

**Map, Plan and Report**  
**For the**  
**Town of Torrey**  
**Proposed Water District No. 1**

**Torrey, New York**

**November 2015**  
**Revised June 2016**



**Clark Patterson Lee**  
DESIGN PROFESSIONALS

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## **I. General**

The Town of Torrey has received notice of public interest in establishing a water district. A water district is a special use district required by Town Law where a specific area of the town receives a specific benefit. The cost for receiving this benefit is borne solely by the property owners in that specific area. The purpose of this project is to provide a safe and reliable potable water supply and fire protection to residences in the Proposed Town of Torrey Water Districts.

This report will be the basis of design for the Town of Torrey Water District No. 1. The Proposed Water District No. 1 is shown in Figure No. 1. The Water District Boundary Map and Legal Description are provided in Appendix A. The new water main will connect to the existing Town of Benton Water District No. 1, Extension No.1.

## **II. Project Planning Area**

### **A. Location**

As part of the Town of Torrey Water District No. 1, water main will be installed along portions of NYS Route 14, Carlson, Davy, Serenity, Serenity Beach, Boston, and Albany Beach Roads. This will involve approximately 16,300 linear feet of 6, 8, and 12-inch water mains to serve approximately 43 residential units and 4 wineries. There are also approximately 17 vacant lots (0.5 EDU) within the District No. 1, bringing the EDU count to approximately 67.5 units.

### **B. Environmental Resources Present**

There are farmlands present in the project area. All construction will be taking place in existing road-right of ways or permanent easements and proper construction mitigation and restoration efforts will be implemented based on standard practices common to the industry.

### **C. Growth Areas and Population Trends**

According to the United States Census, the Town of Torrey had a population of 1,307 in 2000 and 1,282 in 2010. These numbers reflect a population that is decreasing at an average of 0.19% per year.

### III. Existing Facilities

#### A. Location Map

There are no existing water service areas in the Town of Torrey with the exception of houses located along the Village of Dresden transmission main, that are served as out-of-district users by the Village. The water for District No. 1 will be supplied by the Town of Geneva through the Town of Benton's Water District No. 1, Extension No. 1. The Town of Torrey will negotiate with the Town of Benton to provide the operation and maintenance services to this District.

#### B. Existing Water Supply

The entire area of the proposed water district is presently served by private wells. The Town of Torrey has received several complaints about the quality and quantity of the water in the area. Residents in this area have experienced the following problems:

1. **Insufficient quantity** of water is available for residential wells. Residents must conserve water by alternating shower days, alternating laundry days, or not washing clothes in their residences at all.
2. **Poor water quality** is predominant in the existing well supplies. The water quality requires residents to either boil water for consumption or purchase bottled water for cooking and consumption.
3. **High cost** to operate and maintain existing well supplies. Several residents must purchase chemicals for softening and treatment systems, and must frequently replace their plumbing systems due to corrosion of their fixtures. Several residents currently pay over \$400 per year to operate and maintain their water system, which provides them with poor quality water and insufficient quantities at times.
4. **Fire Protection:** Currently, there is no water system to provide fire protection in the proposed water district. Likewise, there are no significant bodies of water in the vicinity that provide an adequate supply of water for fire protection.

## **IV. Need For Project**

### **A. Health and Safety**

The proposed water main project will provide safe potable water to the residents of the Town of Torrey Water District No. 1 and will eliminate the public health risks associated with the quality and quantity of ground water in the area and a potential contamination of the wellhead.

### **B. System O & M**

A water distribution network will replace highly expensive individual water treatment units; this will reduce the operation and maintenance costs borne by the residents at this time.

### **C. Growth**

While economic development is viewed as a project benefit, balancing economic development and land protection is necessary, critical, and provided for. Agriculture is important to the Town of Torrey, functioning as a part of the Town's economic base as well as being the foundation for the rural character that the Town wishes to maintain. Thus, there are no anticipated long-term impacts to the Agricultural Districts as a result of the proposed action including no change in use of agricultural/residential lands within any Agricultural Districts.

## **V. Alternatives Considered**

### **A. Description**

#### **1. Alternative 1 – Null Alternative**

Estimated Capital Cost: \$ 0

This alternative proposes to “do nothing”. The residents of the Town of Torrey Water District No. 1 would continue using their existing well treatment systems, some whose annual costs exceed \$400. Costs for the purchase of bottled water and off-site laundry services add an estimated \$500 to \$1,000 per year to the cost of a private well. This could mean escalating health problems and water shortages for the residents of the Town of Torrey Water District No. 1.

2. Alternative 2 – New Water Treatment Plant and Distribution Water Mains

Estimated Capital Cost: \$ 4,305,000

Costs associated with a new public water treatment plant (WTP) for the residents of the Town of Torrey Water District No. 1 could be in the excess of \$2 million. This is far more expensive than connecting to the existing Town of Benton Water System. The combination of a WTP and water main distribution system would have estimated unit costs of approximately \$2,896. This alternative is far too expensive to be a feasible option for supplying water to the residents in this area.

3. Alternative 3 – New Distribution Water Mains

Estimated Capital Cost: \$ 1,603,000.00

The proposed action includes the installation of approximately 16,300 linear feet of 6, 8, and 12-inch water mains in the Town of Torrey Water District No. 1 service area to provide potable water and fire service. The water main distribution system would have estimated unit costs of approximately \$1,475 without a USDA Grant and approximately \$1,152 with a \$500,000 USDA Grant.

4. The estimated costs for Alternatives 2 and 3 are detailed in Appendix B.

B. Design Criteria

The Town of Torrey Proposed Water District No. 1 has been designed to provide safe potable water and fire protection to the Town residents within the proposed Water District No. 1.

C. Map

The proposed Water District No. 1 area is shown in Figure No. 1.

D. Environmental Impacts

There are no anticipated negative environmental impacts associated with the project. However, an environmental review will be done for the project. All construction will be done in existing road Right-of-Ways or permanent easements and proper construction mitigation and restoration efforts will be implemented.

## E. Advantages/Disadvantages

Although there are significant costs associated with Alternative 3, it is the most viable alternative as it is consistent with the goals and meets the needs of the Town of Torrey more effectively than the other alternatives. The advantages of Alternative 3 are as follows:

1. It will eliminate the ongoing health risks associated with the quality and quantity of ground water in the area.
2. It will be a step towards creating a public water system, increasing the reliability of potable water supply and fire flow.
3. Allows for future expansion within the Town of Torrey for other residents and businesses.

## VI. Recommended Alternative

The recommended alternative is Alternative 3: New Distribution Water Mains for the Proposed Town of Torrey Water District No. 1.

### A. Project Design

#### 1. Water Supply

The Town of Torrey water mains will receive water from the Town of Geneva Kashong Point Well Supply, through the Town of Benton Water District No. 1, Extension No. 1. The Town of Torrey will negotiate with the Town of Benton to provide the operation and maintenance services to this District.

#### 2. Treatment

The Town of Geneva will provide treated water to the Town of Torrey through the Town of Benton. The treated water will meet all the state and federal drinking water standards.

#### 3. Storage

An existing 1.0 million gallon water storage tank is located on Kashong Switch Road in the Town of Seneca. The tank is owned and operated by the Town of Seneca. It serves portions of the Towns of Benton, Geneva and Seneca.

#### 4. Distribution Layout

The connection of the proposed Town of Torrey Water District No. 1 to the Town of Benton Water Distribution System will be made to the Town of Benton Water District No. 1, Extension No. 1's proposed 12-inch water main along NYS Route 14 at the Benton-Torrey Town Line. The Town of Benton is currently in the design phase and is planning to construct in 2016.

#### 5. Water Services

Water services for each house or business will be installed up to the right-of-way or easement line by the contractor during water main installation. Installation of the service from the right-of-way or easement line to the home will be the responsibility of the homeowner. Each home will have to have an individual water pressure regulator and water meter installed.

#### 6. Hydraulic Analysis

The hydraulic conditions of the proposed system were calculated using the WaterGEMS<sup>®</sup> V8i hydraulic modeling software. The hydraulic analysis of the system includes the evaluation of available pressures and flows for the proposed water main extensions and is included in Appendix C. The results of the modeling are discussed below.

Hydraulic analysis of the system with a connection to the Town of Benton Water District No. 1, Extension No. 1 included the evaluation of available pressures and flows during various demand conditions. It is anticipated, based on 43 residential units using 300 gpd for a residential total of 12,900 gpd, and 4 wineries using 1,200 gpd (average seasonal production high) for a commercial total of 4,800 gpd, that the water district will have an average daily demand of 17,700 gpd (12.3 gpm), a maximum daily demand of 35,400 gpd (24.6 gpm), and a peak hour demand of 70,800 gpd (49.1 gpm).

Due to the population trends, it is not anticipated that demands within the water district will increase by more than 20% in the near future.

The hydraulic analysis during average daily demands of the Proposed Water District No. 1 system indicates that adequate flows and pressures are available throughout the proposed system. Static pressures range from 41 psi to 110 psi. Available fire flows during peak demand periods range from 512 gpm to 1,174 gpm while maintaining a minimum of 20 psi residual pressure in the proposed system.



B. Proposed Water District Unit Costs

The estimated water district unit costs are based on a potential \$500,000 USDA Rural Development grant and financing through USDA Rural Development at a 2.875% interest rate for a 38 year term. The estimated average annual water cost was estimated based on the Town of Benton water rate of \$60/quarter fee for the first 6,000 gallons, a retail rate of \$5.50/1,000 gallons (after the first 6,000 gallons), and an average usage of 60,000 gallons/unit/year.

1. The estimated costs for the proposed project are detailed in Appendix B and summarized as follows:

Total Estimated Capital Cost	\$1,605,000
Estimated USDA Grant	\$500,000
Net Local Project Costs	\$1,105,000
Annual Debt Service (38 years, 2.875%)	\$48,178
Estimated Debt Service/Unit (67.5 units)	\$714
Estimated Yearly Water Cost	\$438
<b>Total Estimated Unit Cost</b>	<b>\$1,152</b>

2. Definition of a Unit

Each single-family residential dwelling shall be considered to be one unit and will typically have a 1-inch service line and a ¾-inch meter. Included in this category will be single family houses, mobile homes, and individual apartments. Multiple single family dwellings on the same parcel of land will each be considered an individual unit. Any facility will be considered as a minimum of one unit. Vacant land not within the certified agricultural district will be assessed one-half (0.5) of a unit. The parcels within the project area are detailed in Appendix D with their unit charge.

Non-residential, recreational, educational, commercial, industrial, and agricultural facilities will be assigned an equivalent number of units based following method:

The average daily usage divided by 300 gpd (Average Daily Usage ÷ 300 = number of units).

The Average Daily Use will be based on the Design Standards for Wastewater Treatment Works – Intermediate Sized Sewerage Facilities (New York State Department of Environmental Conservation, 1988), Table 3 – Expected Hydraulic Loading Rates, as provided in Appendix E.

3. Other One Time Costs

Water Meter & Transponder Purchase Fee	\$195
Water Pressure Regulator Purchase	\$ 75
Service Line	\$ 10/LF (\$500 Average)
Well Separation/ Plumbing Modifications	\$200

**VII. Miscellaneous Information**

A. Options for property owner’s well

1. Abandon the well.
2. Keep well but separate it from public water plumbing.
3. Keep well and install backflow prevention.

B. Service Line Information

1. A service line will be installed to all residences, from the water main to the road Right-of-Way or easement, for connection to the public water system.

C. Optional Water District Enhancements with Remaining Funds

1. Upsize water main diameters to allow for future growth of the water system and maintain above average fire flows.
2. Extend water mains to the District Boundaries and through road intersections.
3. Extend water mains through permanent easements across private lands (outside of public/private right-of-ways) to loop and connect dead-end sections with other new water mains.
4. Installation of automatic flushing units in place of manual 2-inch blow-offs.
5. Consideration will also be given to meter reading improvements, computer hardware/software upgrades to maximize the efficiency of the operation and maintenance of the proposed Water District.
6. Purchase of replacement parts (hydrants, valves, water main, fittings and repair materials) and water system maintenance equipment.
7. Purchase of spare water meters, water meter radio read transmitters, and residential water pressure regulators for the residents of the Water District.

D. Short Lived Assets

1. There will be no equipment installed that has a useful life of less than 30 years. The water main, either PVC or DIP, fire hydrants, valves and water services should have a useful life of approximately 50 years with routine maintenance. Hydrants and valves may require replacement earlier if they are struck by a snow plow or damaged in an automobile accident.

## **VIII. Conclusions**

The Town of Torrey is committed to providing safe and reliable potable water supply and fire protection to its residents. This specific project will be instrumental in achieving that goal. It is recommended that the Town of Torrey seek funding for completion of the project once a viable connection point is available.

**FIGURE 1**  
**PROJECT LOCATION MAP**

Referenced Drawings: None  
 Drawing Name: J:\PROJECTS\Torrey\_T\Wtr Study\E District Form\ACAD\WD1 Location Map 2016 06 10.dwg  
 Date last accessed: 6/10/2016 12:40 PM  
 Date last plotted: 6/10/2016 12:41 PM  
 Plotted By: Jeremy Delyser

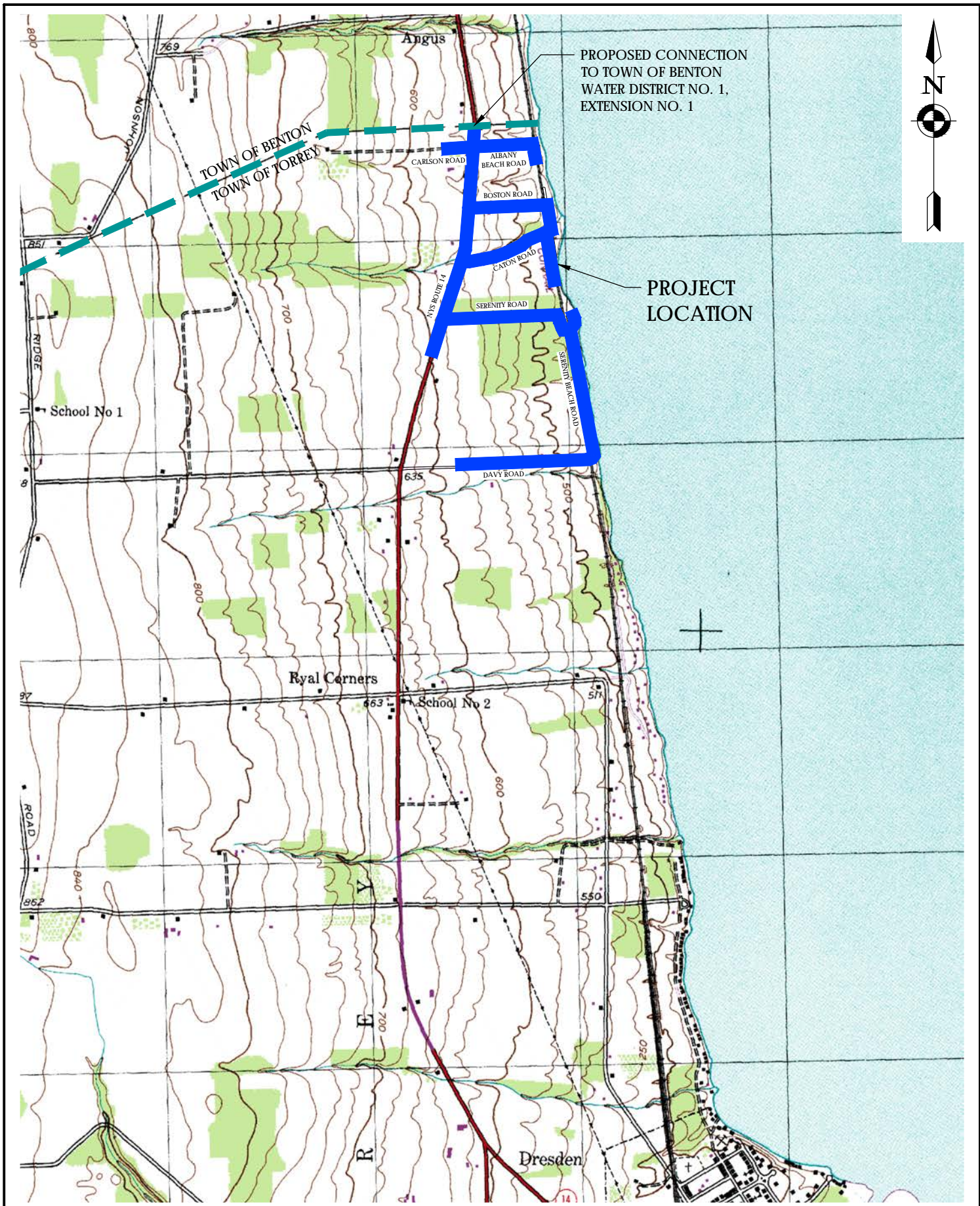



FIGURE #1

	<b>CLARK PATTERSON LEE</b> DESIGN PROFESSIONALS 205 ST. PAUL STREET, SUITE 500 ROCHESTER, NEW YORK 14604 TEL (800) 274-9000 FAX (585) 232-5836 <a href="http://www.clarkpatterson.com">www.clarkpatterson.com</a>	DATE: 06/10/16 DRAWN: DGI CHECKED: JED SCALE: 1"=2000' PROJ. #: 13424.00	<b>PROJECT LOCATION MAP</b>  <b>TORREY WATER DISTRICT NO. 1</b>  TOWN OF TORREY, NEW YORK
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**APPENDIX A**

**WATER DISTRICT BOUNDARY MAP  
AND  
LEGAL DESCRIPTION**





**TOWN OF TORREY**  
**WATER DISTRICT No. 1**

All that tract or parcel of land situate in the Town of Torrey, Yates County, State of New York, being described as follows:

Beginning at a point, on the northerly line of the Town of Torrey at the centerline of NYS Route 14 (right-of-way varies); thence,

1. Easterly, along the northerly line of the Town of Torrey, a distance of 990 feet, more or less, to the northeasterly corner of tax account number 19.66-1-1.1 on the westerly shore line of Seneca Lake; thence,
2. Southerly, along the westerly shore line of Seneca Lake, a distance of 6,036 feet, more or less, to the southeast corner of tax account number 29.43-1-3; thence,
3. Westerly, along the southerly line of tax account number 29.43-1-3, a distance of 72 feet, more or less, to the southwest corner of tax account number 29.43-1-3; thence,
4. Northerly, along the westerly line of tax account number 29.43-1-3 and the northerly extension of the westerly line of tax account number 29.43-1-3, a distance of 166 feet, more or less, to the centerline of Davy Road (49.5 feet wide right-of-way); thence,
5. Southwesterly, along the centerline of Davy Road, a distance of 71 feet, more or less, to the northerly extension of the easterly line of tax account number 29.43-1-6; thence,
6. Southerly, along the northerly extension of the easterly line of tax account number 29.43-1-6 and the easterly line of tax account number 29.43-1-6, a distance of 236 feet, more or less, to the southeasterly corner of tax account number 29.43-1-6; thence,
7. Westerly, along the southerly lines of tax account numbers 29.43-1-6, 29.43-1-5.1, 29.42-1-5, and 29.42-1-6, and along a westerly extension of the southerly line of tax account number 29.42-1-6, through the lands of tax account number 29.42-1-7, a distance of 1,877 feet, more or less, to a point 400 feet westerly of and parallel to the westerly line of tax account number 29.42-1-6; thence,
8. Northerly, along a line 400 feet westerly of and parallel to the westerly line of tax account number 29.42-1-6, a distance of 235 feet, more or less, to the centerline of Davy Road; thence,
9. Westerly, along the centerline of Davy Road, a distance of 1,134 feet, more or less, to the centerline of NYS Route 14; thence,
10. Northeasterly, along the centerline of NYS Route 14, a distance of 2,057 feet, more or less, to the easterly extension of the southerly line of tax account number 29.02-1-1; thence,
11. Westerly, along the easterly extension of the southerly line of tax account number 29.02-1-1 and the southerly line of tax account number 29.02-1-1, a distance of 533 feet, more or less, to a point 500 feet westerly of and parallel to the centerline of NYS Route 14; thence,



12. Northeasterly, along a line 500 feet westerly of and parallel to the centerline of NYS Route 14, through the lands of tax account numbers 29.02-1-1, 19.04-1-3.121, 19.04-1-3.2, and 19.04-1-2, across Carlson Road (49.5 feet wide right-of-way), and through the lands of tax account numbers 19.04-1-1 and 19.66-1-1.2, a distance of 3,549 feet, more or less, to the northerly line of the Town of Torrey; thence,
13. Easterly, along the northerly line of the Town of Torrey, a distance of 503 feet, more or less, to the centerline of NYS Route 14 and the Point of Beginning.

Town of Torrey Water District No. 1, as described above contains approximately 295.6 acres of land.

All as shown on a map prepared by Clark Patterson Lee, entitled "Town of Torrey Water District No. 1 – Water District Boundary Map", Drawing Number WD-01, dated November 5, 2015, and revised June 10, 2016.

**APPENDIX B**

**OPINION OF PROBABLE COSTS**

**TOWN OF TORREY  
WATER DISTRICT NO. 1  
PRELIMINARY COST ESTIMATE  
Revised June 9, 2016**

Alternative 2 - USDA Grant & Loan Financing

Project Area: NYS Route 14 to Lake Shore (Benton to Davy Road)

Water Supply: Geneva via Benton

ITEM	DESCRIPTION	UNIT	ESTIMATED QUANTITY	ESTIMATED UNIT PRICE	ESTIMATED TOTAL
1	Mobilization	LS	1	\$ 23,000.00	\$ 23,000.00
2	Maintenance & Protection of Traffic, Including Signs and Flagmen, Meeting NYSDOT Requirements	LS	1	\$ 23,000.00	\$ 23,000.00
3A	Furnish and Install 6-Inch Diameter Water Main Complete	LF	5,400	\$ 32.00	\$ 172,800.00
3B	Furnish and Install 8-Inch Diameter Water Main Complete	LF	6,600	\$ 38.00	\$ 250,800.00
3C	Furnish and Install 12-Inch Diameter Water Main Complete	LF	4,300	\$ 60.00	\$ 258,000.00
4A	Furnish and Install 6-Inch Gate Valves Complete	EA	5	\$ 800.00	\$ 4,320.00
4B	Furnish and Install 8-Inch Gate Valves Complete	EA	7	\$ 1,200.00	\$ 8,400.00
4C	Furnish and Install 12-Inch Gate Valves Complete	EA	5	\$ 2,200.00	\$ 11,000.00
5	Furnish and Install Hydrant Assemblies Complete	EA	33	\$ 3,500.00	\$ 115,500.00
6A	Furnish and Install New 1" Long Side Water Service w/ Meter Pit	EA	16	\$ 2,100.00	\$ 33,600.00
6B	Furnish and Install New 1" Short Side Water Service w/ Meter Pit	EA	30	\$ 1,600.00	\$ 48,000.00
6C	Furnish and Install New 2" Long Side Water Service w/ Meter Pit	EA	4	\$ 5,000.00	\$ 20,000.00
7A	Boring with 24-Inch Casing Pipe (Railroad Crossing)	LF	400	\$ 300.00	\$ 120,000.00
7B	Boring with 24-Inch Casing Pipe (NYSDOT)	LF	60	\$ 300.00	\$ 18,000.00
8	Furnish and Install 8-inch Water Main Creek Crossing	LF	100	\$ 135.00	\$ 13,500.00
9	Furnish and Install 2-Inch Blow Off	EA	5	\$ 1,000.00	\$ 5,000.00
10	Connection to Existing Water Main, Complete	EA	1	\$ 3,000.00	\$ 3,000.00
11	Compaction Testing	LS	1	\$ 5,000.00	\$ 5,000.00
12	Asphalt Road Restoration	LF	120	\$ 40.00	\$ 4,800.00
13	Asphalt Driveway Restoration	LF	200	\$ 30.00	\$ 6,000.00
14	Stone Driveway Restoration	LF	400	\$ 15.00	\$ 6,000.00
15	Culvert Crossing	EA	4	\$ 10,000.00	\$ 40,000.00
16	Meter Vault	EA	1	\$ 35,000.00	\$ 35,000.00
C-1	Rock Excavation	CY	100	\$ 100.00	\$ 10,000.00
WTP-1	Water Treatment Plant	EA	1	\$ 2,000,000.00	\$ 2,000,000.00

**Construction Subtotal = \$ 3,188,720.00**

Contingency (10%) = \$ 318,872.00

Legal, Engineering & Administration (25%) = \$ 797,180.00

Total = \$ 4,304,772.00

**Total Estimated Capital Cost = \$ 4,305,000.00**

Less USDA Grant = (\$500,000.00)

Net Local Project Cost = \$ 3,805,000.00

Estimated Debt Service at 2.875% (USDA Intermediate Rate) for 38yrs = \$ 165,896.00

Number of EDU's = 67.5

**Estimated Debt Service/Unit/Year = \$ 2,458.00**

Estimated Yearly Water Cost (\$60/q + 6,000 gal, \$5.50/1,000 gal, 60,000 gpy) = \$ 438.00

Total Unit Cost = \$ 2,896.00

**Total Estimated Unit Cost = \$ 2,896.00**

**Notes:**

1. Estimated costs based on contractor installation.
2. Assumed that 1 EDU = 300 gpd, typical residential user.
3. Assumed that Wineries have a seasonal peak usage of 1,200 gpd = 4.0 EDU.
4. Town of Torrey MHI \$53,056 qualifies for Intermediate Level financing. Poverty below \$45,505; Intermediate below \$56,882.
5. USDA Interst Rate 2nd Quarter 2016 = 2.875% Market/2.250% Intermediate/1.750% Poverty Rate. 2.875% used for Estimate.
6. Number of EDU = 43 (43 Residential @ 1.0) + 8.5 (17 Vacant Residential @ 0.5) + 16.0 (4 Winery/Vineyard Commercial @ 4.0) = 67.5 EDU's.
7. NYS Comptroller threshold for automatic approval of water improvement district unit cost = \$906/year for 2016.
8. Railroad will not issue approval of easement or comment on layout until Design Plans are submitted for review.

**TOWN OF TORREY  
WATER DISTRICT NO. 1  
PRELIMINARY COST ESTIMATE  
Revised June 9, 2016**

Alternative 3 - No USDA Grant, Loan only Financing  
Project Area: NYS Route 14 to Lake Shore (Benton to Davy Road)  
Water Supply: Geneva via Benton

ITEM	DESCRIPTION	UNIT	ESTIMATED QUANTITY	ESTIMATED UNIT PRICE	ESTIMATED TOTAL
1	Mobilization	LS	1	\$ 23,000.00	\$ 23,000.00
2	Maintenance & Protection of Traffic, Including Signs and Flagmen, Meeting NYSDOT Requirements	LS	1	\$ 23,000.00	\$ 23,000.00
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4A	Furnish and Install 6-Inch Gate Valves Complete	EA	5	\$ 800.00	\$ 4,320.00
4B	Furnish and Install 8-Inch Gate Valves Complete	EA	7	\$ 1,200.00	\$ 8,400.00
4C	Furnish and Install 12-Inch Gate Valves Complete	EA	5	\$ 2,200.00	\$ 11,000.00
5	Furnish and Install Hydrant Assemblies Complete	EA	33	\$ 3,500.00	\$ 115,500.00
6A	Furnish and Install New 1" Long Side Water Service w/ Meter Pit	EA	16	\$ 2,100.00	\$ 33,600.00
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10	Connection to Existing Water Main, Complete	EA	1	\$ 3,000.00	\$ 3,000.00
11	Compaction Testing	LS	1	\$ 5,000.00	\$ 5,000.00
12	Asphalt Road Restoration	LF	120	\$ 40.00	\$ 4,800.00
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14	Stone Driveway Restoration	LF	400	\$ 15.00	\$ 6,000.00
15	Culvert Crossing	EA	4	\$ 10,000.00	\$ 40,000.00
16	Meter Vault	EA	1	\$ 35,000.00	\$ 35,000.00
C-1	Rock Excavation	CY	100	\$ 100.00	\$ 10,000.00

**Construction Subtotal = \$ 1,188,720.00**

Contingency (10%) = \$ 118,872.00

Legal, Engineering & Administration (25%) = \$ 297,180.00

Total = \$ 1,604,772.00

**Total Estimated Capital Cost = \$ 1,605,000.00**

Less USDA Grant = \$0.00

Net Local Project Cost = \$ 1,605,000.00

Estimated Debt Service at 2.875% (USDA Intermediate Rate) for 38yrs = \$ 69,977.00

Number of EDU's = 67.5

**Estimated Debt Service/Unit/Year = \$ 1,037.00**

Estimated Yearly Water Cost (\$60/q + 6,000 gal, \$5.50/1,000 gal, 60,000 gpy) = \$ 438.00

Total Unit Cost = \$ 1,475.00

**Total Estimated Unit Cost = \$ 1,475.00**

**Notes:**

1. Estimated costs based on contractor installation.
2. Assumed that 1 EDU = 300 gpd, typical residential user.
3. Assumed that Wineries have a seasonal peak usage of 1,200 gpd = 4.0 EDU.
4. Town of Torrey MHI \$53,056 qualifies for Intermediate Level financing. Poverty below \$45,505; Intermediate below \$56,882.
5. USDA Interst Rate 2nd Quarter 2016 = 2.875% Market/2.250% Intermediate/1.750% Poverty Rate. 2.875% used for Estimate.
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7. NYS Comptroller threshold for automatic approval of water improvement district unit cost = \$906/year for 2016.
8. Railroad will not issue approval of easement or comment on layout until Design Plans are submitted for review.

**TOWN OF TORREY  
WATER DISTRICT NO. 1  
PRELIMINARY COST ESTIMATE  
Revised June 9, 2016**

Alternative 3 - USDA Grant & Loan Financing

Project Area: NYS Route 14 to Lake Shore (Benton to Davy Road)

Water Supply: Geneva via Benton

ITEM	DESCRIPTION	UNIT	ESTIMATED QUANTITY	ESTIMATED UNIT PRICE	ESTIMATED TOTAL
1	Mobilization	LS	1	\$ 23,000.00	\$ 23,000.00
2	Maintenance & Protection of Traffic, Including Signs and Flagmen, Meeting NYSDOT Requirements	LS	1	\$ 23,000.00	\$ 23,000.00
3A	Furnish and Install 6-Inch Diameter Water Main Complete	LF	5,400	\$ 32.00	\$ 172,800.00
3B	Furnish and Install 8-Inch Diameter Water Main Complete	LF	6,600	\$ 38.00	\$ 250,800.00
3C	Furnish and Install 12-Inch Diameter Water Main Complete	LF	4,300	\$ 60.00	\$ 258,000.00
4A	Furnish and Install 6-Inch Gate Valves Complete	EA	5	\$ 800.00	\$ 4,320.00
4B	Furnish and Install 8-Inch Gate Valves Complete	EA	7	\$ 1,200.00	\$ 8,400.00
4C	Furnish and Install 12-Inch Gate Valves Complete	EA	5	\$ 2,200.00	\$ 11,000.00
5	Furnish and Install Hydrant Assemblies Complete	EA	33	\$ 3,500.00	\$ 115,500.00
6A	Furnish and Install New 1" Long Side Water Service w/ Meter Pit	EA	16	\$ 2,100.00	\$ 33,600.00
6B	Furnish and Install New 1" Short Side Water Service w/ Meter Pit	EA	30	\$ 1,600.00	\$ 48,000.00
6C	Furnish and Install New 2" Long Side Water Service w/ Meter Pit	EA	4	\$ 5,000.00	\$ 20,000.00
7A	Boring with 24-Inch Casing Pipe (Railroad Crossing)	LF	400	\$ 300.00	\$ 120,000.00
7B	Boring with 24-Inch Casing Pipe (NYSDOT)	LF	60	\$ 300.00	\$ 18,000.00
8	Furnish and Install 8-inch Water Main Creek Crossing	LF	100	\$ 135.00	\$ 13,500.00
9	Furnish and Install 2-Inch Blow Off	EA	5	\$ 1,000.00	\$ 5,000.00
10	Connection to Existing Water Main, Complete	EA	1	\$ 3,000.00	\$ 3,000.00
11	Compaction Testing	LS	1	\$ 5,000.00	\$ 5,000.00
12	Asphalt Road Restoration	LF	120	\$ 40.00	\$ 4,800.00
13	Asphalt Driveway Restoration	LF	200	\$ 30.00	\$ 6,000.00
14	Stone Driveway Restoration	LF	400	\$ 15.00	\$ 6,000.00
15	Culvert Crossing	EA	4	\$ 10,000.00	\$ 40,000.00
16	Meter Vault	EA	1	\$ 35,000.00	\$ 35,000.00
C-1	Rock Excavation	CY	100	\$ 100.00	\$ 10,000.00

**Construction Subtotal = \$ 1,188,720.00**

Contingency (10%) = \$ 118,872.00

Legal, Engineering & Administration (25%) = \$ 297,180.00

Total = \$ 1,604,772.00

**Total Estimated Capital Cost = \$ 1,605,000.00**

Less USDA Grant = (\$500,000.00)

Net Local Project Cost = \$ 1,105,000.00

Estimated Debt Service at 2.875% (USDA Intermediate Rate) for 38yrs = \$ 48,178.00

Number of EDU's = 67.5

**Estimated Debt Service/Unit/Year = \$ 714.00**

Estimated Yearly Water Cost (\$60/q + 6,000 gal, \$5.50/1,000 gal, 60,000 gpy) = \$ 438.00

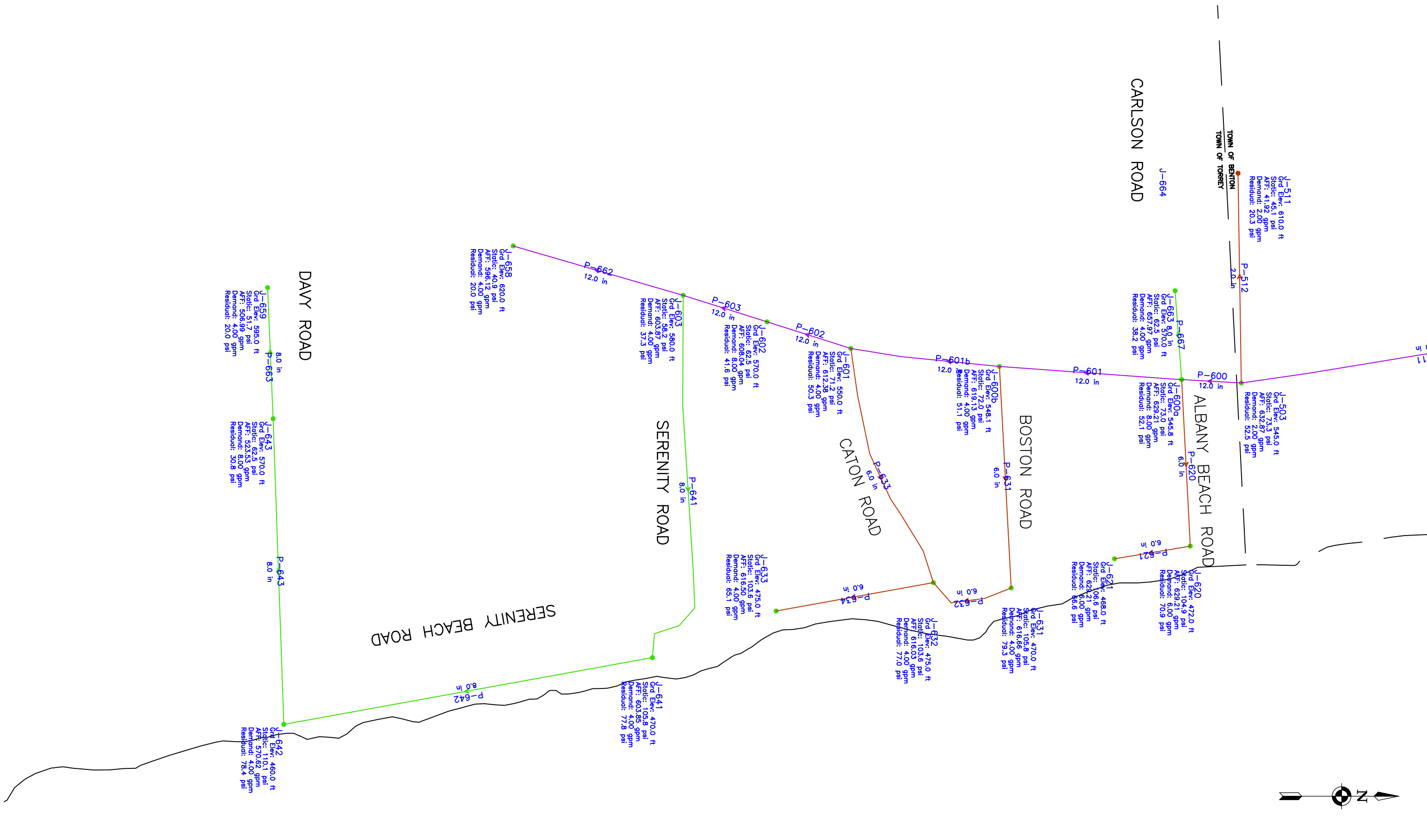
Total Unit Cost = \$ 1,152.00

**Total Estimated Unit Cost = \$ 1,152.00**

**Notes:**

1. Estimated costs based on contractor installation.
2. Assumed that 1 EDU = 300 gpd, typical residential user.
3. Assumed that Wineries have a seasonal peak usage of 1,200 gpd = 4.0 EDU.
4. Town of Torrey MHI \$53,056 qualifies for Intermediate Level financing. Poverty below \$45,505; Intermediate below \$56,882.
5. USDA Interst Rate 2nd Quarter 2016 = 2.875% Market/2.250% Intermediate/1.750% Poverty Rate. 2.875% used for Estimate.
6. Number of EDU = 43 (43 Residential @ 1.0) + 7.5 (15 Vacant Residential @ 0.5) + 16.0 (4 Winery/Vineyard Commercial @ 4.0) = 67.5 EDU's.
7. NYS Comptroller threshold for automatic approval of water improvement district unit cost = \$906/year for 2016.
8. Railroad will not issue approval of easement or comment on layout until Design Plans are submitted for review.

**APPENDIX C**  
**HYDRAULIC ANALYSIS**



PROJECT NUMBER  
13424.00  
DRAWING NUMBER  
**WM-01**

WATER DISTRICT NO. 1  
**WATER MODEL**

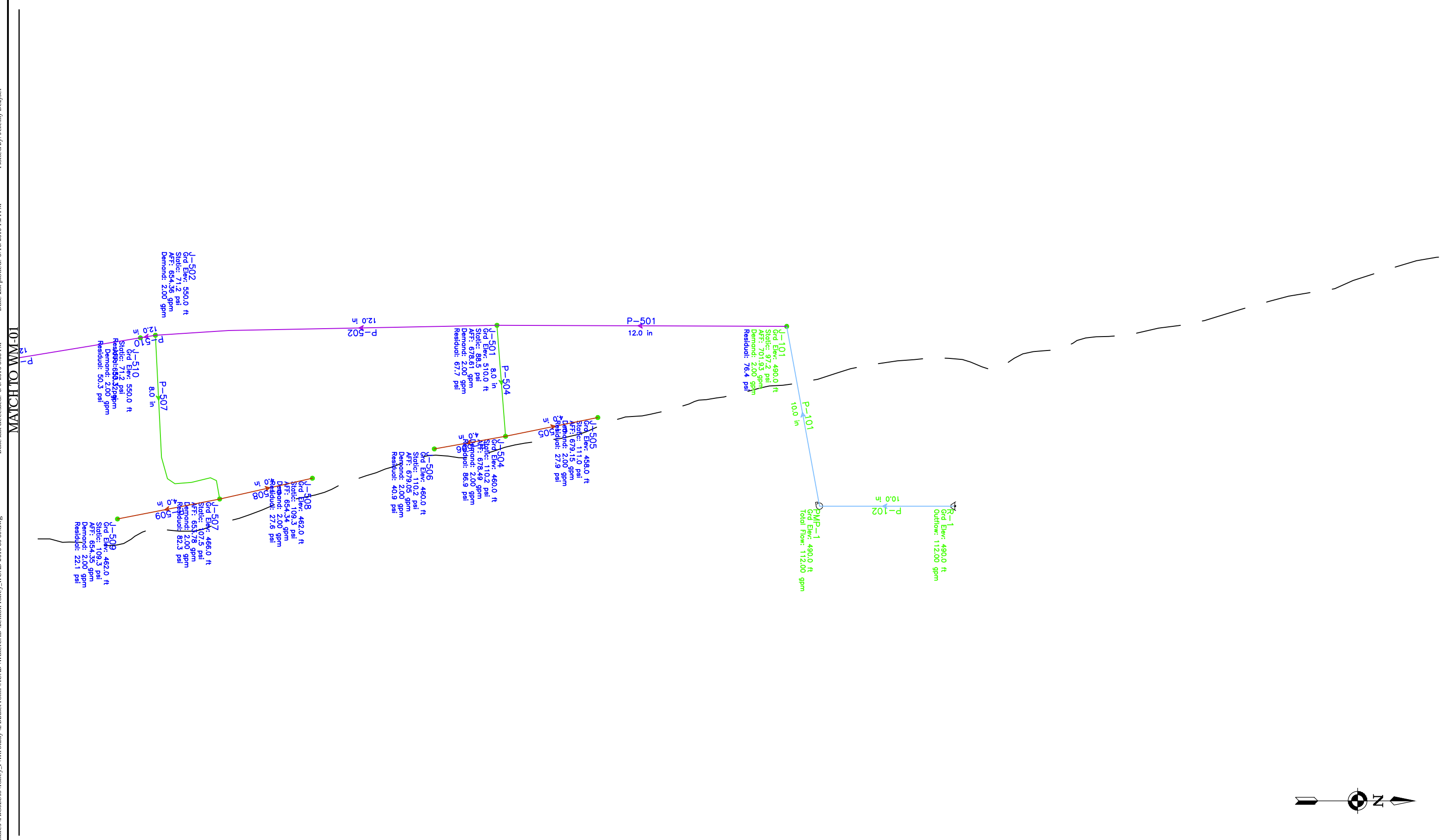
DATE: 11/03/15  
DRAWN: JED  
DESIGNED: JED  
CHECKED: TAC  
SCALE: 1"=500'

**TOWN OF TORREY**  
TOWN OF TORREY YATES COUNTY NEW YORK STATE

**CLARK PATTERSON LEE**  
DESIGN PROFESSIONALS  
205 ST. PAUL STREET, SUITE 500  
ROCHESTER, NEW YORK 14604  
TEL (800) 274-9000  
FAX (585) 232-5836  
www.clarkpattersonlee.com



REVISIONS				
NO.	DATE	BY	CHKD	DESCRIPTION
1.	06/10/16	JED	JED	ADDED CARLSON ROAD, REVIEWED HYDRAULICS



REVISIONS				
NO.	DATE	BY	CHKD	DESCRIPTION
1.	06/10/16	JED	JED	REVIEWED HYDRAULICS



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**TOWN OF TORREY**

TOWN OF TORREY YATES COUNTY NEW YORK STATE

DATE:	11/03/15
DRAWN:	JED
DESIGNED:	JED
CHECKED:	TAC
SCALE:	1"=500'

WATER DISTRICT NO. 1  
**WATER MODEL**

PROJECT NUMBER	13424.00
DRAWING NUMBER	<b>WM-02</b>



**APPENDIX D**

**WATER DISTRICT EQUIVALENT DWELLING UNITS**

Town of Torrey  
Water District No. 1  
Equivalent Dwelling Units

Tax Acct	Owner Name	Mailing	Property Address	Use	Unit Charge	Benefit Charge	2015 Assessed Value
19.04-1-1	Nelson Trust	969 Carlson Road Penn Yan, NY 14527	969 Carlson Road	1 Family Res	1		\$ 163,900.00
19.04-1-2	Fox Run Vineyards, Inc.	670 State Road 14 Penn Yan, NY 14527	975 Carlson Road	Winery Warehouse	1		\$ 549,700.00
19.04-1-3.121	Michael P. Schnelle Nancy A. Irelan	846 State Road 14 Penn Yan, NY 14527	846 State Road 14	Vineyard/Winery	4		\$ 630,500.00
19.04-1-3.2	Sharon Ann Lockner	790 State Road 14 Penn Yan, NY 14527	840 State Road 14	Mfg housing	1		\$ 184,100.00
19.04-1-4	Petruzzello Trust	9 Dummond Place Glen Head, NY 11545	859 State Road 14	Vac farmland (w/in Ag District)	0		\$ 70,000.00
19.04-1-5.1	George R. Thompson Rosa Thompson	867 Serenity Road Penn Yan, NY 14527	930 Serenity Road	Vac w/ Barn (Kitchenette & Bathroom)	0.5		\$ 123,100.00
19.04-1-7	James E. Smith	875 Serenity Road Penn Yan, NY 14527	942 Serenity Road	Vac w/imprv	0.5		\$ 42,700.00
19.66-1-1.11	Nelson Trust	7 Serenity Pl Penn Yan, NY 14527	State Road 14	Res vac land	0.5		\$ 66,000.00
19.66-1-1.12	Nelson Trust	7 Serenity Pl Penn Yan, NY 14527	State Road 14	Res vac land	0.5		\$ 68,100.00
19.66-1-1.13	Walter T Mayo Deborah A Mayo	20 Gilbert Rd Bordentown, NJ 08505	State Road 14	Res vac land	0.5		\$ 72,300.00
19.66-1-1.2	Nelson Trust	7 Serenity Pl Penn Yan, NY 14527	State Road 14	Res vac land	0.5		\$ 43,400.00
19.66-1-1.3	Rohit Mirchandani	701 State Road 14 Penn Yan, NY 14527	701 State Road 14	1 Family Res & Winery	4		\$ 182,000.00
19.66-1-2	Richard W. Kircher Linda Kircher	717 Albany Road Penn Yan, NY 14527	717 Albany Road	1 Family Res	1		\$ 258,700.00

Town of Torrey  
Water District No. 1  
Equivalent Dwelling Units

Tax Acct	Owner Name	Mailing	Property Address	Use	Unit Charge	Benefit Charge	2015 Assessed Value
19.66-1-3	Jonathan A. Pierce	234 Park Avenue, 9th Floor New York, NY 10003	729 Albany Road	Seasonal res	1		\$ 217,700.00
19.66-1-4	Robert J. Feltz Rose B. Feltz	4579 Goose St Stanley, NY 14	748 State Road 14	1 Family Res	1		\$ 41,300.00
19.66-1-5	Sharon E. Ruthven	734 State Road 14 Penn Yan, NY 14527	734 State Road 14	1 Family Res	1		\$ 117,600.00
19.67-1-1	Scott Osborn Ruth A. Osborn	670 State Road 14 Penn Yan, NY 14527	739 Albany Road	Seasonal res	1		\$ 139,400.00
19.67-1-2	Fox Run Vineyards, Inc.	670 State Road 14 Penn Yan, NY 14527	Boston Road	Res vac land	0.5		\$ 94,900.00
19.74-1-1	William P Brown Marion E Zuefle	943 State Road 14 Penn Yan, NY 14527	943 State Road 14	1 Family Res	1		\$ 133,800.00
19.74-1-2	Uriah C. Dean	775 Boston Road Penn Yan, NY 14527	775 Boston Road	1 Family Res	1		\$ 182,500.00
19.74-1-3	Rohit Mirchandani	701 State Road 14 Penn Yan, NY 14527	785 State Road 14	Rural res	1		\$ 307,000.00
19.75-1-1	Fox Run Vineyards, Inc.	670 State Road 14 Penn Yan, NY 14527	Boston Road	Res vac land	0.5		\$ 88,000.00
19.75-1-10	Jeffrey M. Jamison	4780 Pennemite Road Livonia, NY 14487	822 Caton Road	Mfg housing	1		\$ 206,100.00
19.75-1-2	Dorothy W. Putzig Thomas A. Putzig Richard S. Putzig	779 Boston Road Penn Yan, NY 14527 259 Haley Road Ontario, NY 14519	779 Boston Road	1 Family Res	1		\$ 342,000.00
19.75-1-3	Red Cottage Trust	19 Parmenter St Sudbury, MA 01776	787 Caton Road	Seasonal res	1		\$ 133,500.00

Town of Torrey  
Water District No. 1  
Equivalent Dwelling Units

Tax Acct	Owner Name	Mailing	Property Address	Use	Unit Charge	Benefit Charge	2015 Assessed Value
19.75-1-4	Henry Zapasnik Anna Zapasnik	37 Pine Brook Cr Penfield, NY 14526	801 Caton Road	Seasonal res	1		\$ 220,600.00
19.75-1-5	Donald R. Aldred Donna R. Aldred	35 Chipping Ridge Fairport, NY 14450	803 Caton Road	Seasonal res	1		\$ 178,400.00
19.75-1-6	Donald R. Aldred Donna R. Aldred	35 Chipping Ridge Fairport, NY 14450	805 Caton Road	1 Family Res	1		\$ 216,800.00
19.75-1-7	Barbara M. Dalton Gary L. Reeves	1014 Walker Hill Road Waverly Hill Road, NY 14892	809 Caton Road	1 Family Res	1		\$ 196,100.00
19.75-1-8	Robert C. Johns Harolyn L. Johns	1092 Vroom Road Spencerport, NY 14559	813 Caton Road	Mfg housing	1		\$ 123,000.00
19.75-1-9	Henry Cyphert Nola C. Cyphert	1433 Mott Road Phelps, NY 14532	821 Caton Road	Seasonal res	1		\$ 75,700.00
19.83-1-3	Keith N. Wedgwood ----- Pamela J. Wedgwood ----- Dennis A. Wedgwood ----- Cheryl L. Wedgwood ----- Carl & Barbara Wedgwood ----- Glen A. Wedgwood	74 Burben Way Rochester, NY 14624 4051 Eastridge Cr Deerfield Beach, FL 33064 27 Kirklees Road PittsfoRoad, NY 14534 558 Lakeshore Dr Hilton, NY 14468 deceased deceased	832 Caton Road	Mfg housing	1		\$ 111,400.00
19.83-1-4	Michael J. Wedgwood	11025 Lake St Pavillion, NY 14525	834 Caton Road	Mfg housing	1		\$ 50,700.00
19.83-1-5	Robert F. Harris ----- Robert F. Harris, Jr. ----- Mark S. Harris	73 Norwood Ave Geneva, NY 14456 182 Route 14 Lyons, NY 14489 295 Hamilton St Apt 35 Geneva, NY 14456	836 Caton Road	Seasonal res	1		\$ 55,200.00

Town of Torrey  
Water District No. 1  
Equivalent Dwelling Units

Tax Acct	Owner Name	Mailing	Property Address	Use	Unit Charge	Benefit Charge	2015 Assessed Value
19.83-1-6	Louise Davoli ----- Christopher Davoli	72 Slosson Ln Geneva, NY 14456 ----- 1704 Baird Farm Cr, Unit 4205 Arlington, TX 76006	844 Caton Road	Seasonal res	1		\$ 100,300.00
19.83-1-8	Kent Carpenter Jennifer Carpenter	855 Serenity Road Penn Yan, NY 14527	855 Serenity Road	1 Family Res	1		\$ 404,100.00
29.02-1-1	Earl G. Miller (Deceased) ----- David E. Miller ----- John W. Miller ----- Daniel C. Miller ----- Paul S. Miller ----- Thomas A. Miller ----- Mary C. Yrjanson	870 State Road 14 Penn Yan, NY 14527 ----- 13 Countryside Road Fairport, Ny 14450 ----- 9 Breezewood Ct Fairport, NY 14450 ----- 6564 Pleasant Valley Ct Loveland, OH 45140 ----- 629 Millers Dam Ct PonteVedre Beach, FL 32082 ----- 7404 Glen Eagle Cr Lakewood, IL 60014 ----- PO BOX 436 LaMonte, MO 65337	870 State Road 14	Rural res	1		\$ 151,300.00
29.02-1-2	Serenity Vineyards, LLC	930 Davy Road Penn Yan, NY 14527	930 Davy Road	Vineyard/Winery	4		\$ 517,400.00
29.02-1-3	Kim W. Jensen Pamela K. Jensen	876 Davy Road Penn Yan, NY 14527	876 Davy Road	1 Family Res	1		\$ 156,300.00
29.27-1-1	Culp Trust	PO Box 7504	865 Serenity Road	1 Family Res	1		\$ 212,600.00
29.27-1-2	George R. Thompson Rosa L. Thompson	867 Serenity Road Penn Yan, NY 14527	867 Serenity Road	1 Family Res	1		\$ 353,200.00
29.27-1-3	James E. Smith	875 Serenity Road Penn Yan, NY 14527	873 Serenity Road	1 Family Res	1		\$ 223,600.00

Town of Torrey  
Water District No. 1  
Equivalent Dwelling Units

Tax Acct	Owner Name	Mailing	Property Address	Use	Unit Charge	Benefit Charge	2015 Assessed Value
29.27-1-4	James E. Smith	875 Serenity Road Penn Yan, NY 14527	875 Serenity Road	1 Family Res	1		\$ 256,300.00
29.27-1-5	Elizabeth E. Smith James E. Smith ----- Elizabeth A. Smith ----- Arthur J. Smith	875 Serenity Road Penn Yan, NY 14527 78 Deerfield Dr Groton, MA 01450 220 MacArthur Ln Sonoma, CA 95476	881 Serenity Road	1 Family Res	1		\$ 378,600.00
29.27-1-6	Robert J. Staunton Kathy M. Staunton	859 Rolins Road Webster, NY 14580	889 Serenity Road	1 Family Res	1		\$ 252,000.00
29.35-1-1	McClure Trust	891 Serenity Road Penn Yan, NY 14527	891 Serenity Road	1 Family Res	1		\$ 211,000.00
29.35-1-10	Richard J. Kozlosky Beverly L. Hange	926 Davy Road Penn Yan, NY 14527	Serenity Road	Non-Buildable (small lot size)	0	\$ 1.00	\$ 17,100.00
29.35-1-11	Sharon L. Tyler	1895 Himrod Road Penn Yan, NY 14527	Serenity Road	Non-Buildable (small lot size)	0	\$ 1.00	\$ 15,100.00
29.35-1-12	Donald S. Sottile	1895 Himrod Road Penn Yan, NY 14527	Serenity Road	Non-Buildable (small lot size)	0	\$ 1.00	\$ 14,800.00
29.35-1-13	Chester E. Briggs Mary Keane Briggs	915 Serenity Road Penn Yan, NY 14527	915 Serenity Road	1 Family Res	1		\$ 287,100.00
29.35-1-14	Curtin Family Trust	921 Serenity Road Penn Yan, NY 14527	850 Davy Road	Vac w/imprv	0.5		\$ 29,500.00
29.35-1-2	William F. McGowan Nancy B. McGowan	37 Seneca St Geneva, NY 14456	895 Serenity Road	1 Family Res	1		\$ 326,800.00
29.35-1-3	John E. Thiesmeyer Elaine A. Thiesmeyer	901 Serenity Road Penn Yan, NY 14527	897 Serenity Road	Vac w/imprv	0.5		\$ 43,000.00

Town of Torrey  
Water District No. 1  
Equivalent Dwelling Units

Tax Acct	Owner Name	Mailing	Property Address	Use	Unit Charge	Benefit Charge	2015 Assessed Value
29.35-1-4	John Thiesmeyer Elaine A. Thiesmeyer	901 Serenity Road Penn Yan, NY 14527	901 Serenity Road	1 Family Res	1		\$ 233,400.00
29.35-1-5	John M. Cowell	903 Serenity Road Penn Yan, NY 14527	903 Serenity Road	1 Family Res	1		\$ 370,300.00
29.35-1-6	John M. Cowell	903 Serenity Road Penn Yan, NY 14527	907 Serenity Road	1 Family Res	1		\$ 182,000.00
29.35-1-7	John M. Cowell	903 Serenity Road Penn Yan, NY 14527	Serenity Road	Non-Buildable (small lot size)	0	\$ 1.00	\$ 18,100.00
29.35-1-8	Kim W. Jensen Pamela K. Jensen	876 Davy Road Penn Yan, NY 14527	Serenity Road	Non-Buildable (small lot size)	0	\$ 1.00	\$ 45,100.00
29.35-1-9	Thomas A. Patrick Judy Patrick	1540 State Road 14 Penn Yan, NY 14527	Serenity Road	Non-Buildable (small lot size)	0	\$ 1.00	\$ 17,500.00
29.42-1-1	Richard J. Kozlosky Beverly L. Hange	926 Davy Road Penn Yan, NY 14527	926 Davy Road	1 Family Res	1		\$ 148,800.00
29.42-1-2	Sharon L. Tyler	1895 Himrod Road Penn Yan, NY 14527	Davy Road	Rural vac<10	0.5		\$ 14,500.00
29.42-1-3	Donald S. Sottile	1895 Himrod Road Penn Yan, NY 14527	Davy Road	Rural vac<10	0.5		\$ 14,500.00
29.42-1-4	Thomas A. Patrick Judy Patrick	1540 State Road 14 Penn Yan, NY 14527	Davy Road	Rural vac<10	0.5		\$ 14,500.00
29.42-1-5	Rohit Mirchandani	701 State Road 14 Penn Yan, NY 14527	893 Davy Road	1 Family Res	1		\$ 119,900.00
29.42-1-6	Senca Shore Winery, Inc.	PO Box 551 Penn Yan, NY 14527	925 Davy Road	1 Family Res Vacant/Storage	0.5		\$ 46,000.00
29.42-1-7	David F. DeMarco	PO Box 551 Penn Yan, NY 14527	929 Davy Road	Warehouse/Winery	4		\$ 469,200.00

Town of Torrey  
Water District No. 1  
Equivalent Dwelling Units

Tax Acct	Owner Name	Mailing	Property Address	Use	Unit Charge	Benefit Charge	2015 Assessed Value
29.42-1-8	Patrick D. Kirby	30216 Destiny Dr Murrieta, CA 92563	Davy Road	Res vac land	0.5		\$ 14,000.00
29.43-1-1.1	Curtin Family Trust	921 Serenity Road Penn Yan, NY 14527	921 Serenity Road	1 Family Res	1		\$ 385,100.00
29.43-1-3	Towner Trust	PO Box 10 Addison, NY 14801	Davy Road	Vac w/imprv	0.5		\$ 63,000.00
29.43-1-5.1	Senca Shore Winery, Inc.	PO Box 551 Penn Yan, NY 14527	Davy Road	Res vac land	0.5		\$ 21,900.00
29.43-1-6	Shaun Cleary	25 Wayne Dr Rochester, NY 14626	849 Davy Road	Mfg housing	1		\$ 52,500.00
	Timothy S. Cleary	849 Davy Road Penn Yan, NY 14527					
	Kevin Cleary	189 Doewood Ln Rochester, NY 14606					
<b>Totals</b>					<b>67.5</b>	<b>\$ 6.00</b>	<b>\$ 11,702,700.00</b>



**APPENDIX E**

**EXPECTED HYDRAULIC LOADING RATES**

**Table 3. Expected Hydraulic Loading Rates**

Type of Facility	Flow Rate Per Person (Gals./Day)	Flow Rate Per Unit (Gals./Day)
<b>Airports</b>		
Per Passenger	3	
Per Employee	15	
<b>Apartments</b>		
1 Bedroom	75	150
2 Bedroom		300
3 Bedroom		450
<b>Bathhouse</b>		
Per Swimmer	10	
<b>Boarding House</b>		
	75	
<b>Bowling Alley</b>		
Per Lane – No Food Service		75
Per Lane – with Food Service (Add Food Service Value)		
<b>Campgrounds (Recreational Vehicle – Per Site)</b>		
Sewered Sites		100
Central Facilities		
Served Sites, 300-foot Radius		100
Peripheral Sites, 500-foot Radius		75
Subtractions from above		
No Showers		25
Dual Service (Central Facilities and Sewered Facilities overlapping the Central)		25
<b>Campgrounds (Summer Camp)</b>		
Central Facilities	50	
Separate Facilities		
Toilet	10	
Shower	25	
Kitchen	10	
<b>Campground Dumping Stations</b>		
Per Unsewered Site		10
Per Sewered Site		5
<b>Camps, Day</b>		
Add for Lunch	13	
Add for Showers	3	
	5	
<b>Carwash, Assuming No Recycle</b>		
Tunnel Per Car		80
Rollover Per Car		40
Wandwash Per 5 Minutes Cycle		20
<b>Churches</b>		
Per Seat		3
With Catering (Add Food Service Value)		
<b>Clubs</b>		
Country		
Per Resident Member		75
Per Non-Resident Member		25
Racquet (Per Court Per Hour)		80

**Table 3. Expected Hydraulic Loading Rates**

Type of Facility	Flow Rate Per Person (Gals./Day)	Flow Rate Per Unit (Gals./Day)
<b>Factories</b>		
Per Person/Shift	25	
Add for Showers	10	
<b>Food Service Operations (Per Seat)</b>		
Ordinary Restaurant		35
24-Hour Restaurant		50
Restaurant Along Freeway		70
Tavern (Little Food Service)		20
Curb Service (Drive-In Per Car)		50
Catering or Banquet Facilities	20	
<b>Hair Dresser</b>		
Per Station		170
<b>Hospitals</b>		
Per Bed		175
<b>Hotels</b>		
Per Room		120
Add for Banquet Facilities, Theatre, Night Club, as applicable		
<b>Homes</b>		
1 Bedroom		150
2 Bedroom		300
3 Bedroom		400
4 Bedroom		475
5 Bedroom		550
<b>Institutions (Other Than Hospitals)</b>		
Per Person	125	
<b>Laundromats</b>		
Per Machine		580
<b>Mobile Home Parks</b>		
Less than 5 Units: Use Flow Rates for Homes		
5 to 20 Units: Use Prorated Scale		
20 or More units		
Per Trailer		200
Per Double Wide		300
<b>Motels</b>		
Per Living Unit		100
With Kitchen		150
<b>Office Building</b>		
Per Employee	15	
Per Square Foot		0.1
Dentist – Per Chair/Day		750
<b>Parks (Per Picnicker)</b>		
Restroom Only	5	
Showers and Restroom	10	

**Table 3. Expected Hydraulic Loading Rates**

Type of Facility	Flow Rate Per Person (Gals./Day)	Flow Rate Per Unit (Gals./Day)
<b>Schools (Per Student)</b>		
Boarding	75	
Day	10	
Cafeteria – Add	5	
Showers – Add	5	
<b>Service Stations</b>		
Per Toilet (Not Including Car Wash)		400
<b>Shopping Centers</b>		
Per Square Foot-Food Extra		0.1
Per Employee	15	
Per Toilet		400
<b>Swimming Pools (Per Swimmer)</b>	10	
<b>Sports Stadium</b>	5	
<b>Theatre</b>		
Drive-In (Per Space)		
Movie (Per Seat)		
Dinner Theatre, Individual (Per Seat)	20	
With Hotel	10	

Source:

Design Standards for Wastewater Treatment Works – Intermediate Sized Sewerage Facilities (New York State Department of Environmental Conservation, 1988), Table 3 – Expected Hydraulic Loading Rates