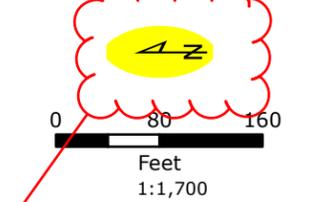
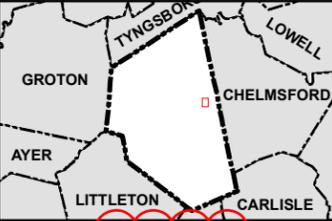
Please note that to fit all structures on one page, the map orientation has been rotated.

CATCHMENT INVESTIGATIONS

LEGEND

- Outfall
 - Interconnection
 - Key Junction Manhole
 - Junction Manhole
 - Manhole
 - Key Junction Catch Basin
 - Junction Catch Basin
 - Catch Basin
 - Inlet/Water Quality Inlet
 - Outlet
 - Overflow Structure
 - Flared End Section
 - Other Stormwater Structure
 - BMP Point
 - Drain Pipe
 - Culvert
 - BMP Polygon
- Manhole Label
- Outfall Label
- Catch Basin Label

LOCUS MAP



NOTES

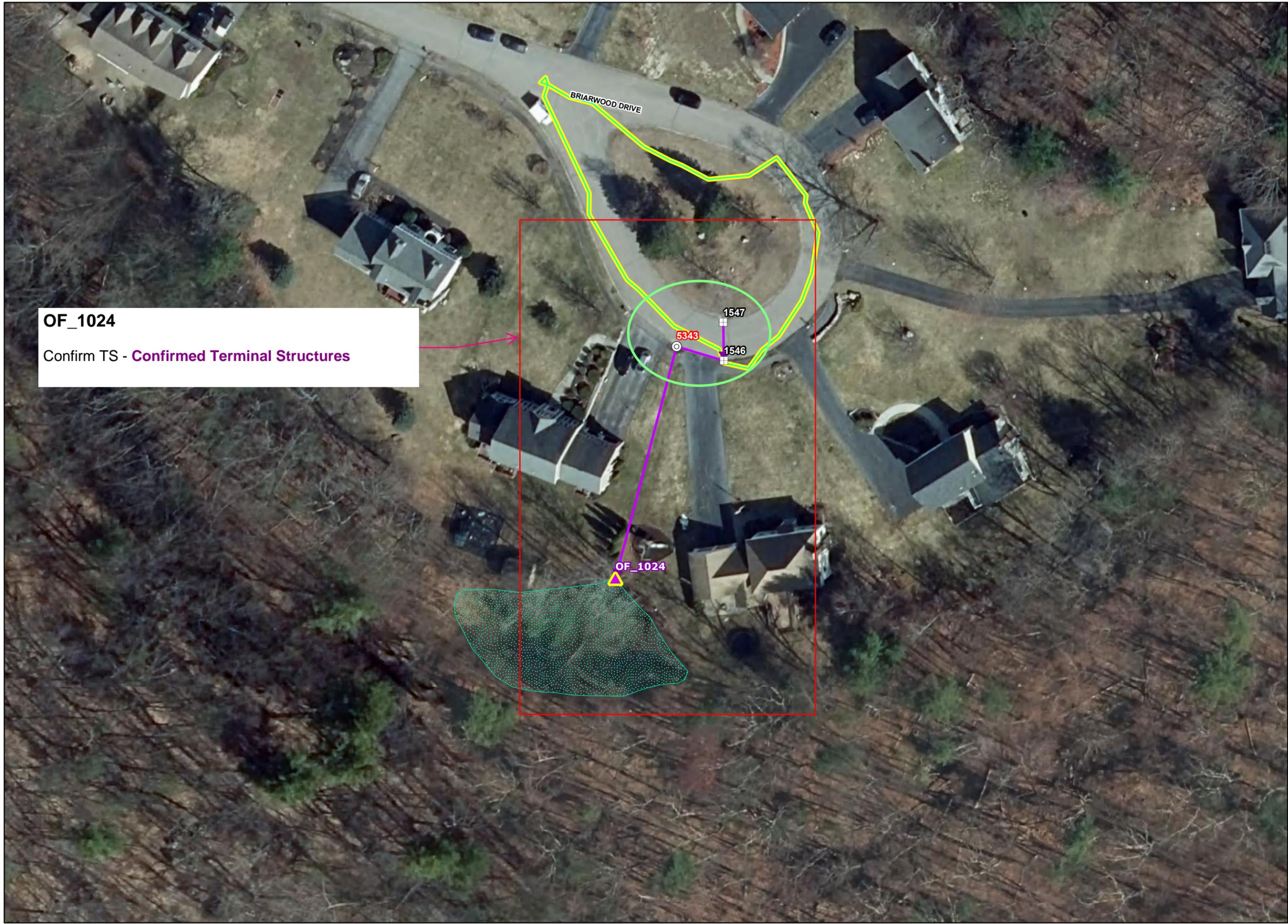
1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2024).

Catchment Area of Outfall: OF_455

Page 2 out of 2

Westford, Massachusetts
 February 2024





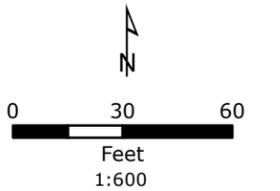
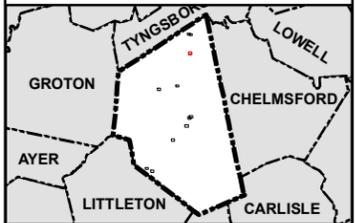
OF_1024
 Confirm TS - **Confirmed Terminal Structures**

CATCHMENT INVESTIGATIONS

LEGEND

- Outfall
- Interconnection
- Key Junction Manhole
- Junction Manhole
- Manhole
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Inlet/Water Quality Inlet
- Outlet
- Overflow Structure
- Flared End Section
- Other Stormwater Structure
- BMP Point
- Drain Pipe
- Culvert
- BMP Polygon
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

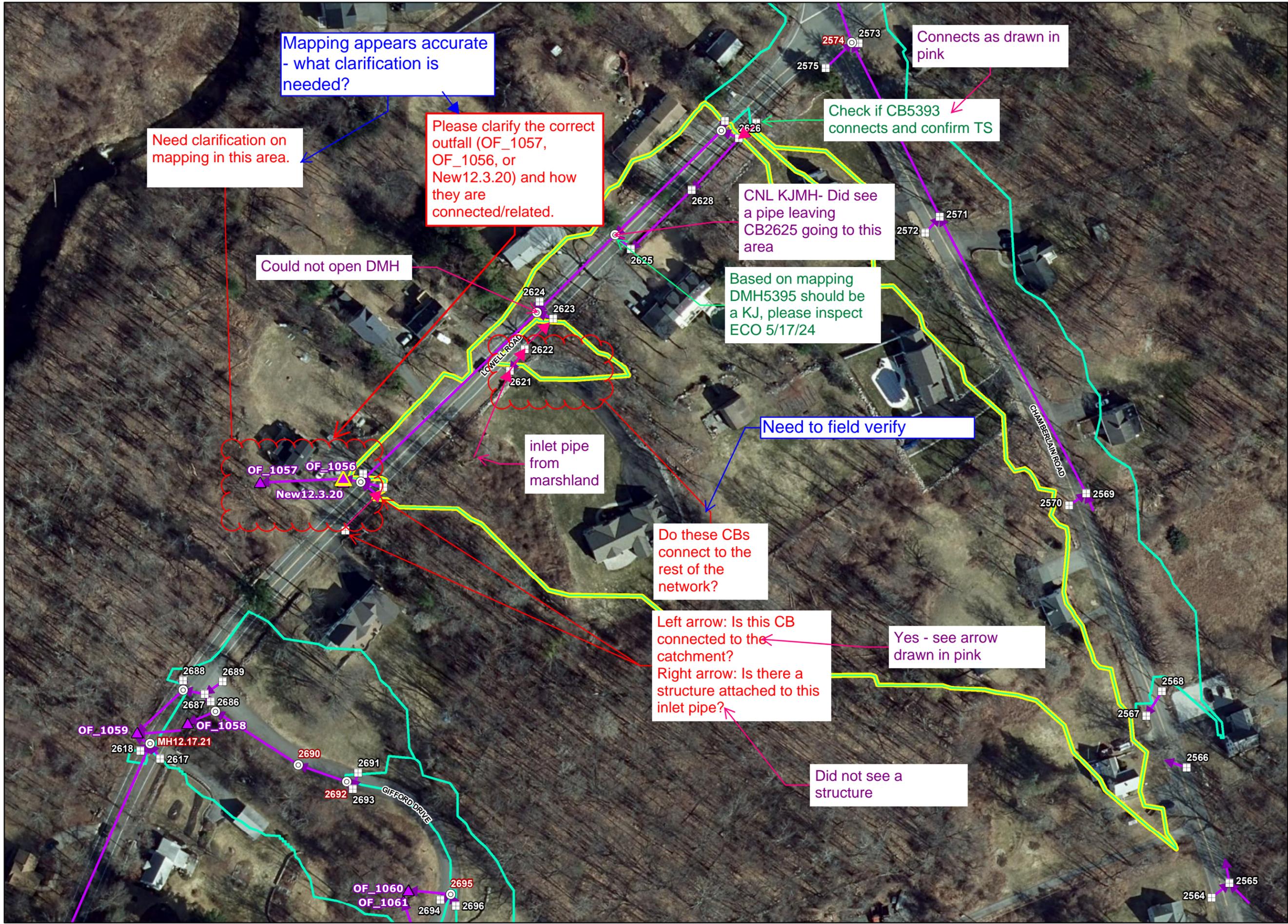
1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by the Town of Westford (2024).

Catchment Area of Outfall: OF_1024

Page 3 out of 11

**Westford, Massachusetts
 February 2024**





Mapping appears accurate - what clarification is needed?

Need clarification on mapping in this area.

Please clarify the correct outfall (OF_1057, OF_1056, or New12.3.20) and how they are connected/related.

Could not open DMH

CNL KJMh- Did see a pipe leaving CB2625 going to this area

Based on mapping DMH5395 should be a KJ, please inspect ECO 5/17/24

Need to field verify

inlet pipe from marshland

Do these CBs connect to the rest of the network?

Left arrow: Is this CB connected to the catchment?
Right arrow: Is there a structure attached to this inlet pipe?

Yes - see arrow drawn in pink

Did not see a structure

Connects as drawn in pink

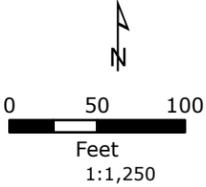
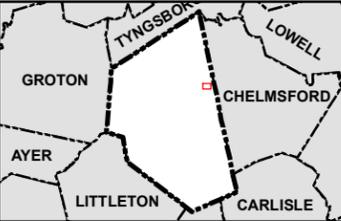
Check if CB5393 connects and confirm TS

CATCHMENT INVESTIGATIONS MAPPING ISSUES

LEGEND

- Outfall
- Key Junction Catch Basin
- Junction Catch Basin
- Catch Basin
- Key Junction Manhole
- Junction Manhole
- Manhole
- Drain Pipe
- Culvert
- BMP Point
- BMP Area
- Catchment Area
- Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021)
2. Stormwater data provided by the Town of Westford.

Catchment Area of Outfall: OF_1056

Westford, Massachusetts
April 2023

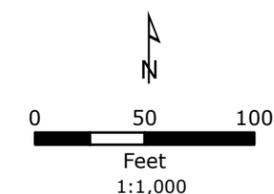
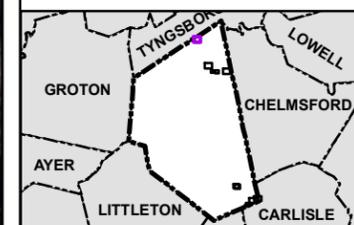


CATCHMENT INVESTIGATIONS GROUP TWO

LEGEND

-  Outfall
-  Interconnection
-  Key Junction Manhole
-  Junction Manhole
-  Manhole
-  Key Junction Catch Basin
-  Junction Catch Basin
-  Catch Basin
-  Inlet/Water Quality Inlet
-  Outlet
-  Overflow Structure
-  Flared End Section
-  Other Stormwater Structure
-  BMP Point
-  Drain Pipe
-  Culvert
-  BMP Polygon
-  Catchment Area
-  Town Boundary

LOCUS MAP



NOTES

1. Based on MassGIS Color Orthophotography (2021).
2. Stormwater data provided by theTown of Westford (2023).

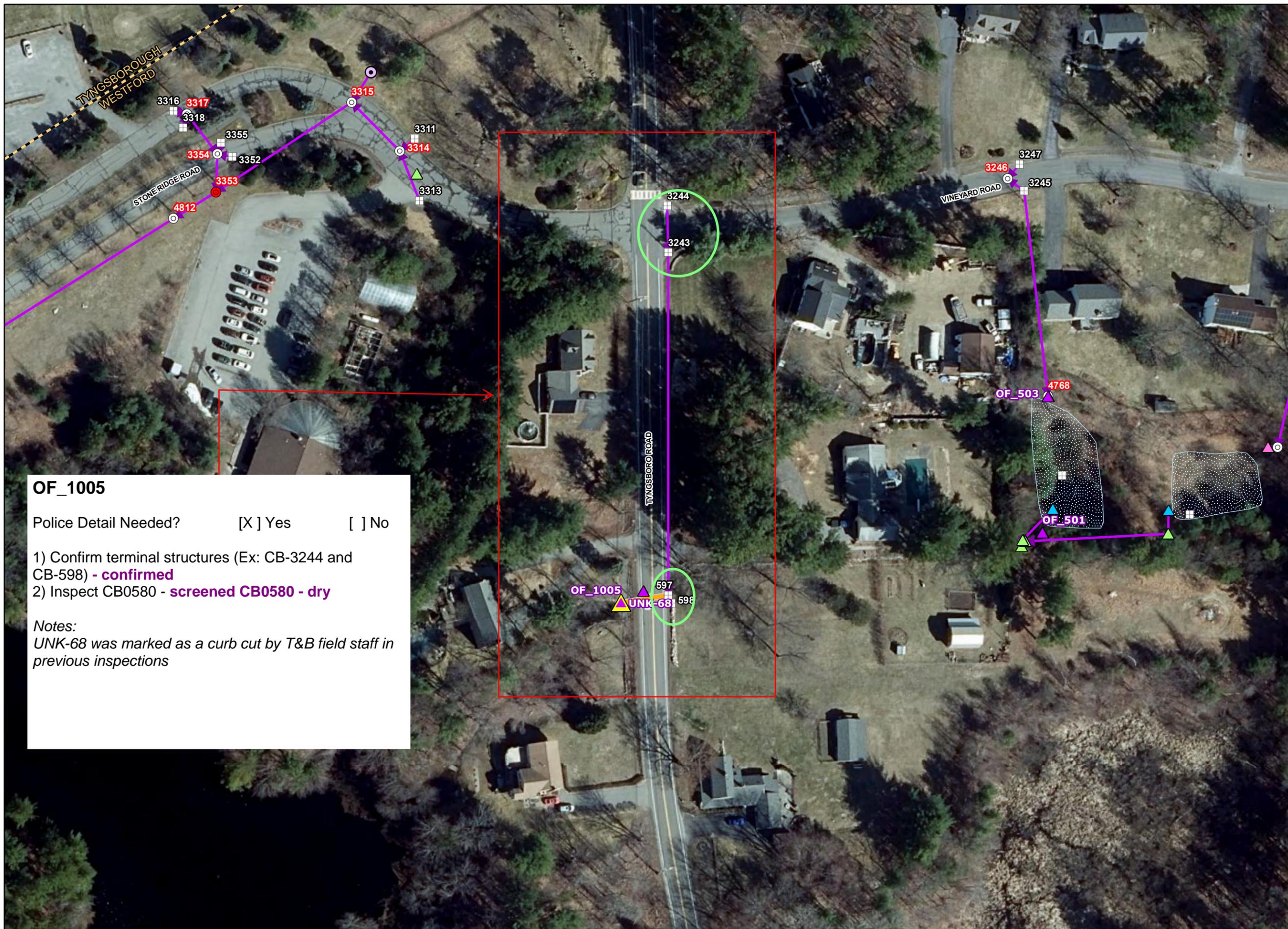
Catchment Area of Outfall: OF_1005

Outside Receiving

Page 1 out of 11

**Westford, Massachusetts
November 2023**

Tighe&Bond



OF_1005

Police Detail Needed? Yes No

1) Confirm terminal structures (Ex: CB-3244 and CB-598) - **confirmed**

2) Inspect CB0580 - **screened CB0580 - dry**

Notes:
UNK-68 was marked as a curb cut by T&B field staff in previous inspections