



Woodridge Lake Sewer District (WLSD) Regional Sewer Extension Project

Phases 1 and 2

Environmental Report

Woodard & Curran, Inc.
1699 King Street, Suite 406
Enfield, CT 06082
860.627.0314 / 855.347.6788

David Prickett Consulting, LLC
107 King Philip Drive
Longmeadow, MA 01106
P: 413-567-6310
F: 413-451-1030
www.DPCengineering.com

progressive solutions for municipal infrastructure

woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

0223604.09
Woodridge Lake Sewer
District
Issued on December 26, 2015
Updated on February 10, 2016



TABLE OF CONTENTS

SECTION	PAGE NO.
1. Purpose and Need for the Proposal	1
1.1 Project Description (Proposed Action)	1
1.1.1 Location.....	1
1.1.2 Project Goals	1
1.1.3 Collection System.....	1
1.1.4 WPCF	2
1.1.5 Disposal System.....	2
1.1.5.1 Key Testing and Evaluation Criteria	2
1.1.5.2 Field Investigation Conclusions	3
1.1.6 Preferred Regional Wastewater Management Alternative	3
1.2 Purpose and Need of the Proposal.....	4
1.2.1 Introduction	4
1.2.2 Service Area Build-Out Analysis.....	4
1.2.3 Future Projections of Flows and Loads	5
2. Alternatives to the Proposed Action	5
2.1 Local Alternative.....	5
2.2 Other Regional Alternatives.....	6
2.2.1 Additional Torrington and Litchfield Alternatives.....	6
2.2.2 Selection of An Alternative.....	7
2.2.3 Conclusions and Recommendations.....	7
3. Affected Environment/Environmental Consequences	8
3.1 Land Use/Important Farmland/Formerly Classied Land	8
3.1.1 Affected Environment.....	8
3.1.2 Environmental Consequences	8
3.1.3 Mitigation	8
3.2 Floodplains	8
3.2.1 Affected Environment.....	8
3.2.2 Environmental Consequences	9
3.2.3 Mitigation	9
3.3 Wetlands	9
3.3.1 Affected Environment.....	9
3.3.2 Environmental Consequences	9
3.3.3 Mitigation	9
3.4 Historic Properties	9
3.4.1 Affected Environment.....	9
3.4.2 Environmental Consequences	10
3.4.3 Mitigation	10
3.5 Biological Resources	10
3.5.1 Affected Environment.....	10
3.5.2 Environmental Consequences	10
3.5.3 Mitigation	10
3.6 Water Quality Issues.....	10
3.6.1 Affected Environment.....	10



3.6.2	Environmental Consequences	10
3.6.3	Mitigation	11
3.7	Coastal Resources	11
3.7.1	Affected Environment.....	11
3.7.2	Environmental Consequences	11
3.7.3	Mitigation	11
3.8	Socio-Economic/Environmental Justice Issues	11
3.8.1	Affected Environment.....	11
3.8.2	Environmental Consequences	11
3.8.3	Mitigation	11
3.9	Miscellaneous Issues.....	11
3.9.1	Affected Environment.....	11
3.9.2	Environmental Consequences	11
3.9.3	Mitigation	12
4.	Summary of Mitigation	12
5.	Correspondence and Coordination	12
6.	Exhibits.....	12
7.	List of Preparers.....	14

1. PURPOSE AND NEED FOR THE PROPOSAL

1.1 PROJECT DESCRIPTION (PROPOSED ACTION)

1.1.1 Location

The Woodridge Lake Sewer District (WLSLD) is an existing, private residential development around 385-acre Woodridge Lake in the Town of Goshen, Connecticut. The Project Planning Area, including the existing sewer service area, parcels comprising WLSLD and Woodridge Lake itself are shown in Exhibit 6-8.

1.1.2 Project Goals

WLSLD owns and operates a wastewater management system consisting of a collection system and Water Pollution Control Facility (WPCF), on a separate effluent disposal system parcel. The collection system serves approximately 691 existing sewer users and roughly 186 undeveloped abutting parcels. The WPCF is located at the effluent disposal site. The majority of the wastewater infrastructure was constructed in the early 1970s. The system received very few improvements and proactive maintenance during its first 20 years of operation. The Connecticut Department of Energy and Environmental Protection's (DEEP) issued a Consent Order (CO) to WLSLD in 1989. The CO requires WLSLD to address its sanitary sewer collection and wastewater treatment/disposal needs. In response to the CO, WLSLD conducted several planning studies, but a capital plan to resolve the issues was not implemented. Unfortunately, reactive system maintenance continued for many years following the CO. However, the current WLSLD leadership has implemented several recent upgrades and proactive maintenance measures over the past five years and is nearing implementation of a wastewater management solution to resolve the requirements of the Consent Order.

WLSLD currently uses Ad Valorem taxing, based on assessed property values, to apportion capital and annual operation and maintenance (O&M) costs to the parcels within the sewer service area. Therefore, WLSLD does not use a sewer user fee system based on a fixed fee or fixed rate basis. The current annual budget for fiscal year 2015-16 is \$1,042,954, which includes payment of the annual debt service for the recently completed I/I Removal and Pump Station/SCADA Upgrade Projects, as funded by USDA-RD. Given the limited number of parcels served by the WLSLD sewer system, including 691 current connections, current unit annual costs are high. The average annual sewer charge per WLSLD property is \$1,211, as compared to the estimated 2013 Connecticut State-wide average of \$406, as published by Tighe & Bond in its 2013 Connecticut Sewer Rates Survey Summary Report. This is three times the State average prior to implementation of the proposed Project.

1.1.3 Collection System

The WLSLD collection system, the extent of which is shown on Exhibit 6-8, was privately constructed in 1972. The majority of the gravity sewer mains are double-walled plastic truss pipe, with a limited amount of cast iron pipe. The WLSLD collection system consists of 16.2 miles (85,500 feet) of gravity sewer, 1.9 miles of force main piping, and eight wastewater pump stations. Of the 691 current connections, approximately 115 are low-lying homes around the Lake that are served by individual grinder pumps, which discharge to mainline gravity sewers.

For the limited number of connections, the system has an unusually large amount of pipe, which allows for greater I/I potential. For the purpose of evaluating the existing sewer system, the service area was divided into subareas based on the locations of pump stations. The unit of inch-diameter-mile of pipe was used to normalize I/I within subareas of varying sizes and pipe diameters. In order to combat excessive I/I, the Wastewater Facilities Plan incorporated several I/I tasks and investigations, including flow monitoring, flow isolation, physical site inspection, building inspections, smoke and dye testing, manhole inspections and CCTV inspections. The results of the CCTV work and manhole inspections suggest that the primary I/I sources relate to service lateral connections to sewer mains, sewer main

penetrations at manholes, and a limited number of mainline truss-pipe joints. Similar to the pipe-MH joint leak shown below, numerous leaks were found at service connections and at pipe to pipe joints. A few cracks and breaks were detected that also contribute I/I to the sewer system. In 2013, open cut sewer repairs were performed to mitigate excessive infiltration and inflow. In 2015, an I/I Removal Project was performed to grout and line sewer mains and manholes. These projects significantly reduced extraneous flows in the collection system.

The existing collection system includes antiquated communication between the pumping stations and a central communications hub such as at the WPCF. Although operations staff periodically inspect each pump station to observe conditions and manually record run time data, real time monitoring of system functions and flows would allow WLSO's staff to more proactively manage its pump stations and I/I mitigation efforts. Based on Woodard & Curran's evaluation, several limitations were observed, including unreliable autodialers and pump controllers without the ability to connect to a SCADA system. The lack of a centralized flow monitoring and data collection system hampers the trending and analysis of data. Deficiencies with the pump station design include a lack of the ability to bypass pumps and motors that could fail in the event of station flooding. In addition, 6 of the 8 pump stations lack permanent emergency generators, and instead have portable generator quick connects. Also in 2015, the Pump Station Upgrades Project was implemented to improve emergency readiness, flow data and remote monitoring capabilities by adding supervisory control and data acquisition (SCADA) systems at WLSO's eight remote pump stations.

1.1.4 WPCF

The WPCF and effluent disposal system are located on a separate 90-acre site, east of the sewer service area. The existing WPCF, shown in Exhibit 6-5, was also constructed in 1972. The WPCF incorporates several unit treatment processes, including preliminary treatment equipment, activated sludge, rapid rate multi-media filtration, aerobic sludge digestion, sludge drying beds, a waste sludge dewatering system, as well as an Operations Building and Garage. Effluent produced by the plant typically meets the existing permit requirements for treatment. Visual inspection of the 40+ year old in-ground steel tanks is severely limited. The rapid rate multimedia filtration system has neither been able to perform as intended since construction in 1972 or remain in service since being upgraded in 2011. Solids produced at the facility are dewatered and disposed of on-site to the east of the WPCF. This practice of on-site disposal of biosolids is not expected to continue if the on-site WPCF is upgraded. The anticipated permit requirements and excessive age of equipment at the WLSO WPCF will necessitate either a replacement WPCF under a local alternative, or conveyance of flow to a regional treatment system. The Local Alternative to upgrade the existing WPCF is presented in Section 2.

1.1.5 Disposal System

WLSO utilizes groundwater disposal for treated effluent, which is regulated by CT-DEEP through a 1977 CT-DEEP Discharge Permit and a 1989 Consent Order. The WLSO WPCF discharges effluent to a groundwater disposal system, shown in Exhibit 6-6, consisting of approximately 90 beds over roughly 90 acres. These beds were constructed in a ridge and furrow configuration with most of the beds approximately 25 feet wide, and ranging in length from just over 100 feet to as much as approximately 700 feet. Treated effluent is discharged to the beds via a series of pipelines and valves. WPCF staff manually open and close valves to direct flow to a particular bed and typical operation involves loading only a single bed at a time. The system is not configured to allow operation of multiple beds simultaneously: (1) due to existing piping limitations; and (2) because the beds are not at the same elevation preventing effective distribution of flow.

1.1.5.1 Key Testing and Evaluation Criteria

During the Facilities Plan, we: reviewed existing data and original design criteria; interviewed WLSO operations staff; conducted hydraulic conductivity testing; performed flow testing; monitored groundwater and surface water levels; analyzed and summarized field data; and prepared summary observations. In addition, flow testing of the existing disposal beds was conducted in Spring 2012. Groundwater monitoring was performed before, during and after flow testing. During this testing, a series of data analyses was conducted on: groundwater level responses to flow testing;

hydraulic conductivity; groundwater contour mapping and gradient; surficial hydrogeologic mapping; travel time; and site loading rates. Several challenges occurred during the testing including: leaking distribution system pipes; maintaining a consistent flow rate to the test beds; groundwater level monitoring; and site drainage. Although the I/I Removal Project reduced current flows, the long-term reduction of system flows below the 100,000 gpd permitted capacity of the effluent disposal system may not be possible. Therefore, a key component of the Wastewater Facilities Plan included evaluation of the current disposal site to determine current/actual capacity.

The testing was conducted in accordance with the testing plan approved by CT-DEEP, which used a number of considerations from the 2006 CT-DEEP document "Guidance for Design of Large-Scale On-Site Wastewater Renovation Systems" (Guidance Manual) that was specifically reviewed and clarified with CT-DEEP in the Field Flow Testing Plan. Because the Guidance Manual is based on development of new systems versus renovation of existing ones, we performed large-scale testing to demonstrate site capacity in lieu of small-scale and laboratory testing criteria. The key testing and evaluation criteria included separation distance under seasonal high groundwater conditions, unit flow rate and travel time.

The Guidance Manual requires an unsaturated separation distance of three feet between the top of mounded groundwater and the bottom of the loading facility. For the purpose of our testing, we used a distance of 1.5 feet from the bottom of the existing beds to the top of mounded groundwater under seasonal high groundwater conditions. The reduction in separation distance to groundwater is similar to other facilities in the State where variances were granted, or in those cases where advanced treatment systems are in use to provide advanced pathogen reduction prior to discharge of the effluent to disposal systems. Separation distance must be maintained under seasonal high groundwater conditions. However, these conditions did not exist in Spring 2012 when the testing was conducted. Therefore, we modified our approach to account for the conditions at the time of testing by increasing the separation maintained during the testing based on well elevations in both on-site and USGS reference wells. The Guidance Manual allows a maximum unit flow rate of 1.2 gallons per day per square foot (gpd/sf) of bed bottom area for tertiary treated wastewater effluent. The Guidance Manual requires a minimum travel time from the point of effluent discharge of a bed to the closest point of concern (surface water or property line) of 21 days.

1.1.5.2 Field Investigation Conclusions

Based on the testing during the Wastewater Facilities Plan, the existing beds provide a capacity ranging from 125,000 to 195,000 gpd under seasonal high groundwater conditions, depending on design and operational features. Full scale bed tests demonstrated that the Bed A-8 and G-1 areas have substantial hydraulic capacity. In addition, we believe that a very high level of treatment and disinfection provides a level of pathogen and virus reduction far in excess of that achieved by a 21 day travel time. In fact, advanced treatment and a four Log₁₀ reduction of viruses provides a higher level of pathogen removal than that estimated in the Guidelines for both the 3 feet of vertical separation and the 21 day travel time, combined.

The majority of the concerns related to health and sanitation center on the WPCF effluent disposal system. Although the permitted capacity of the disposal system is 100,000 gallons per day, soil permeability and seasonal limitations impact the actual performance of the system. The requirements of the current Consent Order are centered on the surrounding Class GAA groundwater supply, separation to groundwater and travel time, all of which relate to protection of public health and the environment. Based on the testing and the State's groundwater disposal guidelines, addressing these concerns with an on-site treatment and disposal upgrade will be challenging.

1.1.6 Preferred Regional Wastewater Management Alternative

The option of connecting to nearby communities with treatment at the respective WPCF were also evaluated. In the case of the WLSLD, the likeliest community for connection is the City of Torrington. For the regional alternative, we assumed the following basis of design conditions:

- Future average annual flow rate of 125,000 gallons per day (gpd), or 87 gallons per minute (gpm);
- Future peak hourly flow rate of 540,000 gpd, or 375 gpm;
- Two pumping stations.
- 8-inch diameter force main(s).
- Design pumping rate of approximately 585 gpm (needed to maintain adequate force main velocity of 3.5 feet per second); and
- All pumping units (minimum of two at each pump station) on variable frequency drives (VFDs).

The probable/preferred regional configuration, Alternative 1, involves a pump station at the existing WLSO WPCF to minimize reconfiguration of the existing Plant Pump Station. We assumed a submersible pump station configuration, consisting of precast wetwell, together with a building for the generators and controls. For the force main route, an in-street route without cross-country easements was assumed for ease of construction and to reduce uncertainty during excavation. This resulted in selecting the route (Alternative 1) along Brush Hill Road, Old Middle Street, Pie Hill Road, East Street, and Goshen Road, with interconnection to the Torrington sewer system at Lovers Lane, as shown in Exhibit 6-7. The proposed force main includes periodic access vaults and cleanout connections for future maintenance. We also included provisions for an odor control facility along the force main route to minimize odors and corrosion at the force main discharge. A second pump station is proposed on Pie Hill Road to reduce hydraulic head and reducing required pumping length.

In order to better determine soil, groundwater and ledge/rock conditions along the pipe corridor, WLSO advanced soil borings and geoprobes at 100-foot increments along the Alternative 1 pipe corridor during Summer 2015. The results indicated the presence of less rock/ledge than originally expected. This contributed to the refinement of the cost estimate for Alternative 1 during the planning phase.

Our opinion of probable project cost for the preferred regional alternative is \$15,507,000, based on anticipated construction in 2016 through 2018. The anticipated annual O&M cost (2015 costs) for the Alternative 1 of the regional alternative is \$644,537.

1.2 PURPOSE AND NEED OF THE PROPOSAL

1.2.1 Introduction

The majority of the concerns related to health and sanitation center on the WPCF effluent disposal system. Although the permitted capacity of the disposal system is 100,000 gallons per day, soil permeability and seasonal limitations impact the actual performance of the system. The requirements of the current Consent Order are centered on the surrounding Class GAA groundwater supply, separation to groundwater and travel time, all of which relate to protection of public health and the environment. Based on the testing and the State's groundwater disposal guidelines, addressing these concerns with an on-site treatment and disposal upgrade will be challenging. Copies of the WLSO permit, Consent Order and recent correspondence with CT-DEEP regarding the Consent Order timeline, are included in Section 2 of the USDA-RD Funding Applications (Phases 1 and 2).

1.2.2 Service Area Build-Out Analysis

During the Facilities Plan, we projected the future flow and pollutant loadings at build-out conditions by estimating average dwelling and per-capita unit generation rates from existing data, and applying them to the projected sewer connections and estimated population at build out. For this analysis, we utilized existing electronic files provided by the WLSO, and we compiled additional information from the Town of Goshen and the State of Connecticut. This information included land use, zoning, wetlands, sensitive resources, conservation restrictions, flood zones, and areas designated by the State for preservation or development. For these projections, we considered developed

lots, vacant lots, new lots that can be created through subdivision, and undevelopable lots that will not be connected to the sewer. Specifically, we developed per-connection and per-capita unit generation rates from influent flow and load data collected by the WLS D from January 2010 to December 2011. The projected build-out sewer population was estimated to be 2,228 individuals using the total number of existing (691) and projected (186) sewer connections from the build-out analysis. This includes an assumption of 2.54 persons per connection, based on the average household size for the Town of Goshen from the 2010 census data. This projection represents an increase in the sewer population of approximately 473 people above the current sewer population of approximately 1,755. The future flow is important for understanding the need for I/I removal, and for determining the conceptual size and hydraulic capacity of the proposed facilities for the evaluation of local and regional alternatives. Pollutant loads are important for understanding the treatment requirements for evaluation of the local alternative. The flows and loads data was used to facilitate the comparison of a local WPCF upgrade versus a regional sewer connection.

1.2.3 Future Projections of Flows and Loads

The average daily wastewater flow to the WLS D WPCF was approximately 105,000 gallons per day (gpd) from January 2010 through December 2011. During this same period, total daily flows ranged from a minimum daily flow of 43,000 gpd to a maximum daily flow of 402,000 gpd. This fluctuation is due to variations in seasonal population use but also due to variations in inflow and infiltration (I/I). Wastewater is comprised of sanitary and I/I flow sources. Based on our observations, the average annual sanitary flow is approximately 65,000 gpd, and the remaining average annual I/I is 40,000 gpd. Our calculations show that the average I/I from month to month ranged from near zero in low-groundwater summer months to nearly 160,000 gpd in March of 2011. Based on the results of the recent I/I Removal Project, system flows have dropped considerably. As a result, we estimate that average annual flows, including current connections, future connections and I/I flows will be approximately 125,000 gpd at design conditions. For the local WPCF Upgrade alternative, this design flow is in excess of the permitted disposal system capacity. For all wastewater treatment and disposal alternatives (local and regional), maintaining low I/I conditions is important. As such, WLS D plans to implement a regular I/I removal program and maintenance program to minimize future I/I flow contributions. Based on the results of these efforts, WLS D should annually monitor and adjust I/I removal goals considering seasonal flow, groundwater and precipitation factors, and the rate at which new sewer users are connected to the system.

2. ALTERNATIVES TO THE PROPOSED ACTION

2.1 LOCAL ALTERNATIVE

The site layout for the local alternative is shown in Exhibit 6-5. The figure includes the location of the existing WPCF and unit processes, as well as the location of the proposed unit processes associated with the local alternative.

For the local alternative, we focused on a new treatment plant utilizing the membrane bioreactor (MBR) process adjacent to the existing facility. The replacement WPCF would include preliminary treatment (including an equalization tank), an MBR process building, disinfection using ultraviolet light, sludge storage and processing equipment, a building addition for plant superintendent and administrative staff and new effluent distribution piping and valves. The proposed WPCF would include a raw sludge storage tank, sludge thickening equipment, and a thickened sludge storage tank. These tanks would be sized to provide adequate sludge storage for weekly removal off site. Following treatment and disinfection, effluent would be conveyed and distributed to the disposal beds. Modifications to the beds are also incorporated in the local alternative including: influent equalization; supplemental treatment to achieve drinking water quality effluent; site piping between beds and flow controls; fill in beds; low permeability cover over beds and stormwater controls; groundwater monitoring systems; and effluent equalization.

The design criteria used for the local alternative are based on TR-16 guidelines. The upgraded WPCF would consist of a membrane bioreactor (MBR) followed by UV disinfection. The MBR will significantly reduce effluent solids to protect the disposal system, and improve effluent dispersal efficiency. The UV disinfections system will be designed

to remove pathogens to a much higher level (4-log removal) than conventional on-site systems, thus providing far higher pathogen reduction, even before discharge to the effluent disposal system. Although we believe the on-site local wastewater management alternative is viable, and that the disposal beds have adequate capacity for current and future flows, concurrence is needed from CT-DEEP on separation to groundwater, travel time and the average annual permitted flow limit. We believe the local alternative, as proposed, meets the objectives and the CT-DEEP Guidance Manual, especially when the proposed level of treatment far exceeds CT- DEEP Guidelines for similar facilities, creating near reuse quality effluent, dramatically improving the quality of effluent discharged from the WPCF. However, CT-DEEP has not demonstrated a willingness to approve this concept without advanced full-scale testing and potential / subsequent input from Department of Public Health, which would be challenging to execute and monitor, as well as cost prohibitive. In addition, WLS D's aggressive I/I removal program will offset future sanitary flow as I/I is removed.

The local alternative will drastically improve the level of wastewater treatment to reuse quality. The improved water quality, together with advanced disinfection, will result in state-of-the-art effluent prior to discharge to the on-site disposal system. This will improve groundwater quality, protect the Class GAA groundwater designation, and promote positive impacts to the environment. In addition, abandonment of on-site sludge disposal will result in improved site, groundwater and stormwater control measures.

The local alternative includes use of the existing site. No new land acquisitions are needed to construct the local alternative. WLS D owns the entire treatment and disposal site. Since the treatment system associated with the local alternative can be constructed adjacent to the existing WPCF, there are no anticipated construction coordination limitations. Upgrades to the effluent disposal system can also occur in a phased approach. Based on the size of the 90-acre site, and the anticipated closed-bed approach to effluent disposal, the local alternative lends itself to exploration of renewable energy opportunities (i.e. solar) to help offset future operation and maintenance costs. However, these considerations were not explored in further detail, because we do not believe that CT-DEEP/DPH will issue a permit renewal for the site. Therefore, the local alternative is not recommended for further consideration.

Our opinion of probable project cost for the on-site (local) wastewater treatment and disposal alternative is \$17,337,000, based on 2015 costs. Adjusted by 3% per year to 2017 costs, this equates to \$18,393,000. The anticipated annual O&M cost for the local alternative is \$744,800.

2.2 OTHER REGIONAL ALTERNATIVES

2.2.1 Additional Torrington and Litchfield Alternatives

Other regional alternatives, including an alternative path to Torrington, and a connection to Litchfield, were evaluated as part of the Project. Analysis of these alternatives involved the same preliminary basis of design conditions, key factors, and collection system improvements within Torrington as discussed above and the only variation in cost is associated with the force main route. Following is a brief description of each of the routes considered for the regional alternatives:

- Regional Alternative 2: Regional Alternative 2 involves a route along Brush Hill Road, Old Middle Street, through Litchfield, to Weed Road and Highland Avenue, with interconnection to the Torrington sewer system west of Birney Brook Road. Our opinion of probable project cost for Alternative 2 of the regional alternative is \$18,312,000, based on 2015 costs. Adjusted by 3% per year to 2017 costs, this equates to \$19,427,000. The anticipated annual O&M cost (2015 costs) for the Alternative 2 of the regional alternative is approximately \$644,537.
- Regional Alternative 3: Regional Alternative 3 route to Litchfield involves less significant elevation differences, but is twice the distance as the Torrington alternatives. Our opinion of probable project cost for Alternative 3 of the regional alternative is \$27,700,000, based on 2015 costs. Adjusted by 3% per year to 2017 costs, this equates to \$29,387,000. The anticipated annual O&M cost (2015 costs) for the Alternative 3 of the regional alternative is approximately \$700,000.

2.2.2 Selection of An Alternative

Our opinion of probable cost for the probable/preferred regional (Torrington) alternative (Regional Alternative 1) is summarized in below. Regional Alternative 1 was chosen based on cost, ease of construction, and reduced uncertainty associated with lack of any easements.

- Local Alternative: Our opinion of probable project cost for the Local Alternative is \$18,393,000. The anticipated annual O&M cost (2015 costs) for the local alternative is \$744,800. Based on a 40-year loan from USDA-RD at an interest rate of 2.50%, with a grant of 45%, the estimated "Year 1" annual cost (annual capital payment and O&M costs) for the local alternative following construction is \$1,145,130. This represents an average annual cost per WLS D homeowner that is 3.3 times the average State sewer rate. The annual sewer rate would be 1.7% of median household income.
- Regional Alternative 1: Our opinion of probable project cost for Regional Alternative 1 is \$15,507,000. The anticipated annual O&M cost (2015 costs) for the Alternative 1 of the regional alternative is \$644,537. Based on a 40-year loan from USDA-RD at an interest rate of 2.50%, with a grant of 45%, the estimated "Year 1" annual cost (annual capital payment and O&M costs) for the local alternative following construction is \$982,052. This represents an average annual cost per WLS D homeowner that is 2.8 times the average State sewer rate. The annual sewer rate would be 1.5% of median household income.
- Regional Alternative 2: Our opinion of probable project cost for Alternative 2 of the regional alternative is \$19,427,000. The anticipated annual O&M cost (2015 costs) for the Alternative 2 of the regional alternative is approximately \$644,537. Based on a 40-year loan from USDA-RD at an interest rate of 2.50%, with a grant of 45%, the estimated "Year 1" annual cost (annual capital payment and O&M costs) for the local alternative following construction is \$1,067,373. This represents an average annual cost per WLS D homeowner that is 3.1 times the average State sewer rate. The annual sewer rate would be 2.0% of median household income.
- Regional Alternative 3: Our opinion of probable project cost for Regional Alternative 3 is \$29,387,000. The anticipated annual O&M cost (2015 costs) for the Alternative 3 of the regional alternative is approximately \$700,000. Based on a 40-year loan from USDA-RD at an interest rate of 2.50%, with a grant of 45%, the estimated "Year 1" annual cost (annual capital payment and O&M costs) for the local alternative following construction is \$1,339,619. This represents an average annual cost per WLS D homeowner that is 3.8 times the average State sewer rate. The annual sewer rate would be 2.5% of median household income.

WLS D is an entity comprised of only 691 residential dwellings, led by volunteers and active citizen participation. Although WLS D has a strong operations team that maintains its current WPCF and collection system systems, the local alternative includes complex treatment and disposal systems, which are maintenance intensive. There will also be additional levels of monitoring and compliance associated with the local alternative, if it were approved by CT-DEEP/DPH. The regional alternative, on the other hand, includes a simple pumping system and countenance pipeline, leaving the details associated with treatment to the City of Torrington and their robust O&M staff. Therefore, the long-term simplicity of the regional alternative is superior to the local alternative relative to non-monetary considerations.

The regional alternative (Regional Alternative 1) was selected for the cost and non-cost factors described above.

2.2.3 Conclusions and Recommendations

WLS D commenced preliminary design phase activities beginning in Summer 2015, to advance the "shovel readiness" of this Project. Initial efforts included soil borings along the proposed Regional Alternative pipe path, aerial mapping for survey data, and preliminary easement survey work for two potential cross-country areas that would help to expedite the work and may help to keep project costs down. Pending completion of the planning phase with USDA-RD and CT-DEEP, together with a letter-of-intent for an inter-municipal agreement with Torrington, and a preliminary grant/loan commitment from USDA-RD, WLS D expects to authorize the balance of the design phase in January 2016. That will allow the design to be completed by June 2016. Permitting will occur in Spring 2016. We anticipate

that the Project may be constructed in two phases to align with funding program requirements and the availability of funds. Therefore, Phase 1 will occur in 2016-17, and Phase 2 will be constructed in 2017-18. Final paving and punchlist work is expected to be finalized in Spring 2019.

The attached Table 1G includes a detailed cost estimate for the proposed Project, as well as the division of the Project into two phases. A corresponding illustration of these Phases is shown in Exhibit 6-8.

The Regional Alternative represents the lowest capital, O&M and annualized costs of the alternatives considered. It also has the clearest permitting and construction path leading to implementation. However, both the local and regional alternatives are expensive to WLS D residents, and are unaffordable absent generous grants and favorable financing terms. WLS D is optimistic that USDA-RD can present an aggressive grant option, together with the long-term financing option offered by USDA-RD for these types of projects.

3. AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES

The proposed Woodridge Lake Sewer District (WLS D) Regional Sewer Extension Project will take place in or on sites of existing developed and previously disturbed land. Following is a summary of how the proposed Project will avoid potential impacts to environmental resources.

3.1 LAND USE/IMPORTANT FARMLAND/FORMERLY CLASSIED LAND

3.1.1 Affected Environment

The proposed pipe route for the wastewater transmission and conveyance system from WLS D's existing WPCF on Brush Hill Road in Goshen to the existing sanitary sewer system in the City of Torrington is shown in Exhibit 6-1. Areas of Prime Farmland Soils and Statewide Important Farmland Soils are summarized on Exhibit 6-4, together with the proposed pipe route. There are a number of both Prime Farmland Soils and Statewide Important Farmland Soils along the proposed pipe alignment.

3.1.2 Environmental Consequences

None of the Prime Farmland Soils and Statewide Important Farmland Soils will be impacted as a result of the proposed Project. The proposed pipe route lies within existing road right-of-ways in the Town of Goshen and the City of Torrington. This includes Brush Hill Road, Old Middle Street, Pie Hill Road, East Street South and Goshen/Torrington Road. All of these road right-of-ways were established prior to August 4, 1984, and therefore we do not believe the proposed is subject to the Farmland Protection Policy Act.

3.1.3 Mitigation

The proposed project will utilize best management practices for construction and stormwater mitigation, including haybales and siltation fencing, to protect adjacent Prime Farmland Soils and Statewide Important Farmland Soils.

3.2 FLOODPLAINS

3.2.1 Affected Environment

The proposed project will be constructed in existing roadways along the alignment shown in Exhibit 6-1, and will traverse three 100-year floodplain areas as follows:

- A Zone A area on Old Middle Road (Route 63) in Goshen, associated with an unnamed brook, north of Brush Hill Road, as shown on Exhibit 6-3 (Flood Map 2 of 8).

- A Zone A area on Pie Hill Road in Goshen, associated with Ivy Mountain Brook, as shown on Exhibit 6-3 (Flood Map 3 of 8).
- A Zone A area on Goshen Road in Torrington, associated with Lovers Lane Brook, as shown on Exhibit 6-3 (Flood Map 8 of 8).

3.2.2 Environmental Consequences

The proposed force main will be constructed within the existing roadway limits. Further, the above areas are associated with existing stream crossings through existing culverts and there will be no impact on existing streams and/or the three Zone A floodplain areas.

3.2.3 Mitigation

The proposed force main will be excavated beneath the existing culverts without impact to the streams or the Zone A floodplain areas. The roadway will be restored to existing conditions.

3.3 WETLANDS

3.3.1 Affected Environment

The proposed pipe route for the wastewater transmission and conveyance system from WLSD's existing WPCF on Brush Hill Road in Goshen to the existing sanitary sewer system in the City of Torrington is shown in Exhibit 6-1. Areas of Alluvial and Floodplain Soils and Poorly Drained and Very Poorly Drained Soils are summarized on Exhibit 6-2, together with the proposed pipe route. There are a number of both Alluvial and Floodplain Soils and Poorly Drained and Very Poorly Drained Soils along the proposed pipe alignment.

3.3.2 Environmental Consequences

None of the Alluvial and Floodplain Soils and Poorly Drained and Very Poorly Drained Soils will be impacted as a result of the proposed Project. The proposed pipe route lies within existing road right-of-ways in the Town of Goshen and the City of Torrington. This includes Brush Hill Road, Old Middle Street, Pie Hill Road, East Street South and Goshen/Torrington Road. No work is to be conducted in wetlands areas.

3.3.3 Mitigation

Proper best management practices, including erosion control (haybales and siltation fencing) and dewatering measures will be utilized to prevent sedimentation of nearby water bodies and/or wetland resource areas. The existing roadway will be restored to existing conditions in those areas where it is disturbed for excavation activities.

3.4 HISTORIC PROPERTIES

3.4.1 Affected Environment

We did not contact the Connecticut State Historic Preservation Officer, as the draft letters included in the December 26, 2015 version of the Environmental Report were not submitted. USDA-RD contacted the State's Historic Preservation Officer on February 9, 2016. A copy of the letter is attached.

3.4.2 Environmental Consequences

The proposed project will be constructed within existing roadway right-of-ways, and we do not believe there will be any impacts to areas that could be historic or historically sensitive. We will update the Environmental Report upon receipt of any comments from the State's Historic Preservation Officer.

3.4.3 Mitigation

Based on USDA-RD's coordination with the Connecticut State Historic Preservation Officer (copy of February 9, 2016 letter from USDA-RD to Connecticut's State Historic Preservation Officer attached), via the Section 106 process, we will follow-up with any additional coordination and evaluation processes, and update the Environmental Report, as necessary.

3.5 BIOLOGICAL RESOURCES

3.5.1 Affected Environment

The proposed pipe route for the wastewater transmission and conveyance system is shown in Exhibit 6-1. Natural Diversity Areas are shown in Exhibit 6-2, together with the proposed pipe route. There are several Natural Diversity Areas along the proposed pipe alignment. We also reviewed the United States Fish and Wildlife Service and their Federally Listed Endangered and Threatened Species in Connecticut. With the exception of the Northern Long-Eared Bat, the list (attached) confirms that there are no federally threatened and endangered species or their habitats within Litchfield County and the project area.

3.5.2 Environmental Consequences

Since the project is planned to be constructed within the existing roadway right-of-ways, it is unlikely that any tree cutting/trimming/clearing will be required. Therefore, we do not believe that there will be the potential for impacts to the Northern Long-Eared Bat. A copy of the U.S. Fish & Wildlife's letter of January 22, 2016 is attached.

3.5.3 Mitigation

The proposed project will utilize best management practices for construction and stormwater mitigation, including haybales and siltation fencing, to protect adjacent Natural Diversity Areas. If any work is proposed outside the existing roadway right-of-ways, or if trees need to be removed and/or trimmed as part of the project, we will coordinate this work with a wildlife biologist to ensure that there are no impacts to the Northern Long-Eared Bat or its habitat.

3.6 WATER QUALITY ISSUES

3.6.1 Affected Environment

The proposed project consists of a wastewater conveyance and transmission system from WLSD's existing WPCF to the City of Torrington's existing sanitary sewer collection system. The proposed force main will be constructed in existing roadway rights-of-way. Decommissioning of the existing WPCF is the only project element that will impact water quality, and it will result in the elimination of a wastewater effluent discharge to a GAA groundwater supply area.

3.6.2 Environmental Consequences

Water Quality in at Woodridge Lake will improve as a result of the proposed Project, because the existing on-site treatment system is being abandoned, and the wastewater will be pumped to Torrington for treatment.

3.6.3 Mitigation

Excavation work, where performed for the above projects, will include erosion control and dewatering methods to prevent sedimentation of nearby water bodies and/or wetlands. Controlling potential runoff will help maintain water quality throughout the project area.

3.7 COASTAL RESOURCES

3.7.1 Affected Environment

The proposed project is not near any coastal resource areas.

3.7.2 Environmental Consequences

There are no impacts or environmental consequences associated with coastal resources.

3.7.3 Mitigation

Since there are no coastal resources, there will be no mitigation necessary.

3.8 SOCIO-ECONOMIC/ENVIRONMENTAL JUSTICE ISSUES

3.8.1 Affected Environment

WLS D acts as an independent municipal tax district. Residents of WLS D meet regularly to review budgets, capital projects, and wastewater planning information. The proposed project will serve the same customer base as does their existing wastewater system. Therefore, there are no changes to the WLS D sewer service area as a result of this proposed project.

3.8.2 Environmental Consequences

The proposed projects will help improve water quality and therefore, environmental quality, as described in Section 3.6 above. No adverse human or environmental health issues are anticipated from this project work.

3.8.3 Mitigation

The proposed project will take place at the WLS D WPCF site and along the proposed force main route. No sewer service will be provided along the pipeline, which will serve strictly as a conveyance and transmission system.

3.9 MISCELLANEOUS ISSUES

3.9.1 Affected Environment

The proposed project includes a wastewater conveyance and transmission system from WLS D's existing WPCF site to the City of Torrington's existing wastewater collection system. There is no development or new discharges associated with the proposed project.

3.9.2 Environmental Consequences

The proposed work will take place in existing roadway right-of-ways. There are no permanent impacts associated with proposed project. Temporary impacts, including construction noise limitations, dust management, and traffic control constitute the majority of the construction phase elements to be mitigated during the project activities.

3.9.3 Mitigation

Noise during construction may occur, but will be controlled to the best practicable degree as possible, to avoid disrupting local populations. No net impact on noise pollution will occur from the proposed work. Best management practices including calcium chloride for dust control, water use, and regular paving will mitigate dust concerns during construction. Traffic control measures will be utilized to minimize traffic impacts on the roads in the project area.

4. SUMMARY OF MITIGATION

As each of the projects described above will be on previously developed and disturbed sites, no impacts to wetlands or other resource areas is anticipated.

Mitigation measures to prevent erosion and sedimentation will be implemented whenever excavation work will take place. Excavations will occur for the proposed pump stations and force main piping.

Erosion control measures such as hay bales, silt fence, and composite socks will be placed on the downhill side of excavations to prevent sediment from reaching nearby water bodies and/or wetlands. In addition, silt sacks will be placed in nearby catch basins, if such exist, that may receive run off from site work.

In the event dewatering is required, the contractor will be required to properly discharge the water to either a hay bale sedimentation capturing device, silt bag, or other qualified device. This will prevent sediment from reaching nearby water bodies and/or wetlands.

Where bypass pumping is required, sewage flow will be pumped from the suction manhole and be discharged to the discharge manhole, which will vary depending on the particular site. The contractor will be required to submit a bypass plan, stamped by a certified Professional Engineer in the State of Connecticut, and will be required to inspect the bypass system and hoses/pipes for leaks. Any leaks discovered will be repaired before further work continues.

5. CORRESPONDENCE AND COORDINATION

Although draft letters to several agencies (including United States Department of Agriculture, Natural Resources Conservation Service, State of Connecticut Historic Preservation Office, United States Fish & Wildlife Service; and Connecticut Department of Energy & Environmental Protection) were developed as part of the December 26, 2015 Environmental Report, neither Woodard & Curran nor David Prickett Consulting submitted this correspondence at that time. As requested by USDA-RD in its memorandum of February 3, 2016, such references have been removed from this updated Environmental Report:

6. EXHIBITS

This section exhibits various resource maps used to characterize the project bounds.

Exhibit 6-1: Project Areas Map

The discrete project area locations, which are related to existing wastewater infrastructure, are depicted in Exhibit 6-1, including the WLSO sewer service area shaded blue and the WPCF property shaded red. Also, shown in this Exhibit is the proposed force main to Torrington.

Exhibit 6-2: Wetlands and Critical Habitats Map

This map depicts the areas of the project designated as critical habitats or wetlands. Critical habitats are identified by the CT DEEP as important in the Connecticut Comprehensive Wildlife Conservation Strategy. Wetland soil types are identified in the Soil Survey Geographic (SSURGO) database for the state of Connecticut. No critical habitats exist within the WPCF property.

Exhibit 6-3: Flood Zone Maps

FEMA flood zone information is presented as Exhibit 6-3. A FEMA flood zone map of the WPCF (2 of 8) shows that the entire site is designated as Zone X, which is excluded from 500 year flood. A second FEMA flood zone map shows the Woodridge Lake Sewer District (1 of 8). The lake itself is designated as Zone AE, a special flood hazard area inundated by 100-year flood where the base flood elevations have been determined. The rest of the WLS D surrounding the lake is designated as Zone X. The remaining flood zone maps (3 through 8) show the proposed force main route to Torrington, which almost entirely located in Zone C or Zone X, outside of the 500-year flood areas. The proposed force main route briefly passes through Zone A areas (100-year flood) at three points within the Town of Goshen.

Exhibit 6-4: Farmland Soils and Aquifer Protection Areas Map

Soils designated as prime farmland or statewide important farmland are shown in Exhibit 6-4. While small portions of the WLS D and much of the WPCF site are designated as prime farmland or of statewide importance, they are already developed and no additional use of potential farmland is planned as part of this project. The proposed force main route is located entirely within existing right of way and does not affect existing or potential farmland.

Farmland soils and aquifer protection area data was obtained from CT DEEP. As can be seen in Exhibit 6-4 no aquifer protection areas were shown to exist within the project area.

Exhibit 6-5: MBR Process Layout (Local Alternative)

The MBR process upgrade layout for the local alternative is depicted in Exhibit 6-5. All construction will take place on land adjacent to the current WPCF that is previously disturbed and part of the WPCF site. Also, shown in this Exhibit is a potential pump station site for the regional alternative.

Exhibit 6-6: WLS D WPCF Site Layout and Disposal Beds

The current WPCF site layout, including the subsurface disposal beds, is depicted in Exhibit 6-6.

Exhibit 6-7: Proposed Regional Alternative

Illustrates the proposed force main route from the new pump station at the WPCF site to the point-of-connection at the Torrington sewer system.

Exhibit 6-8: Proposed Phasing of Regional Alternative

Illustrates the proposed phasing of the force main piping and two pumping stations for the Regional Alternative, along the proposed pipe route from the WLS D WPCF to the City of Torrington sanitary sewer collection system.

Table 1G: Opinion of Probable Project Cost

Summarizes the anticipated project costs, including the two phases.

USDA-RD Correspondence with State Historic Preservation Officer

Includes a copy of the letter from USDA-RD to the State Historic Preservation Officer, dated February 9, 2016.



U.S. Fish & Wildlife Service

Includes a table summarizing the U.S. Fish & Wildlife's Federally Listed and Threatened Species in Connecticut, and Litchfield County in particular, as well as their letter of January 22, 2016.

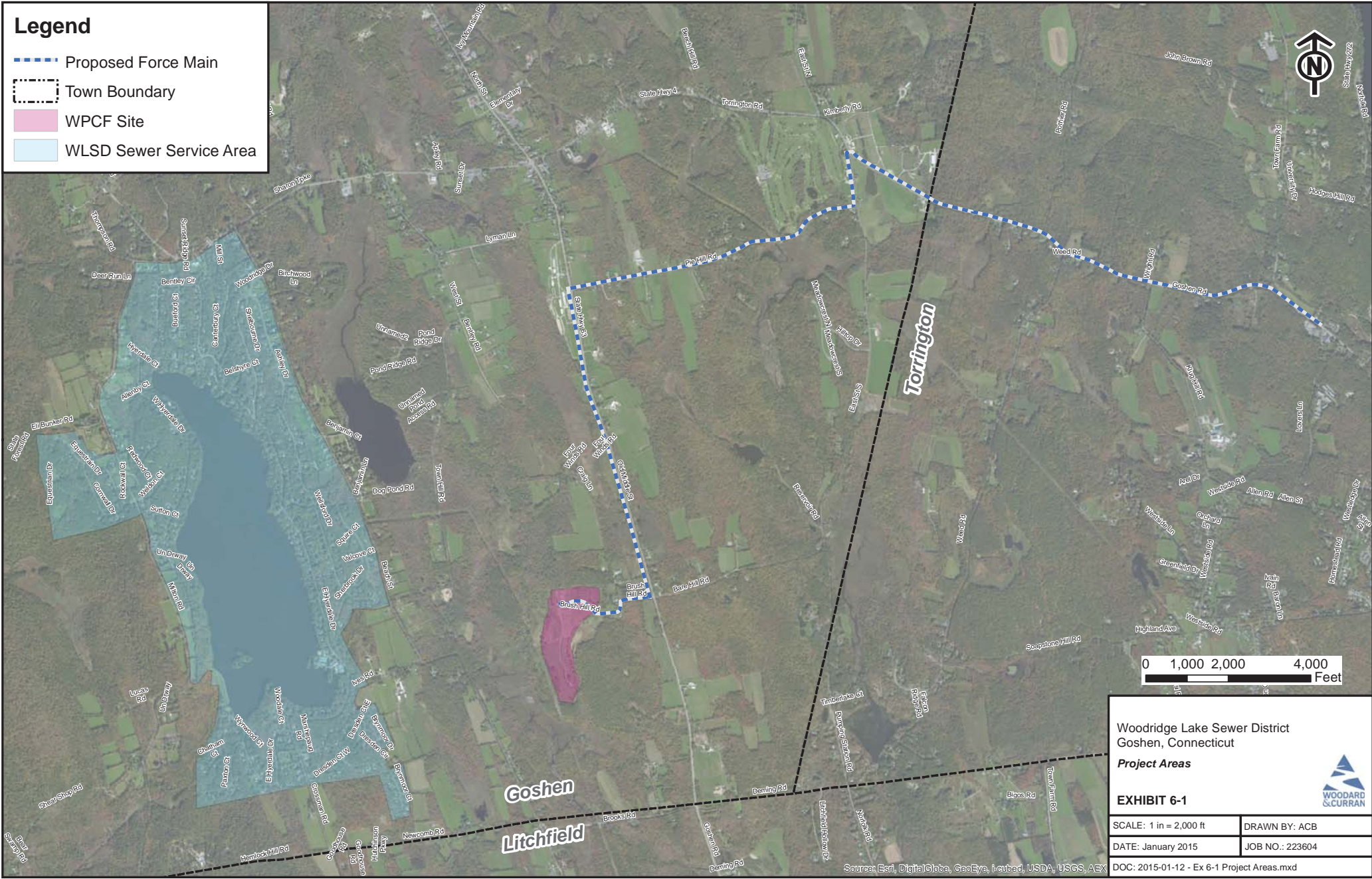
7. LIST OF PREPARERS

This Environmental Report was prepared by Woodard & Curran and David Prickett Consulting, LLC on behalf of the Woodridge Lake Sewer District. Specifically, the following individuals contributed to this Report:

- David Prickett, P.E., Project Manager

Legend

- Proposed Force Main
- Town Boundary
- WPCF Site
- WLSD Sewer Service Area



Woodridge Lake Sewer District
Goshen, Connecticut

Project Areas

EXHIBIT 6-1

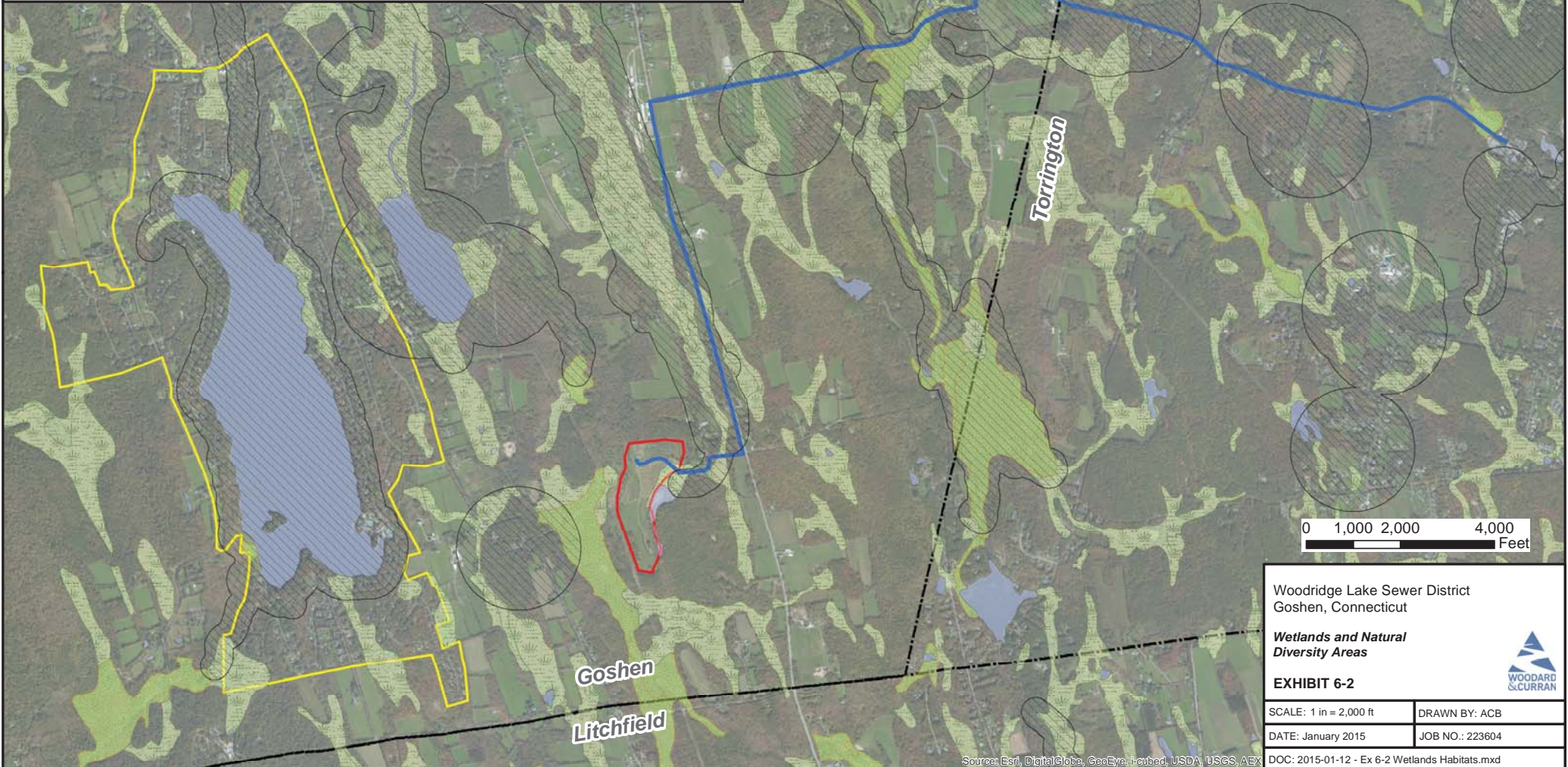
SCALE: 1 in = 2,000 ft	DRAWN BY: ACB
DATE: January 2015	JOB NO.: 223604
DOC: 2015-01-12 - Ex 6-1 Project Areas.mxd	



Source: Esri, DigitalGlobe, GeoEye, AeroDigital, USDA, USGS, AEX

Legend

- WPCF Site
 - WLSA Sewer Service Area
 - Proposed Force Main
 - Town Boundary
- Wetland Soil Types**
- Alluvial and Floodplain Soils
 - Poorly Drained and Very Poorly Drained Soils
 - Water



Woodridge Lake Sewer District
Goshen, Connecticut

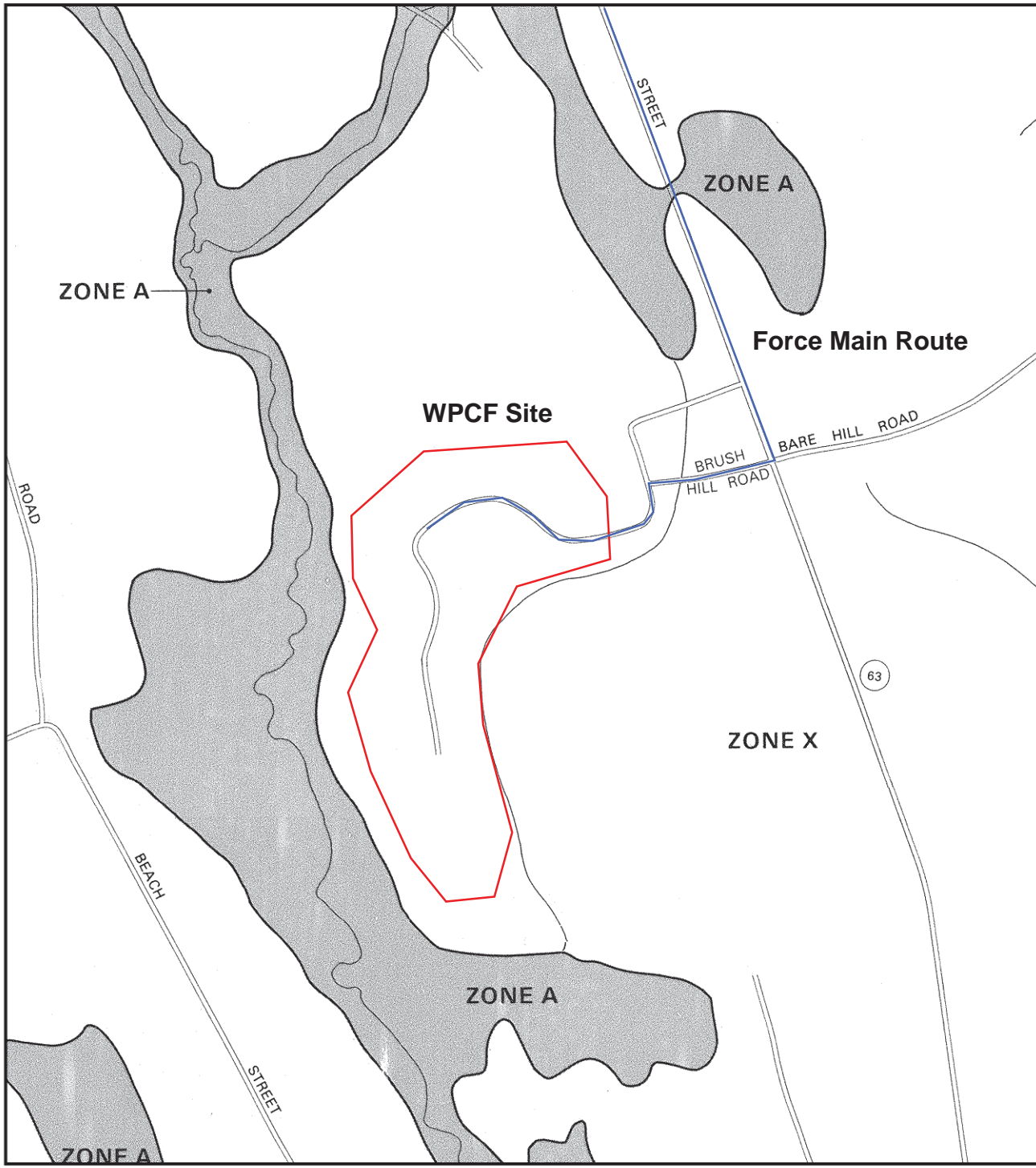
Wetlands and Natural Diversity Areas

EXHIBIT 6-2

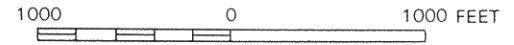
SCALE: 1 in = 2,000 ft	DRAWN BY: ACB
DATE: January 2015	JOB NO.: 223604
DOC: 2015-01-12 - Ex 6-2 Wetlands Habitats.mxd	



Source: Esri, DigitalGlobe, GeoEye, AeroMap, USDA, USGS, AEX



APPROXIMATE SCALE



**Exhibit 6-3: FEMA
Flood Map 2 of 8**

NATIONAL FLOOD INSURANCE PROGRAM

**FIRM
FLOOD INSURANCE RATE MAP**

**TOWN OF
GOSHEN, CONNECTICUT
LITCHFIELD COUNTY**

**PANEL 15 OF 15
(SEE MAP INDEX FOR PANELS NOT PRINTED)**



PANEL LOCATION

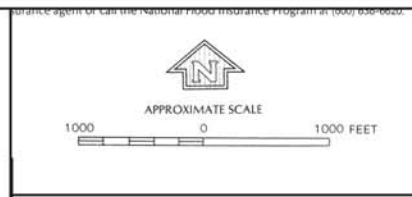
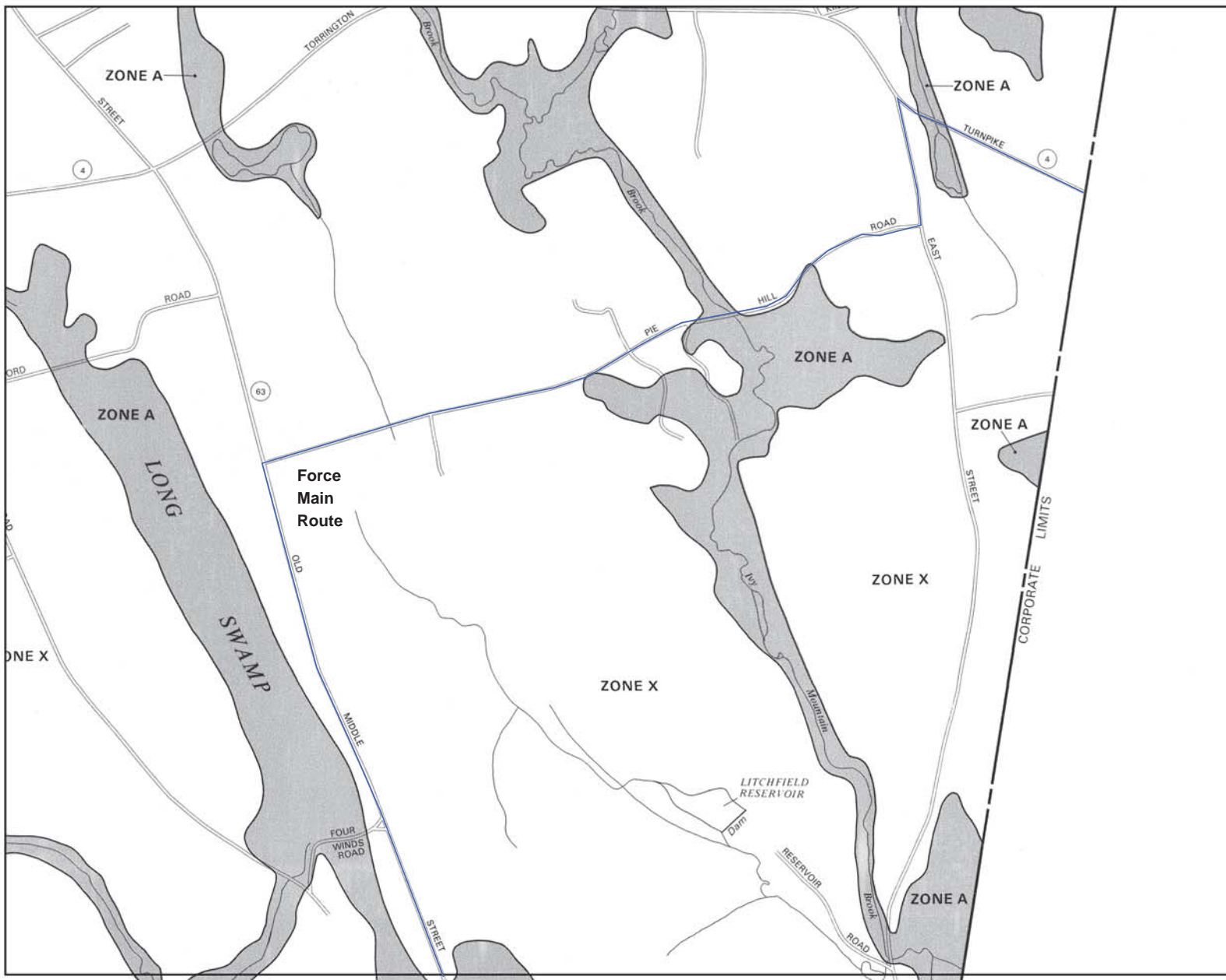
**COMMUNITY-PANEL NUMBER
090177 0015 A**

**EFFECTIVE DATE:
NOVEMBER 16, 1990**



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov




**Exhibit 6-3: FEMA
Flood Map 3 of 8**

NATIONAL FLOOD INSURANCE PROGRAM

**FIRM
FLOOD INSURANCE RATE MAP**


TOWN OF
GOSHEN, CONNECTICUT
LITCHFIELD COUNTY

PANEL 15 OF 15
(SEE MAP INDEX FOR PANELS NOT PRINTED)

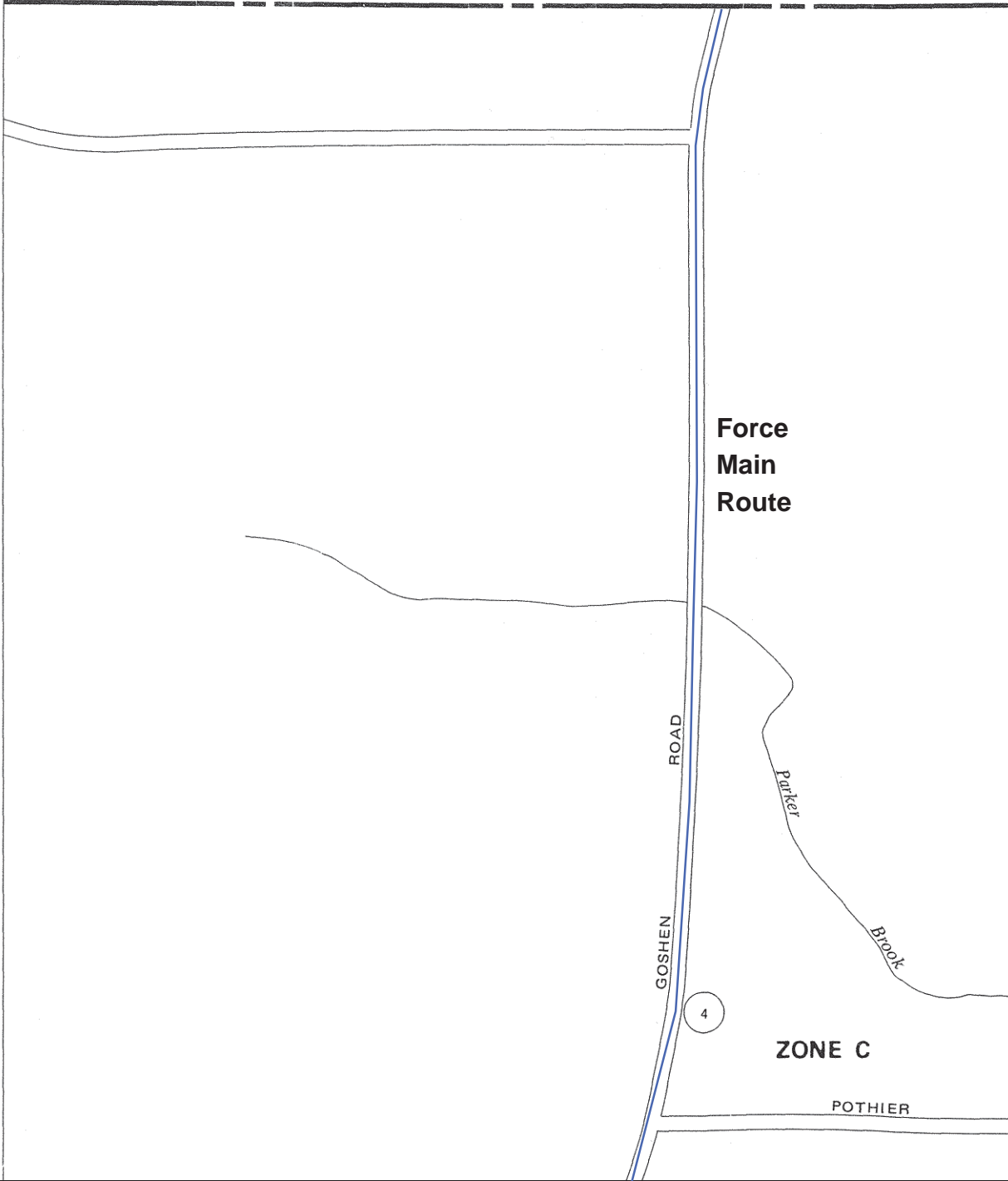

PANEL LOCATION

COMMUNITY-PANEL NUMBER
090177 0015 A

EFFECTIVE DATE:
NOVEMBER 16, 1990


Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



APPROXIMATE SCALE

400 0 400 FEET

**Exhibit 6-3: FEMA
Flood Map 4 of 8**

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
TORRINGTON,
CONNECTICUT
LITCHFIELD COUNTY

PANEL 2 OF 14
(SEE MAP INDEX FOR PANELS NOT PRINTED)

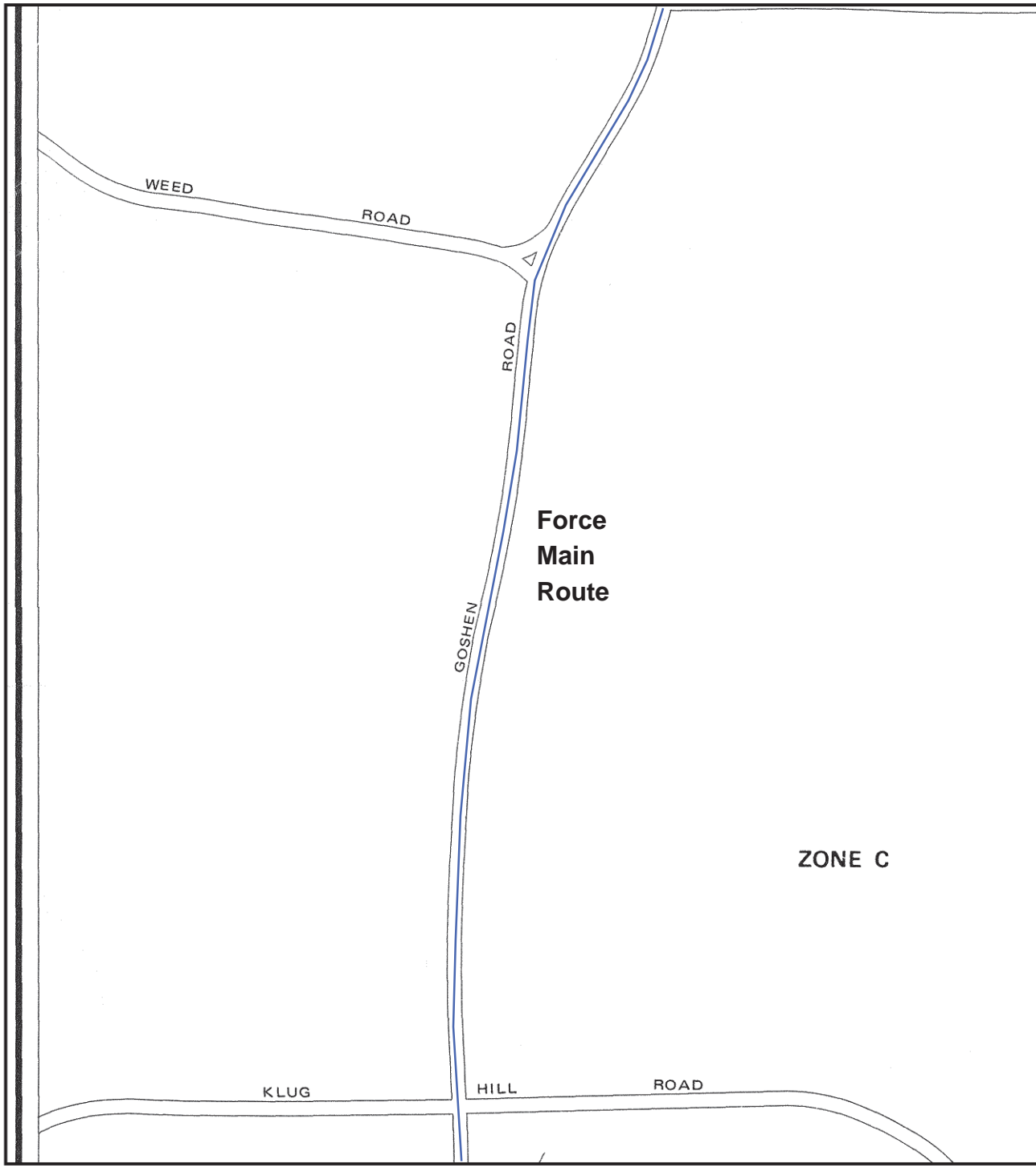
COMMUNITY-PANEL NUMBER
095081 0002 B

MAP REVISED:
APRIL 4, 1983



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



APPROXIMATE SCALE

400 0 400 FEET

**Exhibit 6-3: FEMA
Flood Map 5 of 8**

NATIONAL FLOOD INSURANCE PROGRAM

**FIRM
FLOOD INSURANCE RATE MAP**

**CITY OF
TORRINGTON,
CONNECTICUT
LITCHFIELD COUNTY**

PANEL 2 OF 14
(SEE MAP INDEX FOR PANELS NOT PRINTED)

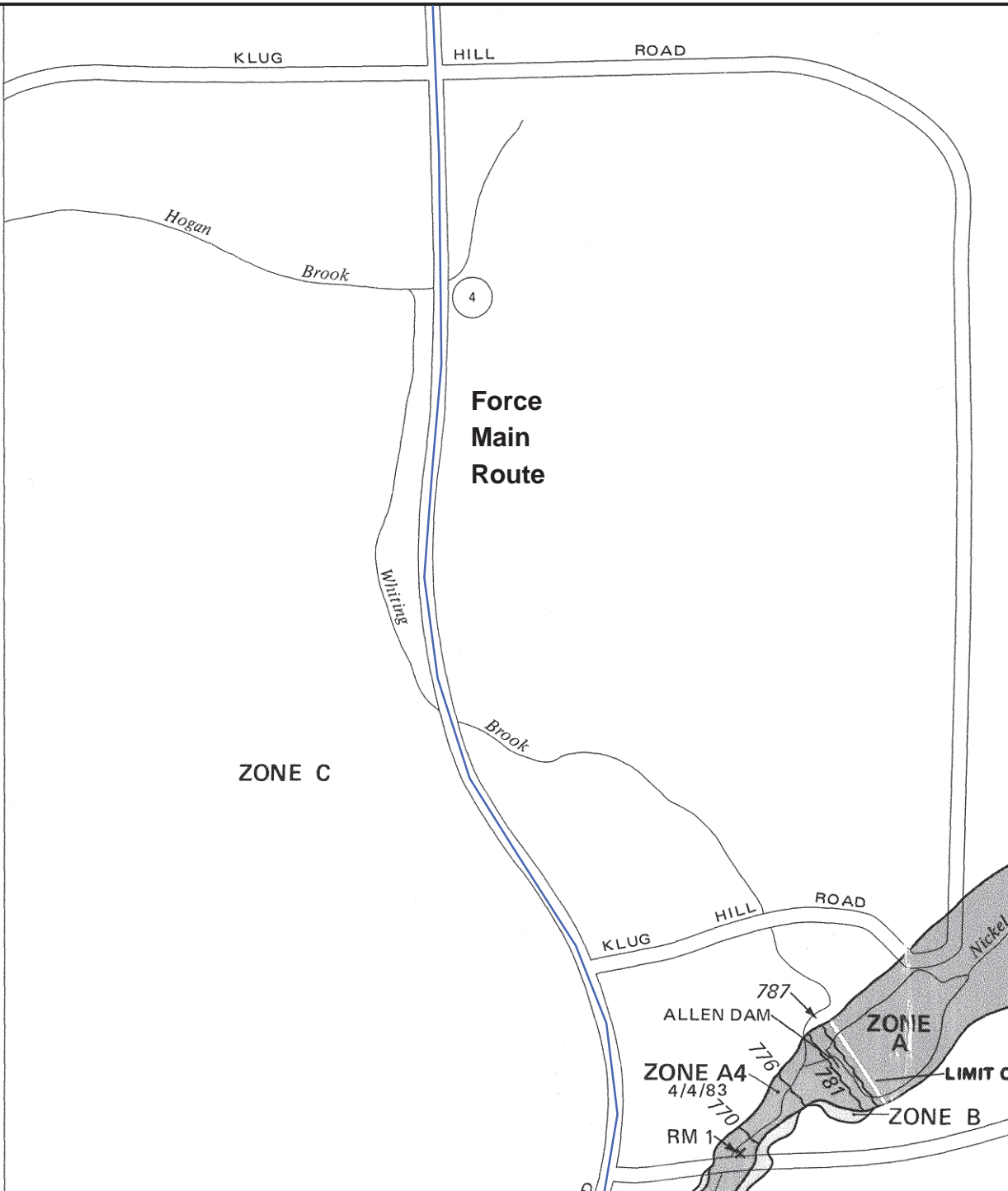
**COMMUNITY-PANEL NUMBER
095081 0002 B**

**MAP REVISED:
APRIL 4, 1983**



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



APPROXIMATE SCALE
 400 0 400 FEET

**Exhibit 6-3: FEMA
 Flood Map 6 of 8**

NATIONAL FLOOD INSURANCE PROGRAM

**FIRM
 FLOOD INSURANCE RATE MAP**

**CITY OF
 TORRINGTON,
 CONNECTICUT
 LITCHFIELD COUNTY**

PANEL 2 OF 14
 (SEE MAP INDEX FOR PANELS NOT PRINTED)

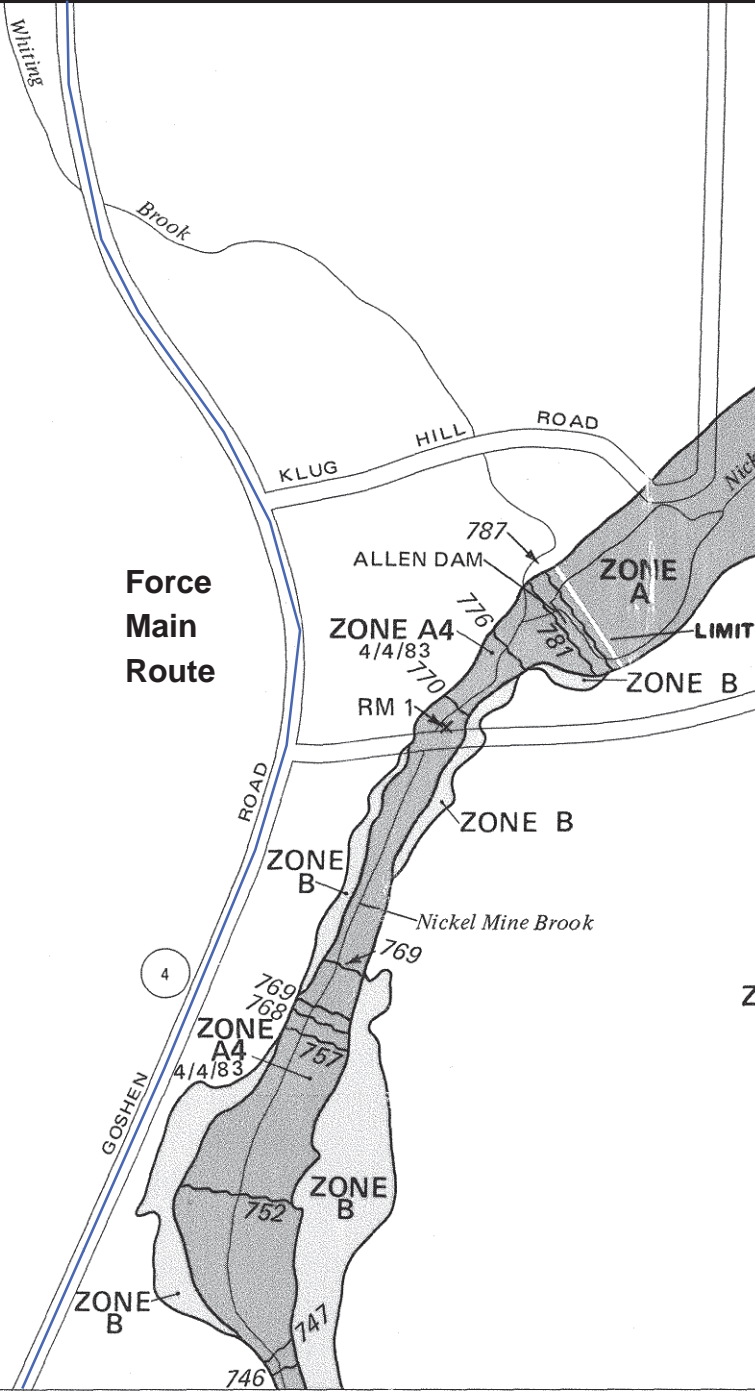
**COMMUNITY-PANEL NUMBER
 095081 0002 B**

**MAP REVISED:
 APRIL 4, 1983**



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



APPROXIMATE SCALE
 400 0 400 FEET

**Exhibit 6-3: FEMA
 Flood Map 7 of 8**

NATIONAL FLOOD INSURANCE PROGRAM

**FIRM
 FLOOD INSURANCE RATE MAP**

CITY OF
**TORRINGTON,
 CONNECTICUT
 LITCHFIELD COUNTY**

PANEL 2 OF 14
 (SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
 095081 0002 B

MAP REVISED:
 APRIL 4, 1983

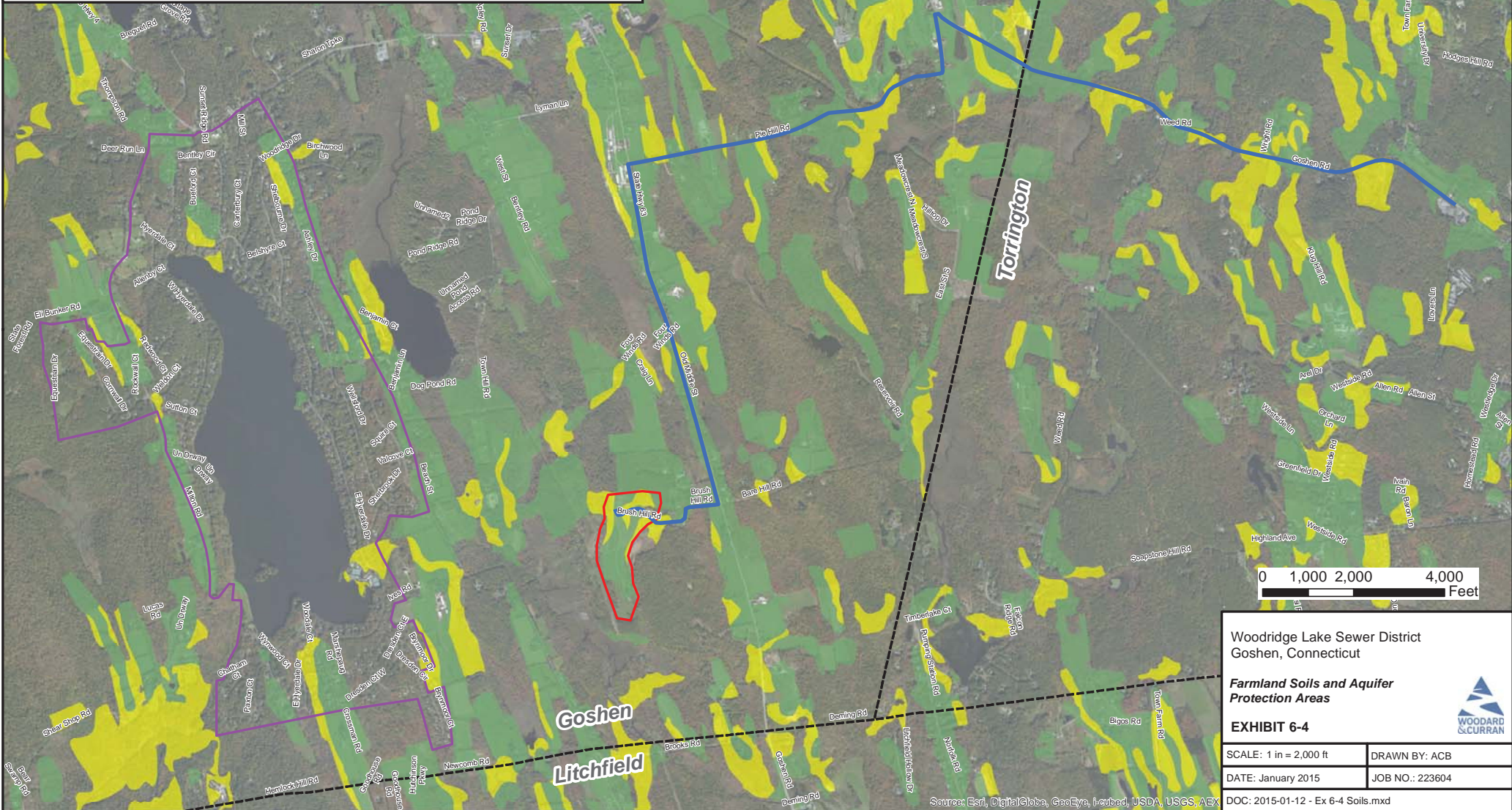


Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Legend

- WPCF Site
- Town Boundary
- WLSO Sewer Service Area
- Prime Farmland Soils
- Statewide Important Farmland Soils
- Proposed Force Main



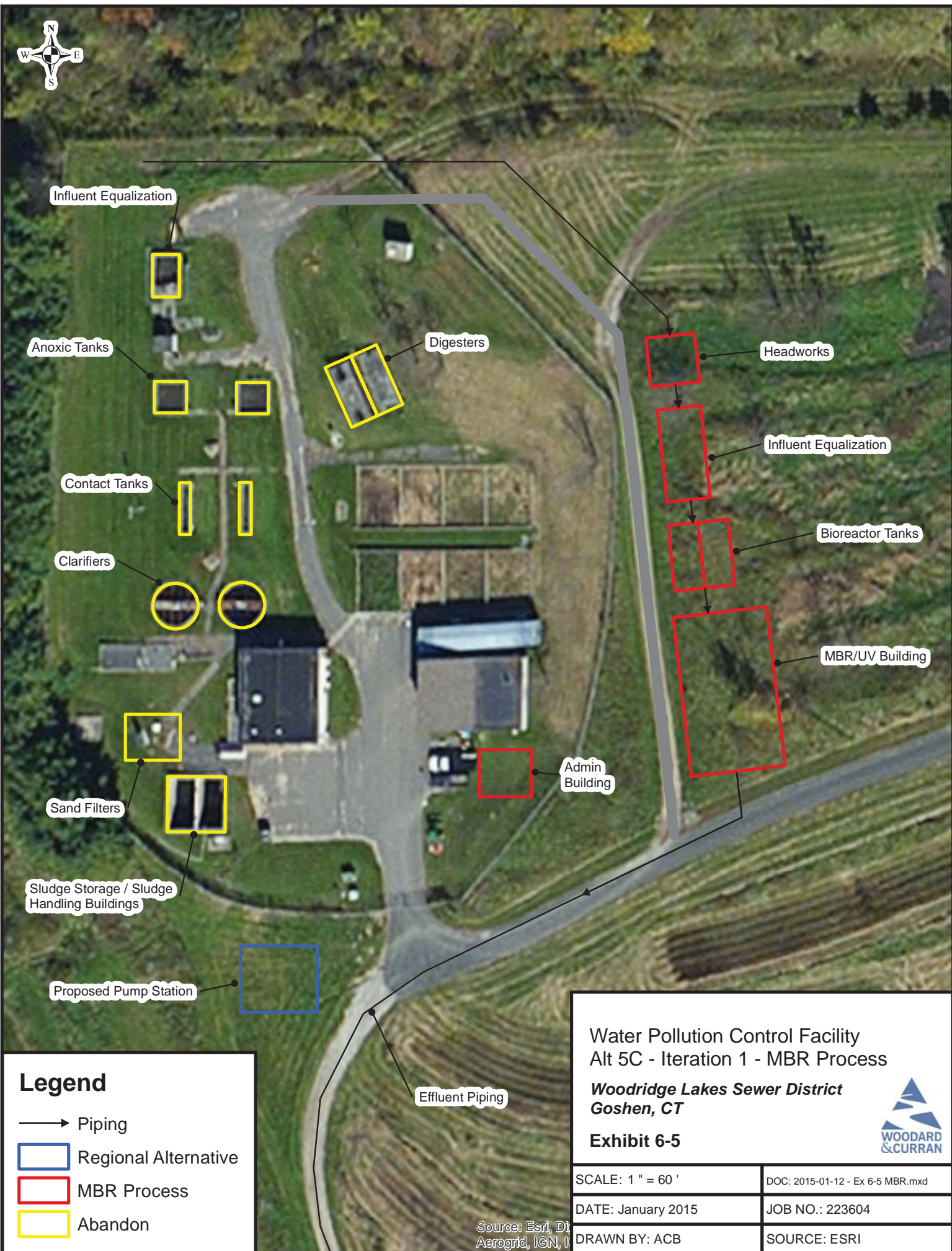
Woodridge Lake Sewer District
Goshen, Connecticut

Farmland Soils and Aquifer Protection Areas





EXHIBIT 6-4

SCALE: 1 in = 2,000 ft	DRAWN BY: ACB
DATE: January 2015	JOB NO.: 223604
DOC: 2015-01-12 - Ex 6-4 Soils.mxd	

Source: Esri, DigitalGlobe, GeoEye, AeroCast, USDA, USGS, AEX




Legend

-  Piping
-  Regional Alternative
-  MBR Process
-  Abandon

Water Pollution Control Facility
 Alt 5C - Iteration 1 - MBR Process
Woodridge Lakes Sewer District
Goshen, CT

Exhibit 6-5



SCALE: 1" = 60'	DOC: 2015-01-12 - Ex 6-5 MBR.mxd
DATE: January 2015	JOB NO.: 223604
DRAWN BY: ACB	SOURCE: ESRI

Source: Esri, DigitalGlobe, GeoEye, IGN, Aerogrid, IGN, I



Legend

- Existing Pump Station
- New Plant Pump Station
- Proposed Force Main Routes**
 - - - Alternative 1
 - - - Alternative 2
- Elevation Contours
 - 5 FT Intervals
 - 20 FT Intervals
- Treatment Plant Parcel Boundary
- Town Boundary
- Parcels

APPROXIMATE ROUTE LENGTHS
 ALTERNATIVE 1 = 31,700 FT
 ALTERNATIVE 2 = 26,900 FT

**ALTERNATIVE 1
 HIGHEST ELEVATION = 1360 Ft**

**ALTERNATIVE 1
 LOWEST ELEVATION = 760 Ft**

**ALTERNATIVE 2
 HIGHEST ELEVATION = 1320 Ft**

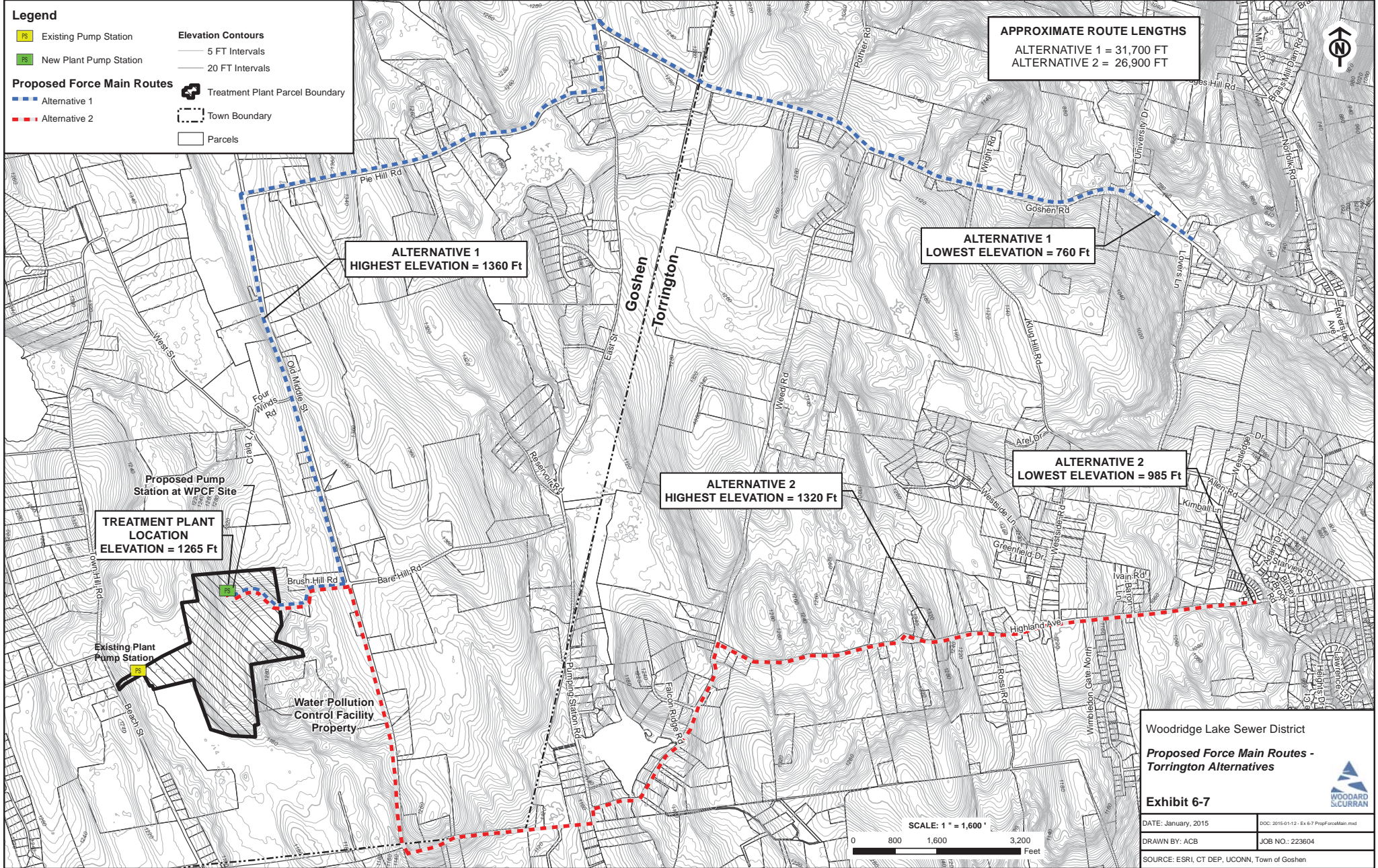
**ALTERNATIVE 2
 LOWEST ELEVATION = 985 Ft**

**TREATMENT PLANT
 LOCATION
 ELEVATION = 1265 Ft**

**Proposed Pump
 Station at WPCF Site**

**Existing Plant
 Pump Station**

**Water Pollution
 Control Facility
 Property**

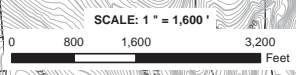


Woodridge Lake Sewer District

Proposed Force Main Routes - Torrington Alternatives

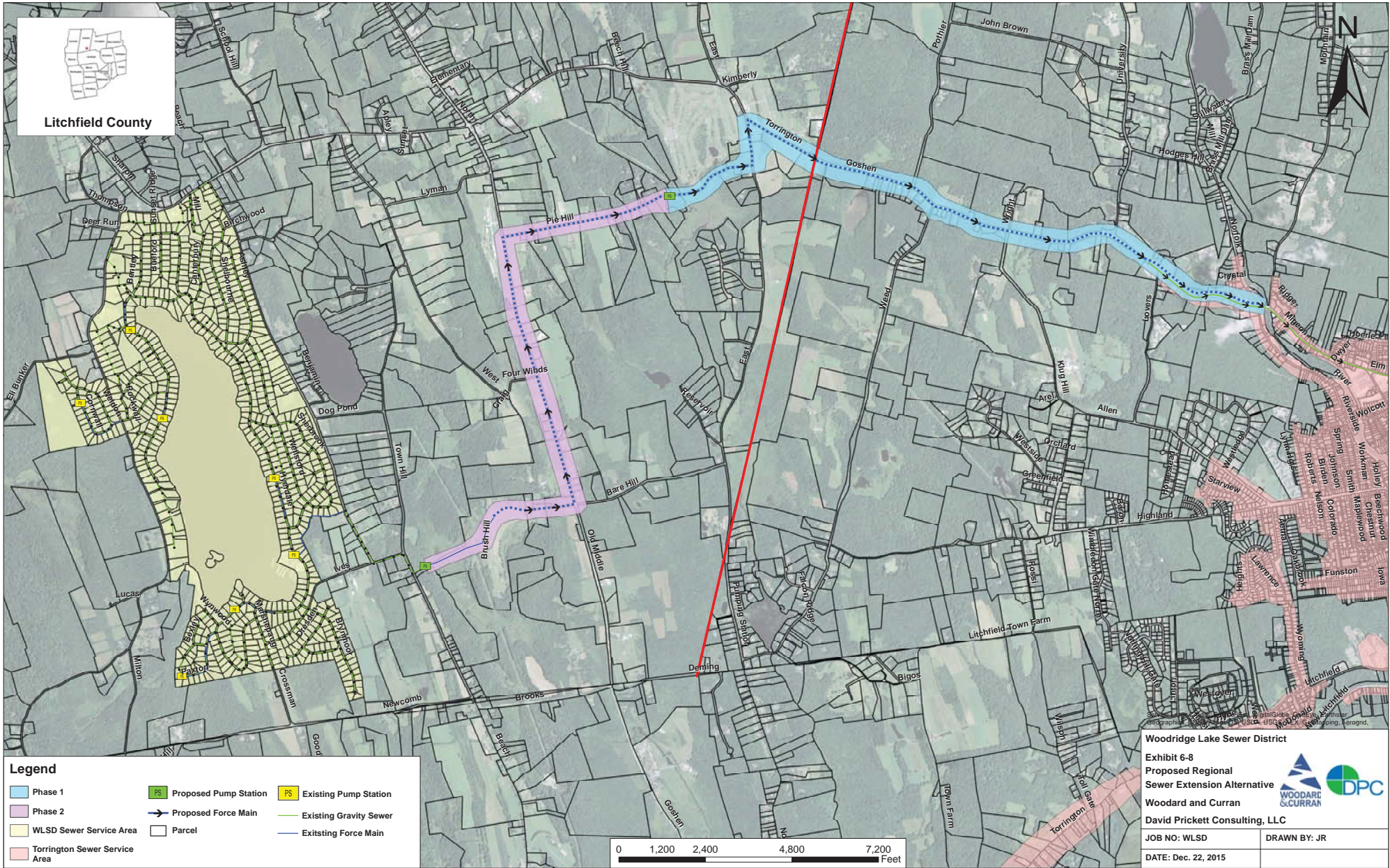
Exhibit 6-7

DATE: January, 2015	DOC: 2015-01-12 - Ex 6-7 PropForceMain.mxd
DRAWN BY: ACB	JOB NO.: 223604
SOURCE: ESRI, CT DEP, UCONN, Town of Goshen	





Litchfield County



Legend

Phase 1	Proposed Pump Station	Existing Pump Station
Phase 2	Proposed Force Main	Existing Gravity Sewer
WLSLD Sewer Service Area	Parcel	Existing Force Main
Torrington Sewer Service Area		



Woodridge Lake Sewer District
 Exhibit 6-8
 Proposed Regional
 Sewer Extension Alternative
 Woodard and Curran
 David Prickett Consulting, LLC

JOB NO: WLSD DRAWN BY: JR
 DATE: Dec. 22, 2015

Table 1G

Opinion of Probable Project Costs (Updated on December 14, 2015)

Item #	Description	Phase 1 (To Be Constructed in 2016-2017)				Phase 2 (To Be Constructed in 2017-2018)					
		Quantity	Units	Estimated Unit Cost	Sub-Total	Quantity	Units	Estimated Unit Cost	Sub-Total		
1	General Conditions	2	LS	10%	\$ 519,295	1	LS	10%	\$ 303,182		
2	8" PVC DR18 Force Main Piping	20,307	LF	\$ 80	\$ 1,624,560	13,677	LF	\$ 80	\$ 1,094,160		
3	Force Main Cleanout & Air Release Vaults	11	EA	\$ 12,000	\$ 132,000	9	EA	\$ 12,000	\$ 108,000		
4	Pump Stations	1	EA	\$ 800,000	\$ 800,000	1	EA	\$ 550,000	\$ 550,000		
5	Decommission Existing WPCF; Sludge Removal	-	LS	\$ 200,000	\$ -	1	LS	\$ 200,000	\$ 200,000		
6	Haybales & Silt Fencing	4,602	LF	\$ 18	\$ 82,836	3,099	LF	\$ 18	\$ 55,790		
7	Storm Drain/Culvert Crossings/Repairs	21	EA	\$ 5,500	\$ 115,843	14	EA	\$ 5,500	\$ 79,625		
8	HDD Across River	1	LS	\$ 150,000	\$ 150,000	-	LS	\$ 150,000	\$ -		
9	Replacement 12" PVC Gravity Sewer In Torrington	-	LF	\$ 150	\$ -	-	LF	\$ 150	\$ -		
10	Trench Dewatering Adjacent to Wetlands	2,400	LF	\$ 35	\$ 84,000	-	LF	\$ 35	\$ -		
11	12" PVC Gravity Sewer Piping	-	LF	\$ 70	\$ -	-	LF	\$ 70	\$ -		
12	Crushed Stone Pipe Bedding	-	CY	\$ 60	\$ -	-	CY	\$ 60	\$ -		
13	Gravity Sewer Manholes	-	EA	\$ 6,500	\$ -	-	EA	\$ 6,500	\$ -		
14	Non-Rock Trench Excavation	22,162	CY	\$ 20	\$ 443,238	15,095	CY	\$ 20	\$ 301,900		
15	Rock Trench Excavation & Rock Disposal	449	CY	\$ 150	\$ 67,317	101	CY	\$ 150	\$ 15,150		
16	Loam & Seed Repair (Off Road Alignment)	4,175	SY	\$ 15	\$ 62,631	5,690	SY	\$ 15	\$ 85,350		
17	Town Road Trench Repair	1,497	SY	\$ 35	\$ 52,407	3,102	SY	\$ 35	\$ 108,570		
18	State Road Trench Repair	9,827	SY	\$ 75	\$ 737,029	1,086	SY	\$ 75	\$ 81,450		
19	2" Milling All Pavement Repairs	14,857	SY	\$ 12	\$ 178,278	5,477	SY	\$ 12	\$ 65,724		
20	Permanent 2" Trench Repair	4,440	TONS	\$ 125	\$ 555,034	1,709	TONS	\$ 125	\$ 213,625		
21	Police Details (Man Days)	192	DAYS	\$ 560	\$ 107,781	129	DAYS	\$ 560	\$ 72,474		
Estimated Phase 1 Bid Price (12/14/15) =					\$ 5,712,000	Estimated Phase 2 Bid Price (12/14/15) =					\$ 3,335,000
15% Contingency =					\$ 857,000	15% Contingency =					\$ 500,000
Engineering Design =					\$ 642,000	Engineering Design =					\$ -
Engineering Bidding & Construction =					\$ 485,520	Engineering Bidding & Construction =					\$ 283,475
Legal, Admin., Closing & Financing Costs =					\$ 113,160	Legal, Admin., Closing & Financing Costs =					\$ 105,185
FCCs =					\$ -	FCCs =					\$ 2,456,731
Engineering: Past Planning Costs =					\$ -	Engineering: Past Planning Costs =					\$ 709,464
Escalation of Costs by 0.5 Yrs (3%/Yr) =					\$ 116,320	Escalation of Costs by 1.5 Yrs (3%/Yr) =					\$ 191,340
Estimated OPC Phase 1 =					\$ 7,926,000	Estimated OPC Phase 2 =					\$ 7,581,195

Estimated Total Cost =	\$ 15,507,195
Previously Appropriated =	\$ 1,351,464
Future Appropriation(s) =	\$ 14,155,731



9 February 2016
(LSC/16-002)

Ms. Catherine Labadia
Deputy State Historic Preservation Officer
Connecticut Department of Economic & Community Development
One Constitution Plaza, 2nd Floor
Hartford, CT 06103

RE: Woodridge Lake Sewer District, Sewer Extension Project
Various Streets, Goshen & Torrington, CT

Dear Ms. Labadia:

USDA Rural Development is considering providing financial assistance to the Woodridge Lake Sewer District (the "Applicant") for the installation of approximately 34,000 lf of sewer force main piping and two (2) sewer pump stations along various streets in Goshen and Torrington. The project will essentially disconnect the Applicant's sewer collection system from their existing, outdated waste water treatment plant and associated leaching beds and connect it to Torrington's existing collection system and treatment plant. The sewer force main piping is planned to be installed within existing, previously disturbed right-of-ways of various streets in Goshen and Torrington, including Brush Hill Road, Old Middle Street, Pie Hill Road, East Street South, and Goshen Road. The force main will begin at the Applicant's waste water treatment plant off of Brush Hill Road in Goshen and will terminate at the intersection of Goshen and Norfolk Roads in Torrington. Following the completion of the project, the Applicant's waste water treatment plant and associated leaching beds will be decommissioned. Two (2) sewer pump stations will be required; one installed at the existing waste water treatment plant and the other installed along Pie Hill Road. The project will also involve pavement repair. An aerial photograph and preliminary engineered site plans have been attached. The proposed project is eligible for financial assistance under Rural Development's Water and Waste Water Loan and Grant Program. Rural Development has determined the Applicant's proposal meets the definition of an undertaking per 36 CFR Part 800.16(y) and therefore is subject to Section 106 review in accordance with the National Historic Preservation Act of 1966, as amended.

We have identified an Area of Potential Effect (APE) as to be limited to the areas within the existing roadway right-of-ways; see attached maps. In accordance with 36 CFR Part 800.3(f), we have not identified any other consulting parties.

Rural Development has checked the National Register of Historic Places and has identified several listed properties and historic districts in Goshen and Torrington, all located outside the established APE. Based on the information gathered, we have made a determination that there are no historic properties affected by our proposed project pursuant to 36 CFR Part 800.4(d)(1) and seek your concurrence pursuant to 36 CFR 800.4(d)(1)(i). An expedited review is requested and appreciated. If you have any questions or require additional information, please contact me at 413-253-4334.

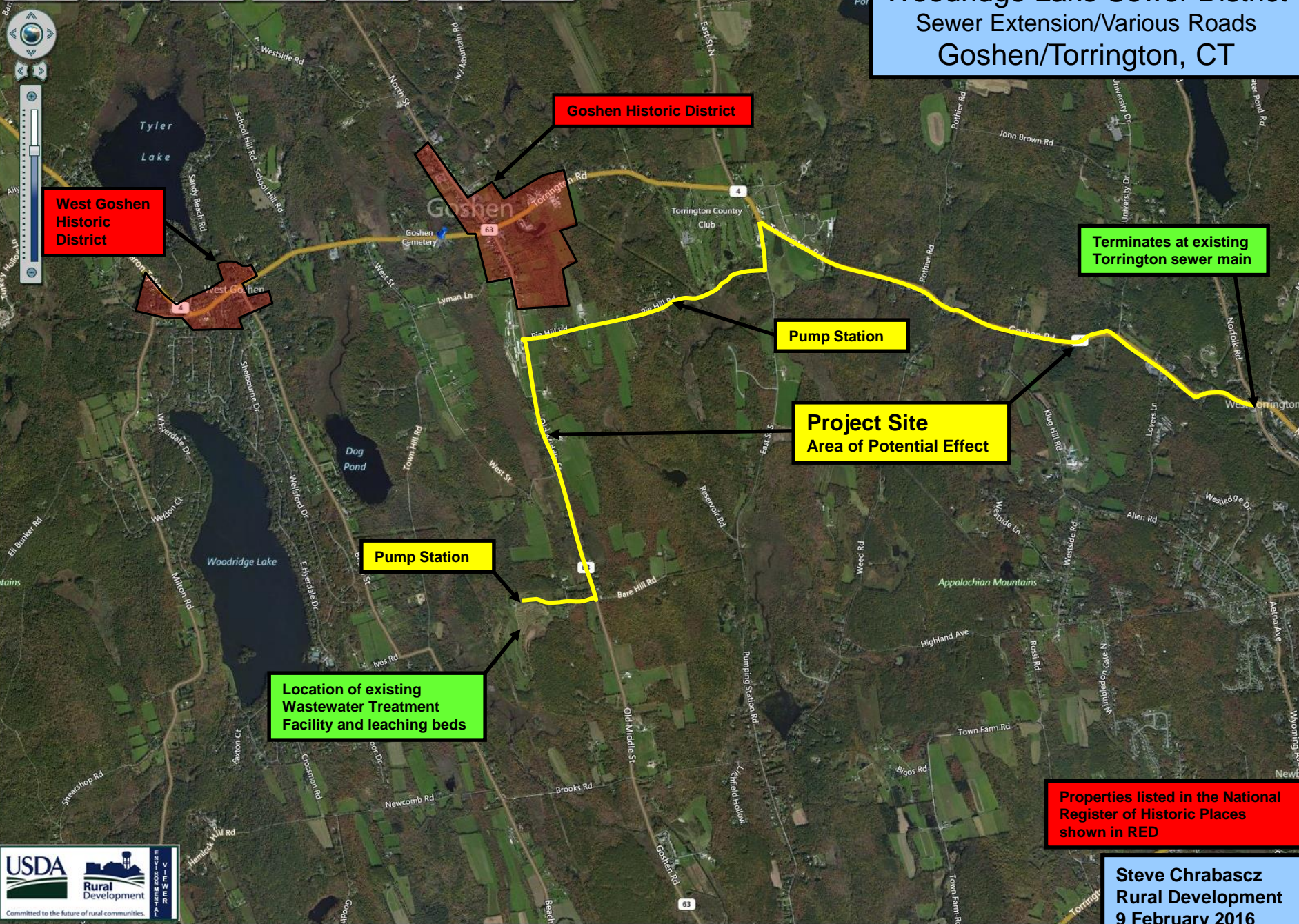
Respectfully,

Steven Chrabascz
State Environmental Coordinator

Rural Development • Amherst State Office
451 West Street, Suite 2 • Amherst MA 01002
Voice (413) 253-4302 • Fax (855) 596-7673
TDD (413)253-4590

USDA is an equal opportunity provider, employer, and lender.

Woodridge Lake Sewer District Sewer Extension/Various Roads Goshen/Torrington, CT



Goshen Historic District

West Goshen Historic District

Terminates at existing Torrington sewer main

Pump Station

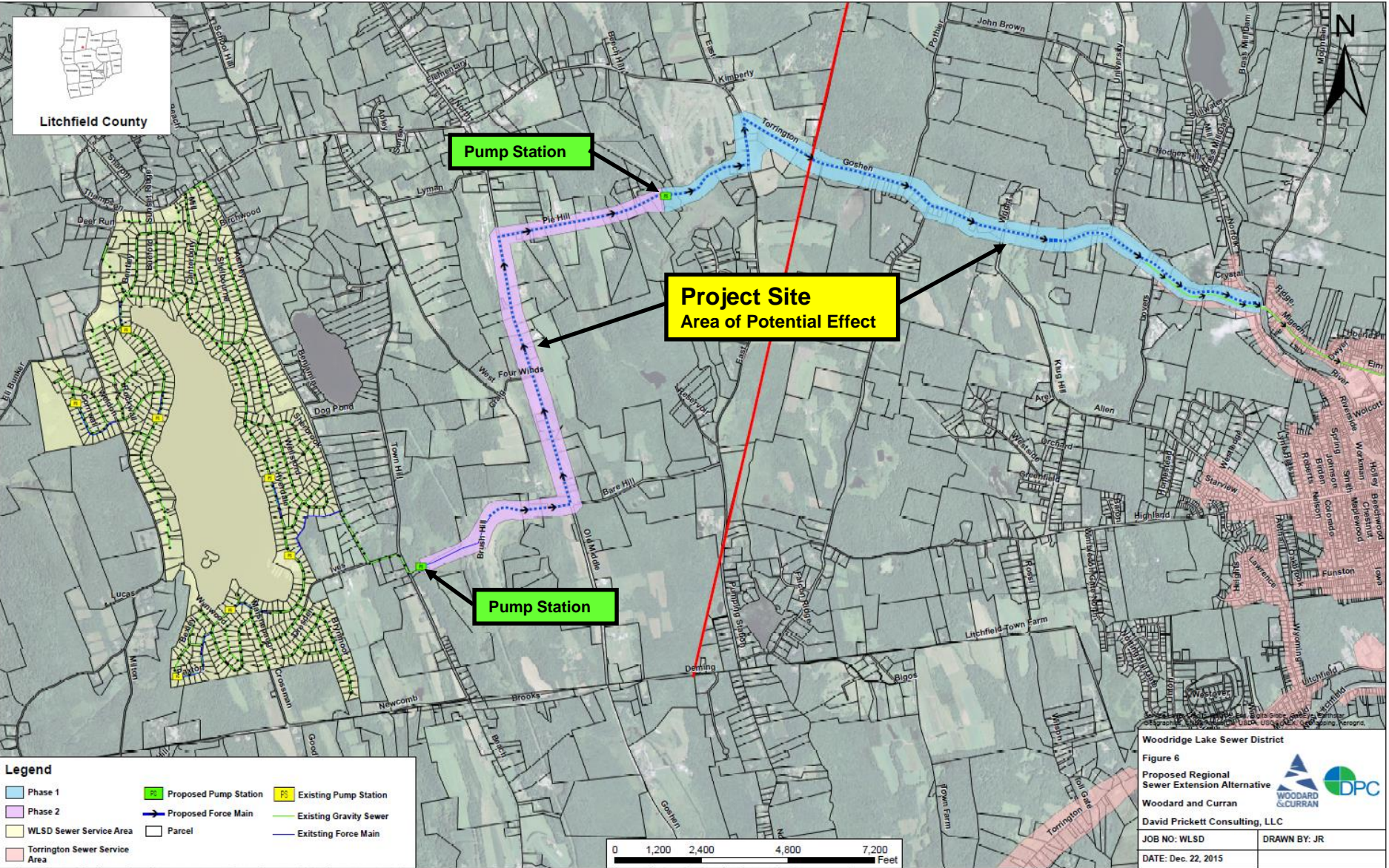
**Project Site
Area of Potential Effect**

Pump Station

Location of existing Wastewater Treatment Facility and leaching beds

Properties listed in the National Register of Historic Places shown in RED

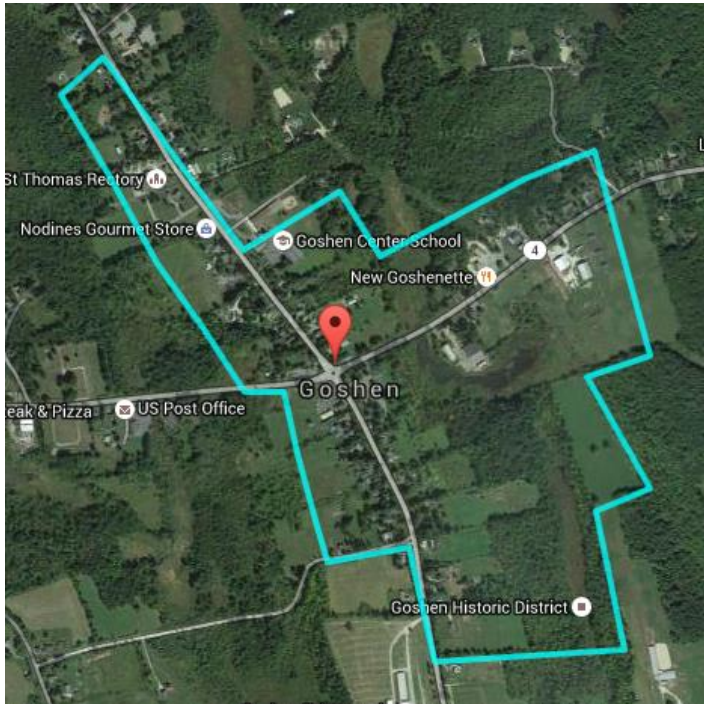
**Steve Chrabascz
Rural Development
9 February 2016**



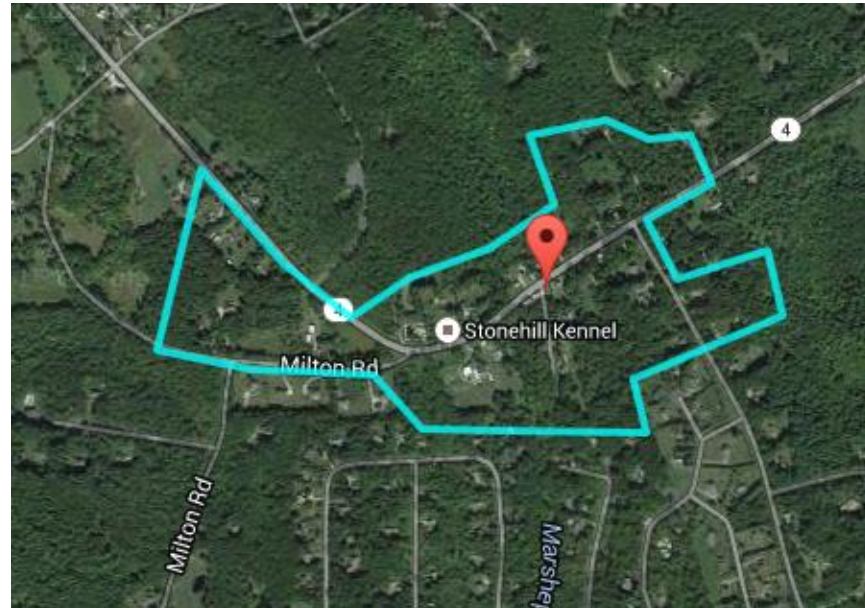
Woodridge Lake Sewer District Sewer Extension/Various Roads Goshen/Torrington, CT

National Register of Historic Places

754	93001362	CONNECTICUT	Litchfield	Goshen	Brooks, Hervey, Pottery Shop and Kiln Site	Address Restricted	19931210	SITE
755	82000996	CONNECTICUT	Litchfield	Goshen	Goshen Historic District	CT 63 and 4, and Gifford Rd.	19821227	DISTRICT
756	87000982	CONNECTICUT	Litchfield	Goshen	West Goshen Historic District	Roughly bounded by CT 4, Beach, Mill and Milton Sts., and Thompson Rd.	19871023	DISTRICT
849	82004480	CONNECTICUT	Litchfield	Torrington	Alldis, James, House	355 Prospect St.		
850	88002978	CONNECTICUT	Litchfield	Torrington	Downtown Torrington Historic District	Roughly bounded by Church and Alvord Sts., Center Cemetery, Willow St., E. Main St., Litchfield St., ar		
851	87000129	CONNECTICUT	Litchfield	Torrington	Fyler--Hotchkiss Estate	192 Main St.		
852	77001403	CONNECTICUT	Litchfield	Torrington	Gillette's Grist Mill	E of Torrington on Maple Hollow Rd.		
853	02000913	CONNECTICUT	Litchfield	Torrington	Migeon Avenue Historic District	Roughly along Migeon Ave. and parts of Forest St.		
854	86001736	CONNECTICUT	Litchfield	Torrington	Paugnut Forest Administration Building	385 Burr Mountain Rd.		
855	02000912	CONNECTICUT	Litchfield	Torrington	Skee's Diner	589 Main St.		
856	86000522	CONNECTICUT	Litchfield	Torrington	South School	362 S. Main St.		
857	91000991	CONNECTICUT	Litchfield	Torrington	Torrington Street Historic District	Torrington St. from Main St. N to W. Hill Rd.		
858	87002185	CONNECTICUT	Litchfield	Torrington	Torrington Fire Department Headquarters	117 Water St.		
859	91000349	CONNECTICUT	Litchfield	Torrington	Villa Friuli	58 High St.		
860	84001098	CONNECTICUT	Litchfield	Torrington	Warner Theatre	68-82 Main St.		
861	87000115	CONNECTICUT	Litchfield	Torrington	Warrenton Woolen Mill	839 Main St.		



Goshen Historic District



West Goshen Historic District

Steve Chrabascz
Rural Development
9 February 2016



United States Department of the Interior



FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
<http://www.fws.gov/newengland>

January 22, 2016

To Whom It May Concern:

This project was reviewed for the presence of federally listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

<http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm> (accessed January 2016)

Based on information currently available to us, no federally listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required. No further Endangered Species Act coordination is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact Maria Tur of this office at 603-223-2541 if we can be of further assistance.

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office

**FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES
IN CONNECTICUT**

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
Fairfield	Piping Plover	Threatened	Coastal Beaches	Westport, Bridgeport and Stratford
	Roseate Tern	Endangered	Coastal beaches, Islands and the Atlantic Ocean	Westport and Stratford
	Bog Turtle	Threatened	Wetlands	Ridgefield and Danbury.
	Red knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Hartford	Dwarf wedgemussel	Endangered	Farmington and Podunk Rivers, Muddy Brook, Philo Brook, Stony Brook	South Windsor, East Granby, Suffield, Simsbury, Avon and Bloomfield.
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Litchfield	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Sharon.
	Bog Turtle	Threatened	Wetlands	Sharon and Salisbury.
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Middlesex	Roseate Tern	Endangered	Coastal beaches, islands and the Atlantic Ocean	Westbrook and New London.
	Piping Plover	Threatened	Coastal Beaches	Clinton, Westbrook, Old Saybrook.
	Puritan Tiger Beetle	Threatened	Sandy beaches along the Connecticut River	Cromwell, Portland
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
New Haven	Bog Turtle	Threatened	Wetlands	Southbury
	Piping Plover	Threatened	Coastal Beaches	Milford, Madison and West Haven
	Roseate Tern	Endangered	Coastal beaches, Islands and the Atlantic Ocean	Branford, Guilford and Madison
	Indiana Bat	Endangered	Mines, Caves	
	Red knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

COUNTY	SPECIES	FEDERAL STATUS	GENERAL LOCATION/HABITAT	TOWNS
New London	Piping Plover	Threatened	Coastal Beaches	Old Lyme, Waterford, Groton and Stonington.
	Roseate Tern	Endangered	Coastal beaches, Islands and the Atlantic Ocean	East Lyme and Waterford.
	Small whorled Pogonia	Threatened	Forests with somewhat poorly drained soils and/or a seasonally high water table	Waterford
	Red knot ¹	Threatened	Coastal Beaches and Rocky Shores, sand and mud flats	Coastal towns
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Tolland	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide
Windham	Sandplain Gerardia	Endangered	Dry, sandy-loam, nutrient-poor soils of sandplain grasslands	Plainfield
	Northern Long-eared Bat	Threatened Final 4(d) Rule	Winter- mines and caves, Summer – wide variety of forested habitats	Statewide

¹Migratory only, scattered along the coast in small numbers

- Eastern cougar, gray wolf, Indiana bat, Seabeach amaranth and American burying beetle are considered extirpated in Connecticut.
- There is no federally-designated Critical Habitat in Connecticut.