

**Town of Bernardston, MA
State Community Compact of
Drainage Structures**



Prepared for:
Town of Bernardston, MA
Selectboard

Prepared by:
Stantec Consulting Services, Inc.

October 11, 2017

TOWN OF BERNARDSTON, MA
STATE COMMUNITY COMPACT OF DRAINAGE STRUCTURES

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1.0 INTRODUCTION

1.1 GENERAL

The Town of Bernardston, MA is responsible for maintaining five hundred eight four (584) waterway crossings, culverts, and drainage structures within the Town limits. All structures were inspected by The Town and the following information was documented for all drainage structures maintained by the Town:

- GPS Coordinates (Latitude and Longitude)
- Crossing or Structure Type
- Approximate Elevation
- Structure Size
- Date of installation (in Decade)
- Condition
- Type of material

The summary of the Survey of Waterway Crossings and Structures, is located in Appendix A. In conjunction with this survey the following types of structures were identified:

- 4 Bridges
- 451 Culverts
- 60 Drop Inlets
- 13 Drywells
- 45 Major Culverts
- 11 Manholes

The condition of these Town maintained drainages structures were identified as Good, Fair, Poor or Very Poor, depending on the existing condition, capacity and functionality. A map of all the drainage structure locations by street with an associated ID number with a color-coded identification of the condition of each structure is provided in Appendix B. A tabulated summary of the information gathered as part of the Town's Survey is provided in Appendix C.

Stantec was hired by the Town to review the existing drainage structure data base, perform inspections of more critical drainage structures (structures identified as poor or very poor), update the assigned conditions of the structures, provide a prioritized list of repair or replacements of existing drainage structures, a time table to replace, expected level of permitting associated with repair or replacement work and approximate associated costs for anticipated repairs or replacement.

1.2 PURPOSE, SCOPE, AND OUTLINE

The purpose of this report is to summarize the inspection of the conditions of existing drainage structures identified by the Town as being poor or very poor and prioritize a list of locations requiring repairs or replacement of the existing drainage structures and/or culverts and to developed a timeline and approach to perform upgrades to the Town's existing drainage system.

We reviewed the following criteria during our inspection of the Town's existing drainage structures:

- Existing wetlands present requiring permitting,
- Existing stream crossing requiring major environmental permitting,
- Environmentally sensitive areas,
- Floodplains,
- Drainage structure material(s),
- Culvert end treatments (Flared End Sections of Headwalls),
- Approximate cover over Pipes,
- Roadway side slopes,
- Signs of flooding of the inlet/outlet,
- Signs of erosion and/or sedimentation of the drainage course,
- Signs of bank erosion,
- Rip rap location, size and material,
- Existence of and condition of the pipe end treatments, pipe joints, pipe alignment,
- Signs of settlement, heaving, washout in proximity to the structure,

- Overall conditional assessment of the structure,
- Approximate Sizing

Individual field reports summarizing the listed criteria above for each drainage structure maintained by the Town are located in Appendix D. Sample pictures of the drainage structures inspected are located in Appendix E.

2.0 DRAINAGE STRUCTURES CONDITION ASSESSMENT

2.1 CULVERTS

A majority of the drainage structures that were inspected were culverts, primarily cross culverts that convey storm water from one side of a road to the other, with some additional cross-country culverts that run through and in wooded areas outside of the roadway.

A high percentage of the culverts inspected were corrugated metal pipe (CMP) or 'metal' as identified as the material in the culvert inventory. Culvert condition designations were changed in the drainage structure inventory based on our inspections from poor to good for metal culverts that have been replaced with high density polyethylene pipe (HDPE) (plastic) since the previous inspection. The materials of the existing culverts documented by the Town are reinforced concrete pipe (RCP), Clay, Tile, HDPE, CMP and in some instances a combination of CMP and HPDE or RCP and HDPE pipe where repairs have been made with HDPE pipe. Over fifty percent of the Town maintained drainage structures are CMP culverts. Table 1 provides a breakdown of inspected culvert materials as compared to the Town wide culvert database noted material types.

Table 1: Stantec Inspected and Town Documented Culverts by Material

Culvert Material	Inventory Material Designation	# of Culverts Inspected	# of Culverts Town Wide	%Culverts Poor/Very Poor
CMP	Metal	101	311	32%
HPDE	Plastic	0	202	0%
RCP	Concrete	0	46	0%
CMP/HDPE	Met/Plst	5	10	50%
RCP/HDPE	Conc/Plst	0	1	0%
Clay or Tile	Clay Tile	0	2	0%

Metal culverts are susceptible to corrosion, especially in locations of salt application and where a section of the culvert is exposed to ambient conditions. In general, most of the culverts that were inspected had some level of material corrosion on the bottom and outlet of the pipe. Photo 1 shows an example of corrosion observed at the outlet of one of the culverts that was

inspected. It should be noted that in the Town's existing inventory, all of the existing HDPE culverts are categorized as being in good condition.



Photo 1: Corroded Metal Culvert at Outlet

Roughly sixty-five percent (65%) of the culverts inspected are twelve-inch diameter pipes or smaller, with nine existing culverts being six-inch and eight-inch diameter pipes. Table 2 provides a breakdown of inspected culvert sizes as compared to town wide database of culvert sizes.

Table 2: Stantec Inspected and Town Maintained Culverts by Size

Culvert Size (in)	# of Culverts Inspected (Very Poor/Poor)	# of Culverts Town Wide	%-Culverts Poor/Very Poor
< 12"	9	9	100%
12"	58	280	21%
15"	39	155	25%
18"	4	12	33%
24"	6	23	26%
30"	0	1	0%
36"	5	13	38%
48"	0	1	0%
72"	0	1	0%

Inlet flooding, sedimentation and outlet scour conditions were observed at a number of culverts inspected, these conditions appear to be attributed to limited culvert capacities, either due to sediment/silt blocking the inlet or the diameter of the existing culvert is undersized to convey the tributary stormwater flows. Photo 2, shows a culvert with limited inlet capacity due to sedimentation build up at the inlet.



Photo 2: Culvert Inlet with Limited Capacity

Roughly half of the inspected culvert locations are on gravel roads, where it is more common that sedimentation and erosion will accumulate in the ditch, limiting capacity of the existing culvert. At the cross culvert locations on Haigis Branch Road it was observed that the shoulder and side slopes on the outlet side of the existing culverts are eroding. This appears to be attributed to water backing up in the ditch due to the limited capacity of the cross culverts, overtopping the road and eroding the downhill side slopes. Photo 3 shows an example of this occurrence at Haigis Branch Road culvert#5.

Culvert repairs consisting of multiple pipe materials, i.e. concrete and plastic or metal and plastic should be considered temporary and can be problematic. The inspection of these structures identified some misalignment of the culvert at the pipe material transition joint.



Photo 3: Eroded Side Slope on Downhill side of Road at Haigis Branch Road

Approximately ten percent of the Town's culvert inventory has been installed since 2000, but none of the culverts inspected or identified as poor or very poor have been installed within the last 30-years. Table 3 provides a breakdown of approximate age of the culverts inspected as compared to the age of culverts identified in the Town wide database. A majority of the culverts identified as poor or very poor were installed between the 1960's and 1980's.

It should be noted that all of the existing concrete culverts are categorized as good or fair regardless of the age of the culvert. The drainage structure inventory indicates that the Town started installing plastic culverts in the 1960's, given that plastic pipe was not available until the 1980's it is more likely that these plastic culverts were installed from 1980 or later. Additionally, four culverts with drop inlets on South Street were installed post 2000, all are currently classified as in fair condition, despite only being roughly 10-12 years since they were installed.

Table 3: Inspected and Town Maintained Culverts by Material

Year Installed	# of Culverts Inspected	# of Culverts Documented	%-Culverts Poor/Very Poor
Pre 1950	2	3	67%
1950's	4	44	9%
1960's	48	254	19%
1970's	51	141	36%
1980's	17	28	61%
1990's	1	28	0%
Post 2000	0	71	0%

In general, the culverts inspected are provided with approximately two to three feet of cover over the pipe. Ditches were observed as typically being narrow and shallow. Ledge outcrops were generally not observed during inspections but the Town Highway department identified locations where the depth or size of the existing culverts were based on the existing shallow depth of ledge under the roadway.

The full summary of the culvert information for poor and very poor culverts is provided in the culvert inventory, summarized by culvert location and ID# in Appendix C.

2.2 DROP INLETS

Although not listed in the Town's drainage structure inventory or shown on the drainage structure location plans, a number of existing cross culverts are connected to custom fabricated drop inlet structures, installed in the ditch of roadways to collect ditched stormwater. There are other drop inlets identified in the drainage structure inventory and on the drainage structure locations plans but not associated with the inspected culverts.

The drop inlets that we inspected were 'custom' fabricated, consisting of concrete block structure with no bottom and tops varying from concrete, to steel plates to a combination of steel plates and concrete blocks. A majority of the custom fabricated drop inlets that were inspected are in working condition but are partially silted in and require cleaning.

It appears that the drop inlets have been installed in lieu of catch basins or deeper ditches and headwalls due to the shallow depth to ledge, to provide an inlet for stormwater without requiring the depth of a catch basin. For all drop inlets inspected, sediment was observed either blocking the inlet or blocked inside culvert.

It should be noted that these structures should be considered deficient due to the lack of a sump for sediment collection to maintain the pipe and structure inlet clear of debris. Photo 4 provides an example of a custom drop inlet structure that was identified during inspections.



Photo 4: Drop Inlet

2.3 HEADWALLS

A majority of the drainage structures inspected did not have end treatments. Two types of headwalls were observed during inspection, a loose block retaining wall/headwall (see Photo 5) and a loose rubble rock headwall (see Photo 6). Although none of these constructed walls were observed as currently being in need of repair there is concern with the long-term stability during larger storm events of these structures and the possible need to repair/replace these structures as a result of flooding conditions.

Pipe culvert outlets were generally observed as extending out of the roadway side slope without an end treatment, a small percentage of culvert outlets have been installed with a stone rubble

headwall. It was noted during our inspections that the outlet of the existing culverts protruding out of the roadway side slopes typically result in increased corrosion of the culverts and has misaligned the culvert overtime due frost action and the outlet not being secured by a solid headwall outlet or flared end section. The extended protrusion (See Photo 7) of the culverts will likely result in continued degradation of the culverts in poor and very poor condition.



Photo 5: Loose Block Headwall/Retaining Wall

Although not typical for the culverts that we inspected, in locations where we observed a pre-cast headwall, the condition of both the culvert and the headwall were observed as being in better condition, with less scour and erosion as that of the culverts that protruded out of the existing roadway side slopes.



Photo 6: Loose Rubble Rock Headwall



Photo 7: Culvert Outlet Pipe Protrusion

Inspection reports and inspection pictures summarizing the detailed assessment and findings at each drainage structure location are located in Appendix D and Appendix E respectively.

2.4 ROADWAYS

Of the culverts that were inspected more than half were located on narrow, gravel roads with gravel or dirt ditches and steep side slopes. The remaining culverts were located on paved roadways, were paved, typically with vegetative ditches and moderate to gradual side slopes. Roadway centerline grades and cross slopes vary throughout Town. In general, roadway cross slopes are installed and/or maintained by the Town at approximately two to three percent, with no observed locations of super-elevation.

Paved roadway surfaces were observed with vegetative grass swales that appear to be well maintained. In general ditch slopes vary between no slope and twenty percent slope, with no rip rap or other means of erosion protection generally provided for the ditch, culvert inlet or culvert outlet.

3.0 WETLANDS AND PERMITTING ASSESSMENT

All of the culverts inspected were assessed for potential environmental impact environmental permitting requirements. Environmentally permitting would be subject ultimately to the determination of the Town of Bernardston Conservation Commission, MADES and in some instances the Army Corps of Engineers permitting requirements; however the following section provides a probable level of permitting requirements for the inspected culverts.

3.1 DRAINAGE STRUCTURES LOCATED IN WETLANDS

Roughly forty-percent (40%) of the culverts inspected are adjacent to existing jurisdictional wetlands and would require wetlands permitting to remove replace the existing culvert. Forty-four (44) culverts were identified as being adjacent to wetlands or conveying an existing stream. Twenty-five of those locations will only require Town of Bernardston Conservation Commission permit approval for wetlands and wetlands buffer disturbance. A full summary of the anticipated, required permitting for the existing, poor and very poor condition culverts is located in Appendix F, drainage structure replacements requiring wetlands permitting are highlighted in yellow, while drainage structure replacement locations requiring major, environmental permitting are highlighted in red.

3.2 DRAINAGE STRUCTURES CONVEYING STREAMS

Less than one quarter of the culverts inspected convey perennial streams, generally these are identified in the Town culvert inventory as locations of 'major crossing' or a bridge structure in some instances these are locations where existing Environmental Sanctuaries and conservation land existing, as is the case for the existing crossings at the northern end of Huckle Hill Road. The culvert replacements that would likely require major permitting, including coordination and/or permitting with the Army Corp of Engineers are included in Table 5 below. The replacement of

these culverts would likely require the installation of a structure capable of conveying 1.2-times the existing streambed bankful width, with a natural bottom:

Table 5: Drainage Structures Anticipated to Require Major Permitting

Street	ID#	Size (in)	Condition
Bald Mountain Road	43M	36"	Poor
Couch Brook Road	007	12"	Poor
Couch Brook Road	008	12"	Poor
Couch Brook Road	009	12"	Poor
Couch Brook Road	010	12"	Poor
Couch Brook Road	2M	18" to 24"	Poor
Cross Street	21M	36"	Poor
Deane Street	20M	24"	Poor
Eden Trail Road	15M	18"	Very Poor
Eden Branch Road	19M	24"	Poor
Haigis Branch Road	5M	24"	Poor
Huckle Hill Road	079	12"	Very Poor
Huckle Hill Road	076	15"	Poor
Huckle Hill Road	077	15"	Poor
Nelson Drive	27M	36"	Poor
River Street	26M	36"	Very Poor
Shedd Road	33M	36"	Poor
Upper West Moutain Road	17M	24"	Very Poor
West Road	40M	24"	Very Poor

It should be noted that this list is limited to the existing drainage structures identified as being in poor or very poor condition and that major permitting may be required for drainage structures considered in fair or good condition that are required to be replaced based on flooding or storm damage.



Photo 8: Huckle Hill Road Environmental Conservation Land

In some instances, if the existing drainage structure is being replaced in kind within the identical foot print of the existing drainage structure, Army Corp. Permitting can be 'self-verifying', where so the Town can perform the work without an official permit approval from Army Corp. and can obtain approval to perform the work with a simple notification. A case by case determination would be made by the Army Corp. regarding whether the drainage structure repair or replacement complies with the requirements of this procedure.

3.3 DRAINAGE STRUCTURES IN FLOODWAYS

Of the culverts inspected, only Couch Brook Road falls within the regulated floodway. It should be noted that only some of the culverts that convey stormwater in the vicinity of Couch Brook Road are not located within an existing wetland that are in the existing floodway. Further investigation would be required to make a definitive determination of the requirements associated with the replacement of these culverts. However, it should be assumed that the replacement of these culverts would require a detailed hydraulic/hydrological analysis to

demonstrate that there would be no alteration of the existing floodway due to the replacement of the existing culvert.

4.0 CONDITIONAL ASSESSMENT

Drainage structure replacement was broken into four categories based on our inspection and the condition designations determined by The Town and Stantec. Structures are listed and color coded in Appendix C and are the following:

- Very Poor Condition = Replace Immediately (20 drainage structures)
- Poor Condition = Replace within the next 1-3 Years (90 drainage structures)
- Fair Condition = Continue to Monitor (228 drainage structures)
- Good Condition = Continue to Monitor, No anticipated action required (242 drainage structures)

4.1 DRAINAGE STRUCTURES IDENTIFIED FOR IMMEDIATE REPAIR

There are twenty (20) drainage structures identified for immediate replacement of those twenty (20) structures six (6) can be performed without permitting and should be replaced by the Town as soon as possible (see Table 6). The remaining culverts identified for immediate replacement will require wetlands permitting, it may be prudent to package these culvert replacements into a project for the Town to bid and have a contractor perform this work. The most pressing of the immediate repairs would be at locations where the existing culvert is less than twelve inches in diameter or where there are signs of roadway side slopes erosion and washout. In these instances, the culvert size should be increased to accommodate the tributary stormwater flows.

Table 6: Drainage Structures Identified for Immediate Replacement Without Required Permitting

Street	ID#	Size (in)	Increase Culvert Size?
Eden Trail	013	8"	Yes
Fox Hill Road	030	15"	Yes
Haigis Branch Road	007	6"	Yes
Nelson Drive	001	12"	Yes
Shedd Road	003	12"	Yes
South Street	009	12"	Yes

4.2 DRAINAGE STRUCTURES IDENTIFIED FOR SHORT TERM REPAIRS

Ninety (90) culverts were identified as in poor condition, resulting in a recommendation of replacement of the culvert within the next one (1) to three (3) years. Of these ninety (90) culverts, it is recommended that these be evaluated by the Town to determine which culverts the Town has the capability to perform the work. The culverts identified that the Town cannot perform should be included in a bid package for contractors to provide price proposals.

Culverts not requiring permitting for replacement should be replaced first, with all culverts less than twelve inches replaced first. Continued monitoring should be performed on these listed culverts to identify if conditions are worsening or remaining constant. If conditions worsen at any one of these locations due to a high intensity storm or associated storm damage, it is recommended that these culverts and the associated replacement be elevated to immediate replacement.

A summary of these culverts identified as poor, requiring replacement within the next one to three years is provided in Appendix C.

5.0 RECOMMENDATIONS

5.1 ENGINEERING

As previously indicated the signs of inlet flooding, stormwater overtopping and eroding side slopes and outlet scour can all be attributed to undersized culverts. Approximately twenty-five percent (25%) of the culverts identified as being in poor and very poor condition can be sized based on existing USGS Stream Stats data. These culverts typically convey existing perennial streams and require major environmental permitting. The remaining replacement culverts can be sized utilizing USGS topographic maps and soils mapping to develop drainage stormwater flow information.

Depending on the permitting requirements and floodplain, a HEC-RAS analysis of the streambed and a comparison of the pre-and post-comparison of the flow conditions for the proposed replacement structure may be required. For instances where culverts are proposed to be replaced in the floodplain the Town would need to demonstrate that the post development conditions do not alter the existing floodplain of lands upstream and downstream of the structure.

Rip rap stone sizing or other outlet armourment can be sized based on the anticipated velocity, flow depth and and flow rate of the stormwater from the proposed replacement culverts.

5.2 CULVERT REPLACEMENT

It is recommended that all replacement culverts between the sizes of fifteen (15) inches and forty eight (48) inches be provided as HDPE. Replacement culverts larger than forty-eight inches will require additional determination based on site conditions, permitting requirements and hydraulic calculations to be able to make a determination on what the for the waterway crossing is.

Culvert sizes should be sized based on available stormwater flow data and environmental regulation requirements. It is recommended that the Town review all the location identified for culvert replacement and make a determination as to whether Town forces have the ability to perform the repairs. For the culvert replacement locations identified as being beyond what the Town can perform "in house", it is recommended that culverts be sized appropriately and that a bid package be created for Contractors to submit cost proposals to replace culverts.

5.3 CONTINUED MONITORING

As previously indicated, the culverts that are identified as fair or good in the culvert inventory list were not inspected as part of this report. It is recommended that the Town or their designee continue to inspect the Town maintained culverts and update the designated condition yearly. By doing so, the Town will be able to more quickly identify both condition deterioration or potential future issues. Included in Appendix H are blank inspection forms for the inspection of culverts and other drainage structure for the Town or their designee to continue to inspect and monitor the condition of the existing drainage structures yearly.

5.4 CULVERT AND DITCH CLEANING

A majority of the culverts inspected required sedimentation removal in the culvert, at the culvert inlet, soil at the outlet or a combination there in. It is recommended that the Town clean/clear sediment from the drop inlets, culverts and the culvert inlets twice annually on gravel roads and annually on paved roads, this activity can be combined with the inspection of the structures. Additionally, for locations where culverts are identified as in poor or very poor conditions it is recommended that these culverts not be jetted but rather 'flushed' without the use of high pressure jetting to reduce the potential of further damage to the bottom of the culvert prior to replacement.

5.5 ADDITIONAL MEASURES

It is recommended that the Town maintain a minimum required culvert diameter size of eighteen inches for all future and replacement roadway cross culverts. It is also, recommended that the replacement culvert sizes be confirmed for all existing poor and very poor culverts.

Currently, the Town does not have scour protection measures installed at the existing poor and very poor culverts. It is recommended that rip rap be sized and installed for all ditches in vicinity

to gravel roads that exceed five-percent to minimize future erosion and sedimentation build up in the ditchline and that an appropriately sized rip rap splash pad and rip rap stone size be provided at all culvert outlets.

It is recommended that as culverts are replaced the existing drop inlets and headwalls also be replaced with pre-cast concrete drop structures and precast headwalls to provide additional life expectancy for those structures.

As roadway repairs are performed, it would be prudent for the Town to identify existing metal culverts to be replaced associated with the roadway reconstruction or repair work even if those culverts are identified as in fair condition or better to decrease the probability of needing to replace the drainage structure after the roadway has been repaired/replaced.

5.6 ESTIMATE OF COSTS

Construction costs will vary by the site-specific location. As an example, a culvert replaced in pavement will cost more than a culvert replacement in a gravel road. We developed expected construction for linear feet of expected sizes of replacement culverts installed. Unit costs are based on the expected work to install the replacement culverts, to include the following:

- Permitting
- Installation and removal of erosion control measures
- Excavation and removal of the existing culvert
- Roadway excavation and restoration
- Pipe material costs
- Stone bedding, erosion control fabric and backfill material
- Labor and equipment costs
- Ditchline restoration costs assumed at ten a limit of ten (10) feet up stream and ten (10) feet downstream.
- Average Depth of Cover of 3-feet
- Contractor Costs (10% markup)

The estimated prices per linear foot of culverts anticipated to be installed for the replacement of the existing poor and very poor culverts are provided in Table 6, based on these considered criteria, and their associated current average unit prices for construction materials.

**Table 6: Anticipate Total Installation Cost (\$)
Per Linear Foot Culvert Replacement**

HDPE Culvert Size (in)	Contractor Cost Per LF (\$/LF)	Town Cost Per LF (\$/LF)
18"	\$140	\$100
24"	\$165	\$120
36"	\$235	\$165
48"	\$350	\$230

As previously noted, it is recommended that pre-cast concrete headwalls be installed at the locations of new and replacement cross culverts and that catch basins be installed in lieu of drop inlets for the replacement of existing, custom fabricated drop inlets. It is anticipated, based on the current, average, unit prices for construction materials that these items will cost the following per location:

- Precast Concrete Headwall: varies between \$3,000 and \$12,000 installed per headwall installed; Table 7 provides an anticipated per headwall cost based on the associated pipe size.

- **Table 7: Anticipate Total Installation Cost (\$)**
 - **Per Each Precast Concrete Headwall**

Culvert Size (in)	Contractor Cost Per EA (\$/EA)	Town Cost Per EA (\$/EA)
18"	\$3,000	\$2,100
24"	\$5,000	\$3,500
36"	\$8,000	\$5,600
48"	\$12,000	\$8,400

- Precast Concrete Catch Basin: \$4,000 per precast concrete catch basin, installed by a contractor as compared to \$1,500 per precast concrete catch basin, installed by the Town.

5.7 CONCLUSIONS

It is recommended that the Town continue to perform the following tasks, relative to the Town maintained drainage structure inventory:

- Inspect drainage structures annually,

- Update condition assessment rating and reprioritize replacement annually,
- Clean/clear culverts and ditches annually

In addition, it is recommended that the Town implement the following procedures and actions based on the findings of our inspections:

- Replace existing culverts designated with a condition of Very Poor by the Town forces,
- Develop bid packages for bidding the replacement of the culverts designated with a condition of Poor within a three-year period, with three phases, one phase being performed each year,
- Assess existing drainage structures in poor and very poor condition and determine which can be replaced by the Town forces,
- Generate and maintain a list of poor and very poor structures that cannot be replaced with Town forces,
- Size, design and permit as required replacement and future culverts for the associated tributary drainage area(s),
- Allocate moneys based on available Town, State and Federal funds, grants and programs.
- Determine a yearly Town contribution allocated budget cost to perform culvert replacements;
- Require that all future and replacement roadway cross culverts be provided at a minimum eighteen-inches in diameter;
- Install rip rap stone for all gravel road ditches where slopes exceed five-percent. Re-establish vegetative ditch slopes as required;
- Install headwalls or flared end sections for all future or replacement culvert inlet and outlets

**TOWN OF BERNARDSTON, MA
STATE COMMUNITY COMPACT OF DRAINAGE STRUCTURES**

Appendix A Town of Bernardston Survey of Waterway Crossings and Structures
October 11, 2017

**Appendix A TOWN OF BERNARDSTON SURVEY OF
WATERWAY CROSSINGS AND STRUCTURES**



TOWN OF BERNARDSTON

SURVEY OF WATERWAY CROSSINGS & STRUCTURES

Total Water Crossings & Structures: 584

Small Bridges: 4

Culverts: 451

Drop Inlets: 60

Drywells: 13

Major Culverts: 45

Manholes: 11



TOWN OF BERNARDSTON

SURVEY OF WATERWAY CROSSINGS & STRUCTURES

Condition

Good: 239
Fair: 222
Poor: 108
Very Poor: 15



TOWN OF BERNARDSTON

SURVEY OF WATERWAY CROSSINGS & STRUCTURES

LEGEND

No: Numeral designation given to the waterway crossing. An "M" adjacent to the number indicates as major culvert in excess of 18" in diameter.

Roadway: Public way where the crossing is located.

N Latitude/W Longitude: GPS coordinates.

Crossing Type: Description of waterway crossing or structure.

Elev.: Elevation in feet.

Length: Length in feet.

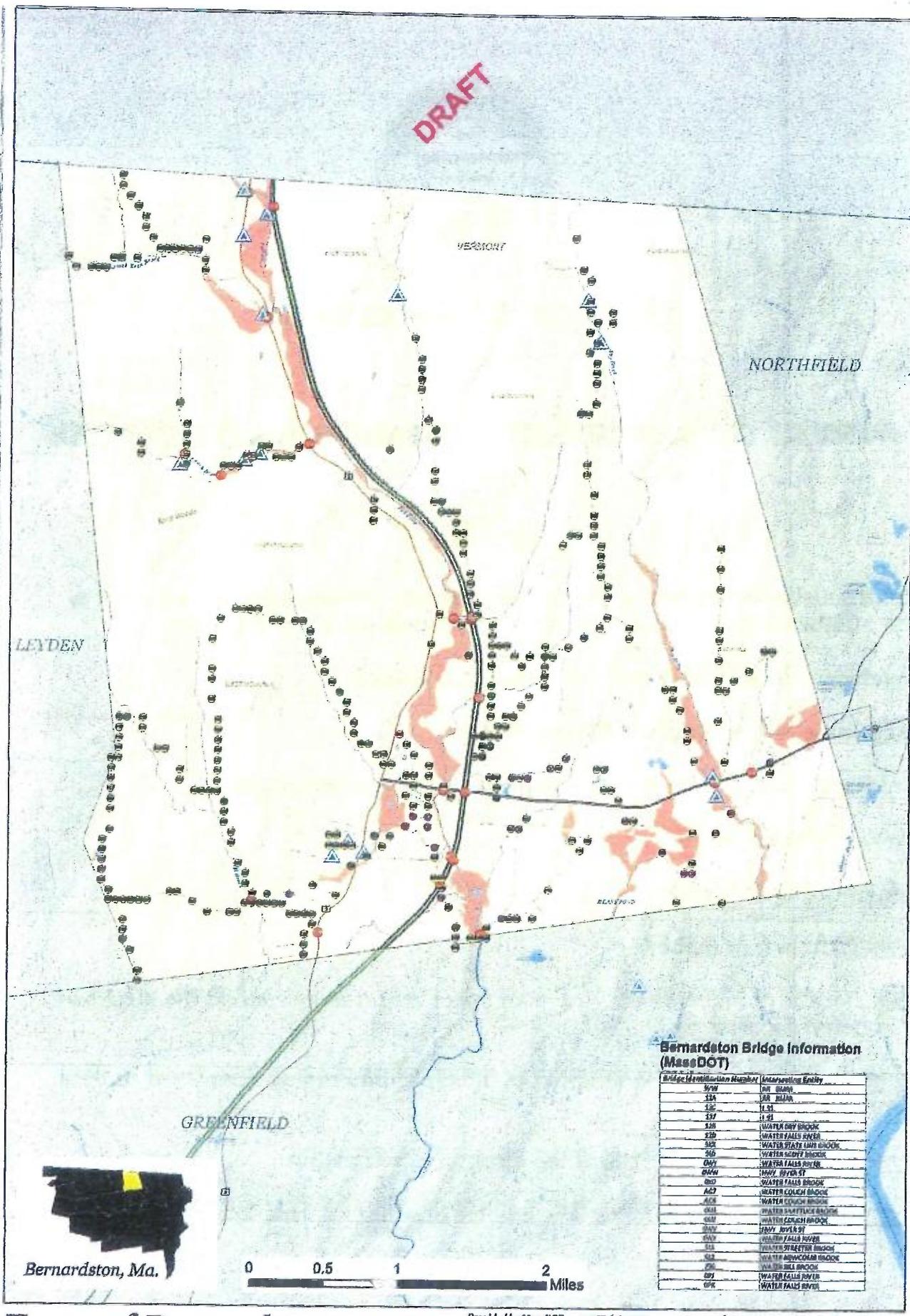
Size: Diameter in inches.

Age: Decade of installation. Where an exact year was located on the structure, it is noted accordingly.

Condition: Inspectional evaluation of the crossing ranging from Good to Very Poor.

Type: Construction material of the structure or crossing.

Comments: Special characteristics, notes or other information useful to the location.



Town of Bernardston

Inventory of Bridges and Culverts

Franklin County, Massachusetts

Provided by MassDOT
● Bridge
● Culvert
● Major Culvert
● Dry Well
● Drop Inlet
● Manhole

— Interstate
— State Route
— Local Road
— Stream, River
△ Local Flooding*
● Special Flood Hazard Area*
● Lake, Pond

*Special Flood Hazard Area: An area subject to inundation from the 1% chance (100-year) flood event. Franklin County, Massachusetts floodplain maps are available online at the Franklin Regional Council of Governments website.

Source: Maintained by the Franklin Regional Council of Governments. Franklin Regional Council of Governments, 1996. Gages Creek, Waterfalls Brook, Mill Brook, Dams, Franklin Falls, and other stream names are trademarks or service marks of Franklin Regional Council of Governments. Franklin Regional Council of Governments is not responsible for any errors or omissions in this map.

FRCC Franklin Regional Council of Governments

**TOWN OF BERNARDSTON, MA
STATE COMMUNITY COMPACT OF DRAINAGE STRUCTURES**

Appendix B Culvert Location Maps
October 11, 2017

Appendix B CULVERT LOCATION MAPS

TOWN OF BERNARDSTON, MA
STATE COMMUNITY COMPACT OF DRAINAGE STRUCTURES

PLEASE SEE ATTACHED

**TOWN OF BERNARDSTON, MA
STATE COMMUNITY COMPACT OF DRAINAGE STRUCTURES**

Appendix C Culvert Inventory
October 11, 2017

Appendix C CULVERT INVENTORY

Town of Bernardston, MA

Water Crossing Inventory - In Public ROW

last Updated: May 2017

Continue to Monitor

Replace in 1-3 Years

Replace Immediately

No Anticipated Action Required

Anticipated Environmental Permitting Required:

Bold = Requires Major Environmental Permitting

Bold & Italic = Requires Wetlands Permitting

Town of Bernardston, MA				Length = feet		Elevation = feet	
Water Crossing Inventory - In Public ROW		Size = diameter inches		Age = decade installed		Condition = Good, Fair, Poor, Very Poor	
						Type = Metal, Plastic, Concrete, Clay Tile	
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)
45M	Bald Mountain Rd Ext.	42 41.470	72 32.560	Major Culvert	402	40	18
46M	Bald Mountain Rd Ext.	42 41.964	72 32.847	Major Culvert	493	40	24
47M	Bald Mountain Rd Ext.	42 42.343	72 32.896	Major Culvert	644	40	36
001	Bald Mountain Road	42 40.224	72 32.342	Manhole	366	—	
002	Bald Mountain Road	42 40.256	72 32.344	Culvert	366	200	12
003	Bald Mountain Road	42 40.265	72 32.331	Culvert	366	66	12
004	Bald Mountain Road	42 40.306	72 32.348	Culvert	368	311	12
005	Bald Mountain Road	42 40.340	72 32.376	Culvert	369	247	12
006	Bald Mountain Road	42 40.343	72 32.373	Culvert	372	35	12
007	Bald Mountain Road	42 40.416	72 32.431	Culvert	364	110	12
008	Bald Mountain Road	42 40.423	72 32.450	Culvert	361	256	12
009	Bald Mountain Road	42 40.455	72 32.490	Culvert	361	50	12
010	Bald Mountain Road	42 40.462	72 32.489	Manhole	361		
011	Bald Mountain Road	42 30.464	72 32.476	Culvert	358	65	12
012	Bald Mountain Road	42 40.534	72 32.474	Manhole	352		
013	Bald Mountain Road	42 40.572	72 32.493	Culvert	353	33	12

Town of Bernardston, MA		Length = feet		Elevation = feet							
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor							
Last Updated: May 2017		Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile							
Anticipated Environmental Permitting Required:											
Bold = Requires Major Environmental Permitting											
<i>Bold & Italics = Requires Wetlands Permitting</i>											
Continue to Monitor, No Anticipated Action Required											
Continue to Monitor											
Replace in 1-3 Years											
Replace Immediately											
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type	Age	Condition	Notes
014	Bald Mountain Road	42 40.696	72 32.409	Culvert	361	28	12	Metal	1970	Fair	
015	Bald Mountain Road	42 40.694	72 32.416	Culvert	362	333	12	Metal	1970	Fair	
016	Bald Mountain Road	42 40.745	72 32.393	Culvert	359	23	12	Metal	1970	Fair	
017	Bald Mountain Road	42 40.745	72 32.395	Culvert	359	263	12	Metal	1970	Fair	
018	Bald Mountain Road	42 40.787	72 32.384	Culvert	354	28	12	Metal	1970	Fair	
019	Bald Mountain Road	42 40.789	72 32.386	Culvert	354	97	12	Metal	1970	Fair	
020	Bald Mountain Road	42 40.836	72 32.380	Culvert	360	30	12	Metal	1970	Fair	
021	Bald Mountain Road	42 40.985	72 32.387	Culvert	371	162	12	Metal	1970	Fair	
022	Bald Mountain Road	42 41.011	72 32.383	Culvert	371	92	12	Metal	1970	Fair	
023	Bald Mountain Road	42 41.027	72 32.387	Culvert	368	313	12	Metal	1960	Fair	
024	Bald Mountain Road	42 41.074	72 32.380	Culvert	372	142	15	Metal	1960	Fair	
025	Bald Mountain Road	42 41.099	72 32.387	Culvert	373	141-163	15	Metal	1960	Fair	
026	Bald Mountain Road	42 41.128	72 32.393	Culvert	373	213	15	Metal	1960	Fair	
027	Bald Mountain Road	42 41.158	72 32.400	Culvert	373	20	15	Metal	1960	Fair	
028	Bald Mountain Road	42 41.159	72 32.407	Manhole	371				Good	Manhole	
029	Bald Mountain Road	42 41.172	72 32.404	Culvert	369	82	15	Metal	1960	Fair	

Town of Bernardston, MA

Water Crossing Inventory - In Public ROW

Last Updated: May 2017

Continue to Monitor
Replace in 1-3 Years

Replace Immediately

Replace Immediately

Replace Immediately

No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type	Age	Condition	Notes
030	Bald Mountain Road	42 41.172	72 32.397	Culvert	372	15	15	Plastic	1960	Good	
031	Bald Mountain Road	42 41.203	72 32.416	Culvert	382	29	12	Metal	1960	Poor	
032	Bald Mountain Road	42 41.202	72 32.421	Culvert	382	54	12	Metal	1960	Fair	
033	Bald Mountain Road	42 41.325	72 32.541	Culvert	366	36	15	Plastic	1960	Good	
034	Bald Mountain Road	42 41.387	72 32.556	Culvert	370	36	15	Plastic	1960	Good	
035	Bald Mountain Road	42 41.412	72 32.556	Culvert	368	29	12	Plastic	1960	Good	
036	Bald Mountain Road	42 41.434	72 32.557	Culvert	368	40	12	Plastic	1960	Good	
037	Bald Mountain Road	42 41.536	72 32.592	Culvert	378	38	12	Plastic	1960	Good	
038	Bald Mountain Road	42 41.631	72 32.614	Culvert	391	40	15	Plastic	1960	Good	
039	Bald Mountain Road	42 41.677	72 32.628	Culvert	399	40	12	Plastic	1960	Good	
040	Bald Mountain Road	42 41.706	72 32.637	Culvert	410	40	15	Plastic	1960	Good	
041	Bald Mountain Road	42 41.732	72 32.653	Culvert	414	40	15	Plastic	1960	Good	
042	Bald Mountain Road	42 41.766	72 32.681	Culvert	415	35	12	Plastic	1960	Good	
043	Bald Mountain Road	42 41.802	72 32.713	Culvert	421	37	15	Plastic	1960	Good	
044	Bald Mountain Road	42 41.810	72 32.718	Culvert	425	64	15	Plastic	1960	Good	
045	Bald Mountain Road	42 41.857	72 32.713	Culvert	435	31	12	Plastic	1960	Good	

Length = feet

Elevation = feet

Size = diameter inches

Condition = Good, Fair, Poor, Very Poor

Age = decade installed

Type = Metal, Plastic, Concrete, Clay Tile

Anticipated Environmental Permitting Required:

Bold = Requires Major Environmental Permitting

Bold & Italics = Requires Wetlands Permitting

Town of Bernardston, MA			Length = feet		Elevation = feet			
Water Crossing Inventory - In Public ROW			Size = diameter inches		Condition = Good, Fair, Poor, Very Poor			
Last Updated: May 2017			Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile			
Continue to Monitor, No Anticipated Action Required			Anticipated Environmental Permitting Required:					
Continue to Monitor			Bold = Requires Major Environmental Permitting					
Replace in 1-3 Years			Bold & Italics = Requires Wetlands Permitting					
Replace Immediately								
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)		
					Size (in)	Type		
046	Bald Mountain Road	42 41.894	72 32.786	Culvert	428	30		
047	Bald Mountain Road	42 41.902	72 32.798	Culvert	430	65		
048	Bald Mountain Road	42 41.902	72 32.838	Culvert	422	40		
049	Bald Mountain Road	42 41.960	72 32.865	Culvert	474	40		
050	Bald Mountain Road	42 42.059	72 32.863	Culvert	498	56		
051	Bald Mountain Road	42 41.081	72 32.860	Culvert	508	40		
052	Bald Mountain Road	42 42.106	72 32.859	Culvert	514	44		
053	Bald Mountain Road	42 42.305	72 32.888	Culvert	576	38		
054	Bald Mountain Road	42 42.399	72 32.911	Culvert	593	32		
055	Bald Mountain Road	42 42.574	72 32.981	Culvert	593	20		
056	Bald Mountain Road	42 42.667	72 32.998	Culvert	580	20		
057	Bald Mountain Road	42 42.706	72 32.995	Culvert	583	30		
058	Bald Mountain Road	42 42.768	72 33.009	Culvert	616	30		
059	Bald Mountain Road	42 42.873	72 33.070	Culvert	633	20		
42M	Bald Mountain Road	42 40.527	72 32.469	Major Culvert	396	150		
43M	Bald Mountain Road	42 40.801	72 32.381	Major Culvert	404	31		

Town of Bernardston, MA

Water Crossing Inventory - In Public ROW

last Updated: May 2017

Continue to Monitor, No Anticipated Action Required

Continue to Monitor

Replace in 1-3 Years

Replace Immediately

Town of Bernardston, MA				Length = feet		Elevation = feet	
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor			
		Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile			
		Anticipated Environmental Permitting Required:					
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)
44M	Bald Mountain Road	42 41.273	72 32.514	Major Culvert	410	62	72x120
001	Ben Hale Road	42 39.606	72 30.873	Culvert	486	23	12
001	BES Drainage	42 39.983	72 33.642	Culvert	754	20	12
002	BES Drainage	42 39.983	72 33.658	Culvert	756	80	6
003	BES Drainage	42 39.981	72 33.673	Culvert	760	154	12
004	BES Drainage	42 39.959	72 33.675	Culvert	765	140	4
005	BES Drainage	42 39.975	72 33.617	Culvert	758	60	6
006	BES Drainage	42 39.981	72 33.639	Culvert	759	382	12
001	Burke Flat Road	42 41.265	72 32.800	Culvert	362	40	12
001	Burrows Turnpike	42 40.571	72 33.093	Culvert	380	34	12
002	Burrows Turnpike	42 40.492	72 33.058	Culvert	379	34	12
003	<i>Burrows Turnpike</i>	<i>42 40.402</i>	<i>72 33.205</i>	<i>Culvert</i>	<i>377</i>	<i>32</i>	<i>18</i>
001	Center Street	42 40.282	72 33.007	Culvert	382	57	6
002	Center Street	42 40.289	72 33.000	Culvert	382	53	6
003	Center Street	42 40.296	72 33.005	Culvert	381	98	12
004	Center Street	42 40.306	72 33.000	Culvert	382	70	12

Town of Bernardston, MA		Length = feet		Elevation = feet							
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor							
Last Updated: May 2017		Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile							
Continue to Monitor, No Anticipated Action Required		Anticipated Environmental Permitting Required:									
Continue to Monitor		Bold = Requires Major Environmental Permitting									
Replace in 1-3 Years		Bold & Italics = Requires Wetlands Permitting									
Replace Immediately											
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.						
				Length (ft)	Size (in)						
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type	Age	Condition	Notes
005	Center Street	42 40.314	72 33.002	Culvert	384	72	12	Plastic	2010	Good	
001	Chapin Road	42 41.074	72 31.971	Culvert	520	40	18	Plastic	1960	Good	
002	Chapin Road	42 41.049	72 32.070	Culvert	504	72	12	Metal	1970	Fair	
003	Chapin Road	42 41.030	72 32.106	Culvert	498	33	12	Metal	1970	Fair	
004	Chapin Road	42 41.003	72 32.177	Culvert	486	66	12	Metal	1970	Poor	
005	Chapin Road	42 41.034	72 32.217	Culvert	454	38	12	Metal	1970	Poor	
006	Chapin Road	42 41.056	72 32.234	Culvert	436	143	12	Plastic	1990	Good	
007	Chapin Road	42 41.084	72 32.286	Culvert	401	149	12	Plastic	1990	Good	
008	Chapin Road	42 41.093	72 32.313	Culvert	391	139	12	Plastic	1990	Good	
009	Chapin Road	42 41.106	72 32.348	Culvert	378	173	12	Plastic	1990	Good	
010	Chapin Road	42 41.107	72 32.356	Culvert	380	37	12	Plastic	1990	Good	
011	Chapin Road	42 41.102	72 32.357	Culvert	377	48	12	Plastic	1990	Good	
012	Chapin Road	42 41.112	72 32.384	Culvert	371	142	12	Metal	1990	Fair	
41M	Chapin Road	42 41.061	72 31.950	Major Culvert	570	36	26	Plastic	1960	Good	
001	Couch Brook Road	42 42.226	72 33.938	Culvert	538	40	15	Metal	1970	Fair	
002	Couch Brook Road	42 42.200	72 34.024	Culvert	574	46	12	Metal	1970	Fair	

Town of Bernardston, MA

Nater Crossing Inventory - In Public ROW

Last Updated: May 2017

█ Continue to Monitor, No Anticipated Action Required

█ Continue to Monitor

█ Replace in 1-3 Years

█ Replace Immediately

Town of Bernardston, MA		Length = feet		Elevation = feet	
Nater Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor	
		Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile	
		Anticipated Environmental Permitting Required:			
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.
003	Couch Brook Road	42 42.202	72 34.089	Culvert	589
004	Couch Brook Road	42 42.202	72 34.113	Culvert	591
005	Couch Brook Road	42 42.205	72 34.166	Culvert	603
006	Couch Brook Road	42 42.214	72 34.210	Culvert	610
007	Couch Brook Road	42 42.210	72 34.255	Culvert	612
008	Couch Brook Road	42 42.192	72 34.311	Culvert	615
009	Couch Brook Road	42 42.168	72 34.390	Culvert	621
010	Couch Brook Road	42 42.130	72 34.438	Culvert	624
011	Couch Brook Road	42 42.118	72 34.504	Drop Inlet	643
012	Couch Brook Road	42 42.112	72 34.539	Culvert	645
013	Couch Brook Road	42 42.194	72 35.206	Culvert	796
014	Couch Brook Road	42 42.205	72 35.229	Culvert	801
015	Couch Brook Road	42 42.213	72 35.235	Culvert	801
016	Couch Brook Road	42 42.212	72 35.247	Culvert	806
2M	Couch Brook Road	42 42.210	72 33.210	Major Culvert	473
001	Cross Street	42 39.833	72 32.838	Culvert	393

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Town of Bernardston, MA			Length = feet			Elevation = feet					
Water Crossing Inventory - In Public ROW			Size = diameter inches			Condition = Good, Fair, Poor, Very Poor					
Last Updated: May 2017			Age = decade installed			Type = Metal, Plastic, Concrete, Clay Tile					
Anticipated Environmental Permitting Required:											
Bold = Requires Major Environmental Permitting											
Bold & Italic = Requires Wetlands Permitting											
Continue to Monitor, No Anticipated Action Required											
Continue to Monitor											
Replace in 1-3 Years											
Replace Immediately											
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type			
002	Cross Street	42 39.844	72 32.847	Culvert	393	27	12	Metal			
21M	Cross Street	42 39.835	72 33.347	Major Culvert	381	30	36	Metal			
20M	Deane Road	42 39.784	72 33.476	Major Culvert	386	43	24	Metal			
001	Depot Street	42 40.166	72 33.017	Culvert	413	80	12	Metal			
002	Depot Street	42 40.060	72 33.015	Dry Well	396			Concrete			
003	Depot Street	42 39.969	72 33.208	Culvert	403	30	12	Plastic			
22M	Depot Street	42 39.983	72 33.276	Major Culvert	376	40	36	Plastic			
23B	Depot Street	42 40.017	72 33.078	Bridge	370	20	6x6	Concrete			
001	Dewey Street	42 40.205	72 33.062	Culvert	405	30	12	Plastic			
002	Dewey Street	42 40.204	72 33.044	Culvert	404	52	6	Metal			
001	Eden Trail	42 39.563	72 34.283	Drop Inlet	455	56	12	Metal			
002	Eden Trail	42 39.556	72 34.298	Culvert	461	30	12	Metal			
003	Eden Trail	42 39.520	72 34.343	Drop Inlet	483	60	12	Metal			
004	Eden Trail	42 39.491	72 34.382	Culvert	506	41	12	Metal			
005	Eden Trail	42 39.488	72 34.423	Drop Inlet	534	57	12	Metal			
006	Eden Trail	42 39.488	72 34.428	Culvert	545	34	12	Metal			

Town of Bernardston, MA

Water Crossing Inventory - In Public ROW

Last Updated: May 2017

Continue to Monitor
Replace in 1-3 Years

Replace Immediately

Anticipated to Monitor, No Anticipated Action Required

Anticipated Environmental Permitting Required:

Bold = Requires Major Environmental Permitting

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Town of Bernardston, MA		Length = feet		Elevation = feet	
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor	
		Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile	
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.
007	Eden Trail	42 39.498	72 34.469	Culvert	580
008	Eden Trail	42 39.497	72 34.630	Culvert	635
009	Eden Trail	42 39.525	72 34.719	Culvert	643
010	Eden Trail	42 39.563	72 39.563	Culvert	648
011	Eden Trail	42 39.583	72 34.859	Culvert	673
012	Eden Trail	42 39.595	72 34.949	Culvert	716
013	Eden Trail	42 39.597	72 34.946	Culvert	715
014	Eden Trail	42 39.560	72 35.095	Culvert	734
015	Eden Trail	42 39.550	72 35.158	Culvert	722
016	Eden Trail	42 39.541	72 35.195	Culvert	727
017	Eden Trail	42 39.541	72 35.228	Drop Inlet	724
018	Eden Trail	42 39.541	72 35.271	Drop Inlet	728
019	Eden Trail	42 39.545	72 35.332	Drop Inlet	731
020	Eden Trail	42 39.562	72 35.370	Drop Inlet	719
021	Eden Trail	42 39.598	72 35.412	Drop Inlet	716
022	Eden Trail	42 39.659	72 35.444	Drop Inlet	732

Town of Bernardston, MA		Length = feet		Elevation = feet	
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor	
Last Updated: May 2017		Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile	
Anticipated Environmental Permitting Required:		Anticipated Environmental Permitting Required:			
Continue to Monitor, No Anticipated Action Required		Requires Major Environmental Permitting			
Continue to Monitor		Requires Wetlands Permitting			
Replace in 1-3 Years					
Replace Immediately					
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.
				Length (ft)	Size (in)
023	Eden Trail	42 39.741	72 35.447	Drop Inlet	746
024	Eden Trail	42 39.735	72 35.451	Drop Inlet	740
025	Eden Trail	42 39.783	72 35.450	Drop Inlet	756
026	Eden Trail	42 39.777	72 35.455	Drop Inlet	757
027	Eden Trail	42 39.860	72 35.442	Culvert	763
028	Eden Trail	42 39.864	72 35.441	Drop Inlet	765
029	Eden Trail	42 39.910	72 35.437	Drop Inlet	771
030	Eden Trail	42 39.962	72 35.425	Drop Inlet	784
031	Eden Trail	42 40.405	72 35.412	Drop Inlet	789
032	Eden Trail	42 40.109	72 35.412	Drop Inlet	788
033	Eden Trail	42 40.170	72 35.394	Drop Inlet	791
034	Eden Trail	42 40.213	72 35.390	Drop Inlet	801
035	Eden Trail	42 40.221	72 35.394	Drop Inlet	1784
036	Eden Trail	42 40.236	72 35.400	Drop Inlet	1793
037	Eden Trail	42 40.252	72 35.404	Drop Inlet	1808
038	Eden Trail	42 40.291	72 35.410	Drop Inlet	1831

Town of Bernardston, MA		Length = feet		Elevation = feet							
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Continue to Monitor, No Anticipated Action Required			Anticipated Environmental Permitting Required:								
Continue to Monitor			Bold = Requires Major Environmental Permitting								
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Replace Immediately											
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type	Age	Condition	Notes
14M	Eden Trail	42 39.587	72 35.396	Major Culvert	743	62	24	Metal	1970	Fair	
15M	Eden Trail	42 39.714	72 35.452	Major Culvert	772	91	18	Metal	1970	V Poor	Pipe is squashed.
16M	Eden Trail	42 40.147	72 35.388	Major Culvert	817	64	24	Metal	1970	Fair	
001	Eden Trail Branch	42 39.401	72 35.306	Culvert	1675	36	12	Metal	1960	Unknown	Not Located
002	Eden Trail Branch	42 39.334	72 35.284	Culvert	1675	40	12	Metal	1960	Fair	
003	Eden Trail Branch	42 39.247	72 35.221	Culvert	1666	36	12	Metal	1960	Fair	
004	Eden Trail Branch	42 39.218	72 35.202	Culvert	1656	41	12	Metal	1960	Fair	
005	Eden Trail Branch	42 39.160	72 25.184	Culvert	1620	41	15	Metal	1960	Fair	
006	Eden Trail Branch	42 39.125	72 35.161	Culvert	1595	76	12	Plastic	1990	Good	
007	Eden Trail Branch	42 39.100	72 35.153	Culvert	1588	41	12	Metal	1960	Fair	
008	Eden Trail Branch	42 39.058	72 35.152	Culvert	1549	41	15	Metal	1960	Fair	
19M	Eden Trail Branch	42 39.298	72 35.269	Major Culvert	727	73	24	Metal	1960	Poor	
001	Fox Hill Road	42 40.196	72 34.546	Culvert	627	41	12	Plastic	2000	Good	
002	Fox Hill Road	42 40.214	72 34.544	Culvert	649	41	12	Plastic	2000	Good	
003	Fox Hill Road	42 40.250	72 34.552	Culvert	664	41	15	Plastic	2000	Good	
004	Fox Hill Road	42 40.344	72 34.551	Culvert	716	35	12	Plastic	2000	Good	

Town of Bernardston, MA			Length = feet			Elevation = feet					
Water Crossing Inventory - In Public ROW			Size = diameter inches			Condition = Good, Fair, Poor, Very Poor					
Last Updated: May 2017			Age = decade installed			Type = Metal, Plastic, Concrete, Clay Tile					
Anticipated Environmental Permitting Required:											
Bold = Requires Major Environmental Permitting											
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Replace Immediately											
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type			
005	Fox Hill Road	42 40.358	72 34.550	Culvert	718	38	12	Plastic			
006	Fox Hill Road	42 40.417	72 34.554	Culvert	751	34	12	Met/Plst			
007	Fox Hill Road	42 40.443	72 34.555	Culvert	762	37	6	Plastic			
008	Fox Hill Road	42 40.482	72 34.562	Culvert	782	42	6	Plastic			
009	Fox Hill Road	42 40.541	72 34.563	Culvert	810	40	12	Metal			
010	Fox Hill Road	42 40.584	72 34.567	Culvert	823	30	15	Metal			
011	Fox Hill Road	42 40.619	72 34.568	Culvert	834	27	12	Met/Plst			
012	Fox Hill Road	42 40.750	72 34.605	Culvert	853	27	5	Plastic			
013	Fox Hill Road	42 40.859	72 34.611	Culvert	890	35	15	Plastic			
014	Fox Hill Road	42 40.939	72 34.611	Culvert	919	21	15	Metal			
015	Fox Hill Road	42 41.123	72 34.611	Culvert	949	30	12	Plastic			
016	Fox Hill Road	42 41.192	72 34.554	Culvert	982	40	12	Plastic			
017	Fox Hill Road	42 41.218	72 34.537	Culvert	990	40	15	Metal			
018	Fox Hill Road	42 41..229	72 34.516	Culvert	998	35	15	Metal			
019	Fox Hill Road	42 41.257	72 34.466	Culvert	1025	40	15	Metal			
020	Fox Hill Road	42 41.262	72 34.358	Culvert	1080	31	15	Metal			

Town of Bernardston, MA		Length = feet		Elevation = feet	
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor	
Last Updated: May 2017		Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile	
Continue to Monitor, No Anticipated Action Required		Anticipated Environmental Permitting Required:		Bold = Requires Major Environmental Permitting	
Continue to Monitor		Bold & Italics = Requires Wetlands Permitting		Replace in 1-3 Years	
Replace Immediately					
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.
021	Fox Hill Road	42 41.256	72 34.327	Culvert	1077
022	Fox Hill Road	42 41.256	72 34.240	Culvert	1070
023	Fox Hill Road	42 41.226	72 34.138	Culvert	1005
024	Fox Hill Road	42 41.212	72 34.103	Culvert	985
025	Fox Hill Road	42 41.207	72 33.979	Culvert	888
026	Fox Hill Road	42 41.212	72 33.922	Culvert	869
027	Fox Hill Road	41 41.190	72 33.846	Culvert	849
028	Fox Hill Road	42 41.175	72 33.839	Culvert	842
029	Fox Hill Road	42 41.126	72 33.816	Culvert	812
030	Fox Hill Road	42 41.031	72 33.768	Culvert	754
031	Fox Hill Road	42 40.964	72 33.730	Culvert	728
032	Fox Hill Road	42 40.928	72 33.703	Culvert	710
033	Fox Hill Road	42 40.909	72 33.692	Culvert	702
034	Fox Hill Road	42 40.886	72 33.675	Culvert	688
036	Fox Hill Road	42 40.875	72 33.670	Culvert	688
037	Fox Hill Road	42 40.833	72 33.647	Culvert	667

Town of Bernardston, MA			Length = feet			Elevation = feet		
Water Crossing Inventory - In Public ROW			Size = diameter inches			Condition = Good, Fair, Poor, Very Poor		
Last Updated: May 2017			Age = decade installed			Type = Metal, Plastic, Concrete, Clay Tile		
Anticipated Environmental Permitting Required:								
Bold = Requires Major Environmental Permitting								
<i>Bold & Italics = Requires Wetlands Permitting</i>								
Replace Immediately								
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type
038	Fox Hill Road	42 40.729	72 33.564	Culvert	616	40	15	Metal
039	Fox Hill Road	42 40.666	72 33.511	Culvert	584	40	15	Plastic
040	Fox Hill Road	42 40.634	72 33.484	Culvert	570	20	12	Plastic
041	Fox Hill Road	42 40.608	72 33.477	Culvert	560	41	15	Metal
042	Fox Hill Road	42 40.593	72 33.464	Culvert	554	37	15	Plastic
043	Fox Hill Road	42 40.579	72 33.462	Culvert	550	36	12	Met/Plst
044	Fox Hill Road	42 40.520	72 33.437	Culvert	520	57	12	Metal
045	<i>Fox Hill Road</i>	<i>42 40.521</i>	<i>72 33.431</i>	<i>Culvert</i>	<i>519</i>	<i>98</i>	<i>10</i>	<i>Metal</i>
046	Fox Hill Road	42 40.475	72 33.381	Culvert	517	35	15	Plastic
047	Fox Hill Road	42 40.465	72 33.327	Culvert	518	37	15	Plastic
048	Fox Hill Road	42 40.455	72 33.264	Culvert	505	65	15	Plastic
049	Fox Hill Road	42 40.448	72 33.260	Culvert	504	23	15	Metal
050	Fox Hill Road	42 40.448	72 33.253	Culvert	503	225	12	Metal
051	Fox Hill Road	42 40.412	72 33.247	Culvert	476	23	12	Metal
052	Fox Hill Road	42 40.412	72 33.239	Culvert	479	150	12	Metal
053	Fox Hill Road	42 40.389	72 33.231	Culvert	459	35	12	Metal

Town of Bernardston, MA		Length = feet		Elevation = feet	
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor	
Last Updated: May 2017		Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile	
Continue to Monitor, No Anticipated Action Required		Anticipated Environmental Permitting Required:			
Continue to Monitor		Bold = Requires Major Environmental Permitting			
Replace in 1-3 Years		Bold & Italics = Requires Wetlands Permitting			
Replace Immediately					
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.
054	Fox Hill Road	42 40.382	72 33.230	Culvert	456
10M	Fox Hill Road	42 41.211	72 34.054	Major Culvert	924
6M	Fox Hill Road	42 40.774	72 33.595	Major Culvert	598
7M	Fox Hill Road	42 40.787	72 33.610	Major Culvert	600
8M	Fox Hill Road	42 41.014	72 33.757	Major Culvert	716
9M	Fox Hill Road	42 41.212	72 33.965	Major Culvert	851
001	Gill Road	42 40.091	72 31.297	Culvert	523
002	Gill Road	42 40.071	72 31.253	Culvert	517
003	Gill Road	42 40.054	72 21.126	Culvert	504
004	Gill Road	42 39.620	72 30.541	Culvert	463
31M	Gill Road	42 39.892	72 30.995	Major Culvert	387
001	Haigis Branch Road	42 42.185	72 34.863	Culvert	639
002	Haigis Branch Road	42 42.214	72 34.865	Culvert	492
003	Haigis Branch Road	42 42.240	72 34.876	Culvert	503
004	Haigis Branch Road	42 42.267	72 34.873	Culvert	516
005	Haigis Branch Road	42 42.312	72 34.867	Culvert	524

Town of Bernardston, MA		Length = feet		Elevation = feet	
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor	
Last Updated: May 2017		Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile	
Continue to Monitor, No Anticipated Action Required		Anticipated Environmental Permitting Required:			
Continue to Monitor		Bold = Requires Major Environmental Permitting			
Replace in 1-3 Years		<i>Bold & Italics</i> = Requires Wetlands Permitting			
Replace Immediately					
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.
006	<i>Haigis Branch Road</i>	42 42.335	72 34.870	<i>Culvert</i>	526
007	Haigis Branch Road	42 42.387	72 34.889	Culvert	534
008	Haigis Branch Road	42 42.459	72 34.905	Culvert	545
3M	Haigis Branch Road	42 42.132	72 34.886	Major Culvert	636
4M	Haigis Branch Road	42 42.124	72 34.867	Major Culvert	643
5M	Haigis Branch Road	42 42.470	72 34.919	Major Culvert	712
001	Hartwell Street	42 40.458	72 33.006	Culvert	381
001	Hartwell Street	42 40.293	72 32.142	Culvert	474
002	Hartwell Street	42 40.360	72 32.884	Culvert	378
003	Hartwell Street	42 40.345	72 32.876	Culvert	380
004	Hartwell Street	42 40.330	72 32.870	Culvert	378
005	Hartwell Street	42 40.318	72 32.869	Culvert	382
001	Harwood Drive	42 40.293	72 32.142	Culvert	474
002	Harwood Drive	42 40.293	72 32.149	Culvert	474
001	Hillcrest Drive	42 39.594	72 33.577	Culvert	731
002	Hillcrest Drive	42 39.606	72 33.607	Culvert	729

Town of Bernardston, MA

Water Crossing Inventory - In Public ROW

Last Updated: May 2017

 Continue to Monitor

 Replace in 1-3 Years

 Replace Immediately

Town of Bernardston, MA				Length = feet		Elevation = feet	
Water Crossing Inventory - In Public ROW				Size = diameter inches		Condition = Good, Fair, Poor, Very Poor	
				Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile	
				Anticipated Environmental Permitting Required:			
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)
003	Hillcrest Drive	42 39.638	72 33.767	Culvert	736	54	6
004	Hillcrest Drive	42 39.587	72 33.930	Drywell	756		
005	Hillcrest Drive	42 39.603	72 33.960	Drywell	758		
001	Hoe Shop Road	42 39.355	72 32.490	Culvert	260	50	12
002	Hoe Shop Road	42 39.371	72 32.457	Culvert	249	17	12
003	Hoe Shop Road	42 39.355	72 32.457	Culvert	248	30	12
004	Hoe Shop Road	42 39.382	72 32.463	Culvert	244	22	12
005	Hoe Shop Road	42 39.382	72 32.448	Culvert	245	30	12
006	Hoe Shop Road	42 39.393	72 32.420	Culvert	246		
007	Hoe Shop Road	42 39.395	72 32.419	Culvert	247	50	12
008	Hoe Shop Road	42 39.389	72 32.426	Culvert	248	21	12
009	Hoe Shop Road	42 39.386	72 32.423	Culvert	244	58	12
010	Hoe Shop Road	42 39.384	72 32.412	Culvert	243	20	12
011	Hoe Shop Road	42 39.393	72 32.408	Culvert	244	20	12
012	Hoe Shop Road	42 39.466	72 32.287	Dry Well	297		
013	Hoe Shop Road	42 39.487	72 32.239	Culvert	301	40	12

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Town of Bernardston, MA			Length = feet	Elevation = feet								
Water Crossing Inventory - In Public ROW			Size = diameter inches	Condition = Good, Fair, Poor, Very Poor								
Last Updated: May 2017			Age = decade installed	Type = Metal, Plastic, Concrete, Clay Tile								
Anticipated Environmental Permitting Required:												
Bold = Requires Major Environmental Permitting												
Bold & Italic = Requires Wetlands Permitting												
Continue to Monitor, No Anticipated Action Required												
Continue to Monitor												
Replace in 1-3 Years												
Replace Immediately												
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type	Age	Condition	Notes	
014	Hoe Shop Road	42 39.503	72 32.134	<i>Culvert</i>	316	60	12	Metal	1960	Poor	Heavy Corrosion	
015	Hoe Shop Road	42 39.492	72 32.054	<i>Culvert</i>	338	50	12	Metal	1960	V Poor	Culvert Undersized	
001	Huckle Hill Road	42 40.516	72 32.461	Culvert	447	18	15	Plastic	1960	Good		
002	Huckle Hill Road	42 40.512	72 32.463	Culvert	446	18	15	Plastic	1960	Good		
003	Huckle Hill Road	42 40.513	72 32.464	Manhole	447	145	18					
004	Huckle Hill Road	42 40.508	72 32.468	Culvert	447	52	15	Plastic	1960	Good	Manhole connecting to culvert #45	
005	Huckle Hill Road	42 40.513	72 32.458	Culvert	447	33	15	Plastic	1960	Good		
006	Huckle Hill Road	42 40.528	72 32.429	Manhole	450	169	18	Plastic				
007	Huckle Hill Road	42 40.527	72 32.4332	Culvert	452	15	15	Plastic	1960	Good		
008	Huckle Hill Road	42 40.529	72 32.432	Culvert	452	20	15	Plastic	1960	Good		
009	Huckle Hill Road	42 40.549	72 32.396	Manhole	458	200	18	Plastic				
010	Huckle Hill Road	42 40.548	72 32.394	Culvert	459	14	15	Plastic	1960	Good		
011	Huckle Hill Road	42 40.553	72 32.399	Culvert	458	19	15	Plastic	1960	Good		
012	Huckle Hill Road	42 40.578	72 32.357	Manhole	465	249	18	Plastic				
013	Huckle Hill Road	42 40.576	72 32.352	Culvert	463	134	15	Plastic	1960	Good		
014	Huckle Hill Road	42 40.578	72 32.355	Culvert	465	21	15	Plastic	1960	Good		

Town of Bernardston, MA

Water Crossing Inventory - In Public ROW

Last Updated: May 2017

Continue to Monitor

Replace in 1-3 Years

Replace Immediately

Town of Bernardston, MA		Length = feet		Elevation = feet	
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor	
		Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile	
		Anticipated Environmental Permitting Required:			
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.
015	Huckle Hill Road	42 40.605	72 32.314	Manhole	474
016	Huckle Hill Road	42 40.612	72 32.314	Culvert	477
017	Huckle Hill Road	42 40.604	72 32.313	Culvert	478
018	Huckle Hill Road	42 40.634	72 32.282	Manhole	235
019	Huckle Hill Road	42 40.633	72 32.276	Culvert	481
020	Huckle Hill Road	42 40.637	72 32.281	Culvert	481
021	Huckle Hill Road	42 40.641	72 32.264	Culvert	481
022	Huckle Hill Road	42 40.661	72 32.248	Culvert	485
023	Huckle Hill Road	42 40.663	72 32.250	Culvert	487
024	Huckle Hill Road	42 40.706	72 32.204	Culvert	504
025	Huckle Hill Road	42 40.733	72 32.156	Culvert	528
026	Huckle Hill Road	42 40.776	72 32.103	Culvert	558
027	Huckle Hill Road	42 40.795	72 32.081	Culvert	578
028	Huckle Hill Road	42 40.867	72 31.997	Culvert	602
029	Huckle Hill Road	42 40.904	72 31.971	Culvert	620
030	Huckle Hill Road	42 40.952	72 31.951	Culvert	637

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Town of Bernardston, MA			Length = feet		Elevation = feet			
Water Crossing Inventory - In Public ROW			Size = diameter inches		Condition = Good, Fair, Poor, Very Poor			
Last Updated: May 2017			Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile			
Continue to Monitor, No Anticipated Action Required			Anticipated Environmental Permitting Required:					
Continue to Monitor			Bold = Requires Major Environmental Permitting					
Replace in 1-3 Years			Bold & Italic = Requires Wetlands Permitting					
Replace Immediately			Italic = Requires Environmental Permitting					
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)		
031	Huckle Hill Road	42 41.026	72 31.899	Culvert	659	57		
032	Huckle Hill Road	42 41.107	72 31.802	Culvert	662	84		
033	Huckle Hill Road	41 41.120	72 31.784	Culvert	663	40		
034	Huckle Hill Road	42 41.166	72 31.703	Culvert	659	40		
035	Huckle Hill Road	42 41.206	72 31.587	Culvert	671	38		
036	Huckle Hill Road	42 41.222	72 31.549	Culvert	680	30		
037	Huckle Hill Road	42 41.245	72 31.544	Culvert	687	40		
038	Huckle Hill Road	42 40.280	72 31.524	Culvert	705	215		
039	Huckle Hill Road	42 41.283	72 31.516	Culvert	704	30		
040	Huckle Hill Road	41 41.350	72 31.509	Culvert	737	35		
041	Huckle Hill Road	42 41.376	72 31.521	Culvert	748	48		
042	Huckle Hill Road	42 41.382	72 31.515	Culvert	747	30		
043	Huckle Hill Road	42 40.490	72 32.485		12	Plastic		
044	Huckle Hill Road	42 41.417	72 31.520	Culvert	854	42		
045	Huckle Hill Road	42 41.441	72 31.522	Culvert	867	42		
046	Huckle Hill Road	42 41.497	72 31.539	Culvert	892	40		

Town of Bernardston, MA

Water Crossing Inventory - In Public ROW

Last Updated: May 2017

Continue to Monitor

Replace in 1-3 Years

Replace Immediately

Town of Bernardston, MA		Length = feet		Elevation = feet						
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor						
		Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile						
047	Huckle Hill Road	42 41.535	72 31.543	Culvert	902	41	15	Plastic	1960	Good
048	Huckle Hill Road	42 41.549	72 31.544	Culvert	908	40	15	Plastic	1960	Good
049	Huckle Hill Road	42 41.592	72 31.546	Culvert	925	43	15	Plastic	1960	Good
050	Huckle Hill Road	42 41.622	72 31.545	Culvert	934	44	15	Plastic	1960	Good
051	Huckle Hill Road	42 41.650	72 31.550	Culvert	941	43	15	Plastic	1960	Good
052	Huckle Hill Road	42 41.698	72 31.555	Culvert	947	42	15	Plastic	1960	Good
053	Huckle Hill Road	42 41.717	72 31.563	Culvert	949	43	15	Plastic	1960	Good
054	Huckle Hill Road	42 41.768	72 31.601	Culvert	942	43	15	Plastic	1960	Good
055	Huckle Hill Road	42 41.819	72 31.611	Culvert	948	40	15	Plastic	1960	Good
056	Huckle Hill Road	41 41.868	72 31.619	Culvert	957	40	15	Plastic	1960	Good
057	Huckle Hill Road	42 41.909	72 31.628	Culvert	964	40	15	Plastic	1960	Good
058	Huckle Hill Road	42 41.987	72 31.646	Culvert	986	30	12	Plastic	1960	Good
059	Huckle Hill Road	42 42.132	72 31.674	Culvert	1018	40	15	Plastic	1960	Good
060	Huckle Hill Road	42 42.153	72 31.677	Culvert	1022	40	15	Plastic	1960	Good
061	Huckle Hill Road	42 42.182	72 31.681	Culvert	1030	40	18	Plastic	1960	Good
062	Huckle Hill Road	42 42.499	72 31.688	Culvert	1135	40	12	Metal	1960	Fair

Anticipated Environmental Permitting Required:

Bold = Requires Major Environmental Permitting

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Town of Bernardston, MA			Length = feet		Elevation = feet						
Water Crossing Inventory - In Public ROW			Size = diameter inches		Condition = Good, Fair, Poor, Very Poor						
Last Updated: May 2017			Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile						
Continue to Monitor, No Anticipated Action Required			Anticipated Environmental Permitting Required:								
Continue to Monitor			Bold = Requires Major Environmental Permitting								
Replace in 1-3 Years			Bold & Italics = Requires Wetlands Permitting								
Replace Immediately											
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type	Age	Condition	Notes
063	Huckle Hill Road	42 42.546	72 31.643	Culvert	1124	32	12	Metal	1960	Fair	
064	Huckle Hill Road	42 42.63	72 31.622	Culvert	1115	32	12	Metal	1960	Fair	
065	Huckle Hill Road	42 42.638	72 31.625	Culvert	1112	33	12	Metal	1960	Fair	
066	Huckle Hill Road	42 42.700	72 31.629	Culvert	1097	34	12	Metal	1960	Fair	
067	Huckle Hill Road	42 42.720	72 31.631	Culvert	1092	33	12	Metal	1960	Fair	
068	Huckle Hill Road	42 42.753	72 31.635	Culvert	1081	33	12	Metal	1960	Fair	
069	Huckle Hill Road	42 42.784	72 31.644	Culvert	1066	42	12	Metal	1960	Fair	
070	Huckle Hill Road	42 42.951	72 31.660	Culvert	1044	45	12	Metal	1960	Fair	
071	Huckle Hill Road	42 42.951	72 31.689	Culvert	1012	40	12	Metal	1960	Fair	
072	Huckle Hill Road	42 43.039	72 31.638	Culvert	1037	38	12	Metal	1960	Fair	
073	Huckle Hill Road	42 43.061	72 31.659	Culvert	1046	28	12	Metal	1960	Fair	
074	Huckle Hill Road	42 43.113	72 31.680	Culvert	1056	42	12	Metal	1960	Fair	
075	Huckle Hill Road	42 43.163	72 31.700	Culvert	1067	30	6	Metal	1960	V Poor	Needs replacement ASAP
076	Huckle Hill Road	42 43.230	72 31.701	<i>Culvert</i>	1071	31	15	Metal	1960	Fair	
077	Huckle Hill Road	42 43.343	72 31.749	<i>Culvert</i>	1112	32	15	Metal	1960	Fair	
078	Huckle Hill Road	42 43.343	72 31.749	Culvert	1115	32	12	Metal	1960	Fair	

Town of Bernardston, MA		Length = feet		Elevation = feet					
Water Crossing Inventory - In Public ROW				Size = diameter inches		Condition = Good, Fair, Poor, Very Poor			
Last Updated: May 2017				Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile			
Anticipated Environmental Permitting Required:				Anticipated Environmental Permitting Required:					
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Notes		
079	Huckle Hill Road	42 43.474	72 31.829	Culvert	1143	31	Metal V Poor Major Permitting and Cost to Replace		
34M	Huckle Hill Road	42 40.701	72 32.203	Major Culvert	440	172	Plastic 1960 Good		
35M	Huckle Hill Road	42 41.170	72 31.659	Major Culvert	592	48	Plastic 1960 Good		
36M	Huckle Hill Road	42 42.188	72 31.680	Major Culvert	841	50	Plastic 1960 Good		
37M	Huckle Hill Road	42 42.468	72 31.726	Major Culvert	915	50	Plastic 1960 Good		
38M	Huckle Hill Road	42 42.844	72 31.667	Major Culvert	813	40	Metal 1960 Fair		
39M	Huckle Hill Road	42 42.874	72 31.604	Major Culvert	787	40	Plastic 1960 Good		
001	Keets Brook Branch	42 43.367	72 35.032	Culvert	644	20	Metal 1960 Poor		
002	Keets Brook Branch	42 43.364	72 35.065	Culvert	661	35	Metal 1960 Fair		
003	Keets Brook Branch	42 43.373	72 35.107	Culvert	684	38	Metal 1960 Fair		
004	Keets Brook Branch	42 43.410	72 35.143	Culvert	711	40	Metal/Plas 1960 Poor		
005	Keets Brook Branch	42 43.454	72 35.177	Culvert	726	31	Metal 1960 Poor		
006	Keets Brook Branch	42 43.522	72 35.230	Culvert	737	38	Metal 1960 Poor		
007	Keets Brook Branch	42 43.553	72 35.245	Culvert	744	43	Metal 1960 Poor		
008	Keets Brook Branch	42 43.613	72 35.283	<i>Culvert</i>	771	41	Metal 1960 Poor		
009	Keets Brook Branch	42 43.686	72 35.345	Culvert	814	31	Metal 1960 Fair		

Town of Bernardston, MA			Length = feet			Elevation = feet		
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Anticipated Environmental Permitting Required:			Anticipated Environmental Permitting Required:			Anticipated Environmental Permitting Required:		
Continue to Monitor, No Anticipated Action Required			Bold = Requires Major Environmental Permitting			Bold & Italicics = Requires Wetlands Permitting		
Continue to Monitor								
Replace in 1-3 Years								
Replace Immediately								
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type
010	Keets Brook Branch	42 43.701	72 39.369	Culvert	826	27	12	Metal
011	Keets Brook Branch	42 43.736	72 35.399	Culvert	861	34	12	Metal
012	Keets Brook Branch	42 43.789	72 35.414	Culvert	896	37	12	Metal
001	Keets Brook Road	42 43.367	72 35.032	Culvert	644	40	12	Metal
002	Keets Brook Road	42 43.364	72 35.065	Culvert	661	35	12	Metal
003	Keets Brook Road	42 43.372	72 35.107	Culvert	684	38	12	Metal
004	Keets Brook Road	42 43.410	72 34.721	Culvert	711	40	12	<i>Metal/Pst</i>
005	Keets Brook Road	42 43.454	72 35.177	Culvert	726	31	12	<i>Metal</i>
006	Keets Brook Road	42 43.268	72 34.740	Culvert	310	120	12	Metal
007	Keets Brook Road	42 43.316	72 34.740	Culvert	316	38	6	Metal
008	Keets Brook Road	42 43.359	72 34.792	Culvert	323	36	12	Metal
009	Keets Brook Road	42 43.369	72 34.831	Culvert	328	39	12	Metal
010	Keets Brook Road	42 43.376	72 34.894	Culvert	335	40	12	Metal
011	Keets Brook Road	42 43.378	72 34.952	Culvert	344	40	12	<i>Metal</i>
012	Keets Brook Road	42 43.374	72 35.001	Culvert	361	50	12	Metal
013	Keets Brook Road	42 43.365	72 35.031	Culvert	363	48	12	<i>Metal</i>

Town of Bernardston, MA

Water Crossing Inventory - In Public ROW

Last Updated: May 2017

Continue to Monitor

Replace in 1-3 Years

Replace Immediately

Town of Bernardston, MA			Length = feet			Elevation = feet					
Water Crossing Inventory - In Public ROW			Size = diameter inches			Condition = Good, Fair, Poor, Very Poor					
Last Updated: May 2017			Age = decade installed			Type = Metal, Plastic, Concrete, Clay Tile					
Anticipated Environmental Permitting Required:											
Bold = Requires Major Environmental Permitting											
<i>Bold & Italics = Requires Wetlands Permitting</i>											
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type			
014	Keets Brook Road	42 43.354	72 35.090	Culvert	357	48	12	Metal			
015	Keets Brook Road	42 43.352	72 35.122	Culvert	349	50	12	Metal			
016	Keets Brook Road	42 43.313	72 35.261	Culvert	349	33	12	Metal			
017	Keets Brook Road	42 43.320	72 35.376	Major Culvert	355	40	36	Metal			
018	Keets Brook Road	42 43.308	72 35.445	Culvert	358	40	12	Metal			
019	Keets Brook Road	42 43.299	72 35.468	Culvert	360	44	12	Metal			
020	Keets Brook Road	42 43.283	72 35.517	Culvert	366	40	12	Metal			
021	Keets Brook Road	42 43.281	72 35.564	Culvert	366	40	12	Metal			
022	Keets Brook Road	42 43.280	72 35.605	Culvert	370	40	12	Metal			
023	Keets Brook Road	42 43.271	72 35.648	Culvert	374	40	12	Metal			
024	Keets Brook Road	42 43.266	72 35.738	Culvert	378	37	12	Metal			
025	Keets Brook Road	42 43.300	72 35.804	Culvert	380	38	12	Metal			
1M	Keets Brook Road	42 42.315	72 35.381	Major Culvert	519	60	24	Metal			
001	Kringle Drive	42 40.230	72 32.737	Culvert	409	92	12	Conc/Plas			
002	Kringle Drive	42 40.230	72 32.732	Culvert	409	26	12	Concrete			
003	Kringle Drive	42 40.226	72 32.708	Culvert	409	112	12	Concrete			

Town of Bernardston, MA			Length = feet			Elevation = feet		
Water Crossing Inventory - In Public ROW			Size = diameter inches			Condition = Good, Fair, Poor, Very Poor		
Last Updated: May 2017			Age = decade installed			Type = Metal, Plastic, Concrete, Clay Tile		
Anticipated Environmental Permitting Required:			Anticipated Environmental Permitting Required:			Anticipated Environmental Permitting Required:		
Continue to Monitor, No Anticipated Action Required			Bold = Requires Major Environmental Permitting			Bold & Italic = Requires Wetlands Permitting		
Continue to Monitor								
Replace in 1-3 Years								
Replace Immediately								
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type
004	Kringle Drive	42 40.217	72 32.708	Culvert	410	60	12	Metal
001	Library Street	42 40.299	72 33.083	Culvert	378	30	8	Metal
002	Library Street	42 40.312	72 33.082	Culvert	379	35	8	Metal
11M	Lower West Mountain Rd	42 40.108	72 34.516	Major Culvert	570	40	18	Plastic
12M	Lower West Mountain Rd	42 40.120	72 34.527	Major Culvert	573	40	18	Plastic
13M	Lower West Mountain Rd	42 40.174	72 34.623	Major Culvert	564	40	48/18	Plastic
<i>001</i>	<i>Martindale Road</i>	<i>42 40.418</i>	<i>72 30.529</i>	<i>Culvert</i>	<i>530</i>	<i>38</i>	<i>12</i>	<i>Metal</i>
002	Martindale Road	42 40.689	72 30.573	Culvert	609	37	12	Metal
003	Martindale Road	42 40.862	72 30.573	Culvert	635	48	15	Metal
004	Martindale Road	42 40.923	72 30.577	Culvert	642	30	12	Plastic
005	Martindale Road	42 41.038	72 30.603	Culvert	683	34	12	Metal
006	Martindale Road	42 41.150	72 30.603	Culvert	734	42	12	Metal
007	Martindale Road	42 41.173	72 30.609	Culvert	742	42	12	Metal
008	Martindale Road	42 41.191	72 30.605	Culvert	747	125	12	Metal
009	Martindale Road	42 41.489	72 30.603	Culvert	763	30	12	Metal
<i>010</i>	<i>Martindale Road</i>	<i>42 41.553</i>	<i>72 30.610</i>	<i>Culvert</i>	<i>769</i>	<i>40</i>	<i>12</i>	<i>Metal</i>
								<i>1970</i>
								<i>V Poor</i>
								<i>Significant Flooding no D/S Side</i>

Town of Bernardston, MA		Length = feet	Elevation = feet								
Water Crossing Inventory - In Public ROW		Size = diameter inches	Condition = Good, Fair, Poor, Very Poor								
Last Updated: May 2017		Age = decade installed	Type = Metal, Plastic, Concrete, Clay Tile								
Continue to Monitor, No Anticipated Action Required		Anticipated Environmental Permitting Required:									
Continue to Monitor		Bold = Requires Major Environmental Permitting									
Replace in 1-3 Years		Bold & Italic = Requires Wetlands Permitting									
Replace Immediately											
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type	Age	Condition	Notes
011	Martindale Road	42 41.728	72 30.628	Culvert	780	40	12	Plastic	1970	Good	
001	Meadow Road	42 41.249	72 32.638	Culvert	767	47	12	Concrete	1950	Good	
48M	Meadow Road	42 41.051	72 32.552	Major Culvert	399	46	30	Concrete	1950	Good	
001	Merrifield Road	42 39.996	72 32.168	Drywell	412			Concrete	1990	Good	No pipe
28M	Merrifield Road	42 40.092	72 32.108	Major Culvert	377	40	36	Plastic	1950	Good	
001	Nelson Drive	42 40.038	72 32.205	Culvert	420	22	12	Metal	1950	V Poor	Culvert Undersized
002	Nelson Drive	42 40.044	72 32.203	Culvert	420	60	12	Metal	1950	Fair	
003	Nelson Drive	42 40.041	72 32.228	Culvert	423	54	12	Metal	1950	Fair	
27M	Nelson Drive	42 40.025	72 32.207	Major Culvert	382	80	36	Metal	1950	Poor	
001	North Merrifield Road	42 40.316	72 32.081	Drywell	497			Concrete	2000	Good	No pipe
001	Oakes Road	42 43.011	72 31.527	Culvert	1073	35	12	Metal	1960	Fair	
002	Oakes Road	42 43.056	72 31.529	Culvert	1116	31	12	Metal	1960	Fair	
001	Parmenter Road	42 40.269	72 32.311	Culvert	475	30	18	Plastic	1970	Good	
002	Parmenter Road	42 40.326	72 32.182	Culvert	473	44	12	Plastic	1980	Good	
003	Parmenter Road	42 40.320	72 32.186	Culvert	475	44	12	Plastic	1980	Good	
004	Parmenter Road	42 40.365	72 31.949	Drywell	487			Concrete	2000	Good	No pipe

Town of Bernardston, MA			Length = feet			Elevation = feet					
Water Crossing Inventory - In Public ROW			Size = diameter inches			Condition = Good, Fair, Poor, Very Poor					
Last Updated: May 2017			Age = decade installed			Type = Metal, Plastic, Concrete, Clay Tile					
Continue to Monitor, No Anticipated Action Required						Anticipated Environmental Permitting Required:					
Continue to Monitor						Bold = Requires Major Environmental Permitting					
Replace in 1-3 Years						<i>Bold & Italics = Requires Wetlands Permitting</i>					
Replace Immediately											
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type			
005	Parmenter Road	42 40.389	72 31.874	Culvert	494	35	18	Plastic			
006	Parmenter Road	42 40.431	72 31.804	Culvert	496	100	15	Metal			
007	Parmenter Road	42 40.442	72 31.781	Drywell	494			Concrete			
008	Parmenter Road	42 40.455	72 21.744	Culvert	492	40	18	Plastic			
009	Parmenter Road	42 40.363	72 31.539	Culvert	498	40	18	Plastic			
010	Parmenter Road	42 40.249	72 31.413	Culvert	495	40	18	Plastic			
011	Parmenter Road	42 40.203	72 31.367	Culvert	495	40	18	Plastic			
29M	Parmenter Road	42 40.312	72 32.231	Major Culvert	387	40	18	Plastic			
30M	Parmenter Road	42 40.352	72 31.529	Major Culvert	420	40	24	Plastic			
001	Pine Grove Drive	42 39.975	72 31.613	Culvert	453	40	12	Metal			
002	Pine Grove Drive	42 39.976	72 31.718	Culvert	454	91	12	Metal			
001	Purple Meadow Road	42 40.000	72 30.793	Culvert	494	32	12	Metal			
002	Purple Meadow Road	42 40.457	72 30.807	Culvert	495	27	12	Metal			
003	Purple Meadow Road	42 40.538	72 30.835	Culvert	498	24	12	Metal			
004	Purple Meadow Road	42 40.617	72 30.863	Culvert	501	40	12	Plastic			
005	Purple Meadow Road	42 40.719	72 30.892	Culvert	516	33	12	Metal			

Town of Bernardston, MA			Length = feet			Elevation = feet					
Water Crossing Inventory - In Public ROW			Size = diameter inches			Condition = Good, Fair, Poor, Very Poor					
Last Updated: May 2017			Age = decade installed			Type = Metal, Plastic, Concrete, Clay Tile					
Anticipated Environmental Permitting Required:											
Bold = Requires Major Environmental Permitting											
Bold & Italicics = Requires Wetlands Permitting											
Continue to Monitor, No Anticipated Action Required											
Continue to Monitor											
Replace in 1-3 Years											
Replace Immediately											
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type			
006	Purple Meadow Road	42 40.727	72 30.891	Culvert	516	40	12	Metal			
007	Purple Meadow Road	42 40.802	72 30.935	Culvert	514	40	12	Metal			
008	Purple Meadow Road	42 40.844	72 30.972	Culvert	521	30	12	Metal			
009	Purple Meadow Road	42 40.875	72 31.002	Culvert	526	35	12	Metal			
010	Purple Meadow Road	42 41.178	72 31.308	Culvert	672	31	12	Metal			
011	Purple Meadow Road	42 41.233	72 31.335	Culvert	694	43	12	Metal			
012	Purple Meadow Road	42 40.422	72 30.807	Culvert	408	32	6	Plastic			
001	Railroad Street	42 39.897	72 33.267	Culvert	413	30	12	Metal			
001	River Street	42 40.201	72 32.862	Culvert	413	32	12	Metal			
002	River Street	42 40.166	72 32.865	Culvert	410	42	12	Metal			
003	River Street	42 40.100	72 32.863	Culvert	409	43	12	Metal			
004	River Street	42 30.104	72 32.856	Culvert	410	130	12	Metal			
005	River Street	42 40.061	72 32.862	Culvert	409	52	12	Metal			
006	River Street	42 40.069	72 32.858	Dry Well	411			Metal			
007	River Street	42 40.038	72 32.868	Dry Well	411			Concrete			
008	River Street	42 39.747	72 32.817	Culvert	236	30	12	Metal			

Town of Bernardston, MA		Length = feet		Elevation = feet							
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor							
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Anticipated Environmental Permitting Required:											
Continue to Monitor		Requires Major Environmental Permitting									
Replace in 1-3 Years		Requires Wetlands Permitting									
Replace Immediately											
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type	Age	Condition	Notes
009	River Street	42 39.747	72 32.788	Culvert	229	660	24	Concrete	1957	Good	
010	River Street	42 39.733	72 32.773	Culvert	229	57	24	Concrete	1957	Good	
011	River Street	42 39.681	72 32.770	Culvert	233	20	24	Concrete	1957	Good	
012	River Street	42 39.521	72 32.688	Culvert	231	32	12	Metal	1970	Fair	
013	River Street	42 39.400	72 32.632	Culvert	244	40	12	Metal	1970	Fair	
014	River Street	42 39.391	72 32.615	Culvert	242	30	12	Metal	1970	Fair	
015	River Street	42 39.388	72 32.622	Culvert	242	44	12	Metal	1970	Fair	
016	River Street	42 39.351	72 32.617	Culvert	249	226	12	Metal	1970	Fair	
017	River Street	42 39.353	72 32.610	Culvert	249	53	12	Metal	1970	Fair	
018	River Street	42 39.319	72 32.627	Culvert	265	202	12	Metal	1970	Fair	Covered under driveway
24B	River Street	42 39.895	72 32.837	Bridge	348	23	6x6	Concrete	1940	Fair	
25B	River Street	42 39.627	72 32.747	Bridge	332	50	12x5	Concrete	1959	Good	
26M	River Street	42 39.393	72 32.622	Major Culvert	344	70	36	Metal	1970	V Poor	In conflict with water main
001	Saw Mill Lane	42 41.906	72 33.339	Drop Inlet	517	40	15	Plastic	2000	Good	
002	Saw Mill Lane	42 41.910	72 33.342	Drop Inlet	517	17	15	Plastic	2000	Good	
003	Saw Mill Lane	42 41.903	72 33.347	Culvert	516	38	6	Plastic	2000	Good	

Town of Bernardston, MA				Length = feet		Elevation = feet			
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor					
Last Updated: May 2017		Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile					
Anticipated Environmental Permitting Required:									
Continue to Monitor, No Anticipated Action Required		Bold = Requires Major Environmental Permitting							
Continue to Monitor		Bold & Italic = Requires Wetlands Permitting							
Replace in 1-3 Years									
Replace Immediately									
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)		
004	Saw Mill Lane	42 41.881	72 33.360	Drop Inlet	530	190	15		
005	Saw Mill Lane	42 41.883	72 33.360	Drop Inlet	529	17	15		
006	Saw Mill Lane	42 41.846	72 33.347	Drop Inlet	543	218	15		
007	Saw Mill Lane	42 41.847	72 33.344	Drop Inlet	543	17	15		
001	School Road	42 39.903	72 33.461	Culvert	734	1447	18		
002	School Road	42 39.906	72 33.461	Culvert	735	1447	18		
003	School Road	42 39.908	72 33.481	Culvert	735	1447	18		
004	School Road	42 39.905	72 33.484	Culvert	734	1447	18		
005	School Road	42 39.910	72 33.518	Culvert	737	1447	18		
006	School Road	42 39.912	72 33.519	Culvert	737	1447	18		
007	School Road	42 39.919	72 33.536	Culvert	740	1447	18		
008	School Road	42 39.916	72 33.565	Culvert	739	1447	18		
009	School Road	42 39.919	72 33.609	Culvert	744	1447	18		
010	School Road	42 39.933	72 33.611	Culvert	742	1447	18		
011	School Road	42 39.917	72 33.526	Culvert	735	42	24		
012	School Road	42 39.925	72 33.646	Culvert	766	1447	18		

Town of Bernardston, MA		Length = feet		Elevation = feet							
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor							
Last Updated:	May 2017	Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile							
Continue to Monitor, No Anticipated Action Required					Anticipated Environmental Permitting Required:						
Continue to Monitor					Bold = Requires Major Environmental Permitting						
Replace in 1-3 Years					Bold & Italics = Requires Wetlands Permitting						
Replace Immediately											
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.						
					Length (ft)						
					Size (in)						
					Type						
					Age						
					Condition						
					Notes						
013	School Road	42 39.916	72 33.643	Culvert	766	1447	18	Plastic	2012	Good	lugs into connected singular pipe # 1-13
001	Shaw Road	42 39.878	72 31.702	Culvert	455	31	12	Metal	1960	Fair	
002	Shaw Road	42 39.842	72 21.742	Culvert	462	32	12	Metal	1960	Poor	
003	Shaw Road	42 39.649	72 31.940	Culvert	480	31	12	Metal	1960	Poor	
001	Shedd Road	42 40.883	72 30.569	Culvert	595	40	12	Plastic	1970	Good	
002	Shedd Road	42 40.927	72 30.465	Culvert	603	23	12	Met/Plst	1970	Poor	
003	Shedd Road	42 40.939	72 30.457	Culvert	604	23	12	Metal	1970	V Poor	Needs replacement ASAP
004	<i>Shedd Road</i>	<i>42 40.976</i>	<i>72 30.374</i>	<i>Culvert</i>	<i>587</i>	<i>25</i>	<i>12</i>	<i>Metal</i>	<i>1970</i>	<i>V Poor</i>	
005	Shedd Road	40 41.018	72 30.319	Culvert	571	27	15	Plastic	1970	Good	
006	Shedd Road	42 41.077	72 30.200	Culvert	571	40	18	Plastic	1970	Good	
33M	<i>Shedd Road</i>	<i>42 41.072</i>	<i>72 30.243</i>	<i>Major Culvert</i>	<i>520</i>	<i>18</i>	<i>36</i>	<i>Metal</i>	<i>1970</i>	<i>V Poor</i>	Need Guardrail Installed
001	South Street	42 39.456	72 33.750	Drop Inlet	372	107	15	Metal	1960	Fair	
002	South Street	42 39.442	72 33.753	Drop Inlet	371	21	15	Metal	1960	Fair	
003	South Street	42 39.440	72 33.751	Drop Inlet	370	21	15	Metal	2000	Fair	
004	South Street	42 39.439	72 33.762	Drop Inlet	370	116	15	Metal	2000	Fair	
005	South Street	42 39.424	72 33.776	Drop Inlet	370	30	15	Metal	2000	Fair	

Town of Bernardston, MA		Length = feet		Elevation = feet	
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor	
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Anticipated Environmental Permitting Required:		Anticipated Environmental Permitting Required:			
Continue to Monitor, No Anticipated Action Required		Bold = Requires Major Environmental Permitting			
Continue to Monitor		Bold & Italic = Requires Wetlands Permitting			
Replace in 1-3 Years					
Replace Immediately					
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.
				Length (ft)	Size (in)
006	South Street	42 39.412	72 33.772	Drop Inlet	368
007	South Street	42 39.385	72 33.823	Culvert	367
008	South Street	42 39.285	72 33.849	Drop Inlet	364
009	South Street	42 39.260	72 33.858	Drop Inlet	360
001	Turners Falls Road	42 39.770	72 30.858	Drywell	494
002	Turners Falls Road	42 39.777	72 30.856	Drywell	494
003	Turners Falls Road	42 39.772	72 30.788	Drywell	496
004	Turners Falls Road	42 39.841	72 30.788	Culvert	494
005	Turners Falls Road	42 39.869	72 30.762	Culvert	495
006	Turners Falls Road	42 40.002	72 30.627	Culvert	502
007	Turners Falls Road	42 40.407	72 30.184	Culvert	504
008	Turners Falls Road	42 40.403	72 30.181	Culvert	504
009	Turners Falls Road	42 40.414	72 30.164	Manhole	
32B	Turners Falls Road	42 40.158	72 30.460	Bridge	403
17M	Upper West Mountain Rd	42 40.624	72 35.321	Major Culvert	739
18M	Upper West Mountain Rd	42 40.646	72 35.255	Major Culvert	701

Town of Bernardston, MA		Length = feet		Elevation = feet						
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor						
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Anticipated Environmental Permitting Required:										
Bold = Requires Major Environmental Permitting										
Bold & Italic = Requires Wetlands Permitting										
Replace Immediately										
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.					
					Length (ft)					
					Size (in.)					
					Type					
					Age					
					Condition					
					Notes					
001	West Mountain Road	42 39.464	72 33.762	Drop Inlet	256 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
002	West Mountain Road	42 39.460	72 33.765	Drop Inlet	261 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
003	West Mountain Road	42 39.472	72 33.812	Drop Inlet	268 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
004	West Mountain Road	42 39.468	72 33.814	Drop Inlet	273 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
005	West Mountain Road	42 39.480	72 33.865	Drop Inlet	304 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
006	West Mountain Road	42 39.478	72 33.866	Drop Inlet	308 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
007	West Mountain Road	42 39.491	72 33.915	Drop Inlet	314 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
008	West Mountain Road	42 39.488	72 33.916	Drop Inlet	315 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
009	West Mountain Road	42 39.506	72 33.979	Drop Inlet	322 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
010	West Mountain Road	42 39.502	72 33.981	Drop Inlet	323 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
011	West Mountain Road	42 39.517	72 34.032	Drop Inlet	328 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
012	West Mountain Road	42 39.514	72 34.032	Drop Inlet	328 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
013	West Mountain Road	42 39.533	72 34.102	Drop Inlet	337 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
014	West Mountain Road	42 39.527	72 34.106	Drop Inlet	338 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
015	West Mountain Road	42 39.543	72 34.171	Drop Inlet	351 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
016	West Mountain Road	42 39.548	72 34.170	Drop Inlet	351 *	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)

Town of Bernardston, MA			Length = feet	Elevation = feet							
Water Crossing Inventory - In Public ROW			Size = diameter inches	Condition = Good, Fair, Poor, Very Poor							
Last Updated: May 2017			Age = decade installed	Type = Metal, Plastic, Concrete, Clay Tile							
Continue to Monitor, No Anticipated Action Required			Anticipated Environmental Permitting Required:								
Continue to Monitor			Bold = Requires Major Environmental Permitting								
Replace in 1-3 Years			Bold & Italic = Requires Wetlands Permitting								
Replace Immediately											
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.	Length (ft)	Size (in)	Type	Age	Condition	Notes
017	West Mountain Road	42 39.549	72 34.176	Drop Inlet	353	*	15	Metal	1960	Fair	*taps into singular 171ft pipe w/culvert#19
018	West Mountain Road	42 39.564	72 34.166	Drop Inlet	362	*	12	Metal	1960	Fair	*taps into singular 171ft pipe w/culvert#19/private driveway
019	West Mountain Road	42 39.577	72 34.161	Culvert	366	*	8-12	Metal	1960	Fair	*taps into singular 171ft pipe w/culvert#19/private driveway
020	West Mountain Road	42 39.558	72 34.271	Drop Inlet	376	*	15	Metal	1960	Fair	*taps into a singular 2,300ft pipe (1-21)
021	West Mountain Road	42 39.555	72 34.218	Drop Inlet	377	*	15	Metal	1960	Fair	* taps into a singular 2,300ft pipe (1-21)
022	West Mountain Road	42 39.580	72 34.262	<i>Culvert</i>	385	43	12	Metal	1960	Poor	
023	West Mountain Road	42 39.640	72 34.291	Culvert	423	24.5	12	Plastic	2000	Good	
024	West Mountain Road	42 39.707	72 34.304	Culvert	441	24	15	Metal	1980	Poor	
025	West Mountain Road	42 39.799	72 34.353	Culvert	489	40	12	Plastic	1960	Good	
026	West Mountain Road	42 39.887	72 34.411	Culvert	522	20	12	Metal	1970	Poor	
027	West Mountain Road	42 39.942	72 34.440	Culvert	521	67	15	Metal	1980	Fair	
028	West Mountain Road	42 39.965	72 34.466	<i>Culvert</i>	514	33	15	Metal	1980	V. Poor	Culvert Undersized
029	West Mountain Road	42 40.001	72 34.476	Culvert	512	30	15	Metal	1980	Poor	
030	West Mountain Road	42 40.030	72 34.488	Culvert	509	30	12	Plastic	1990	Good	
031	West Mountain Road	42 40.072	72 34.509	Culvert	522	31	12	Plastic	1990	Good	
032	West Mountain Road	42 40.190	72 34.644	Culvert	518	51	12	Metal	1980	Fair	

Town of Bernardston, MA		Length = feet		Elevation = feet	
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor	
Last Updated: May 2017		Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile	
Anticipated Environmental Permitting Required:					
Continue to Monitor, No Anticipated Action Required					
Continue to Monitor					
Replace in 1-3 Years					
Replace Immediately					
No.	Roadway	Latitude	Longitude	Crossing Type	Elev.
033	West Mountain Road	42 40.212	72 34.681	Culvert	548
034	West Mountain Road	42 40.218	72 34.718	Culvert	568
035	West Mountain Road	42 40.222	72 34.729	Culvert	575
036	West Mountain Road	42 40.272	72 34.832	Culvert	626
037	West Mountain Road	42 40.321	72 34.858	Culvert	644
038	West Mountain Road	42 40.436	72 34.993	Culvert	645
039	West Mountain Road	42 40.462	72 35.010	Culvert	641
040	West Mountain Road	42 40.543	72 35.146	Culvert	630
041	<i>West Mountain Road</i>	<i>42 40.580</i>	<i>72 35.165</i>	<i>Culvert</i>	<i>623</i>
042	<i>West Mountain Road</i>	<i>42 40.596</i>	<i>72 35.173</i>	<i>Culvert</i>	<i>628</i>
043	West Mountain Road	42 40.579	72 35.335	Culvert	707
044	West Mountain Road	42 40.508	72 35.348	Culvert	740
045	West Mountain Road	42 40.495	72 35.341	Culvert	744
046	West Mountain Road	42 40.451	72 35.352	Culvert	767
047	West Mountain Road	42 40.392	72 35.366	Culvert	800
048	West Mountain Road	42 40.295	72 35.382	Culvert	824

Town of Bernardston, MA		Length = feet		Elevation = feet	
Water Crossing Inventory - In Public ROW		Size = diameter inches		Condition = Good, Fair, Poor, Very Poor	
Last Updated: May 2017		Age = decade installed		Type = Metal, Plastic, Concrete, Clay Tile	
049	West Mountain Road	42 40.236	72 35.386	Drop Inlet	816
001	West Road	42 41.787	72 31.732	Culvert	1026
002	West Road	42 41.721	72 31.848	Culvert	1010
40M	West Road	42 41.735	72 31.826	Major Culvert	768
Total Waterway Crossings:		584			

Anticipated Environmental Permitting Required:
Bold = Requires Major Environmental Permitting
Bold & Italics = Requires Wetlands Permitting

Replace Immediately

Continue to Monitor
 Replace in 1-3 Years

