

## 3.0 ALTERNATIVES CONSIDERED

### 3.1 INTRODUCTION

This section lays out the basic parameters and logistics for each of the alternatives considered. The feasibility, prudence, and impacts of pursuing each alternative are discussed in Sections 5 through 11 of this document, with a chapter devoted to each alternative. The majority of alternatives have a variety of subalternatives or scenarios that are enumerated and evaluated in these successive sections.

The overarching purpose of this project is to address the current and future water supply needs of the University of Connecticut (University) and the town of Mansfield. In accordance with Connecticut Environmental Policy Act (CEPA) requirements, numerous alternatives have been analyzed to supply water to the University and the town of Mansfield. In total, four different types of actions have been evaluated, including:

- The "no action" or "no-build" alternative
- Relocation or replacement of Fenton River Wellfield Well A
- Interconnection with neighboring wholesale water providers
- Construction of new public supply wellfield(s)

Each of these four primary water supply actions has been evaluated for potential impacts to the existing environment as well as against the identified project purpose and need. The project purpose is primarily threefold:

1. To provide a safe, reliable water supply source that maximizes benefits while minimizing environmental, land use, and other adverse impacts, and the cost to all ratepayers and taxpayers
2. To provide additional water supply to the University that will maintain a long-term system Margin of Safety (MOS) greater than 1.15 while meeting existing and committed demands, even if the additional water supply will not be needed on a daily basis
3. To provide additional water supply to support future growth and redevelopment in the town of Mansfield consistent with the current *Plan of Conservation and Development*, including but not limited to the Mansfield Four Corners area, planned elderly and assisted living facility, and a number of residential development areas in town

Based on the project purpose and need, an average day demand of 1.2 million gallons per day (mgd) and a peak day demand of 1.93 mgd will be required to supply existing and future water supply needs at the University and surrounding areas within the town of Mansfield through the year 2060. The availability of additional water supply will allow the University and the town of Mansfield to meet previously committed and future demands while maintaining an adequate MOS.

While the first two potential actions are distinct to the current supply system, the third (interconnection) encompasses three water wholesalers located at various distances and directions

from the University. As such, a variety of potential interconnection routes to connect to existing University infrastructure have been evaluated within this document. The fourth potential action considers a total of nine well locations that could potentially become new sources of supply. Similarly, each well location has several possible water main routes to connect with University infrastructure, including several that are similar to the interconnection routes.

Given the complexity of some of the proposed actions listed above, they have been divided where appropriate for analysis. Seven specific alternatives are enumerated below:

- Alternative #1 No action or no-build
- Alternative #2 Relocation or replacement of Fenton River Wellfield Well A
- Alternative #3 Interconnection with The Connecticut Water Company's Northern Operations Western System in Tolland
- Alternative #4 Interconnection with the Metropolitan District Commission in East Hartford
- Alternative #5 Interconnection with the Windham Water Works system in southern Mansfield
- Alternative #6 Development of a new groundwater supply source along the Willimantic River
- Alternative #7 Development of a new groundwater supply source near Mansfield Hollow Lake

As several of the alternatives share the same potential water main routes, potential water main routes associated with these alternatives have been segmented and assigned an identification number. Each segment has been characterized, and potential impacts along that segment are enumerated. Note the following:

- For some categories, the potential impacts have been generalized without the need to reference specific piping segments.
- Exact water main routes would be adjusted during final design to account for site-specific details. The given pipeline distances are approximate.
- Finally, pipeline routes are evaluated to connect to the University water system and to the Mansfield Four Corners area.

### **3.2 ALTERNATIVE #1 – NO ACTION OR NO-BUILD**

The consideration of a "no action" alternative is necessary to establish a basis for comparison, as it provides a baseline that can be used to assess the level of impact associated with the implementation of the action alternatives. The no action alternative would result in a lack of additional water supply for the University and the town of Mansfield. Under this scenario, certain projects would still occur within and around the University campus:

- Storrs Center would be completed as this project is already underway.

- North Hillside Road would be extended to Route 44. The Final Environmental Impact Statement (FEIS) for that project has been completed. A number of proposed buildings in the Technology Park may also be built.
- Several buildings could be redeveloped on the Depot Campus.
- The North Eagleville Road/King Hill Road planned business area could be redeveloped.
- Water service would not be extended to Mansfield Four Corners or to other areas of Mansfield, but sewer service would be extended to Mansfield Four Corners and connected to the University system through the North Hillside Road extension.

The no action or no-build alternative is evaluated in Section 5.0.

### **3.3 ALTERNATIVE #2 – REPLACEMENT OF WELL A AT THE FENTON RIVER WELLFIELD**

The Fenton River Wellfield consists of four wells, of which one (Well A) is a relatively shallow caisson well. The remaining wells are deeper gravel-packed wells. Previous planning documents, including the 2006 *Fenton River Study* and the University's 2011 *Water Supply Plan* have considered the replacement of Well A to a location more than 250 feet away from the existing well. This replacement would be performed in the hopes of reducing the instream flow impacts from utilizing the existing Well A on the Fenton River such that it could be utilized more often during the year. The 250-foot distance is the limit allowed for the drilling of replacement wells without a water diversion permit under existing Connecticut Department of Energy & Environmental Protection (CT DEEP) water diversion regulations [CGS Section 22a-368 and RCSA Section 22a-377(b)-1(3)].

The 2006 *Fenton River Study* evaluated several different pumping scenarios, including two in which Well A was relocated approximately 250 feet south of its existing location:

*The new location of [replacement] Well A was chosen under the premise that a well located in the parts of the aquifer where the stratified drift has greater thickness will have substantially reduced effects on the Fenton river stream flow [but] based on this preliminary analysis and with the caveat emptor statement above, the cost of relocating Well A beyond the 250-foot distance may not be justified as the decrease in  $\Delta Q$  (the reduction in streamflow in the Fenton River due to pumping) is only minimal.*

The 2006 *Fenton River Study* predicted that a 25% reduction in streamflow impact could be obtained under low streamflow conditions if Well A was relocated away from the river from its existing location by 250 feet. The University has been updating the model with more recent geophysical data as studies are completed by University faculty. As noted in the 2011 *Water Supply Plan*, further investigation is warranted to evaluate whether relocating Well A within 250 feet of the existing well may prove to have lesser impacts to streamflow than the existing well location under pumping conditions.

Additional modeling was conducted by the University in 2011 to also consider locations outside of the 250-foot radius with the understanding that such relocation would require a diversion permit from the CT DEEP. The area where a potential new well could be installed was narrowed based on a variety of considerations as follows:

1. Modeling by University faculty considered areas within 1,000 feet of existing Well A, thus setting the outer boundary for this evaluation.
2. The new well would need to meet the 200-foot sanitary radius and control requirements set by the Connecticut Department of Public Health (DPH) and would also be located further from the Fenton River than the existing Well A.
3. The new well should be located further from Well B than existing Well A to minimize the introduction of additional interference between the wells. Well B is located approximately 880 feet from Well A.
4. The new well should be located more than 50 feet away from buildings (potential floor drains or foundation drains) and high water marks for surface water bodies (including wetlands and intermittent watercourses). These are DPH well siting requirements per the Public Health Code. Intermittent watercourses and wetlands were approximately located during a field reconnaissance and are not meant to be construed as exact delineations or replace a formal wetland survey.

Refer to Figure 3.3-1 for a depiction of areas where a new well could be installed based on the above well siting criteria. The new well, Well E, would replace the function of Well A. Once Well E was online and approved, the University would retain Well A as an emergency backup.

Unlike the other development alternatives, this alternative requires only one water main route on lands located outside of University property. Water main installation would be restricted to a new eight-inch transmission main to connect the new Well E to the existing clearwell at the Fenton River Wellfield (pipeline segment 0; the location of this segment is dependent upon where Well E would be installed), the construction of a 12-inch diameter water main within the North Hillside Road extension (pipeline segment 21; this water main will eventually be installed to service the Technology Park regardless of the alternative selected), and the extension of a 12-inch diameter water main from North Hillside Road along Route 44 to Mansfield Four Corners (pipeline segment 20). These pipeline segments are summarized in Table 3.3-1. Refer to Figure 3.4-1 in the following section for a location map of pipeline segments 20 and 21.



**TABLE 3.3-1**  
**Pipeline Segments Associated with the**  
**Potential Replacement of Well A at the Fenton River Wellfield**

Segment	Starting Street or Location	Pipeline Route	Ending Street or Location	Distance (feet)
0	Well E	Access roads at the Fenton River Wellfield	Clearwell at Fenton River Wellfield	< 1,300
20	Future North Hillside Road extension	Route 44	Route 195	1,540
21	Route 44	Future North Hillside Road extension	16-inch main at North Hillside Road	3,400

### **3.4 ALTERNATIVE #3 – INTERCONNECTION WITH THE CONNECTICUT WATER COMPANY**

The Connecticut Water Company (CWC) public water system in Tolland currently has a terminus on Route 195 on the north side of Interstate 84. CWC prepared its most recent approved individual water supply plan update for the Northern Region in September 2006. As outlined in the water supply plan, CWC has proposed to install a "regional pipeline" along the Route 195 corridor to supply public water to Mansfield. This proposal was also presented in CWC's 2001 Water Supply Plan and discussed in the 2002 Town of Mansfield water supply plan. Currently, the terminus of the CWC water system on Route 195 is located near the intersection of Route 195 and the off ramp and on ramp for Interstate 84 westbound.

This alternative proposes installing water mains beneath existing roads to interconnect the CWC water system with the University water system such that treated water can be provided to the University and portions of the town of Mansfield. Several interconnection route scenarios have been evaluated for this alternative. The first step would be to interconnect with the Town of Tolland water system on Route 195. The second step would be to extend a regional pipeline into Mansfield to connect to the University and the town of Mansfield. These are discussed in the subsections below.

#### **3.4.1 CWC INTERCONNECTION WITH THE TOWN OF TOLLAND**

The Town of Tolland currently provides public water to residential and commercial customers along Route 195 between Interstate 84 and Anthony Road. CWC and the Town of Tolland have entered into an agreement for a future interconnection of the two water systems. Based on the agreement, CWC indicates that it will utilize a portion of the Tolland system for the regional pipeline if the CWC supply alternative is implemented. Customers along this corridor would continue to be Town of Tolland customers (i.e., CWC would sell water to the Town of Tolland, who would resell it to its customers). Figure 3.4-1 depicts potential interconnection route scenarios and pipeline segments within Tolland.



The methodology for moving water into the Tolland water system would be as follows:

- Approximately 5,300 feet of water main (pipeline segments 8 and 9) would be installed beneath Interstate 84 and below the surface of Route 195. Some of this water main will parallel the existing Tolland system to a point east of the intersection of Goose Lane and Route 195. This is the vicinity of Tolland's existing pressure-reducing vault.
- CWC has proposed utilizing a portion of the existing Tolland system (pipeline segment 10). Thus, the new water main would interconnect with the Tolland system at this location.
  - A meter pit would be installed at the interconnection to record the transfer of water into the Tolland system. The length of existing Tolland pipeline between Interstate 84 and Anthony Road (pipeline segments 9 and 10) would now carry CWC water. Customers along these pipeline segments would continue to be customers of Tolland. CWC estimates that less than 0.05 mgd will be needed to serve Tolland customers and has conservatively allocated 0.05 mgd of demand to this area to meet peak day demands.
  - Approximately 2,900 feet of existing 12-inch water main (pipeline segment 10) owned by the Town of Tolland heading east from the meter pit to Anthony Road would be utilized by CWC. An emergency interconnection would be installed with the Tolland water system at Anthony Road, which would provide source redundancy to the Tolland water system. This interconnection would normally be closed. A meter would be installed to record transfer of water into the Tolland system. The proposed regional pipeline would begin east of Anthony Road.

### **3.4.2 CWC REGIONAL PIPELINE TO THE TOWN OF MANSFIELD**

Following interconnection with the Town of Tolland, water mains would be installed along the Route 195 corridor into the town of Coventry and then into the town of Mansfield. Several potential interconnection scenarios are available to connect the regional pipeline to the University and Mansfield Four Corners. Refer to Figure 3.4-2 for a depiction of the potential interconnection route scenarios and pipeline segments. The proposed interconnection routes with CWC involve a total of 16 potential water main segments. These are outlined in Table 3.4-1.

A water main would be extended along Route 195 in Tolland (pipeline segment 11). The first major item of consideration for this section of the regional pipeline is the extension of the water main across the Willimantic River. There are two options for installing water mains across the Willimantic River:

Crossing Option A - The first option is to continue along Route 195 and attach a water main to the Route 195 bridge. In this case, the water main would continue along Route 195 into Mansfield (pipeline segment 12A).





**TABLE 3.4-1  
Pipeline Segments Associated with the Potential CWC Interconnection**

<b>Segment</b>	<b>Starting Street or Location</b>	<b>Pipeline Route</b>	<b>Ending Street or Location</b>	<b>Distance (feet)</b>
8T	Rockville Water Treatment Plan	Route 74, Kinsbury Avenue, Route 30, Route 74, Robin Circle, Route 74, Route 195	End of CWC system on Route 195	27,190
8	CWC system on Route 195	Route 195 (Interstate 84)	South side of Interstate 84	790
9	Route 195 on south side of Interstate 84	Route 195	Route 195 east of Goose Lane	4,750
10	Route 195 east of Goose Lane	Route 195 (potentially utilizing Tolland system)	Route 195 at Anthony Road	2,870
11	Tolland system at Anthony Road	Route 195	Jones Crossing Road	9,300
12A	Jones Crossing Road	Route 195 across Willimantic River	Tolland Turnpike	3,820
12B	Route 195	Jones Crossing Road across Willimantic River to easement to Tolland Tpke	Route 195	4,140
13	Tolland Turnpike	Route 195	Baxter Road	1,630
14	Baxter Road	Route 195	Route 44	8,190
15	Route 195	Baxter Road	Route 44	4,560
16	Baxter Road	Route 44	Hunting Lodge Road	330
17	Route 44	Hunting Lodge Road	16-inch main at Hunting Lodge Rd.	1,680
18	Hunting Lodge Road	Route 44	Future North Hillside Road extension	4,120
19	Route 44	Route 195 and W-Lot	5.4 million gallon (MG) reservoir in W-Lot	5,140
20	Future North Hillside Road extension	Route 44	Route 195	1,540
21	Route 44	Future North Hillside Road	16-inch main at North Hillside Road	3,400

Crossing Option B - The second option is to utilize Jones Crossing Road. The Town of Coventry and the Town of Mansfield have expressed an interest in creating a pedestrian bridge across the Willimantic River at the historical location of Jones Crossing Road. The pedestrian bridge would be installed on the former bridge abutments at this location, and the new water main would hang on the underside. In this case, the water main would follow a town-owned right-of-way in Mansfield and Tolland Turnpike to rejoin Route 195 (pipeline segment 12B).

Once the water main is extended into Mansfield on Route 195, there are several options for routing and interconnecting the CWC water supply with the University system and Mansfield Four Corners. Each of these routes utilizes existing state and town roads with the exception of the future North Hillside Road extension. This extension is proposed as part of future North

Campus development by the University. The connection options for interconnecting CWC with the University water system and Mansfield Four Corners include:

Connection Option #1 - Route 195 directly to the 5.4 million gallon (MG) reservoir in W-Lot (pipeline segments 13, 14, and 19). This route passes directly through Mansfield Four Corners.

Connection Option #2 - Route 195 to Baxter Road to Route 44 to Hunting Lodge Road to the 16-inch transmission main from the Willimantic River Wellfield (pipeline segments 13, 15, 16, and 17). This transmission main leads to the 5.4 MG reservoir in W-Lot. In order to reach Mansfield Four Corners, a distribution pipe would need to extend up the future North Hillside Road extension to Route 44, and then along Route 44 into Mansfield Four Corners (pipeline segment 20).

Connection Option #3 - Route 195 to Route 44 to the future North Hillside Road extension to the 16-inch transmission main from the Willimantic River Wellfield (pipeline segments 13, 14, 20, and 21), passing through Mansfield Four Corners.

Connection Option #4 - Route 195 to Baxter Road to Route 44 to the future North Hillside Road extension to the 16-inch transmission main from the Willimantic River Wellfield (pipeline segments 13, 15, 16, 18, and 21). In order to reach Mansfield Four Corners, additional water main would be extended along pipeline segment 20.

Connection Option #5 - Route 195 to Baxter Road to Route 44 to Route 195 to the 5.4 MG W-lot reservoir (pipeline segments 13, 15, 16, 18, 20, and 19). This route passes directly through Mansfield Four Corners.

Note that a water distribution main along North Hillside Road was evaluated in the Technology Park FEIS. As such, only transmission mains along North Hillside Road are considered above.

### **3.4.3 SUMMARY OF CWC INTERCONNECTION OPTIONS**

In summary, an interconnection with CWC would consist of the connection to and through the Town of Tolland water system, utilization of either of the Willimantic River crossing options (noted by "A" or "B" for Crossing Option A or Crossing Option B, respectively), and utilization of one of the five connection options for water main routing (Connection Options #1 through #5). Table 3.4-2 summarizes these 10 scenarios.

**TABLE 3.4-2  
Potential CWC Interconnection Scenarios**

<b>Scenario</b>	<b>Pipeline Segments</b>	<b>Total Construction Distance for 12-inch main (feet)*</b>
#3A-1	8, 9, 10, 11, 12A, 13, 14, 19	33,620
#3A-2	8, 9, 10, 11, 12A, 13, 15, 16, 17, 20	28,400
#3A-3	8, 9, 10, 11, 12A, 13, 14, 20, 21	33,420
#3A-4	8, 9, 10, 11, 12A, 13, 15, 16, 18, 21, 20	34,240
#3A-5	8, 9, 10, 11, 12A, 13, 15, 16, 18, 20, 19	35,980
#3B-1	8, 9, 10, 11, 12B, 13, 14, 19	33,940
#3B-2	8, 9, 10, 11, 12B, 13, 15, 16, 17, 20	28,720
#3B-3	8, 9, 10, 11, 12B, 13, 14, 20, 21	33,740
#3B-4	8, 9, 10, 11, 12B, 13, 15, 16, 18, 21, 20	34,560
#3B-5	8, 9, 10, 11, 12B, 13, 15, 16, 18, 20, 19	36,300

\* Distance does not include existing 2,870 feet of water main (pipeline segment 10) owned by the Town of Tolland.

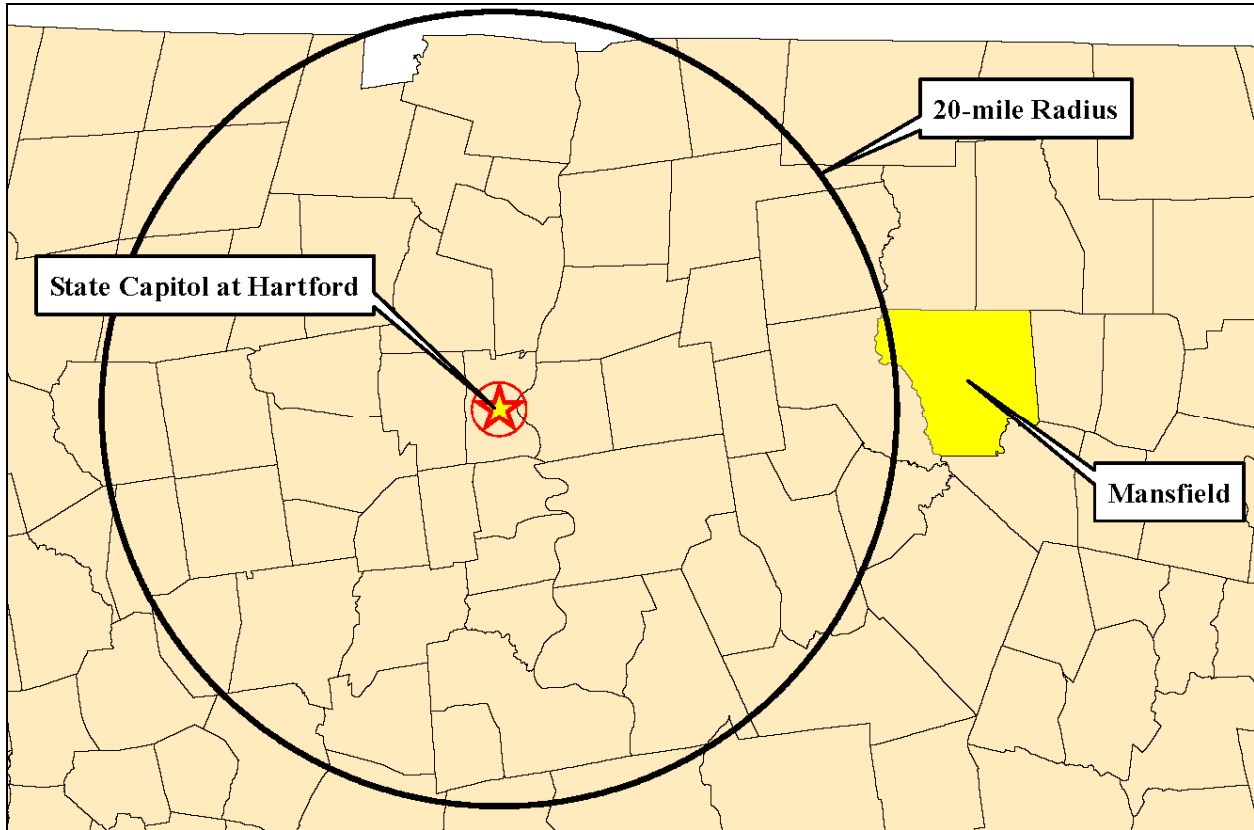
### **3.5 ALTERNATIVE #4 – INTERCONNECTION WITH THE METROPOLITAN DISTRICT COMMISSION**

The existing Metropolitan District Commission (MDC) public water system provides water service to portions of East Granby, Windsor Locks, Windsor, Bloomfield, West Hartford, Hartford, Farmington, Newington, Wethersfield, Rocky Hill, Glastonbury, South Windsor, and East Hartford. MDC also provides treated water to the Berlin Water Commission system, the East Farmington Water Company system, CWC (in Unionville and Collinsville), and the Town of Portland through water supply interconnections and agreements.

The MDC last prepared a water supply plan in July 2008. Section VIII of the water supply plan states that MDC did not (at that time) anticipate extension of its water distribution system outside of its established exclusive service area (ESA). However, Section 5-8 of the MDC charter (granted by the Connecticut General Assembly in 1929) authorizes MDC to supply water to any towns partially or fully within a radius of 20 miles from the State Capitol. This radius includes a portion of Mansfield as shown in Figure 3.5-1. Section 5-8 of the MDC charter is reprinted below:

*Section 5-8 Supply to Non-Member Towns: The Metropolitan District is authorized to supply water at rates uniform with those charged within said District, to any town or city, any part of which is situated not more than twenty miles from the State Capitol at Hartford, or to the inhabitants thereof, or to any state facility located within such area, upon such terms as may be agreed upon, but all other sources belonging to any such town or city shall be developed by such consumer or made available for development by said District. The cost of constructing the pipe connection between the District and such town or city shall be paid by such town or city. The cost of constructing the pipe connection between the District and any such state facility shall be paid by the State of*

*Connecticut. Nothing herein shall authorize The Metropolitan District to supply any water in competition with any water system in any town or city except by agreement.*



**Figure 3.5-1: MDC Charter Area**

Furthermore, Section 6-3 of the MDC Charter discusses additional requirements that the District must meet when providing water service. Section 6-3 is reprinted below:

***Section 6-3 Water Supply to Certain Towns:*** *Whenever said District shall divert water under the authority hereof, said District shall supply water to any inhabitants of the towns through which the line of main pipes conducting said water shall pass, upon such reasonable terms and conditions as may be agreed upon, but said District shall not sell water in any such town in competition with any other water company or system now having authority to supply water in such town, except that said District may sell water at wholesale to any such company or system desiring the same. The District shall pay taxes on all land owned or taken as provided in Section 6-14 hereof.*

MDC has identified a 30-inch diameter water main located west of Phillips Farm Road on Silver Lane in East Hartford as an interconnection point. Thus, a new water main would be installed from this existing main east along Silver Lane to the vicinity of the Exit 1 interchange at Interstate 384 eastbound (pipeline segment 1). From this location, two potential alternative routes to interconnect with University infrastructure are evaluated below.

### 3.5.1 MDC INTERCONNECTION WITH THE UNIVERSITY OF CONNECTICUT

Two interconnection route scenarios have been evaluated for this interconnection alternative. These routes are depicted in Figure 3.5-2. Both scenarios require multiple pumping stations and pressure-reducing valves in order to provide service. A total of 16 pipeline segments have been identified with the two MDC alternatives. These are characterized in Table 3.5-1.

**TABLE 3.5-1  
Pipeline Segments Associated with the Potential MDC Interconnection**

Segment	Starting Street or Location	Pipeline Route	Ending Street or Location	Distance (feet)
1	30-inch water main	Silver Lane	Exit 1 ramps to Interstate 384 on Spencer Street	7,980
2	Spencer Street	Interstate 84 / Route 44	Route 44 at Mansfield Depot	78,060
4	Route 44 at Mansfield Depot	Route 44	Route 44 near railroad	840
5	Route 44 near railroad	Route 44	Route 32	1,890
6	Route 32	Route 44	Baxter Road	7,690
7	Spencer Street	Interstates 384 / 84	Route 195	75,260
9	Route 195 on south side of Interstate 84	Route 195	Route 195 east of Goose Lane	4,750
10	Route 195 east of Goose Lane	Route 195	Route 195 at Anthony Road	2,870
11	Route 195 at Anthony Road	Route 195	Jones Crossing Road	9,300
12A	Jones Crossing Road	Route 195 across Willimantic River	Tolland Turnpike	3,820
13	Tolland Turnpike	Route 195	Baxter Road	1,630
15	Route 195	Baxter Road	Route 44	4,560
16	Baxter Road	Route 44	Hunting Lodge Road	330
18	Hunting Lodge Road	Route 44	Future North Hillside Road extension	4,120
20	Future North Hillside Road extension	Route 44	Route 195	1,540
21	Route 44	Future North Hillside Road extension	Existing 16-inch transmission main at North Hillside Road	3,400

The route evaluated by MDC connects to the University but not to Mansfield Four Corners. A transmission main with a metered connection would be made to the existing 16-inch diameter transmission main at North Hillside Road to direct MDC water to existing University storage supplies. The University would need to install a separate distribution main along the future North Hillside Road extension to service the Technology Park (as already proposed in the FEIS; that distance is not included herein). An additional distribution main would need to be extended from the Technology Park to provide water service to Mansfield Four Corners (pipeline segment 20).



The two potential pipeline options for a connection with MDC therefore include:

Scenario #4A - This interconnection scenario would install new water mains beneath Silver Lane in East Hartford, Interstate 384, Route 44, and the future North Hillside Road extension (pipeline segments 1, 2, 4, 5, 6, 16, 18, and 21). The water main along the future North Hillside Road extension would be a transmission main to connect to the University. Distribution mains would therefore need to be installed within the future North Hillside Road extension and along Route 44 to Mansfield Four Corners (pipeline segment 20).

Scenario #4B - This interconnection scenario would install new water mains beneath Silver Lane in East Hartford, Interstate 384, Interstate 84, Route 195, Baxter Road, Route 44, and the future North Hillside Road extension (pipeline segments 1, 7, 9, 10, 11, 12A, 13, 15, 16, 18, and 21). The water main along the future North Hillside Road extension would be a transmission main to connect to the University. Distribution mains would therefore need to be installed within the future North Hillside Road extension and along Route 44 to Mansfield Four Corners (pipeline segment 20).

### 3.5.2 SUMMARY OF MDC INTERCONNECTION OPTIONS

The two alternative pipeline scenarios for connecting the MDC with the University and Mansfield Four Corners are presented in Table 3.5-2.

**TABLE 3.5-2  
Potential MDC Interconnection Scenarios**

Alternative	Pipeline Segments	Total Distance (feet)*
#4A	1, 2, 4, 5, 6, 16, 18, 21, 20	105,850
#4B	1, 7, 9, 10, 11, 12A, 13, 15, 16, 18, 21, 20	119,560

\* Distance does not include use of existing water mains owned by the University.

The MDC pipeline could transfer the anticipated peak day demand of 1.93 mgd. While customers located along the interconnection route within East Hartford are already MDC customers and there are no direct customers located along the interstate highways, nearby water systems may wish to connect for the sake of system redundancy. Depending upon the water main alternative selected, customers along Route 44 and Route 195 that are not already customers of another water system could become direct MDC customers.

### 3.6 ALTERNATIVE #5 – INTERCONNECTION WITH WINDHAM WATER WORKS

The Windham Water Works (WWW) public water system is located in the southern part of Mansfield with the section pertinent to this Environmental Impact Evaluation (EIE) being located along the Route 195 corridor. The WWW's water supply source (Willimantic Reservoir) and its treatment plant are located in southern Mansfield on the eastern side of Route 195.

This alternative proposes installing water mains within existing roads to interconnect the WWW water system with the University water system such that treated water can be provided to the



University and eventually to Mansfield Four Corners. A description of potential scenarios associated with this interconnection follows.

### **3.6.1 NEW WWW STORAGE TANK IN MANSFIELD**

WWW has indicated that a direct connection from its water treatment plant to the University is not hydraulically practical. Rather, a 2.0 MG storage tank will be necessary in the vicinity of Mansfield Center to balance pressure in the WWW system. A plot of land would need to be purchased, leased, or donated from the Town of Mansfield or the State of Connecticut for this purpose. Approximately 1,000 feet of additional piping would be needed to connect the tank to the Route 195 corridor.

A new water main would be installed from the WWW treatment building to Route 195 and then north along the Route 195 corridor into Mansfield Center along pipeline segments 22, 28, and 34, with additional water mains needed to connect to the new tank. A pumping station would be installed near the new tank to provide the pressure necessary to move treated water to the University water system. Interconnection rates of less than 2.0 mgd can be supplied via 12-inch diameter water mains. An interconnection rate greater than 2.0 mgd would require 16-inch diameter water main.

### **3.6.2 WWW INTERCONNECTION WITH THE UNIVERSITY OF CONNECTICUT**

Water mains would be installed along one of three routes to interconnect with University infrastructure. A meter would be installed to record the amount of water passing through the interconnection. As shown in Figure 3.6-1, the proposed interconnection routes with WWW involve several potential water main segments. Three potential connection points are possible for the WWW interconnection to University infrastructure as follows:

- An interconnection could connect directly into the distribution system on the south side of the Main Campus (the 12-inch diameter express main at Bolton Road).
- An interconnection could connect to existing infrastructure at the Fenton River Wellfield. The existing clearwell and transmission piping leading to the University's storage tanks would need to be replaced to accommodate the additional supply.
- An interconnection could be made to the 5.4 MG reservoir at W-Lot and the Towers storage tanks.

Finally, additional piping would be necessary to provide water to Mansfield Four Corners. The most straightforward method of providing water to this area would be to extend a water main northerly along the future North Hillside Road extension (water distribution mains would eventually be installed anyway by the University for the proposed Technology Park) and then extend a water main along Route 44 into Mansfield Four Corners (pipeline segments 21 and 20 as shown in Figure 3.4-2). Potential pipeline segments associated with the WWW interconnection are outlined in Table 3.6-1.



**TABLE 3.6-1  
Pipeline Segments Associated with the Potential WWW Interconnection**

Segment	Starting Street or Location	Pipeline Route	Ending Street or Location	Distance (feet)
20	Future North Hillside Road extension	Route 44	Route 195	1,540
21	Existing water system on North Hillside Road	Future North Hillside Road extension	Route 44	3,400
22	WWW treatment plant	WWW property and Route 195	Bassetts Bridge Road	7,330
28	Bassetts Bridge Road	Route 195	Route 89	2,390
34	Route 89	Route 195	Chaffeeville Road	2,230
35	Route 195	Chaffeeville Road	Mulberry Road	9,920
36	Mulberry Road	Chaffeeville Road, Gurleyville Road, unpaved utility access	Fenton River Wellfield Clearwell	13,070
37	Fenton River Wellfield Clearwell	Utility corridor, Horse Barn Hill Road, Gurleyville Road	Route 195	6,400
38	Chaffeeville Road	Route 195	Clover Mill Road	570
39	Route 195	Clover Mill Road to Spring Hill Road to Maple Road	Route 275	17,230
40	Clover Mill Road	Route 195	Route 275	14,900
45	Maple Road	Route 275	Route 195	3,410
46	Route 275	Route 195	Bolton Road	1,360
47	Route 195	Bolton Road	12-inch express main at Bolton Road	380
48	Bolton Road	Route 195	Gurleyville Road	2,820
49	Gurleyville Road	Route 195, Towers Loop Road	5.4 MG Reservoir	4,040
50	Towers Loop Road	Access Road	Towers tanks	260

The potential scenarios for routing and interconnecting the WWW water supply with the University system and the town of Mansfield are detailed below. Each of these routes utilizes existing state and town roads with two exceptions. The first exception is the future North Hillside Road extension proposed as part of the future Technology Park as discussed in the FEIS. The second exception is the existing unpaved utility access road leading from Fenton River Wellfield Well D near Gurleyville Road to the vicinity of Well A, and the utility corridor leading up to Horse Barn Hill Road.

Scenario #5A-1 - Chaffeeville Road to Gurleyville Road to the Fenton River Wellfield (pipeline segments 35 and 36). In this case, water would enter into the Fenton River Wellfield transmission system leading to the Main Campus storage facilities. The transmission main leading from the Fenton River Wellfield to the storage reservoir would need to be replaced (pipeline segments 37, 49, and 50). Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).

Scenario #5A-2 - This is the same routing as Alternative #5A-1. Pipeline segments 37, 49, and 50 would require replacement under this alternative.

Scenario #5B-1 - Route 195 to Clover Mill Road to Spring Hill Road to Maple Road to Route 275 to Route 195 to connect to the 12-inch diameter express main at Bolton Road (pipeline segments 38, 39, 45, 46, and 47). In this case, water from WWW would directly enter the lower section of the University's Main Campus distribution system. Additional distribution piping would be necessary to direct water from the University system to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).

Scenario #5B-2 - This is the same routing as Alternative #5B-1. This alternative would require a direct connection to the existing storage reservoir and tanks near Towers (negating pipeline segment 47 and adding pipeline segments 48, 49, and 50).

Scenario #5C-1 - Route 195 to the 12-inch diameter express main at Bolton Road (pipeline segments 38, 40, 46, and 47). In this case, water from WWW would directly enter the lower section of the University's Main Campus distribution system. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).

Scenario #5C-2 - This is the same routing as Alternative #5C-1. This alternative would require a direct connection to the existing storage reservoir and tanks near Towers (negating pipeline segment 47 and adding pipeline segments 48, 59, and 50).

### 3.6.3 SUMMARY OF WWW INTERCONNECTION OPTIONS

The six potential pipeline scenarios for connecting WWW with the University and Mansfield Four Corners are presented in Table 3.6-2.

**TABLE 3.6-2  
Potential WWW Interconnection Scenarios**

<b>Option</b>	<b>Pipeline Segments</b>	<b>Total Distance (feet)*</b>
#5A-1	20, 21, 22, 28, 34, 35, 36, 37, 49, 50	50,580
#5A-2	20, 21, 22, 28, 34, 35, 36, 37, 49, 50	50,580
#5B-1	20, 21, 22, 28, 34, 38, 39, 45, 46, 47	39,840
#5B-2	20, 21, 22, 28, 34, 38, 39, 45, 46, 48, 49, 50	46,580
#5C-1	20, 21, 22, 28, 34, 38, 40, 46, 47	34,100
#5C-2	20, 21, 22, 28, 34, 38, 40, 46, 48, 49, 50	40,840

\* Distances do not include additional  $\pm 1,000$  feet of water main to connect to a water tank in the areas of Mansfield Center.

### 3.7 ALTERNATIVE #6 – NEW WELLFIELD ALONG THE WILLIMANTIC RIVER

Previous planning documents have identified several areas along the Willimantic River downstream of the existing Willimantic River Wellfield that may be suitable for wellfield

development. Four areas<sup>1</sup> have been investigated within the context of this EIE, as shown in Figure 3.7-1. Each site is located adjacent to the Willimantic River in Mansfield, and one or more sites would need to produce the required 1.93 mgd of water supply.

- Alternative #6A is potential wellfield MD-1, located on private property south of Route 44. Most of this property is currently used for agriculture. The central portion of the property appears to be wetlands.
- Alternative #6B is potential wellfield MD-3 located in River Park. The site is owned by the Town of Mansfield and is currently used for recreation.
- Alternative #6C is potential wellfield EP-4, located in the state-owned northern portion of Eagleville Preserve. This area is currently forested wetland.
- Alternative #6D is potential wellfield EP-5, located in the southern portion of Eagleville Preserve owned by the Town of Mansfield.

Construction of a new wellfield or wellfields along the Willimantic River would at a minimum require any or all of the following:

- Installation of production wells
- Construction of pump houses
- Construction of treatment buildings
- Construction of pumping stations
- Construction of water mains along state- and town-owned roads

This alternative proposes installation of a wellfield and the installation of 12-inch diameter water mains to connect the new wellfield with the University water system such that additional water can be provided to the University and eventually to Mansfield Four Corners. Existing and proposed roadways are utilized in the majority of the scenarios. Under this alternative, water produced at any of these wellfields would be directed to the University water system, which would then provide water for sale in Mansfield Four Corners via the Technology Park.

### **3.7.1 POTENTIAL CONNECTIONS TO THE UNIVERSITY SYSTEM**

Several water main route scenarios have been evaluated for the four potential wellfield sites along the Willimantic River. Refer to Figure 3.7-1 through Figure 3.7-5 for a depiction of the potential wellfield locations, potential interconnection routes, and potential pipeline segments. As shown in Figure 3.7-1, the proposed water main routes from potential Willimantic River wellfield sites involve a total of 23 water main segments to connect to the University water system. These are outlined in Table 3.7-1.

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<sup>1</sup> Wellfields MD-2, EP-1, EP-2, and EP-3 were considered early in the planning process begun by the Town of Mansfield prior to the scoping of the EIE. These sites are all on private property and were dropped from consideration by the University prior to project scoping.





*Figure 3.7-2: Vicinity of Well Location MD-1*



*Figure 3.7-3: Vicinity of Well Location MD-3*



*Figure 3.7-4: Vicinity of Well Location EP-4*



*Figure 3.7-5: Vicinity of Well Location EP-5*



**TABLE 3.7-1**  
**Pipeline Segments Associated with Potential New Wellfields Along the Willimantic River**

<b>Segment</b>	<b>Starting Street or Location</b>	<b>Pipeline Route</b>	<b>Ending Street or Location</b>	<b>Distance (feet)</b>
3	Well site MD-1	Access to well site MD-1	Route 44	460
4	MD-1 access	Route 44	Former railroad depot on Route 44	840
5	Former railroad depot on Route 44	Route 44	Route 32	1,890
20	Future North Hillside Road extension	Route 44	Route 195	1,540
21	Existing 12-inch main at North Hillside Road	Future North Hillside Road extension	Route 44	3,400
41	Well site EP-5	Access to well site EP-5 to Route 32	Route 275	2,550
42	Well site EP-4	Access to well site EP-4 to Route 275	Shady Lane	1,320
43	Shady Lane	Route 275	Route 32	660
44	Route 32	Route 275	Maple Road	7,930
45	Maple Road	Route 275	Route 195	3,410
46	Route 275	Route 195	Bolton Road	1,360
47	Route 195	Bolton Road	12-inch express main at Bolton Road	380
51	Route 275	Shady Lane	Route 32	1,350
52	Route 275	Route 32	Shady Lane	1,100
53	Shady Lane	Route 32	North Eagleville Road	500
54	Route 32	North Eagleville Road, LeDoyt Road, North Hillside Road	16-inch transmission main from Willimantic River Wellfield	13,400
55	North Eagleville Road	Route 32	Plains Road	6,340
56	Well site MD-3	Access to well site MH-3 and Plains Road	Route 32	1,410
57	Plains Road	Route 32	Route 44	1,970
58	Route 44	Route 32	Old Colony Road	630
59	Former railroad depot on Route 44	Through railroad lands	Railroad tracks southwest of Old Colony Road	630
60	Railroad tracks southwest of Old Colony Road	Beneath railroad tracks and along Old Colony Road	Route 44	1,840
61	Old Colony Road	Route 32	Spring Manor Lane or 16-inch water main	1,100
62	Route 32	Spring Manor Lane	Dirt road in Spring Manor Farm	2,960
63	Railroad tracks southwest of Old Colony Road	Through state lands into Spring Manor Farm and along dirt road	Spring Manor Lane	4,220
64	Intersection of dirt road and Spring Manor Lane	Spring Manor Lane and state land	Willimantic River Wellfield treatment building	130

Notes: MD = Mansfield Depot; EP = Eagleville Preserve

Not all of the pipeline segments identified in Table 3.7-1 are applicable to each wellfield. For example, the Mansfield Depot (MD) wellfields would not utilize pipelines in the vicinity of Route 275. However, the Eagleville Preserve (EP) wellfields could either connect to the Willimantic River Wellfield or the existing 16-inch diameter transmission main near the Depot Campus, or could connect directly to the University distribution system via Route 275 and Route 195 or via North Eagleville Road. In order to reach Mansfield Four Corners, a distribution main would extend along the future North Hillside Road extension to Route 44, and then extend along Route 44 into Mansfield Four Corners (pipeline segments 21 and 20). This final connection would be necessary for all scenarios evaluated.

The water main routing options associated with each potential wellfield location are as follows:

- Well Site MD-1 would require a water main to connect to Route 44 and proceed eastward into MD near the intersection of the railroad tracks (pipeline segments 3 and 4). From that point, there are five potential scenarios to connect with University infrastructure.

Option#6A-1 - Water main on Route 44 to Route 32 to connect to the 16-inch diameter transmission main leading to the Main Campus (pipeline segments 5, 58, and 61). Under this scenario, treatment would be required at the new wellfield because it would not occur at an existing treatment building. Treatment would consist of (at a minimum) chlorination and corrosion control. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20).

Option #6A-2 - Water main on Route 44 to Route 32 to Spring Manor Lane to connect to the treatment building at the Willimantic River Wellfield (pipeline segments 5, 58, 61, 62, and 64). Treatment would be provided at the Chemical Building at the Willimantic River Wellfield. Customers in MD would not be able to be served by the new water main. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).

Option #6A-3 - Water main running northwest adjacent to the railroad tracks and then to Old Colony Road to Route 32 to connect to the 16-inch diameter transmission main leading to the Main Campus (pipeline segments 59, 60, and 61). Under this scenario, treatment would be required at the new wellfield as noted above. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).

Option #6A-4 - Water main running northwest adjacent to the railroad tracks and then up Old Colony Road to Route 32 to Spring Manor Lane to connect to the treatment building at the Willimantic River Wellfield (pipeline segments 59, 60, 61, 62, and 64). Treatment would be provided at the Chemical Building at the Willimantic River Wellfield. Customers in MD would not be able to be served by the new water main. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).

Option #6A-5 - Water main running northwest adjacent to the railroad tracks into Spring Manor Farm and then beneath the unpaved farm road to connect to the treatment building at the Willimantic River Wellfield (pipeline segments 59, 63, and 64). Treatment would be provided at the Chemical Building at the Willimantic River Wellfield. Customers in Mansfield Depot would not be able to be served by the new water main. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).

- Well Site MD-3 would require a water main to connect to Plains Road and Route 32, and then proceed to the intersection with Spring Manor Lane (pipeline segments 56, 57, 58, and 61). From that point, there are two potential scenarios to connect with University infrastructure:

Option #6B-1 - Interconnect with the 16-inch diameter water main leading to the Main Campus (no additional pipeline segments). Under this scenario, treatment would be required at the new wellfield as noted above. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).

Option #6B-2 - Water main extending down Spring Manor Lane to the treatment building at the Willimantic River Wellfield (pipeline segments 62 and 64). Treatment would be provided at the Chemical Building at the Willimantic River Wellfield. Note that most of this pipeline route is already served by the University's Depot Campus water system. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).

- Well Site EP-4 would require a water main to extend to Route 275 and then to the intersection with Shady Lane (pipeline segment 42). From that point, there are four potential scenarios to connect with University infrastructure:

Option #6C-1 - Water main running along Shady Lane to Route 32 to interconnect with the 16-inch diameter water main leading to the Main Campus at Spring Manor Lane (pipeline segments 51, 53, 55, 57, 58, and 61). Under this scenario, treatment would be required at the new wellfield as noted above. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).

Option #6C-2 - Water main running along Shady Lane to Route 32 to Spring Manor Lane to connect to the treatment building at the Willimantic River Wellfield (pipeline segments 51, 53, 55, 57, 58, 61, 62, and 64). Treatment would be provided at the Chemical Building at the Willimantic River Wellfield. No customers along the route would be served by the new water main. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).

- Option #6C-3 - Water main running along Shady Lane to Route 32 to North Eagleville Road to LeDoyt Road to North Hillside Road to connect with the 16-inch diameter water main leading to the Main Campus (pipeline segments 51, 53, and 54). Under this scenario, treatment would be required at the new wellfield as noted above. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).
- Option #6C-4 - Water main running along Route 275 and Route 195 to interconnect with the 12-inch diameter express main in the University distribution system at Bolton Road (pipeline segments 43, 44, 45, 46, and 47). Under this scenario, treatment would be required at the new wellfield as noted above. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).
- Well Site EP-5 would require a water main to connect to Route 32 and run to the intersection with Route 275 (pipeline segment 41). From that point, four potential scenarios are possible to connect with University infrastructure:
    - Option #6D-1 - Water main running along Route 32 to interconnect with the 16-inch diameter water main leading to the Main Campus at Spring Manor Lane (pipeline segments 52, 53, 55, 57, 58, and 61). Under this scenario, treatment would be required at the new wellfield as noted above. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).
    - Option #6D-2 - Water main running along Route 32 to Spring Manor Lane to connect to the treatment building at the Willimantic River Wellfield (pipeline segments 52, 53, 55, 57, 58, 61, 62, and 64). Treatment would be provided at the Chemical Building at the Willimantic River Wellfield. No customers along the route would be served by the new water main. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).
    - Option #6D-3 - Water main running along Route 32 to North Eagleville Road to LeDoyt Road to North Hillside Road to connect with the 16-inch diameter water main leading to the Main Campus (pipeline segments 52, 53, and 54). Under this scenario, treatment would be required at the new wellfield as noted above. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).
    - Option #6D-4 - Water main running along Route 275 and Route 195 to interconnect with the 12-inch diameter express main in the University distribution system on Bolton Road (pipeline segments 44, 45, 46, and 47). Under this scenario, treatment would be required at the new wellfield as noted above. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20 as noted above).

### 3.7.2 SUMMARY OF NEW WILLIMANTIC RIVER WELLFIELDS AND CONNECTION OPTIONS

The four potential wellfields along the Willimantic River have a variety of pipeline scenarios for connecting to the University and Mansfield Four Corners. These scenarios are presented in Table 3.7-2.

**TABLE 3.7-2  
Potential New Willimantic River Wellfield Connection Scenarios**

Option	Treatment at Source	Pipeline Segments	Total Distance (feet)
<i>Potential Wellfield MD-1</i>			
#6A-1	Yes	3, 4, 5, 20, 21, 58, 61	9,860
#6A-2	No	3, 4, 5, 20, 21, 58, 61, 62, 64	12,950
#6A-3	Yes	3, 4, 20, 21, 59, 60, 61	9,810
#6A-4	No	3, 4, 20, 21, 59, 60, 61, 62, 64	12,900
#6A-5	No	3, 4, 20, 21, 59, 63, 64	11,220
<i>Potential Wellfield MD-3</i>			
#6B-1	Yes	20, 21, 56, 57, 58, 61	10,050
#6B-2	No	20, 21, 56, 57, 58, 61, 62, 64	13,140
<i>Potential Wellfield EP-4</i>			
#6C-1	Yes	20, 21, 42, 51, 53, 55, 57, 58, 61	18,150
#6C-2	No	20, 21, 42, 51, 53, 55, 57, 58, 61, 62, 64	21,240
#6C-3	Yes	20, 21, 42, 51, 53, 54	21,510
#6C-4	Yes	20, 21, 42, 43, 44, 45, 46, 47	20,000
<i>Potential Wellfield EP-5</i>			
#6D-1	Yes	20, 21, 41, 52, 53, 55, 57, 58, 61	19,130
#6D-2	No	20, 21, 41, 52, 53, 55, 57, 58, 61, 62, 64	22,220
#6D-3	Yes	20, 21, 41, 52, 53, 54	22,490
#6D-4	Yes	20, 21, 41, 44, 45, 46, 47	20,570

Notes: MD – Mansfield Depot; EP = Eagleville Preserve

As shown in Table 3.7-2, treatment needs have been evaluated for each scenario. Scenarios that move water directly into the University's transmission or distribution system would require treatment at the new wellfield. Treatment would likely consist of chlorination and corrosion control at a minimum. This would match the treatment provided at the existing Fenton River Wellfield and Willimantic River Wellfield treatment buildings. Other scenarios evaluate the installation of a raw water pipeline that would receive treatment at the Willimantic River Wellfield prior to entering the distribution system.

Water service to the Mansfield Four Corners area would be provided via a connection at the northern terminus of the future North Hillside Road extension.

### 3.8 ALTERNATIVE #7 – NEW WELLFIELD NEAR MANSFIELD HOLLOW LAKE

Previous planning documents have identified several areas in the vicinity of Mansfield Hollow Lake that may be suitable for wellfield development. Five areas have been investigated within the context of this EIE, as shown in Figure 3.8-1 through Figure 3.8-6.





*Figure 3.8-2: Looking East at MH-2 from Commonfields Path*



*Figure 3.8-3: Looking out at School from Vicinity of MH-3*



*Figure 3.8-4: Vicinity of Well Location MH-4*



*Figure 3.8-5: Trail Leading to Well Location MH-5*





**Figure 3.8-6: Vicinity of Well Location MH-6**

- Alternative #7A is potential wellfield MH-2<sup>2</sup>, located on the agricultural Commonfields owned by the Town of Mansfield located north of the western part of Bassett Bridge Road.
- Alternative #7B is potential wellfield MH-3, located in the forest behind Southeast Elementary School owned by the Town of Mansfield on the south side of Route 89.
- Alternative #7C is potential wellfield MH-4, located on federally owned land north of Mansfield Hollow Lake.
- Alternative #7D is potential wellfield MH-5, located on federally owned land east of Mansfield Hollow Lake, west of Kaya Lane, and near the Atwoodville Trail.
- Alternative #7E is potential wellfield MH-6, located on federally owned land west of Mansfield Hollow Lake and southeast of Bassett Bridge Road.

Construction of a new wellfield or wellfields in the vicinity of Mansfield Hollow Lake would at a minimum require any or all of the following:

- Installation of production wells
- Construction of pump houses
- Construction of treatment buildings
- Construction of pumping stations
- Construction of water mains along state- and town-owned roads

This alternative would require installation of a wellfield and the installation of 12-inch diameter water mains to connect the new wellfield with the University water system such that water could be provided to the University and to Mansfield Four Corners. Existing and proposed roadways are utilized in the majority of the scenarios.

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<sup>2</sup> Site MH-1, a wellfield site located at the WWW facility, was considered in the early stages of planning by the Town of Mansfield but was removed from consideration prior to project scoping.

### 3.8.1 POTENTIAL CONNECTIONS TO THE UNIVERSITY SYSTEM

Several water main route scenarios have been evaluated for the five potential Mansfield Hollow wellfields. Refer back to Figure 3.8-1 for a depiction of the potential interconnection routes. The proposed water main routes from potential Mansfield Hollow wellfield sites involve many potential water main segments to connect to the University as outlined in Table 3.8-1.

**TABLE 3.8-1  
Pipeline Segments Associated with Potential New Wellfields Near Mansfield Hollow Lake**

Segment	Starting Street or Location	Pipeline Route	Ending Street or Location	Distance (feet)
20	Future North Hillside Road extension	Route 44	Route 195	1,540
21	Existing 12-inch main at North Hillside Road	Future North Hillside Road extension	Route 44	3,400
23	Well site MH-5	Atwoodville Trail to Bassetts Bridge Road	Access to well site MH-6	3,640
24	Well site MH-6	Access to well site MH-6	Bassetts Bridge Road	270
25	Access to well site MH-6	Bassetts Bridge Road	Access to well site MH-2	4,720
26	Well site MH-2	Access to well site MH-2	Bassetts Bridge Road	310
27	Access to well site MH-2	Bassetts Bridge Road	Route 195	920
28	Bassetts Bridge Road	Route 195	Route 89	2,390
29	Well site MH-3	Access to well site MH-3	Route 89	590
30	Access to well site MH-3	Route 89	Route 195	4,150
31	Access to well site MH-3	Route 89	Bakers Road	1,780
32	Well site MH-4	Access to well site MH-4 to Route 89	Bakers Road	2,470
33	Route 89	Bakers Road to Lions Club Park through federal lands to Olsen Drive to Mulberry Road	Chaffeeville Road	8,780
34	Route 89	Route 195	Chaffeeville Road	2,230
35	Route 195	Chaffeeville Road	Mulberry Road	9,920
36	Mulberry Road	Chaffeeville Road, Gurleyville Road, unpaved access to wellfield	Fenton River Wellfield Clearwell	13,070
37	Fenton River Wellfield Clearwell	Utility corridor, Horse Barn Hill Road, Gurleyville Road	Route 195	6,400
38	Chaffeeville Road	Route 195	Clover Mill Road	570
39	Route 195	Clover Mill Road to Spring Hill Road to Maple Road	Route 275	17,230
40	Clover Mill Road	Route 195	Route 275	14,900
45	Maple Road	Route 275	Route 195	3,410
46	Route 275	Route 195	Bolton Road	1,360
47	Route 195	Bolton Road	12-inch express main at Bolton Road	380
49	Gurleyville Road	Route 195, Towers Loop Road	5.4 MG reservoir	4,040
50	Towers Loop Road	Access Road	Towers tanks	260

Note: MH = Mansfield Hollow

Not all of the pipeline segments identified in Table 3.8-1 are applicable to each wellfield. For example, a few segments are exclusively associated with potential wellfields MH-5 and MH-6. In order to reach Mansfield Four Corners, a distribution pipe would need to extend up the future North Hillside Road extension to Route 44, and then run along Route 44 into Mansfield Four Corners (pipeline segments 21 and 20). This connection would be necessary for all scenarios evaluated. The segments associated with each potential wellfield location are listed below:

- Well Site MH-2 would require a water main to connect to Bassett Bridge Road, to Route 195, and then north to Chaffeeville Road (pipeline segments 26, 27, 28, and 34). From that point, there are three potential scenarios to connect with University infrastructure:

Option #7A-1 - Water main along Chaffeeville Road to Gurleyville Road to the utility access to the treatment building at the Fenton River Wellfield (pipeline segments 35 and 36). Treatment could be provided either at the source or at the Fenton River Wellfield dependent on whether areas along the pipeline need water service prior to connection with the University. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20).

Option #7A-2 - Water main along Route 195 to Clover Mill Road to Spring Hill Road to Maple Road to South Eagleville Road to Route 195 to connect to the 12-inch express main in the existing University distribution system on Bolton Road (pipeline segments 38, 39, 45, 46, and 47). Under this scenario, treatment would be required at the new wellfield to provide chlorination and corrosion control. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20) as noted above.

Option #7A-3 - Water main along Route 195 to connect to the 12-inch express main in the existing University distribution system on Bolton Road (pipeline segments 38, 40, 46, and 47). Under this scenario, treatment would be required at the new wellfield. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20) as noted above.

- Well Site MH-3 would require a water main to connect to Route 89 (pipeline segment 29). From that point, there are four potential scenarios to connect with University infrastructure:

Option #7B-1 - Water main along Route 89 to Route 195 to Chaffeeville Road to Gurleyville Road to the utility access to the treatment building at the Fenton River Wellfield (pipeline segments 30, 34, 35, and 36). Treatment could be provided either at the source or at the Fenton River Wellfield dependent on whether areas along the pipeline need water service prior to connection with the University. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20) as noted above.

Option #7B-2 - Water main along Route 89 to Route 195 to Clover Mill Road to Spring Hill Road to Maple Road to South Eagleville Road to Route 195 to connect to the

12-inch express main in the existing University distribution system on Bolton Road (pipeline segments 30, 34, 38, 39, 45, 46, and 47). Under this scenario, treatment would be required at the new wellfield as noted above. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20) as noted above.

- Option #7B-3 - Water main along Route 89 to Route 195 to connect to the 12-inch express main in the existing University distribution system at Bolton Road (pipeline segments 30, 34, 38, 40, 46, and 47). Under this scenario, treatment would be required at the new wellfield as noted above. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20) as noted above.
- Option #7B-4 - Water main along Route 89 to Bakers Road and through Lions Club Park and federal lands to Olsen Drive, and then beneath Olsen Drive, Mulberry Road, Chaffeeville Road, and Gurleyville Road to the utility access to the treatment building at the Fenton River Wellfield (pipeline segments 31, 33, and 36). Treatment could be provided either at the source or at the Fenton River Wellfield dependent on whether areas along the pipeline need water service prior to connection with the University. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20) as noted above.
- Well Site MH-4 would require a water main to connect to Route 89 and then to the intersection of Bakers Road (pipeline segment 32). From that point, there are four potential scenarios to connect with University infrastructure.
  - Option #7C-1 - Water main along Route 89 to Route 195 to Chaffeeville Road to Gurleyville Road to the utility access to the treatment building at the Fenton River Wellfield (pipeline segments 31, 30, 34, 35, and 36). Treatment could be provided either at the source or at the Fenton River Wellfield dependent on whether areas along the pipeline need water service prior to connection with the University. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20) as noted above.
  - Option #7C-2 - Water main along Route 89 to Route 195 to Clover Mill Road to Spring Hill Road to Maple Road to South Eagleville Road to Route 195 to connect to the 12-inch express main in the existing University distribution system on Bolton Road (pipeline segments 31, 30, 34, 38, 39, 45, 46, and 47). Under this scenario, treatment would be required at the new wellfield as noted above. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20) as noted above.
  - Option #7C-3 - Water main along Route 89 to Route 195 to connect to the 12-inch express main in the existing University distribution system on Bolton Road (pipeline segments 31, 30, 34, 38, 40, 46, and 47). Under this scenario, treatment would be required at the new wellfield as noted above. Additional

distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20) as noted above.

Option #7C-4 - Water main along Bakers Road and through Lions Club Park and federal lands to Olsen Drive, and then along Olsen Drive, Mulberry Road, Chaffeeville Road, and Gurleyville Road to the utility access to the treatment building at the Fenton River Wellfield (pipeline segments 33 and 36). Treatment could be provided either at the source or at the Fenton River Wellfield dependent on whether areas along the pipeline need water service prior to connection with the University. Additional distribution piping would be necessary to direct water to Mansfield Four Corners (pipeline segments 21 and 20) as noted above.

- Well Site MH-5 would require water main along the Atwoodville Trail to connect to Bassett Bridge Road and then extend west to Route 195 and north to Chaffeeville Road (pipeline segments 23, 25, 27, 28, and 34). From that point, there are three potential scenarios to connect with University infrastructure that are exactly the same as those for MH-2. These are identified as Option #7D-1, Option #7D-2, and Option #7D-3, respectively.
- Well Site MH-6 would require a water main to connect to Bassett Bridge Road and head west to Route 195 and north to Chaffeeville Road (pipeline segments 24, 25, 27, 28, and 34). From that point, there are three potential scenarios to connect with University infrastructure that are exactly the same as those for MH-2 and MH-5. These are identified as Option #7E-1, Option #7E-2, and Option #7E-3, respectively.

### **3.8.2 SUMMARY OF NEW MANSFIELD HOLLOW WELLFIELDS AND CONNECTION OPTIONS**

As shown above, the five potential wellfields near Mansfield Hollow Lake have a variety of pipeline scenarios for connecting to the University and Mansfield Four Corners. These scenarios are presented in Table 3.8-2.

As shown in Table 3.8-2, treatment needs have been evaluated for each scenario. Scenarios that move water directly into the University's transmission or distribution system would require treatment at the new wellfield. Treatment would at a minimum consist of chlorination and corrosion control. Scenarios that connect to the Fenton River Wellfield could involve pipelines carrying either raw or treated water dependent on the need to supply potable water to areas prior to connection to the University.

Water service to the Mansfield Four Corners area would be provided via a connection at the northern terminus of the future North Hillside Road extension.

**TABLE 3.8-2**  
**Potential New Mansfield Hollow Wellfield Connection Scenarios**

<b>Alternative</b>	<b>Treatment at Source</b>	<b>Pipeline Segments</b>	<b>Total Distance (feet)</b>
<i><b>Potential Wellfield MH-2</b></i>			
#7A-1*	Optional	20, 21, 26, 27, 28, 34, 35, 36	33,780
#7A-2	Yes	20, 21, 26, 27, 28, 34, 38, 39, 45, 46, 47	33,740
#7A-3	Yes	20, 21, 26, 27, 28, 34, 38, 40, 46, 47	28,000
<i><b>Potential Wellfield MH-3</b></i>			
#7B-1*	Optional	20, 21, 29, 30, 34, 35, 36	34,900
#7B-2	Yes	20, 21, 29, 30, 34, 38, 39, 45, 46, 47	34,860
#7B-3	Yes	20, 21, 29, 30, 34, 38, 40, 46, 47	29,120
#7B-4*	Optional	20, 21, 29, 31, 33, 36*	29,160
<i><b>Potential Wellfield MH-4</b></i>			
#7C-1*	Optional	20, 21, 32, 31, 30, 34, 35, 36	38,560
#7C-2	Yes	20, 21, 32, 31, 30, 34, 38, 39, 45, 46, 47	38,520
#7C-3	Yes	20, 21, 32, 31, 30, 34, 38, 40, 46, 47	32,780
#7C-4*	Optional	20, 21, 32, 33, 36	29,260
<i><b>Potential Wellfield MH-5</b></i>			
#7D-1*	Optional	20, 21, 23, 25, 27, 28, 34, 35, 36	41,830
#7D-2	Yes	20, 21, 23, 25, 27, 28, 34, 38, 39, 45, 46, 47	41,790
#7D-3	Yes	20, 21, 23, 25, 27, 28, 34, 38, 40, 46, 47	36,050
<i><b>Potential Wellfield MH-6</b></i>			
#7E-1*	Optional	20, 21, 24, 25, 27, 28, 34, 35, 36	38,460
#7E-2	Yes	20, 21, 24, 25, 27, 28, 34, 38, 39, 45, 46, 47	38,420
#7E-3	Yes	20, 21, 24, 25, 27, 28, 34, 38, 40, 46, 47	32,680

\* Distance does not include replacement of existing Fenton River Wellfield transmission main, which would add an additional 10,700 feet if required.

Note: MH = Mansfield Hollow