Project Summary

Town of Hinesburg Wells 4 & 5
September 26, 2014

Aldrich + Elliott
WATER RESOURCE ENGINEERS

Background

The Town currently has two (2) existing groundwater well sources that, when first constructed, originally had a combined permitted capacity of 190 gpm. Over time the existing wells have diminished and the State permitted combined capacity is currently 120 gpm.

Per the Water Supply Rules (WSR), a source's ability to meet the average day demand (ADD) is based on pumping 12 hours per day. Given that the system currently utilizes 140,000 gpd, the required pump capacity to satisfy the current ADD is 194 gpm. Since the existing well capacity fails to meet the ADD in the specified time period, the State is not permitting expansion of the system and the Town is not permitted to issue allocation letters to new users or increase the number of service connections served until the source capacity issue has been resolved.

Taking into consideration current and future uses/growth, the 20 year long-term capacity is estimated at 393 gpm. If the existing wells are to be maintained the additional long-term required capacity is 273 gpm. In looking at a 10 year horizon, the short-term capacity is estimated at 312 gpm. If the existing wells are to be maintained the additional short-term required capacity is 192 gpm. A summary of the source capacity requirements is attached.

The Town has drilled and tested two wells on the Wainer property (Wells 4 and 5). The results of the pump testing indicate that the wells have a minimum capacity of 200 gpm with the possibility of being permitted for up to 240 gpm. At a minimum these new wells have sufficient capacity to satisfy the immediate and short-term needs that will allow the expansion moratorium to be lifted.

Based upon the water quality testing of Wells 4 and 5, water treatment is recommended for iron, manganese, and hardness.

Recommended Plan

The recommended plan is to permit Wells 4 and 5 at the Wainer property with a minimum capacity of 200 gpm and possibly up to 240 gpm. The new wells will be tied into the system through a connection with the existing 8" PVC main on Shelburne Falls Road near the medical center. In order to eliminate any adverse interference from the new wells with neighboring existing residential wells, the Wainer, Bertrand, T. Lyman, and D. Lyman properties are proposed to be connected to the water system as part of this project.

A new water treatment building is proposed to house the well controls and the required treatment system. Electric, telephone, and gas utilities will be extended from Shelburne Falls Road to service the new building. A pump station will be installed to accept

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wastewater from the lab and treatment system and the discharge will be run via a new forcemain to the existing sewer on Shelburne Falls Road. An access road to the new wells and water treatment building will be constructed from the existing Wainer property driveway down to the well site. An emergency generator will be provided to operate the wells and treatment facility during a power outage.

A proposed site plan showing the recommended project elements is attached.

The construction cost for the recommended plan is estimated at $1.05 Million using May 2015 (ENR 10010) values. The total project cost is estimated at $1.5 Million, which includes the construction cost, 10% construction contingency, source testing, permitting, engineering, construction phase services, and other administrative, fiscal, legal, and short term interest costs. A total project cost summary is attached.

The total project cost of $1.5 Million is the recommended bond vote amount.

Funding through the State of Vermont Drinking Water State Revolving Fund (DWSRF) loan program is available to fund this project at a rate of 3% for a term of 20 years.

Next Steps
Currently source permitting and preliminary engineering for the new wells are on-going and anticipated to be completed in November 2014. Easements for the well site have been obtained. A bond vote for the project is proposed for November 4, 2014.

Assuming the bond vote passes, final design of the project would then be completed over the winter to allow the project to go out to bid in the February 2015 timeframe. It is anticipated that construction would start in April 2015 and the new wells would be online in the September 2015 timeframe.

Future Steps
It is anticipated that the new Wells 4 and 5 will provide the required additional capacity to address the immediate and short-term capacity needs. Assuming the short-term build out occurs as projected, there will still be a need for additional source capacity in the future (10 to 20 year horizon). Therefore, it is recommended that the Town pursue an additional source(s) to address the long-term capacity needs.

Pursuing an additional source(s) is also recommended to eliminate the need to rely upon the existing Wells 1 and 2 as a long-term source. The diminishing capacity for the existing wells seems to have stabilized and there isn't reason to believe that diminishing capacity will be an issue in the future. The major concern with Wells 1 and 2 is the presence of low levels of MTBE (methyl tert-butyl ether), a fuel additive for motor gasoline, in the groundwater. In addition, there is concern of being in relative close proximity to other potential sources of contamination, and the potential drawdown from the existing wells.

Several potential well sites have been identified in previous studies and it is recommended that the Town continue to investigate those sources in addition to the work associated with Wells 4 and 5.

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Town of Hinesburg
Water Source Study
Source Capacity Requirements Summary
September 26, 2014

Existing Pump Capacity

Current Average Day Demand	140,000	gpd
Current Daily Pumping Run Time	17.5	hours
Current Average Daily Pumping Rate	133	gpm
Existing Required 12 hour Pumping Rate	194	gpm
Permitted 12 hour Pumping Rate	***120***	***gpm***
Existing Permitted Source Capacity	*86,400*	*gpd*

Projects Allocated but Not Connected

Green Street	20 Res	4,200	gpd
NRF	3 Res	630	gpd
Thistle Hill	4 Res	840	gpd
South Farm	3 Res	630	gpd
Caron	2 Res	420	gpd
Aube Smith	1 Res	210	gpd
KB Real Estate	2 Res	420	gpd
Fire Station Additions		1,100	gpd
Hannafords		2,745	gpd
Total		*11,195*	*gpd*
12 hour Pumping Rate		***16***	***gpm***

Projects in Works as of February 2014

Norris	25 Res	5,300	gpd
Black Rock	245 Res	51,000	gpd
	51,000 sq ft Comm	5,000	gpd
Hinesburg Ctr Phs 2 Milot	45 Res	9,450	gpd
	3 Comm	3,000	gpd
Total		*73,750*	*gpd*
12 hour Pumping Rate		***102***	***gpm***

Future Projections

Future Residential	205 Res	43,050	gpd
Future Comm/Ind		15,000	gpd
Total		*58,050*	*gpd*
12 hour Pumping Rate		***81***	***gpm***

Summary of Immediate Needed Capacity

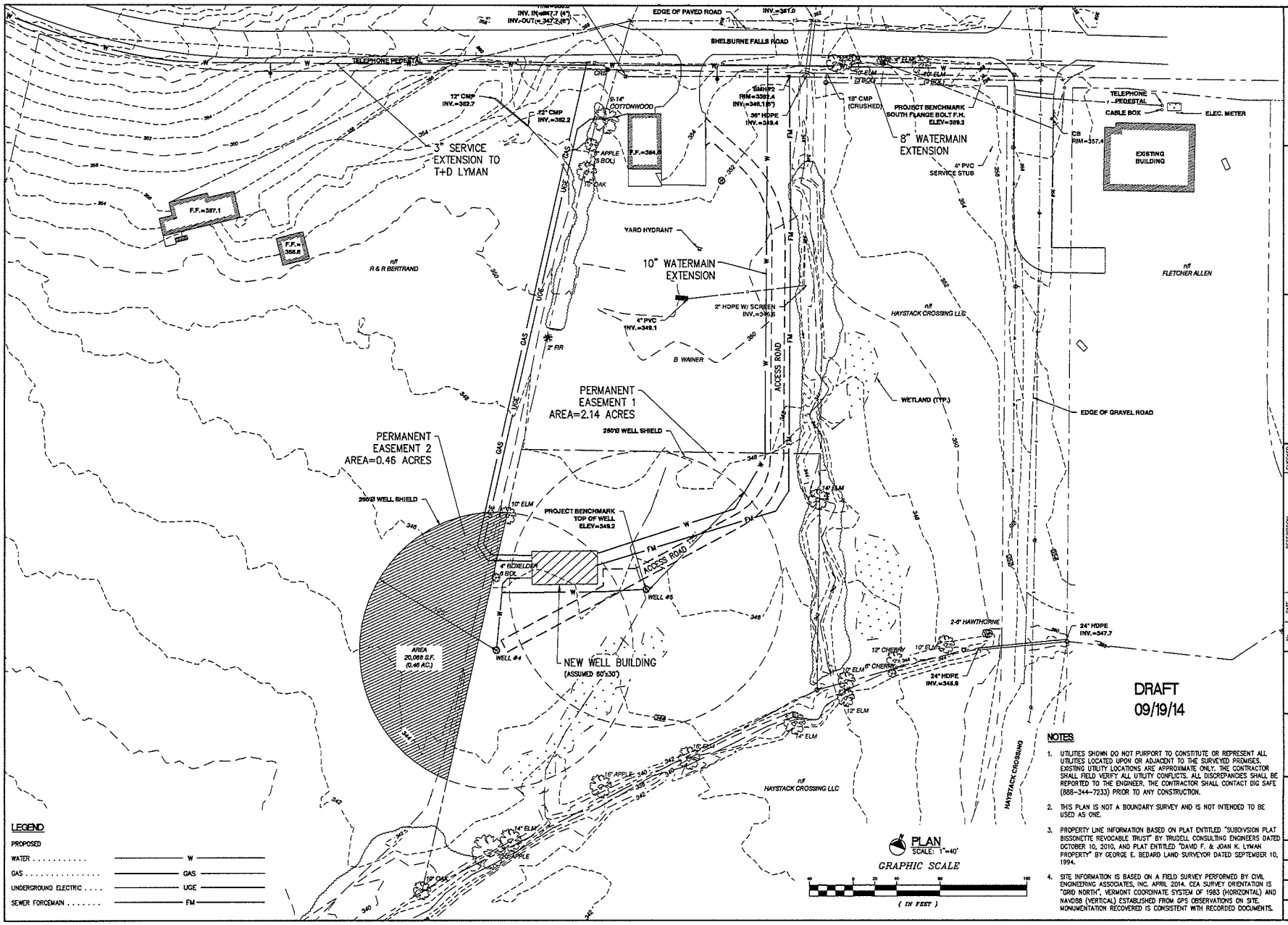
Existing Required 12 hour Pumping Rate	194	gpm
Projects Allocated but Not Connected	16	gpm
Total Capacity Required	*210*	*gpm*
Permitted 12 hour Pumping Rate	*(120)*	*gpm*
Additional Immediate Capacity Required	***90***	***gpm***

Summary of Short-Term Needed Capacity

Existing Required 12 hour Pumping Rate	194	gpm
Projects Allocated but Not Connected	16	gpm
Projects in Works as of February 2014	102	gpm
Total Capacity Required	*312*	*gpm*
Permitted 12 hour Pumping Rate	*(120)*	*gpm*
Additional Short-Term Capacity Required	***192***	***gpm***

Summary of Long-Term Needed Capacity

Existing Required 12 hour Pumping Rate	194	gpm
Projects Allocated but Not Connected	16	gpm
Projects in Works as of February 2014	102	gpm
Future Projections	81	gpm
Total Capacity Required	*393*	*gpm*
Permitted 12 hour Pumping Rate	*(120)*	*gpm*
Additional Long-Term Capacity Required	***273***	***gpm***



LEGEND

PROPOSED

WATER	W
GAS	GAS
UNDERGROUND ELECTRIC	UGE
SEWER FORCEMAIN	FM

NOTES:

1. UTILITIES SHOWN DO NOT PURPORT TO CONSTITUTE OR REPRESENT ALL UTILITIES LOCATED UPON OR ADJACENT TO THE SURVEYED PREMISES. EXISTING UTILITY LOCATIONS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL FIELD VERIFY ALL UTILITY CONFLICTS. ALL DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER. THE CONTRACTOR SHALL CONTACT DIG SAFE (888-344-7233) PRIOR TO ANY CONSTRUCTION.
2. THIS PLAN IS NOT A BOUNDARY SURVEY AND IS NOT INTENDED TO BE USED AS ONE.
3. PROPERTY LINE INFORMATION BASED ON PLAT ENTITLED "SUBDIVISION PLAT BISSONETTE REVOCABLE TRUST" BY TRUDELL CONSULTING ENGINEERS DATED OCTOBER 10, 2010, AND PLAT ENTITLED "DAVID F. & JOAN K. LYMAN PROPERTY" BY GEORGE E. BEDARD LAND SURVEYOR DATED SEPTEMBER 10, 1994.
4. SITE INFORMATION IS BASED ON A FIELD SURVEY PERFORMED BY CIVIL ENGINEERING ASSOCIATES, INC. APRIL 2014. CEA SURVEY ORIENTATION IS "GRID NORTH", VERMONT COORDINATE SYSTEM OF 1983 (HORIZONTAL) AND NAVD88 (VERTICAL) ESTABLISHED FROM GPS OBSERVATIONS ON SITE. MONUMENTATION RECOVERED IS CONSISTENT WITH RECORDED DOCUMENTS.

DRAFT
09/19/14

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No.	DATE	DESCRIPTION	CHECKED

TOWN OF HINESBURG, VERMONT

NEW WATER SUPPLY WELLS

WELL #4 AND #5 CONCEPTUAL SITE PLAN

DESIGNED JJD	PROJECT NO. 12079
DRAWN JEB	FIGURE NO. 1
CHECKED JJD	
DATE JUNE, 2014	

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