McCLURE
ENGINEERING, INC

119 Worcester Road | Charlton, MA 01507 | T: 508.248.2005 | F: 508.248.4887

Professional Engineering Solutions

December 19, 2019

Mrs. Rebecca Gendreau, Conservation Agent
Sturbridge Conservation Commission
Center Office Building
301 Main Street
Sturbridge, MA 01566

RE: 65 Whittemore Road
Wetland Bylaw Letter Permit Application
Assessors' Parcel ID: 680-03041-065

Dear Commission Members:

On behalf of our Client, Town of Sturbridge (Applicant), McClure Engineering, Inc. (McClure) is providing this cover letter to accompany the enclosed Wetland Bylaw Letter Permit Application for the proposed site development at 65 Whittemore Road, Sturbridge, MA (Site). The subject 0.25 +/- Acre Site is referenced as Sturbridge Assessor's Parcel ID 680-03041-065.

The property lies on the northern side of Whittemore Road, approximately 500 feet west of Fiske Hill Road. The Site is located within the Suburban Residential zoning district. Currently, the existing site consists of an existing 391,000-gallon above ground water tank, existing water pump house, and existing 5,000-gallon underground hydropneumatic (pressurized) water storage tank. There are no on-site wetland resource areas or any wetland resource areas within 100 feet of the site. There is a wetland within 200' to the southwest of the site as indicated in the attached wetland evaluation conducted by EcoTec, Inc, however there is no work proposed within 170' of the wetland as shown on the "Town of Sturbridge, Fiske Hill Water Pump Station Replacement Project, Site Plan Rev 1, 65 Whittemore Road, Sturbridge, MA 01566" date 12/18/19. There are no known endangered plant or animal species on the proposed site per the Massachusetts Natural Heritage and Endangered Species Program (NHESP).

The purpose of the requested letter permit is to allow for the construction of a new town owned water booster station to eliminate the need for the existing hydropneumatic tank. On June 23, 2015, a hydropneumatic water storage tank failed at a community public water supply in North Stonington, CT. The failure caused a large explosion and the pump station was totally destroyed. The explosion occurred around 3:00 am and no injuries or loss of life occurred. The distribution system depressurized and significant emergency measures were required to restore and sustain water service. A preliminary analysis indicated that several factors contributed to the tank's catastrophic failure including internal corrosion, age, and construction. Per a notice from MassDEP dated July 24, 2015, there are 970 hydropneumatic tanks operating in water systems in Massachusetts. To avoid catastrophic failure similar to what occurred in Connecticut and other places, MassDEP strongly recommends that all operational hydropneumatic tanks be evaluated and maintained in accordance with manufacturer's specifications. The evaluation should consider structural integrity, manufacturer's pressure ratings, age and expected service life, and condition of internal coating systems. The typical useful life of tanks varies, however, for asset management purposes, hydropneumatic tanks generally have a life expectancy of 10 years. More details are provided in the attached MassDEP notice.

Due to the age of the existing hydropneumatic tank on site, the tank not meeting most of the current DEP hydropneumatic tank requirements, and the difficulty and danger of attempting to inspect and evaluate the condition of such tanks, the Applicant is proposing the construction of a new water booster station to replace the existing water pump house and hydropneumatic water storage tank in order to avoid a similar catastrophe to what happened in CT in 2015. The proposed multi-pump booster station, which has been sized to accommodate daily flow requirements as well as fire flow requirements, will eliminate the necessity to have a pressurized hydropneumatic tank on site to maintain water pressures for the 211 homes located in the Fiske Hill high service water area. The proposed water booster station will be located within a proposed 12'x16' precast building which will be set on site adjacent to the

existing above ground water tank. The existing pump house and hydropneumatic tank will remain online while the new booster station is constructed. Once the station is ready to be turned on, the existing system will be taken offline and abandoned. The existing pump house is to remain for storage for the Sturbridge Water Department. The new station will tie into the existing electrical service and SCADA system on site. The existing propane tank and propane emergency generator will be removed and returned to the Sturbridge DPW, and be replaced with a new diesel fuel emergency generator for the new booster station. A paved driveway will be provided for the new station.

8" staked straw wattles are proposed for erosion and sedimentation control during construction at the limit of work, as well as within the existing stormwater swale along Whittemore Road which leads to a town owned drop inlet catch basin. The catch basin, as noted by EcoTec Inc, likely discharges to a wetland resource area. Hay bales are proposed to be placed across the access drive at the end of each day during construction.

McClure is providing complete project details for your review within our "Town of Sturbridge, Fiske Hill Water Pump Station Replacement Project, 65 Whittemore Road, Sturbridge, MA 01566" date 12/11/19. Plans have been designed and drawn in accordance to the Town of Sturbridge's General Rules and Regulations and Zoning By-Laws.

Please contact me at (508) 248-2005 with any questions or comments. Thank you.

Sincerely,

Peter Engle, P.E.
Senior Engineer

cc: Mr. Butch Jackson, DPW Director, Town of Sturbridge, 308 Main Street, Sturbridge, MA 01566

Town of Sturbridge

Conservation Commission

Wetland Bylaw Letter Permit Application

Instructions and Submittal Requirements:
The following activities may be permitted through a Wetland Bylaw Permit application filed with the Commission office at least 1 week in advance of a public meeting.

1. Minor projects taking place outside of the State 100-foot buffer zone.
2. Any work within the 100-foot WPA buffer zone, which is classified under 310 CMR 10.02 (1.) as a Minor Activity under the Wetlands Protection Act, or project with no potential to generate erosion.
3. Retaining Walls:
    a. Reconstruction of existing retaining walls within the 200-foot buffer requires a Wetland Bylaw Letter Permit request filing.
    b. Creation of new retaining walls within the 100-foot buffer requires a Notice of Intent filing.
    c. Creation of new retaining walls within the 100 to 200 foot buffer requires a Request for Determination filing.

- Wetland Bylaw Permits must be filled out in their entirety and must identify all buffer zone impacts. Application must be signed by the property owner and accompanied by a plan.
- Plans must be at a minimum 1" = 20' for consideration and should be drawn clearly and to scale.
- Depending on the scope of the project, the Commission has the discretion to require a Request for Determination of Applicability, or a Notice of Intent, and may require plans be stamped and signed by a registered professional engineer, architect, landscape architect, or surveyor.

Town of Sturbridge

Conservation Commission

Wetland Bylaw Letter Permit Application

General Information:

Project Location 65 Whittemore Road, Sturbridge, MA 01566

Applicant Name Town of Sturbridge DPW

Applicant Address 69 New Boston Road Extension, Sturbridge, MA 01566

Applicant Mailing Address P.O. Box 182, Sturbridge, MA 01566

Phone 508-347-2515 E-mail Address bjackson@town.sturbridge.ma.us

Property Owner ☐ same

Name Town of Sturbridge

Representative McClure Engineering, Inc.

Narrative description of the work being proposed: Include a scope of work, and a thorough description of any and all work being proposed. This shall include any earthwork, structural work, the placement and/or removal of impervious surfaces, a construction sequence, mitigation being utilized and any additional activities being proposed which fall under the jurisdiction of the [1]Bylaw and its [2]Regulations. (If more space is needed for narrative please attach separate page)

To construct an upgraded 192 s.f. water booster station and abandon an existing 5,000 gallon hydropneumatic water storage tank due to age. Constructing the proposed water booster station will maintain town water supply to 211 homes within the Fiske Hill high service area.

[1] Chapter 3.5 "Wetlands Protection"; Town of Sturbridge General Bylaws As Amended 2007

[2] Regulations Administering the Town of Sturbridge Wetlands Bylaw; Effective November 22, 2002, Revision 1 – effective February 17, 2004

Town of Sturbridge

Conservation Commission

Project Type

- ☐ Landscaping
- ☐ Accessory to Residential Structure
- ☐ Agricultural
- ☐ Vegetation Removal
- ☐ Reconstruction of retaining wall within the 200-foot buffer zone
- ☐ Other: _____
- ☐ Exploratory Test Pits
- ☐ Driveway
- ☒ Utility

Buffer Zone only

- ☐ Between 0 – 50 feet
- ☐ Between 50 – 100 feet
- ☒ Between 100 – 200 feet

Signature of Applicant _____

Signature of Owner (if different from Applicant) _____

Attached Plans

Fiske Hill Water Pump Station Replacement Project — Name

12-11-19 — Date

Also attached:

- ☒ Photographs
- ☒ Map showing property location

Town Hall
308 Main Street
Sturbridge, MA 01566

508-347-2506
(f) 508-347-5886

APPENDIX A

Site Information

USGS Map

Assessors Map

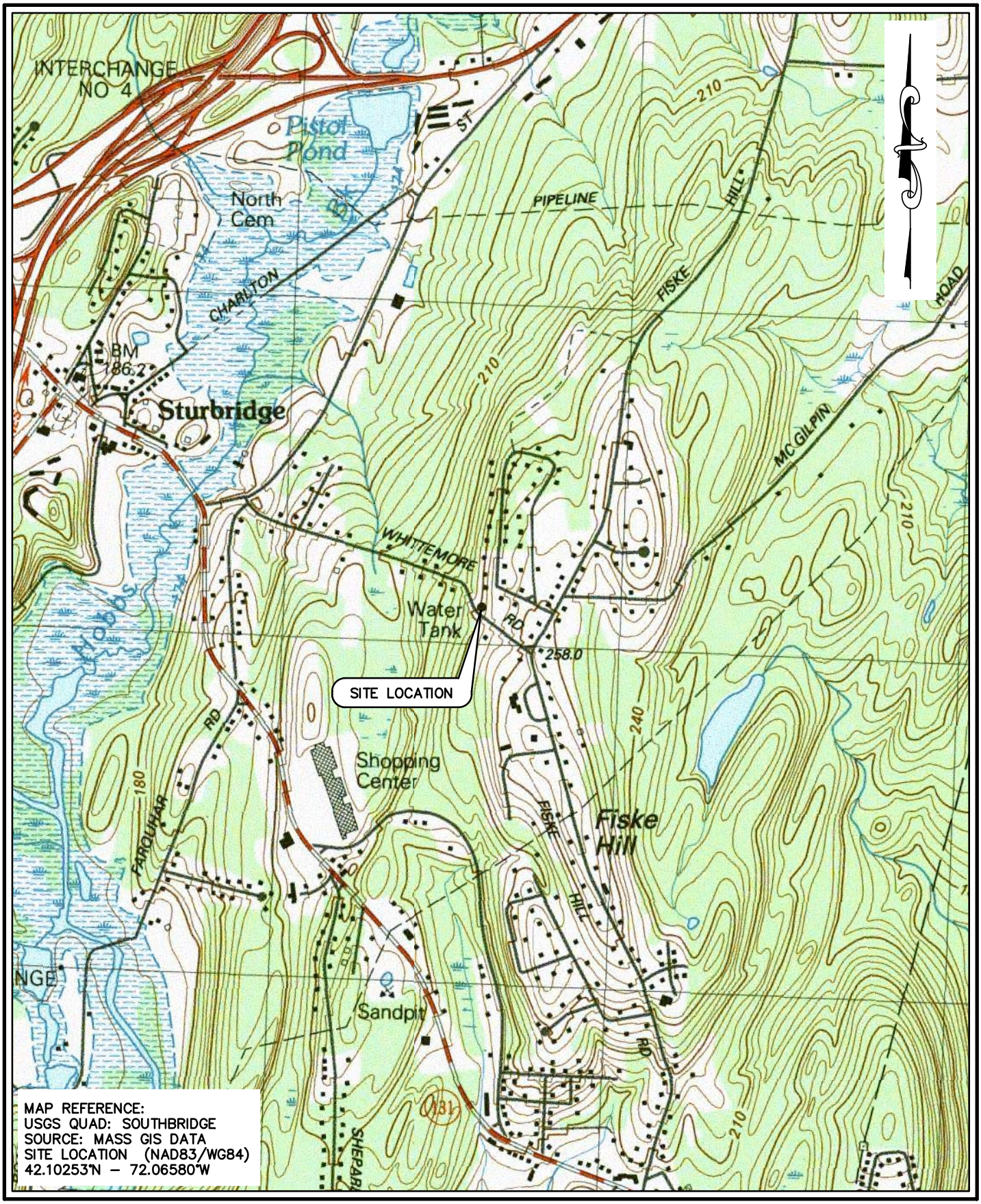
Certified Abutters List

Assessors Property Record Card

Site Photos

Fiske Hill High Service Water Area Map

EcoTec Inc., Site Evaluation, 12/2/19



DATE:	10/12/2016
DRAWN BY:	MM
APPROVED BY:	GPM
SCALE:	
HORZ:	1"=500'
VERT:	

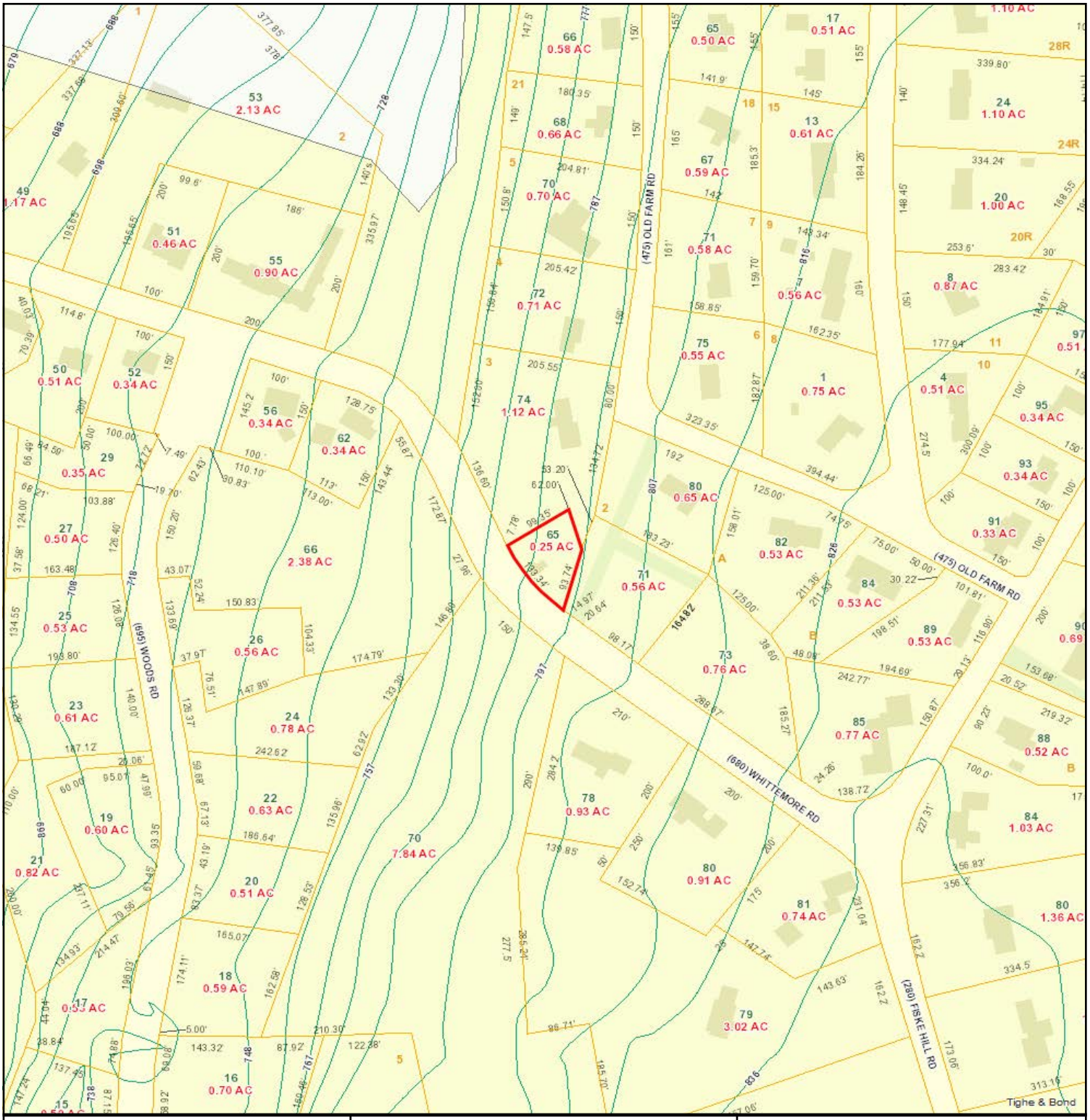
0 250' 500'

McCLURE
ENGINEERING, INC
119 Worcester Road
Charlton, MA 01507
Tel: (508) 248-2005
Fax (508) 248-4887
Email: chris@mcclureengineers.com

USGS SITE LOCATION
FISKE HILL WATER BOOSTER STATION
65 WHITTEMORE ROAD
STURBRIDGE, MA 01566
PREPARED FOR
TOWN OF STURBRIDGE D.P.W.

PROJ. NO.	287-1348-H
DWG.	USGS

FIG 1



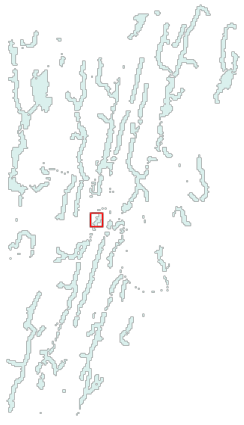
65 WHITTEMORE ROAD

11/14/2019 1:34:37

1"=200'

Property Information

Parcel ID	680-03041-065
Address	65 WHITTEMORE
Total Value	$124,800.00



The information depicted on this map is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel-level analyses.

Property Location 65 WHITTEMORE ROAD | Map ID 680-/0 3041/- 065/ / | Bldg Name | State Use 9380
Vision ID 4042 | Account # 680-03041-065 | Bldg # 1 | Sec # 1 of 1 | Card # 1 of 1 | Print Date 9/25/2019 5:05:29 PM

CURRENT OWNER

TOWN OF STURBRIDGE
WATER DEPT
WHITTEMORE ROAD

STURBRIDGE MA 01566

GIS ID 680-03041-065

TOPO TYPE	UTILITY	STREET	LOCATION
4 Rolling			

TOPO WET	EASEMENT	TRAFFIC	CORNER
	2 Suburban		

DRAINAGE	VIEW	COMMUNITY
		1 Paved

SUPPLEMENTAL DATA

Alt Prcl ID 680-03041-065
Parcel User_
Parcel User_
Parcel User_
Parcel User_
POND

SEPTIC
FEATURES
TOPO
WF CHAR
USE
Assoc Pid#

CURRENT ASSESSMENT

Description	Code	Appraised	Assessed
EXM LAND	9380	57300	57,300
EXEMPT	9380	65700	65,700
	Total	123,000	123,000

348
STURBRIDGE, MA

RECORD OF OWNERSHIP

RECORD OF OWNERSHIP	BK-VOL/PAGE		SALE DATE	Q/U	V/I	SALE PRICE	VC
TOWN OF STURBRIDGE	0	0		U	V	0	

PREVIOUS ASSESSMENTS (HISTORY)

Year	Code	Assessed	Year	Code	Assessed	Year	Code	Assessed
2020	9380	57,300	2019	9380	59,100	2018	9380	56,200
	9380	65,700		9380	65,700		9380	65,700
	Total	123000		Total	124800		Total	121900

EXEMPTIONS

Year	Code	Description	Amount
		Total	0.00

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm Int

This signature acknowledges a visit by a Data Collector or Assessor

ASSESSING NEIGHBORHOOD

Nbhd	Nbhd Name	B	Tracing	Batch
6				

NOTES

ECO-OVERBUILT/SIZE IE

TOWN WATER TANK

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	0
Appraised Xf (B) Value (Bldg)	0
Appraised Ob (B) Value (Bldg)	65,700
Appraised Land Value (Bldg)	57,300
Special Land Value	0
Total Appraised Parcel Value	123,000
Valuation Method	C
Exemption	0
Adjustment	
	123,000

BUILDING PERMIT RECORD

Permit Id	Issue Date	Type	Description	Amount	Insp Date	% Comp	Date Comp	Comments

VISIT / CHANGE HISTORY

Date	Type	Is	Id	Cd	Purpost/Result
02-23-2015	02		AJ	53	VALUE REVIEW
01-28-1998			RM	00	Measur+Listed
05-29-1986					

LAND LINE VALUATION SECTION

B	Use Co	Description	Zone	D	Fronta	Depth	Land Units		Unit Price	I. Fact	S.A.	Ac Di	C. Fact	St. Idx	Adj	Notes	Special Pricing		Size A	Adj Unit Pric	Land Value
1	9380	Town District V					10,890	SF	4.21	1.250	6	1.000	1.00		1.00			0	1.000	5.26	57,300
						Total Card Land Units	0.250	AC	Parcel Total Land Area:	0.2500										Total Land Value	57,300

Property Location 65 WHITTEMORE ROAD | Map ID 680-/0 3041/- 065/ / | Bldg Name | State Use 9380
Vision ID 4042 | Account # 680-03041-065 | Bldg # 1 | Sec # 1 of 1 | Card # 1 of 1 | Print Date 9/25/2019 5:05:30 PM

CONSTRUCTION DETAIL

Element	Cd	Description
Style	94	Outbuildings
Model	00	Vacant
Grade:		
Stories:		
Occupancy		
Exterior Wall 1		
Exterior Wall 2		
Roof Structure:		
Roof Cover		
Interior Wall 1		
Interior Wall 2		
Interior Flr 1		
Interior Flr 2		
Heat Fuel		
Heat Type:		
AC Type:		
Total Bedrooms		
Total Bthrms:		
Total Half Baths		
Total Xtra Fixtrs		
Total Rooms:		
Bath Style:		
Kitchen Style:		
Num Kitchens		

CONSTRUCTION DETAIL (CONTINUED)

Element	Cd	Description

MIXED USE

Code	Description	Percentage
9380	Town District V	100
		0
		0

COST / MARKET VALUATION

Adj Base Rate	
Replace Cost	0
Net Other Adj	
Year Built	0
Effective Year Built	0
Depreciation Code	
Remodel Rating	
Year Remodeled	
Depreciation %	
Functional Obsol	0
Economic Obsol	0
Cost Trend Factor	1
Condition	
% Complete	0
Overall % Condition	
Deprec Value	0
Dep % Ovr	
Dep Ovr Comment	
Misc Imp Ovr	
Misc Imp Ovr Comment	
Cost to Cure Ovr	
Cost to Cure Ovr Comment	

No Sketch

OB - OUTBUILDING & YARD ITEMS(L) / XF - BUILDING EXTRA FEATURES(B)

Code	Description	Su	Sub Type	Lan	Units	Unit Price	Yr Blt	%	Dep.	Cond	Gra	Qual	Apprais Va
WAT2	WATER TOW			L	150,	0.50	1986	50	0.00			0.00	37,500
FN4	FENCE-8' C			L	480	11.00	1998	50	0.00			0.00	2,600
SHD2	W/LIGHTS E			L	144	9.00	1998	50	0.00			0.00	600
CGN	COMM GEN			L	1	25000.00		100	0.00			0.00	25,000

BUILDING SUB-AREA SUMMARY SECTION

Subarea	Description	Living	Gross	Eff Area	Unit Cost	Undeprec Value
	Ttl Gross Liv / Lease Area	0	0	0		

Photo Documentation
Fiske Hill Booster Station
65 Whittemore Rd., Sturbridge, MA

Fiske Hill Water Booster Station (Photo No. 3576)

14’ x 10’ Pumphouse (Photo No. 132127)

391,000 Gallon Storage Tank (Photo No. 4438)

Storage Tank Control Panel (Photo No. 4444)

Photo Documentation
Fiske Hill Booster Station
65 Whittemore Rd., Sturbridge, MA

Pumphouse Lower Level – Booster Pumps (Photo No. 4492)

Pumphouse Lower Level – Low Level Cutoff (Photo No. 4477)

Pumphouse Lower Level – Booster Pumps (Photo No. 4502)

Pumphouse Lower Level - Booster Pump Controls/Gauges (Photo No. 4475)

Photo Documentation
Fiske Hill Booster Station
65 Whittemore Rd., Sturbridge, MA

Pumphouse Upper Level – Electrical Components (Photo No. 4453)

Pumphouse Upper Level – Chemical Storage Area (Photo No. 4454)

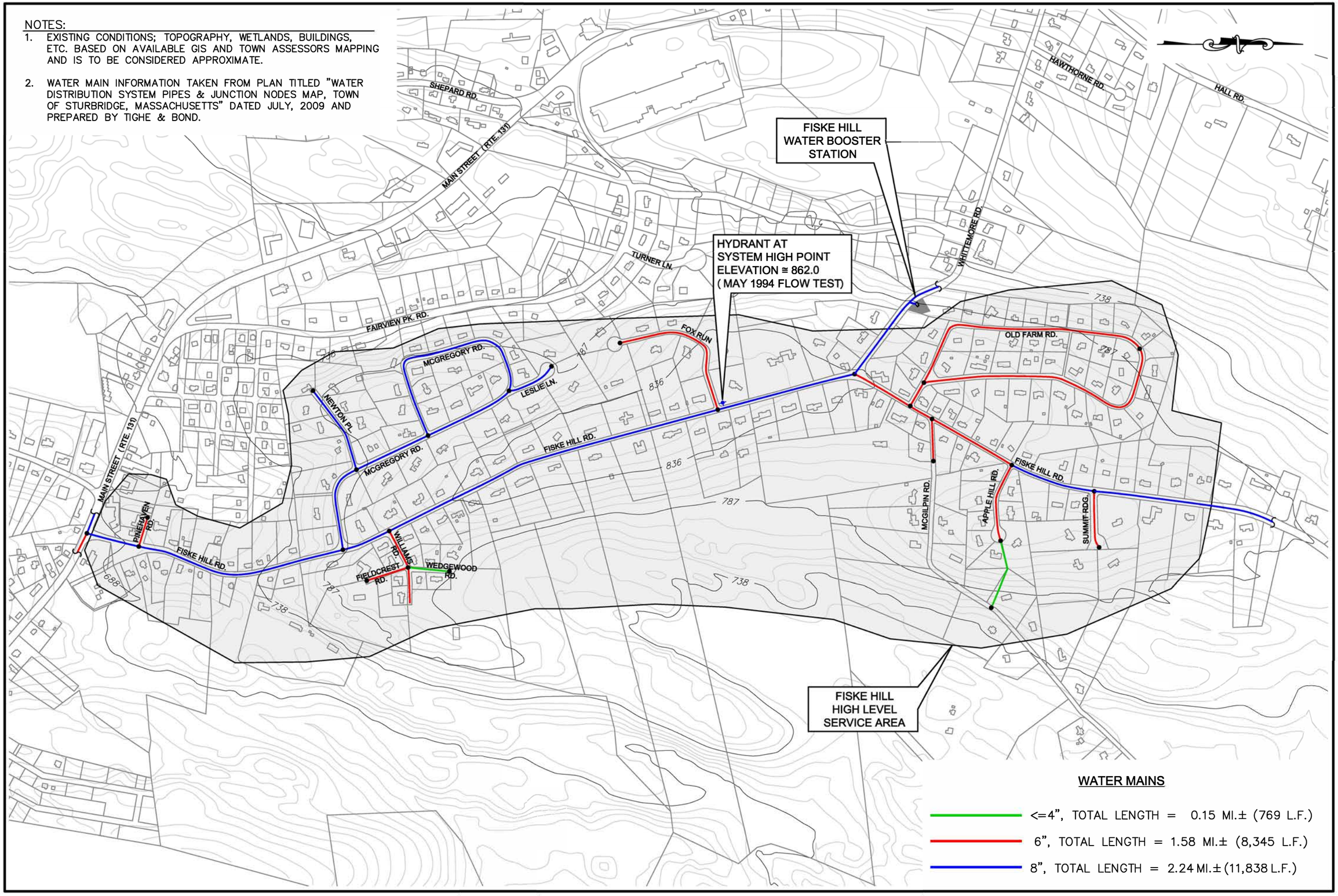
Photo No. 4440

Photo No. 4437

NOTES:

1. EXISTING CONDITIONS; TOPOGRAPHY, WETLANDS, BUILDINGS, ETC. BASED ON AVAILABLE GIS AND TOWN ASSESSORS MAPPING AND IS TO BE CONSIDERED APPROXIMATE.

2. WATER MAIN INFORMATION TAKEN FROM PLAN TITLED "WATER DISTRIBUTION SYSTEM PIPES & JUNCTION NODES MAP, TOWN OF STURBRIDGE, MASSACHUSETTS" DATED JULY, 2009 AND PREPARED BY TIGHE & BOND.



PROJ. NO. 287-1348-G
DWG. SERVICE AREA

FIG 2

HIGH LEVEL SERVICE AREA
FOR
FISKE HILL WATER BOOSTER STATION
65 WHITTEMORE ROAD
STURBRIDGE, MA 01566

McCLURE ENGINEERING, INC
119 Worcester Road
Charlton, MA 01507
Tel: (508) 248-2005
Fax (508) 248-4887
Email: chris@mcclureengineers.com

DATE: 2/17/2017
DRAWN BY: MM
APPROVED BY: CPM
SCALE: HORZ: 1" = 600'
VERT: N.T.S.
0 300 600

EcoTec, Inc.

ENVIRONMENTAL CONSULTING SERVICES
102 Grove Street
Worcester, MA 01605-2629
508-752-9666 – Fax: 508-752-9494

December 2, 2019

Dennis Rice, PE
McClure Engineering, Inc.
119 Worcester Road
Charlton, MA 01507

RE: Wetland Resource Evaluation, 65 Whittemore Road, Sturbridge, Massachusetts

Dear Mr. Rice:

On November 20, 2019, EcoTec, Inc. inspected the above-referenced property for the presence of wetland resources as defined by: (1) the Massachusetts Wetlands Protection Act (M.G.L. Ch. 131, § 40; the "Act") and its implementing regulations (310 CMR 10.00 *et seq.*; the "Regulations"); (2) the U.S. Clean Water Act (i.e., Section 404 and 401 wetlands); and (3) the Town of Sturbridge Wetlands Protection Bylaw and regulations. Paul J. McManus, PWS conducted the inspection.

The subject site consists of a 1/4-acre parcel located northeasterly of Whittemore Road in Sturbridge. The site consists of a water tank, building, parking area and forested uplands. The wetland resources observed in the vicinity of the site are described below.

Methodology and Findings

The site was inspected for the presence of areas that may qualify as wetland resources. The site parcel does not contain any vegetated wetlands or jurisdictional streams, and is located high on a hillside, precluding the presence of floodplains.

EcoTec also conducted an inspection of surrounding properties, to the extent feasible from the site and public property, and determined that the closest wetland to the site is located across Whittemore Road in a southwesterly direction approximately 200-feet from the site. This vegetated wetland appears to border a more distant intermittent stream; accordingly, the vegetated wetland would be regulated as Bordering Vegetated Wetlands and the intermittent stream would be regulated as Bank under the Act and Bylaw. A 100-foot Buffer Zone extends horizontally outward from the edge of Bordering Vegetated Wetlands and Bank under the Act. Therefore, the site is not located within the 100-foot Buffer Zone under the Act.

The Town of Sturbridge Wetlands Protection Bylaw extends jurisdiction by extending the Buffer Zone under the local Bylaw to 200-feet. The project appears to be just at the outer edge of this

jurisdictional Buffer associated with the off-site wetland described above. As such, under the "Local Wetland Bylaw Buffer," review by the Sturbridge Conservation Commission ("SCC") is recommended to ensure regulatory compliance and prevent significant adverse impact to wetlands. Any work proposed between the 100 and 200-foot Buffer requires the filing of either a Request for Determination of Applicability, a Wetland Bylaw Permit, or a Tree Removal Permit with SCC under the local wetlands bylaw.

We note also that a paved drainage swale abuts the site along the shoulder of Whittemore Road and directs stormwater to drop inlets. It is likely that this drainage system discharges to a wetland resource and therefore EcoTec recommends that the stormwater inlets downgradient of the site be protected during construction to prevent sediment from entering the drainage system.

Bordering Land Subject to Flooding is an area that floods due to a rise in floodwaters from a bordering waterway or water body. Where flood studies have been completed, the boundary of Bordering Land Subject to Flooding is based upon flood profile data prepared by the National Flood Insurance Program. Section 10.57(2)(a)3. states that "The boundary of Bordering Land Subject to Flooding is the estimated maximum lateral extent of flood water which will theoretically result from the statistical 100-year frequency storm." Based upon a review of the Flood Insurance Rate Map #25027C0927E effective July 4, 2011, the site is within a Zone X, which is outside the 100-year flood elevation. The project engineer should evaluate the most recent National Flood Insurance Program flood profile data to confirm that Bordering Land Subject to Flooding does not occur on the site. Bordering Land Subject to Flooding would occur in areas where the 100-year flood elevation is located outside of or upgradient of the Bordering Vegetated Wetlands or Bank boundary. Bordering Land Subject to Flooding does not have a Buffer Zone under the Act.

The Massachusetts Rivers Protection Act amended the Act to establish an additional wetland resource area: Riverfront Area. Based upon a review of the current USGS Map (i.e., Southbridge Quadrangle, dated 1982, attached) and observations made during the site inspection, there are no mapped or unmapped streams located within 200 feet of the site. Accordingly, Riverfront Area would not occur on the site. Riverfront Area does not have a Buffer Zone under the Act.

The Regulations require that no project may be permitted that will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species, as identified by procedures set forth at 310 CMR 10.59. Based upon a review of the *Massachusetts Natural Heritage Atlas*, 14th edition, Priority Habitats and Estimated Habitats from the NHESP Interactive Viewer, valid from August 1, 2017, and Certified Vernal Pools from MassGIS, there are no Estimated Habitats [for use with the Act and Regulations (310 CMR 10.00 *et seq*.)], Priority Habitats [for use with Massachusetts Endangered Species Act (M.G.L. Ch. 131A; "MESA") and MESA Regulations (321 CMR 10.00 *et seq*.)], or Certified Vernal Pools on or in the immediate vicinity of the site. A copy of this map is attached.

The reader should be aware that the regulatory authority for determining wetland jurisdiction rests with local, state, and federal authorities. A brief description of my experience and qualifications is attached. If you have any questions, please feel free to contact me at any time.

Cordially,
ECOTEC, INC.

Paul J. McManus, PWS
President

Attachments (4, 4 pages)

17/E/SturbridgeWhittemore65Report

EcoTec, Inc.

ENVIRONMENTAL CONSULTING SERVICES

102 Grove Street

Worcester, MA 01605-2629

508-752-9666 – Fax: 508-752-9494

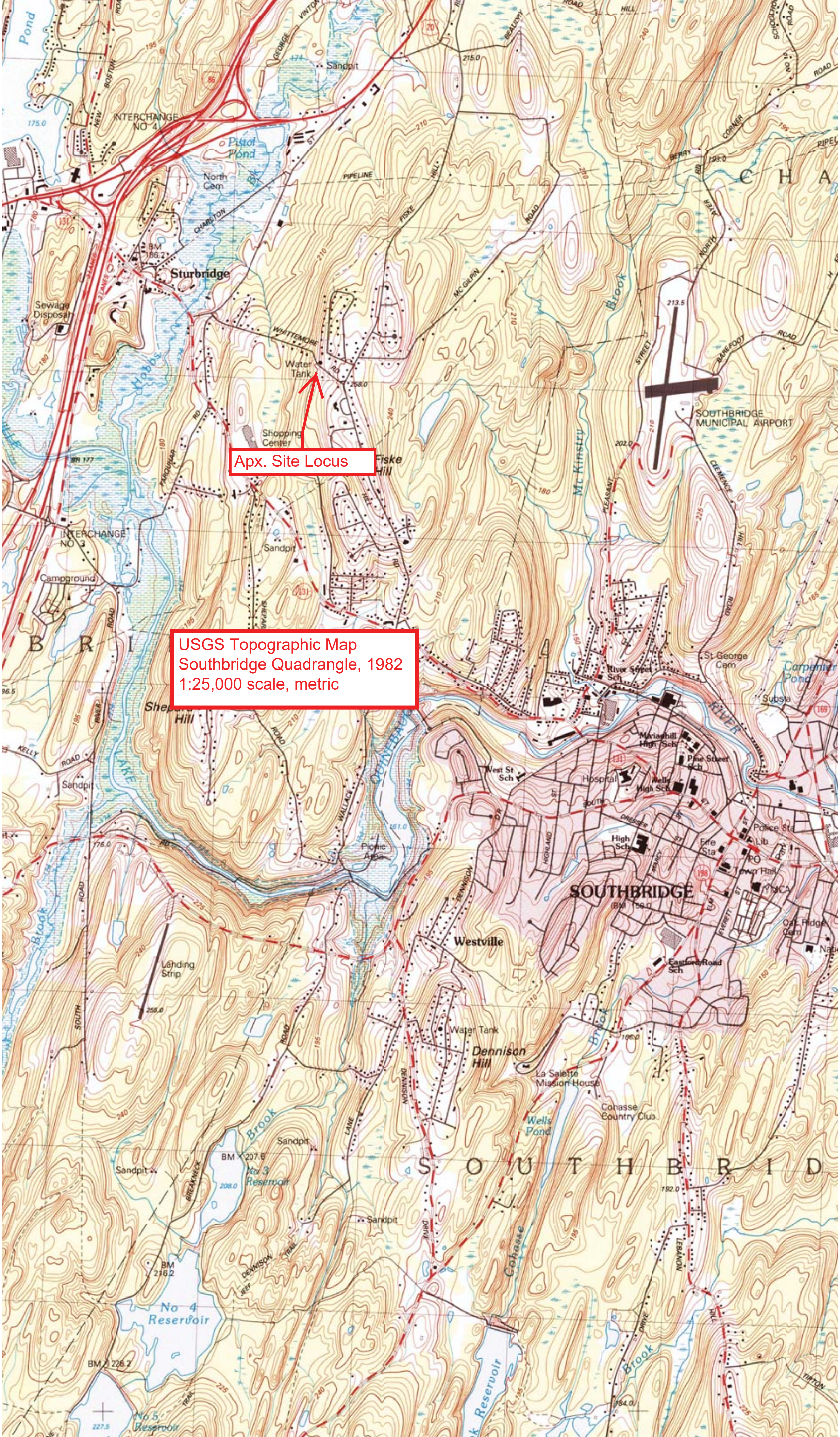
Paul J. McManus, LSP, PWS
President

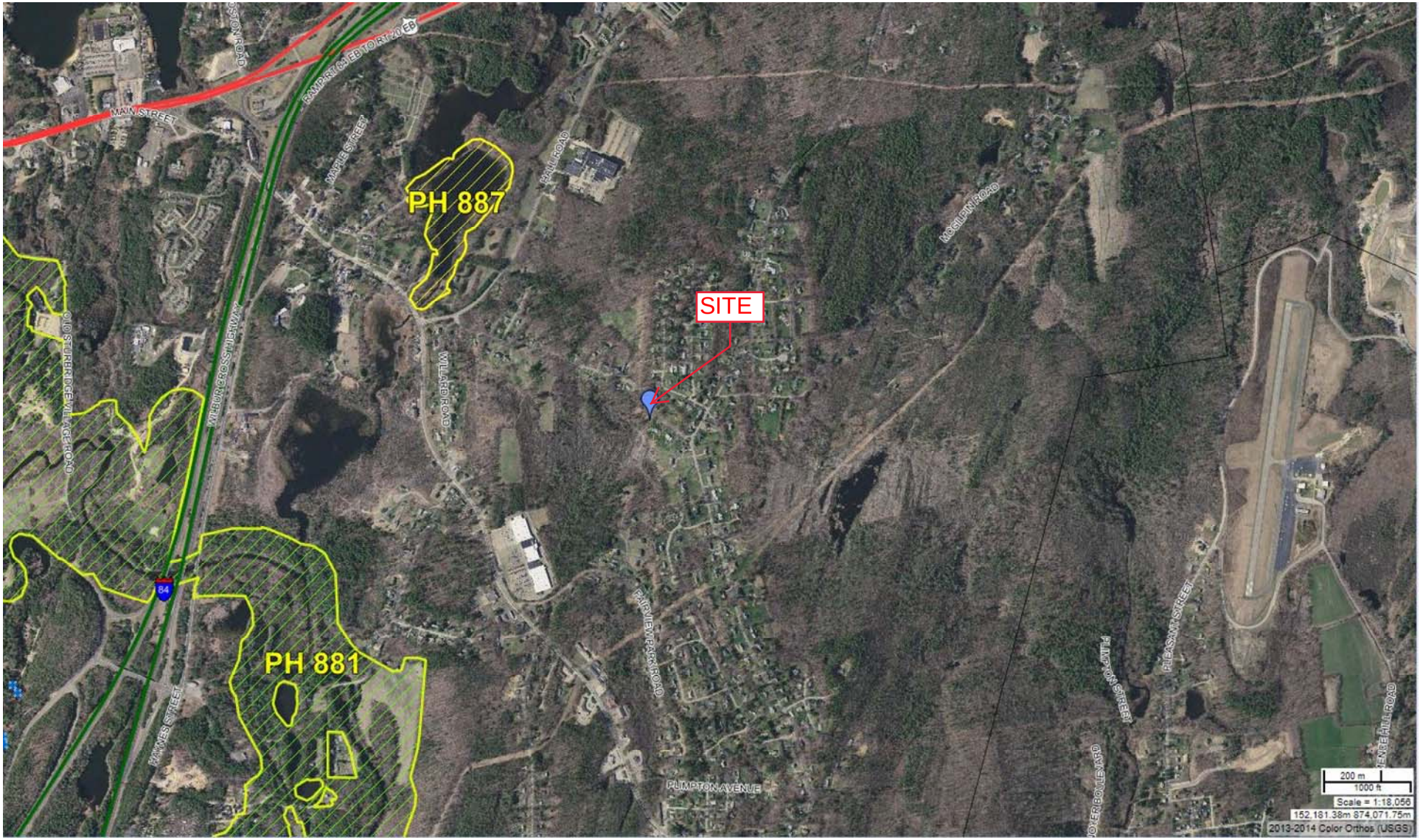
Paul McManus is the President and owner of EcoTec, Inc., which he founded in 1990. He has received certification as a Professional Wetlands Scientist (PWS) from the International Society of Wetlands Scientists (SWS), the leading professional organization in the field. He was elected President of the New England Chapter of SWS, and represented the Chapter on the International Board of Directors for several years, and currently serves as Chapter Past President and Treasurer. Mr. McManus is also a Massachusetts-certified Licensed Site Professional with experience that has included a wide range of site assessment and remediation projects, focused on the field of ecological risk assessment at contaminated sites. Prior to the founding of EcoTec, Mr. McManus was employed as the Senior Scientist at Harborline Engineering Inc. of New Bedford, MA and served for several years as a project manager at the Gulf of Maine Research Center Inc. in Salem, MA. His experience also includes employment as an aquatic ecologist at the Massachusetts Division of Water Pollution Control. Mr. McManus brings a wide variety of environmental consulting experience to EcoTec, including wetland evaluation and delineation, lake and stream assessment, wildlife habitat evaluation, oil and hazardous materials assessment and ecological risk assessment, as well as a variety of other types of environmental impact assessment. Included among the major wetland projects he has completed are detailed wetland community surveys and impact restoration specifications for lengthy pipeline crossings of the Fowl Meadow "Area of Critical Environmental Concern" (ACEC). At the MWRA's Norumbega Reservoir property in Weston, he conducted the state and federal wetland delineations, was project manager for the related town-wide off-site vernal pool mitigation evaluation, and authored the project's wetland mitigation program, including vernal pool replication in support of a Wetlands Protection Act Variance and other environmental permits. He has directed hundreds of other wetlands projects at sites including large and small residential and commercial developments. He has completed all phases of environmental permitting work, including wetland delineation, replication and mitigation design, implementation, and monitoring in freshwater wetlands and salt marsh, as well as general wildlife and rare species assessments and trapping, including marbled salamander, 4-toed salamander, spotted turtle, and eastern box turtle, under the MA Wetlands and Endangered Species Act Regulations. Permitting efforts regularly include federal, local and state permitting, including filings under the Massachusetts Environmental Policy Act (MEPA) regulations. Additional projects he has directed include major biological and chemical marine sampling programs; he has been involved in a variety of freshwater system evaluations, and conducted evaluations and sampling for proposed fresh water and marine dredging projects. He has conducted ecological risk assessments for aquatic and terrestrial biota, including state-listed species, at numerous locations of contamination by oil and hazardous materials. Mr. McManus serves as a consultant on behalf of government, business, major utility companies, the development community, conservation commissions, and concerned citizens' groups. He presently serves on a regular basis as technical wetlands consultant for the Town of Dover Conservation Commission, and works regularly for other Commissions providing peer review expertise on a wide variety of projects.

Education: Master of Science: Applied Marine Ecology - University of Massachusetts/Boston, 1988
Bachelor of Arts: Biology (Ecology emphasis) – College of the Holy Cross, Worcester, MA, 1984
U.S. Fish and Wildlife Service: Habitat Evaluation Procedure (HEP) Certification
Massachusetts Division of Water Pollution Control: Algal Assay (eutrophication) Short Course

Professional Affiliations: Massachusetts Association of Conservation Commissioners
(Partial list) Society of Wetland Scientists (Past President of the New England Chapter)
Association of Massachusetts Wetlands Scientists
Society of Environmental Toxicology and Chemistry

Certifications: Society of Wetlands Scientists Professional Wetlands Scientist # 962
Commonwealth of Massachusetts Licensed Site Professional # 5711
OSHA Health & Safety Hazardous Waste Safety Training, 29 CFR 1910.120 (40 hr & refresher)


Apx. Site Locus
USGS Topographic Map
Southbridge Quadrangle, 1982
1:25,000 scale, metric
Sturbridge
SOUTHBRIDGE
Westville
Fiske Hill
Dennison Hill
SOUTHBRIDGE MUNICIPAL AIRPORT
Shopping Center
Water Tank
INTERCHANGE NO 4
Pistol Pond
North Cem
Sewage Disposal
Campground
Landing Strip
No 3 Reservoir
No 4 Reservoir
No 5 Reservoir
Wells Pond
Cohasse Country Club
La Salette Mission House
St George Cem
Carpenter Pond
Picnic Area
West St Sch
River Street Sch
Marianhill High Sch
Pine Street Sch
Wells High Sch
High Sch
Hospital
Police Sta
Lib
Fire Sta
PO
Town Hall
YMCA
Eastford Road Sch
Oak Ridge Cem
S O U T H B R I D
B R I
C H A



Natural Heritage Atlas Online Data Viewer Output

65 Whittemore Road, Sturbridge- November 22, 2019

National Flood Hazard Layer FIRMette

FEMA

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 — Cross Sections with 1% Annual Chance
- 17.5 — Water Surface Elevation
- Coastal Transect
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 11/22/2019 at 1:53:59 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX B

MassDEP Notice

Inspection of Hydropneumatic Storage Tanks and Asset Management Plans, 7/24/15

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs
Department of Environmental Protection

IMPORTANT NOTICE

TO: Public Water Suppliers

FROM: Yvette DePeiza, Program Director, Drinking Water Program, BWR /MassDEP

DATE: July 24, 2015

RE: Inspection of Hydropneumatic Storage Tanks and Asset Management Plans

The Massachusetts Department of Environmental Protection, Drinking Water Program (MassDEP/DWP) has been notified that a conventional hydropneumatic (pressurized) storage tank failed at a community public water system in North Stonington, Connecticut on June 23, 2015. The failure caused a large explosion and the pump station was totally destroyed. Thankfully, the explosion occurred around 3:00 am and no injuries or loss of life occurred. The distribution system depressurized and significant emergency measures were required to restore and sustain water service. A preliminary analysis indicated that several factors contributed to the tank's catastrophic failure including internal corrosion, age, and construction.

Further research indicated that hydropneumatic water and wastewater tanks have failed similarly in California http://www.acwajpia.com/filecabinet/rmnopw/hydropneumatic_tank_insp_9-28-12-jh.pdf and regrettably a loss of life occurred in one event.

A review of our records indicated that there are 970 hydropneumatic tanks operating in water systems in Massachusetts. **To avoid catastrophic failure similar to what occurred in Connecticut and other places, MassDEP strongly recommends that all operational hydropneumatic tanks be evaluated and maintained in accordance with manufacturer's specifications.** The evaluation should consider structural integrity, manufacturer's pressure ratings, age and expected service life, and condition of internal coating systems. The typical

useful life of tanks varies; however, for asset management purposes, hydropneumatic tanks generally have a life expectancy of 10 years. Public water systems should verify that pressure relief valves and high pressure alarms are installed and operational. Current operational pressure settings of hydropneumatic tanks should be reviewed to determine if the current operating pressures comply with the manufacturer's recommended range. If a tank is found to be structurally deficient and requires immediate replacement, the system pressure may need to be reduced temporarily to prevent a catastrophic failure of the tank.

MassDEP is working on updating its guidance for hydropneumatic tanks to include recommendations regarding inspections. See current guidance in Section 8.3 of Massachusetts Drinking Water Guidelines located at http://www.mass.gov/eea/docs/dep/water/laws/a-thru-h/glchpt8.pdf. The guidance refers to the latest American Society of Mechanical Engineer's (ASME) code requirements or an equivalent requirement of state and local laws and regulations for the construction and installation of unfired pressure vessels. Until that guidance is updated to address inspections, the following is a link to an informative tank inspection and maintenance document from the Association of California Water Agencies Joint Powers Insurance Authority: http://www.acwajpia.com/filecabinet/rmnopw/Hydropneumatic_Tank_Insp_9-28-12-JH.pdf

The catastrophic failure of public water supply infrastructure provides an excellent reminder of the importance of an asset management plan. The plan assesses the age and the condition of water system components to set aside reserve funds to replace aging components before catastrophic failure and the resulting loss of water supply occurs. MassDEP provides capital improvement and asset management planning resources on the MassDEP website at http://www.mass.gov/eea/agencies/massdep/water/drinking/water-systems-ops.html#3. You may also contact our Capacity/Asset Management contact below for information on appropriate funding options for replacement of aging infrastructure.

Please use the following contact information to contact the Drinking Water Program for further information on this issue.

Western Regional Office	Deirdre Doherty	413-755-2148
Central Regional Office	Robert Bostwick	508-849-4036
Northeast Regional Office	Thomas Mahin	978-694-3226
Southeast Regional Office	Richard Rondeau	508-946-2816
Capacity /Asset Management	Michael Maynard	508-767-2735
Drinking Water Program	Program.director-dwp@state.ma.us	

APPENDIX C

Proposed Booster Station

Easi-Set Precast Building Brochure

Typical Easi-Set Precast Booster Station Drawing Specs

Typical Easi-Set Precast Booster Station Photos

EASI-SET®

TRANSPORTABLE PRECAST CONCRETE BUILDINGS

Available throughout North America from EASI-SET® licensed manufacturers

- Weather-tight
- Fast Installation
- No Footing Needed
- Small to Ultra-Large
- Maintenance Free
- Cost Effective
- Secure

EASI SET®

www.PrecastBuildings.com

EASI-SET® Steel-Reinforced Precast Concrete Buildings:

The originator of and industry leader in transportable concrete buildings offers patented post-tensioned roof and floor features which provide even greater weather-tightness and impact resistance.

Durable

- ***Impact resistant:*** upgraded post-tensioned design increases average compressive strengths by 28% and increases distribution of radial compressive forces by 33%.
- ***Weather-tight:*** special roof and floor design provides superior watertight construction and interior and exterior panel joints are caulked with polyurethane concrete sealant.
- ***Maintenance Free:*** will not rust, warp, corrode, rot or burn and retains finish without maintenance.
- ***Heavy-Duty Construction:*** galvanized insulated doors, deluxe door hardware and extruded aluminum threshold with integral seal.

Fallen mature oak tree causes no damage

Secure

- ***Vandal resistant:*** steel-reinforced precast concrete construction, tamper-proof hinges, deadbolt locks and steel doors.
- ***Bullet resistant:*** UL 752 — Level 4 bullet resistant. (See page 7)
- ***Fire resistant:*** standard fire rating of 1.5 hours with additional protection available.
- ***Earthquake resistant:*** rated Seismic Zone 4.
- ***Hurricane resistant:*** withstands up to 130 mph wind loads standard (150 mph available).
- ***Petrochemical blast resistant.***

Post-tensioned roof design: Withstands the impact of a 100-pound block of ice dropped from 200 feet without any internal or external damage.

Versatile

- **Standard sizes:** 10’ x 12’, 12’ x 16’, and 12’ x 20’ (exterior dimensions) with EASI-SET® transportable custom designs and sizes available.
- **Ultra-large sizes:** EASI-SPAN® Modular Expandable precast concrete buildings are available with 20’, 24’, 30’ and 40’ clear spans. (See page 5)
- ***Exterior-finish choices:*** many options offered to provide compatibility with surrounding or adjacent buildings. (See back cover)
- ***Unlimited optional features:*** buildings can be provided with gabled roofs and outfitted as required.

Walnut Creek pump station with optional roof detail, Lancaster, NY

EASI-SET® *The nationwide network of licensed manufacturers ensures availability of the highest quality buildings where you want them and when you want them.*

Practical

- ***Gets your site operational fast:*** quick installation and simple site preparation. With built-in floor, no foundations are necessary unless required by local codes. Buildings can also be delivered preassembled, without a floor, and placed on a pre-poured concrete slab.
- ***Reduces maintenance expenses:*** durable and vandal resistant with lifetime finishes.
- ***Saves money:*** costs much less than comparable built-in-place construction.
- ***Relocatable:*** can be moved when needs change.

Weather-tight Features

Turn-Down Roof: Prefabricated turn-down roof caps the walls with an architectural ribbed edge. This design protects the roof joint from direct exposure to driving rain, provides a drip edge which prevents moisture penetration, and ensures a watertight interior.

Above-Door Rain Guard: Drip edge protection increases watertightness.

Galvanized Door and Frame: Specially reinforced for high quality with mechanical hold-open arm.

Step-Down Floor: Perimeter of floor is recessed so that the wall joint is below top of floor, which ensures additional watertight integrity.

Raised Aluminum Threshold: Extruded aluminum threshold with integral neoprene seal provides unsurpassed moisture, dust and pest resistance.

Improved Radial Post-Tension Design: Provides superior weather-tight construction.

Quick installation of Navigational Aide Building at Dulles International Airport

It Works!

Thank you for your help in the purchase of two 12' x 16' precast concrete buildings. Due to network expansion, AT&T placed additional equipment at critical locations to satisfy customer requirements. My territory needed building expansion at two sites, and the due dates required quick delivery and short setup.

These buildings provide maximum security for our equipment and require minimum site preparation. They were delivered on time, set quickly and correctly. Within just a few hours the building was ready for HVAC and electrical installations.

All of our due dates were either met or bettered by using your buildings rather than conventional construction. We have used this technique also in West Virginia and western Pennsylvania with the same excellent results.

I plan to utilize EASI-SET® Buildings for our future network needs.

Sincerely,
Gregory A. Carter
Building Engineer, AT&T

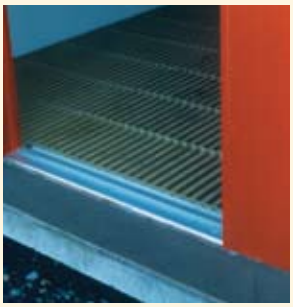
Spill Containment

HAZARDOUS MATERIAL STORAGE: Maximum Security and Protection

STANDARD FEATURES

- ***Standard building sizes:*** 10’ x 12’ x 8’-8” and 12’ x 20’ x 8’-8” with storage capacities for 20 and 45, 50-gallon drums, respectively.
- ***Maximum protection:*** high-strength, thick, steel-reinforced precast concrete.
- ***Crack and water penetration resistance:*** 4” thick post-tensioned roof and floor slabs.
- ***Easy access:*** double-steel entry doors.
- ***Greater containment capabilities:*** secondary spill containment sump holds more than 33% of drum storage capacity (exceeds the minimum EPA required sump capacity specified in 40 CFR Par. 264.175).
- ***Safe:*** galvanized steel or fiberglass grating elevates containers above floor surface (corrosion resistant fiberglass provides 250 psf loading, skid resistant and spark resistant).

AVAILABLE OPTIONS



- Larger containment capacities.
- Customized duct, pipe or wire openings.
- Special corrosion-resistant epoxy coatings.
- Static grounding systems to prevent sparks.
- Fire rated doors.
- Interior climate controls.
- Fire, security and spill alarm systems.
- Fire protection system with sprinkler and/or dry chemical fire suppression.
- Explosion-proof lighting and electrical systems.
- Custom explosion-relief panels.
- DOT and NFPA warning signs and placards.
- Ventilation systems to prevent hazardous vapor accumulation.
- Roll-up garage doors.
- Non-corrosive doors and hardware.

Building provides spill-containment protection

Ultra-Large Bu

EASI-SET® provides the largest, pre

Combination concessions and restrooms

Unobstructed space allows room for large e
Independent Hill, VA

Electrical Substation, Board of Public Utilit

uildings EASI-SPAN® EXPANDABLE BUILDINGS

-engineered, transportable precast concrete building in the industry.

s

equipment,

ies, Jamestown, NY

The engineering capabilities of EASI-SET® and its manufacturing network allow the design and production of bigger, more specialized buildings to

- ***Self-supporting clear-span roof:*** available in widths of 20', 24', 30', and 40'.
- ***Sizes:*** combine roof sections (in 10' lengths) for overall building lengths up to 200'.
- ***Easily transported and installed.***
- ***No footing or foundation required.***
- ***Expandable length:*** the only precast building in the industry with the ability to be lengthened, as needs change, and still maintain the original monolithic structural roof.

Additional sections can be attached to existing structure.

EASI-SPAN® expandable precast building... assembled in days for a "lifetime of security"

The optional EXPANDABLE building maintains the original structural and water-tight integrity during future expansions.

Unobstructed 30' W x 24' H x 60' L space allows room for large hydroturbine equipment, Mesa, AZ

EASI-SET® *offers customers the largest selection of sizes, options and custom designs available in the industry.*

Communications Equipment Housing, Chicago, IL

Restroom Building, Las Vegas, NV

Communications

- Fiber Optic Regenerator Huts
- Switching Stations
- Microwave Transmission Shelters
- Cellular Phone Sites
- Other Pre-finished Equipment Shelters

Government, School & Municipal

- Weather and Pollution Monitoring Stations
- Military Storage, Equipment Housing and Electronic Operations
- Hazardous and Flammable Materials Storage with Spill Containment
- Park Vending Enclosure, Restrooms and Ticket Kiosks
- Traffic Control Systems
- School Maintenance and Athletic Equipment Storage
- Airport Lighting Control and Transmitter Housing
- Law Enforcement Evidence and / or Ammunition Storage

Generator Building, Oliver City Sanitary Sewer System, Warrenton, VA

Pump Enclosure, Ontario, Canada

Utilities

- Electrical Switching Stations and Transformer Housing
- Gas Control Shelters and Valve Enclosures
- Water and Wastes Treatment Facilities
- Pumping Stations
- Reduced Pressure Zone and Water Meter Enclosures

Commercial & Industrial

- Electromechanical Housing
- Storage of Contaminated Substances
- Emergency Generator Shelters
- Maintenance Equipment Storage
- Irrigation System Housing
- Food or Bottle Storage
- Gate Houses
- Restrooms
- Electrical Controls
- Pump Enclosures

EASI-SET® Specifications

STANDARD EASI-SET® BUILDING

- Meets IBC 2003 requirements; Patented in USA and Canada.
- Standard Building Dimensions:
  Exterior: 10' x 12', 12' x 16', 12' x 20'; custom sizes available.
  Interior Heights: 8'; custom heights available.
- 5,000 psi steel-reinforced concrete.
- Standard double doors, 6' x 6'-8" x 1¾"; 18-gauge galvanized steel; insulated; tamper-proof hinges; deadbolt lock; adjustable mechanical door hold-open arm; door stop and holder; rain guard.
- Extruded aluminum threshold with integral neoprene seal.
- Two 12.5-gauge screened aluminum vents; minimum 7" x 18".
- , each by a single continuous tendon, creating .
- Sloped roof panel with prefabricated, architectural ribbed edge*.
- Exclusive turn-down roof with built-in drip edge.
- Roof load capacity: 60 psf standard; higher loadings available.
- Wind load: 130 mph standard; higher loadings available.
- Rated Seismic Zone 4.
- Bullet tested to UL
- Floor load: 250 psf standard; additional capacities available.
- V

*Some standard features are not available on custom-sized buildings.

ADDITIONAL SPECIFICATIONS EASI-SPAN® BUILDING

- Standard Dimensions:
  Clear-span widths: 20', 24', 30' and 40'.
  Lengths: up to 200' in multiples of 10'.
  Interior Heights: 9'; custom heights available.
- Horizontal precast roof and oor joints sealed watertight with polymer concrete grouted keyways and longitudinal post-tensioning. (Post-tensioning creates the equivalence of a monolithic two-way slab design.)
- Field erected on EASI-SPAN® 's slab-on-grade, or can be delivered pre-assembled in sections.
- Optional expandable feature: structural integrity and watertightness maintained when expanded.

ADDITIONAL SPECIFICATIONS EASI-SET® HAZARDOUS MATERIAL STORAGE BUILDING

- Meets requirements for: EPA Spill Containment requirements 40 CFR Par.264.175; ACI 318-97 "Building Code Requirements for Reinforced Concrete"; Concrete Reinforcing Institute "Manual of Standard Practice"; and ANSO "Building Code Requirements for Minimum Design Loads in Buildings and Other Structures."
- Larger secondary spill containment sump available.
- itted).
- Extruded aluminum threshold with neoprene seal.
- 6' x 6'-8" x 1 ¾
  (higher ratings available).

HAZARDOUS MATERIAL STORAGE BUILDING: Since we cannot anticipate all conditions under which this information and our product, or the products of other manufacturers in combination with our products, may be used, we accept no responsibility for results obtained by the application of this information or the safety and suitability of our products, either alone or in combination with other products. Users are advised to make their own tests to determine the safety and suitability of each such product for their own purposes. Unless otherwise agreed in writing, we sell the products without warranty and buyers and users assume all responsibility and liability for loss or damage arising from the handling and use of our products, whether used alone or in combination with other products.

Contact your EASI-SET® Manufacturer for detailed speci cations.

Transformer Substation (Pre-assembled building delivered with hole in floor to fit over transformer)

Outback Restroom Building, Midland, VA

Federal Detention Facility Guardhouse, Batavia, NY

Simple site preparation, no footings required

Site Preparation and Installation

EASI-SET® Precast Buildings are easily transported and installed. No foundations or footings are required, only a level six-inch layer of sand or crushed stone on an approved sub-base. Your installation can be completed within a few hours.

Installed in a matter of hours

The EASI-SET® / EASI-SPAN® Precast Building... Installed in hours for a "lifetime of protection"

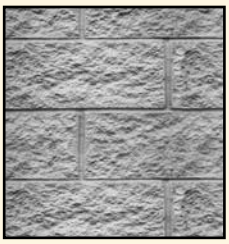
Finishes

Colors and textures of natural materials may vary by region. Additional colors and finishes available.

Skip Trowel

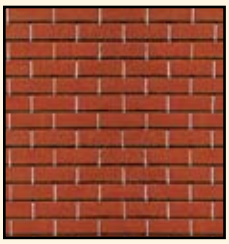
Broom

Exposed Stone



Split Block

Barnboard



Easi-Brick® Precast Concrete Brick Finish

Manufactured Locally By:

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www.easiset.com · www.precastbuildings.com · info@easiset.com

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www.sheaconcrete.com
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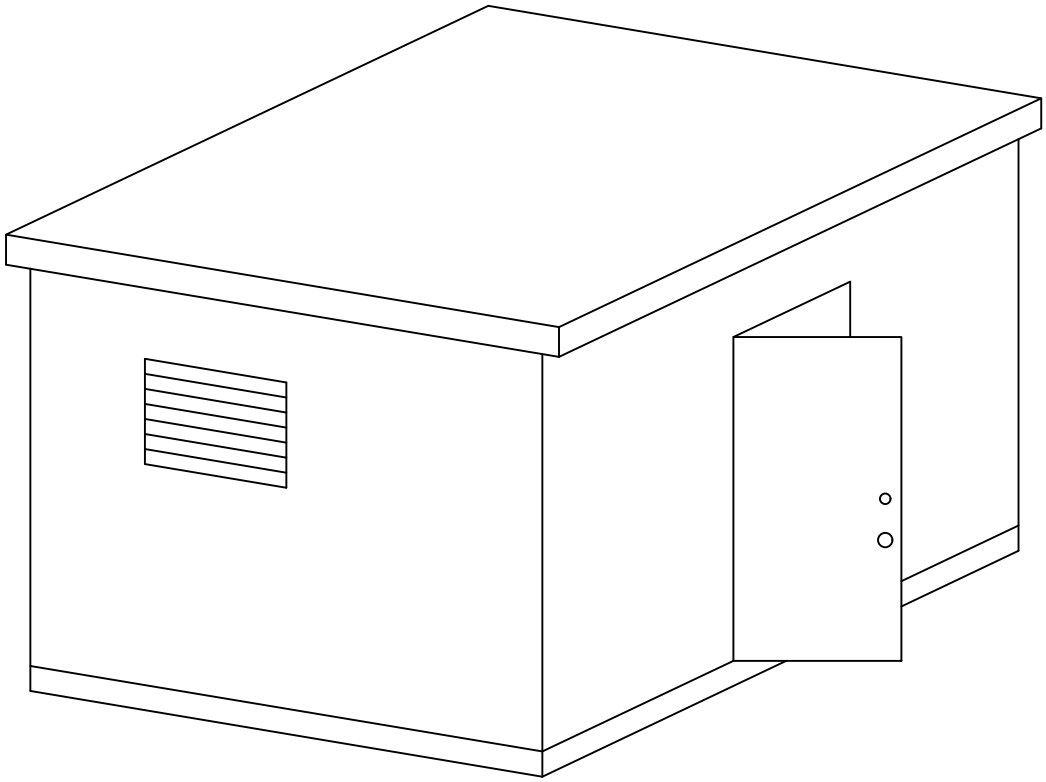
EASI-SET PRECAST BUILDING



BUILDINGS USED FOR:
RESTROOMS
STORAGE
HAZMAT
PUMP SYSTEMS
COMMUNICATIONS
DUGOUTS
CONCESSIONS
ETC...

Notes:

1. Concrete strength f'c=5,000 psi min.
2. Steel reinforcement yield strength Fy=60,000 psi min.
3. All openings for electric, mechanical, louvers, etc. sized as required.
4. Standard Finishes (custom finishes available):
   Exterior: Broom, Brick, Exposed Aggregate, Split Block, Barnboard.
   Interior: Concrete, FRP
5. Standard Dimensions:
   Exterior: 10'x 12', 12' x 16' 12' x 20'; custom sizes available.
   Interior Heights: 8'; custom heights available.
6. Standard double doors, 6' x 6'-8" x 13/4"; 18-gauge galvanized steel;
7. Two 12.5-gauge screened aluminum vents; minimum 7" x 18".
8. Post-tensioned roof and floor.
9. Exclusive turn-down roof with built-in drip edge.
10. Roof load capacity: 60 psf standard; higher loadings available.
11. Wind load: 130 mph standard; higher loadings available.
12. Rated Seismic Zone 4.
13. Bullet tested to UL 752, Level 4 (30 caliber rifle fired at 15 feet).
14. Floor load: 250 psf standard; additional capacities available.
15. For larger sizes Easi-Span Building Standard Dimensions:

Clear-span widths: 20', 24', 30' and 40'.
Lengths: up to 200' in multiples of 10'.
Interior Heights: 9'; custom heights available

SHEA PRODUCT ID:	PREPARED FOR:	FILE NAME: Easi-Set Building.dwg	
WEIGHT (LBS):	DRAWN BY: ARO	DATE: 03/01/2018	PAGE: M13

NPCA CERTIFIED PLANT