November 30, 2021 GeoInsight Project 11439-000

Danica Melone
Town Planner
1 Grove Street
Peterborough, NH 03458

RE: Walden Eco Village
360 Middle Hancock Road
Peterborough, New Hampshire

Dear Ms. Melone:

GeoInsight, Inc. (GeoInsight) is providing this letter to summarize our review of hydrogeologic conditions and the review of wetlands mapping for the project referenced above. The Town of Peterborough (the Town) Planning Board (the Board) is currently reviewing an application for subdivision prepared by Fieldstone Land Consultants located at the address referenced above. You have provided GeoInsight with a copy of the proposed development plans and a scope of work dated June 13, 2021. Review of the wetlands mapping was provided by West Environmental, Inc. (WEI) and their review letter is included as Attachment A.

HYDROGEOLOGIC EVALUATION

The project applicant retained HydroSource Associates Inc. (Hydrosource) to conduct a hydrogeologic study of the proposed development and Hydrosource documented their opinions in a report, dated May 10, 2021, titled: ***Feasibility of Supplying Water to Development Using Bedrock Wells, Walden Eco Village Development, Peterborough, New Hampshire.*** GeoInsight reviewed this report and evaluated the potential impact of the proposed development on nearby water users and water users based upon information available through information provided on-line and based upon information available through online sources.

Based upon this review GeoInsight provides the following observations and conclusion:

1) Shared Supply Well: Plans provided by the applicant show that seven of the existing residential lots will be served by a single bedrock well with a reported yield of 40 gallons per minute (gpm). This well will not be considered a community supply well based upon New Hampshire Department of Environmental Services (NHDES) regulations considering it does not serve greater than 25 people and does not have 15 service connections. The reported yield of 40 gpm should be sufficient for the seven lots but backup documentation

for this flow rate has not been provided. It should be noted that this reported yield is higher than any yield reported for existing private supply wells in the area included in Hydrosource's report the letter (see their tables 1 and 2). Extended well usage, possibly through irrigation, pool filling or other uses, by one or more homeowners could jeopardize water quality or water quantity for other well owners on the well. Should water quality or quantity problems arise, impacted homeowners approaching NHDES would be likely be directed to the Town of Peterborough considering that the NHDES has no jurisdiction regarding the use of this shared well. Accordingly, the project applicant should develop a well ownership agreement to verify with users of the shared well agreement clarifying well testing and maintenance responsibilities. Representatives from the NHDES Small Systems Engineering and Treatment, NHDES Drinking Water and Groundwater could potentially be able to provide examples of similar agreements.

2) Fourteen additional private wells will be drilled and constructed and these wells are not regulated by the NHDES. These wells should be installed by licensed well drillers in accordance with well construction rules (New Hampshire Code of Administrative Rules We 100-1000) specified by the New Hampshire Water Well Board.

3) Hydrosource included assumptions regarding water yields needed for residential supply wells and these assumptions appear rational and consistent with NHDES guidance. Assumptions do not account for excessive irrigation or lawn and garden watering. It is unclear whether Waterloo and Cambridge assumptions referenced in their letter regarding outdoor water usage (10 percent of total water use is from outdoor use based upon surveys of water users) would be applicable to Peterborough, New Hampshire. Regardless, GeoInsight concurs with these assumptions.

4) Hydrosource's estimates an average target potential flow rate 5.5 gpm for each proposed bedrock residential supply well. GeoInsight independently verified this inventory and target flow rate and concur that an estimated average flow rate of 5.5 gpm is reasonable. Further, GeoInsight concurs that most wells installed in the area are of moderate depth and provide acceptable amounts of water. Based upon summary statistics provided in their report it is unlikely that operation of proposed private supply wells will endanger existing supplies.

5) GeoInsight checked the private well inventory and found 22 wells within one mile of the development which is more than the 16 included in the Hydrosource inventory. This difference may be related to difference in the area queried and other details. Summary statistics compiled by GeoInsight concurred with Hydrosource's analysis. Further, GeoInsight concurs that wells within one mile of the development are of moderate well depths and moderate well yields suggesting that development of additional wells proposed as part of this development should not overly stress the bedrock aquifer;

6) The single shared well serving the existing seven parcels should be able to provide a minimum of 1.5 gpm in order to provide a sustainable yield. The reported yield of the shared well at 40 gpm is much greater than this threshold but this yield could not be independently verified. The instantaneous demand on this well could be much greater than 1.5 gpm when all well owners are using the well at the same time (during morning showering periods, clothes washing, or if significant lawn irrigation is in process). For this reason, further testing of the well may be desired to independently document its well yield.

WETLANDS DELINEATION REVIEW

West Environmental visited the site on September 23, 2021 and October 1, 2021 with the applicant's wetland consultant, Fieldstone Land Consultants (Fieldstone), to review and verify the wetlands boundaries. The verified wetlands boundaries are shown on Wetland Worksheets WK-1 and WK-2 included in Attachment A. It is our understanding that WEI and Fieldstone concur on these boundaries; see WEI's attached report for details.

Please contact me at (603) 314-0820 if you have questions regarding this letter. Mark West at WEI can be contacted directly regarding wetlands delineation question at (603) 778-5292.

Respectfully Submitted,
GEOINSIGHT INC.

David A. Maclean, P.G.
Senior Hydrogeologist

Attachment A: Wetlands Delineation Review Report

ATTACHMENT A

WETLANDS DELINEATION REVIEW REPORT

WEST ENVIRONMENTAL INC.
48 Stevens Hill Road, Nottingham, NH 03290
603-734-4298 ♦ mark@westenv.net

David Maclean
GeoInsight, Inc.
186 Granite Street, Suite 3A
Manchester, NH 03101

November 22, 2021

Re: Wetland Delineation Review Walden Eco-Village

Dear Dave:
West Environmental, Inc. (WEI) submits this report to document our review of wetland boundaries associated with the Walden Eco Village Project delineated by Fieldstone Environmental Consultants. The scope of wetlands to be reviewed is shown on attachment A prepared by The Town of Peterborough Planning Department.

WEI met with Christopher Guida on September 23 and October 1, and 2021, to review Areas A and B. Many of the original Wetland flags were missing and it was decided that the most efficient method for finalizing the wetland boundary was to flag areas where flags were missing in the field together. Wetland Area B includes pit and mound wetlands with upland islands and areas dominated by upland trees including red oak and white pine. These wetlands are located adjacent the access road. The wetland boundaries were verified according to the following standards:

- **US Army Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1 (January, 1987).**
- **Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (October 2012).**
- **New England Hydric Soils Technical Committee's "Field Indicators for Identifying Hydric Soils in New England", Version 4, 2017,**
- **Northcentral and Northeast 2016 Regional Wetland Plant List, Version 3.3, 2016**
- **Code of Administrative Rules. Wetlands Board, State of New Hampshire (Current).**

We evaluated soil probes, evidence of wetland hydrology and plant communities to determine the edge of wetland. **These verified wetlands are shown on the attached Wetland Worksheet WK-1 prepared by Fieldstone Land Consultants dated November 17, 2021, and accurately reflect the wetland boundaries.**

We also reviewed the wetlands in Area A in the western portion of the site using the same techniques as before. This wetland drains south from the houses west of Walden Way into a pasture near a barn. **The verified wetlands in this location are shown on the attached Wetland Worksheet WK-2 prepared by Fieldstone Land Consultants dated November 17, 2021, and accurately reflect the wetland boundaries.**

We also reviewed the area identified on Attachment B because Lots 16 and 17 west of Luna Lane are adjacent the 50-foot setback of the wetland. These flags were still in place and the wetland boundary shown in blue on the attachment was verified to be accurate.

This completes our report. Please call our office if you have any questions or require additional information.

Sincerely,
West Environmental, Inc.

Mark C. West,
NH Certified Wetland Scientist # 010

Cc: Christopher Guida NH Certified Wetland Scientist # 53

TOWN OF
PETERBOROUGH
NEW HAMPSHIRE

Office of Planning & Building

1 Grove Street
Peterborough, NH 03458
Office:(603) 924-8000 x 104
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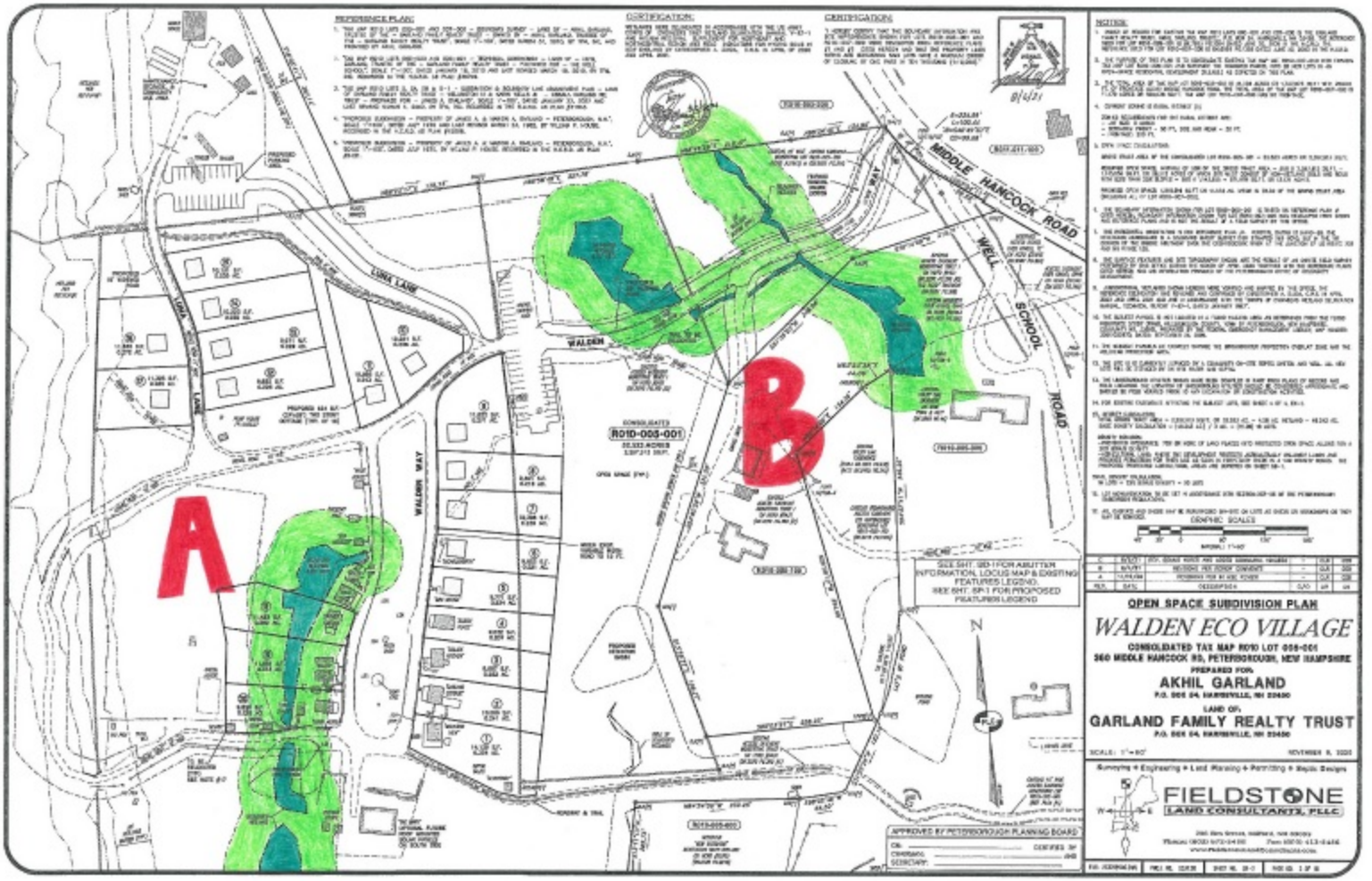


77C

PROPOSED STONE BERM
LEVEL SPREADER

LUNA LANE

LUNA LANE

ROCK

WETLANDS
PER
REF.PLAN#1

Wetland Boundary
Reviewed and
Verified

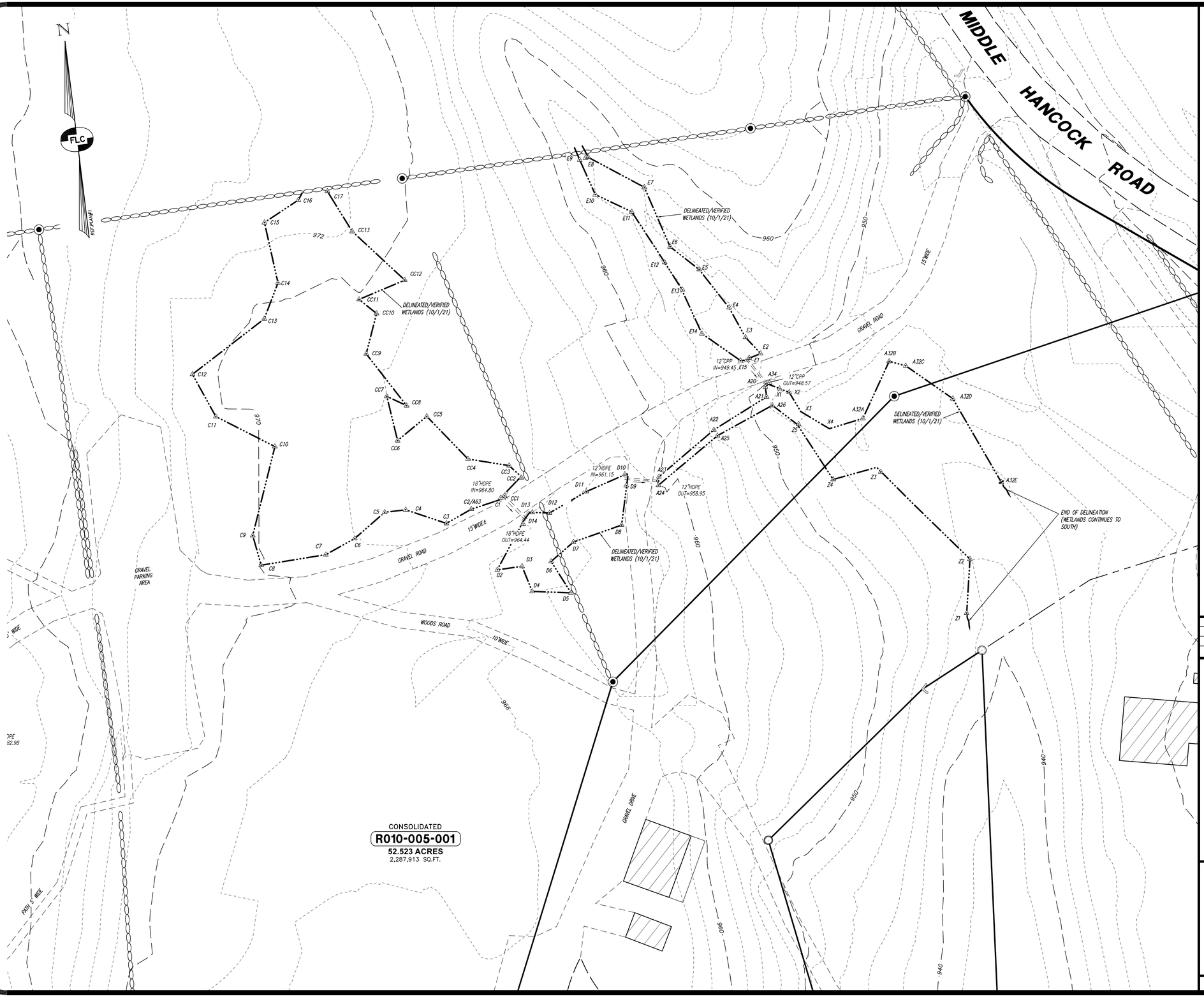
BENCHMARK IS A
MAG NAIL (FND)
IN 18" OAK
ELEV=1007.43

INSTALL SILT
FENCE (TYP.)

PROPOSED MATERIAL
STOCKPILE AND
CONSTRUCTION STAGING
AREA

DELINEATED
WETLANDS
8,815 SQ.FT.

1008
1010
1006
1000
990
998
996
994
992
988
986
15
14
13
16
17
11
8



LEGEND:

- RIGHT-OF-WAY LINE
- BOUNDARY LINE
- ABUTTING LOT LINE
- EDGE OF PAVED ROAD
- EDGE OF GRAVEL ROAD
- STONE WALL
- EDGE OF WETLANDS
- 300 — 10' CONTOUR INTERVAL
- 302 — 2' CONTOUR INTERVAL
- CULVERT OR DRAIN LINE
- R010-005-001 TAX MAP & LOT NUMBER

WETLAND CERTIFICATION:

WETLANDS WERE DELINEATED IN ACCORDANCE WITH THE US ARMY CORPS OF ENGINEERS 1987 WETLAND DELINEATION MANUAL Y-87-1 AND REGIONAL SUPPLEMENTS FOR NORTHEAST AND NORTHCENTRAL REGION, FIELD INDICATORS FOR HYDRIC SOILS IN NEW ENGLAND VERSION 4, NORTHCENTRAL AND NORTHEAST 2016 REGIONAL WETLAND PLANT LIST VERSION 3.3, AND CODE OS ADMINISTRATIVE RULES-WETLANDS BOARD, STATE OF NEW HAMPSHIRE BY CHRISTOPHER A. GUIDA, C.W.S. ON OCTOBER 1, 2021.

DATE:_____

GRAPHIC SCALE

30' 15' 0 30' 60' 900'

IMPERIAL: 1"=30'

REV.	DATE	DESCRIPTION	C/O	DR	CK

WETLAND WORKSHEET

WALDEN ECO VILLAGE

CONSOLIDATED TAX MAP R010 LOT 005-001

(MIDDLE HANCOCK ROAD)

PETERBOROUGH, NEW HAMPSHIRE

PREPARED FOR:

AKHIL GARLAND

P.O. BOX 54, HARRISVILLE, NH 03450

LAND OF:

GARLAND FAMILY REALTY TRUST

P.O. BOX 54, HARRISVILLE, NH 03450

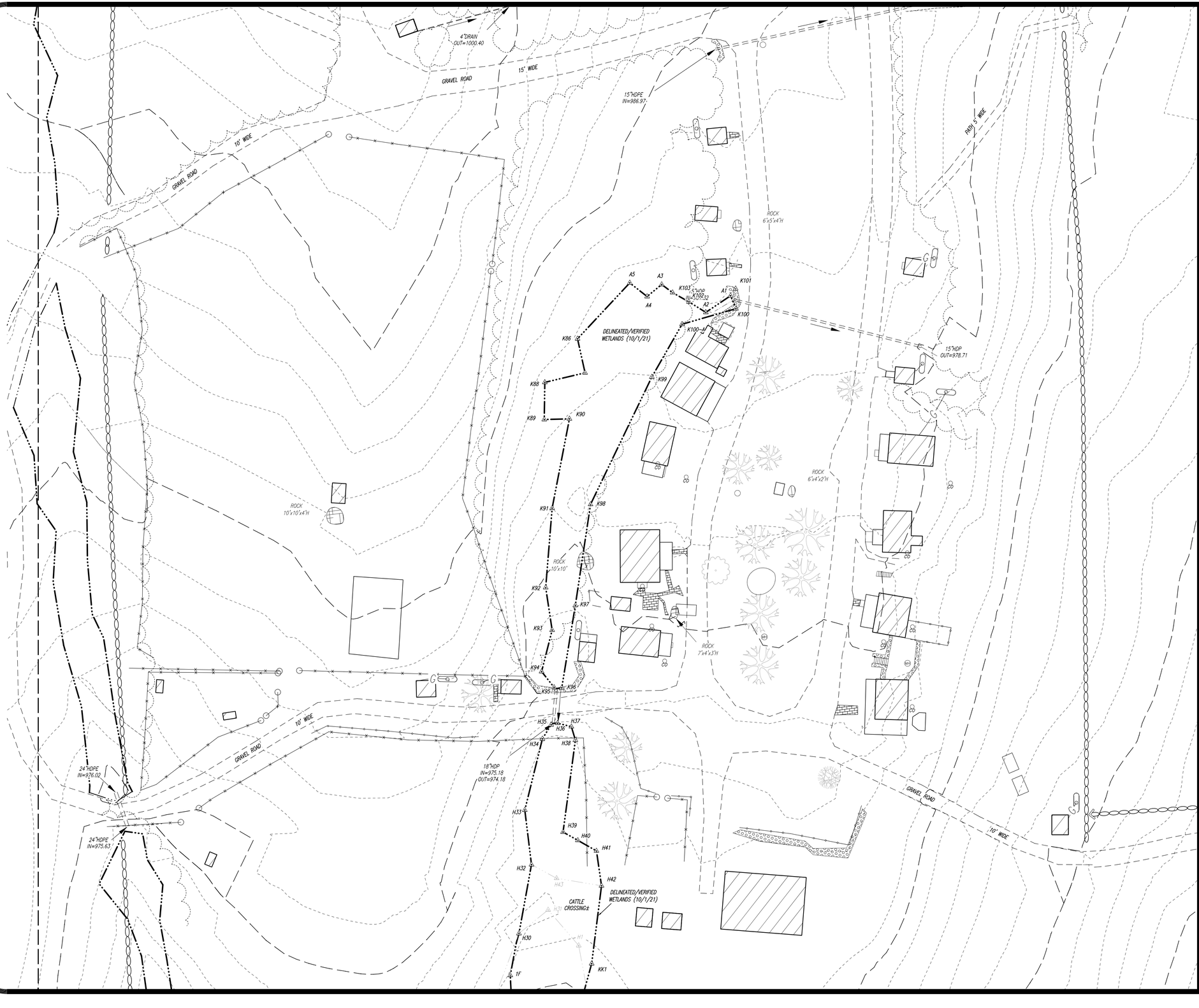
SCALE: 1"=30' NOVEMBER 17, 2021

Surveying ⌖ Engineering ⌖ Land Planning ⌖ Permitting ⌖ Septic Designs

FIELDSTONE LAND CONSULTANTS, PLLC

206 Elm Street, Milford, NH 03055
Phone: (603) 672-5456 Fax: (603) 413-5456
www.FieldstoneLandConsultants.com

FILE: 2337WK00.DWG	PROJ. NO. 2337.00	SHEET NO. WK-1	PAGE NO. 1 OF 2



LEGEND:

- RIGHT-OF-WAY LINE
- BOUNDARY LINE
- ABUTTING LOT LINE
- BUILDING SETBACK LINE
- EDGE OF PAVED ROAD
- EDGE OF GRAVEL ROAD
- STONE WALL
- EDGE OF TREE LINE
- EDGE OF WETLANDS
- WETLANDS SETBACK LINE
- EXISTING EASEMENT LINE
- 300 10' CONTOUR INTERVAL
- 302 2' CONTOUR INTERVAL
- SPLIT RAILFENCE
- STOCKADE FENCE
- WIRE/ELEC FENCE
- TIE COURSE LINE
- FORMER TRACT LINE
- CULVERT OR DRAIN LINE
- SEPTIC LINE
- OH OVERHEAD UTILITY LINE
- U/G UNDERGROUND UTILITY LINE
- G GAS LINE
- W WATER LINE

- D.H.[*] DRILL HOLE PER REF.PLAN
- I.PIN[*] IRON PIN PER REF.PLAN
- I.PIPE[*] IRON PIPE PER REF.PLAN
- UTILITY POLE, GUY & LIGHT
- CATCH BASIN (SQUARE)
- SEWER CLEAN-OUT
- WATER SHUT-OFF
- W WELL
- ELECTRIC PEDESTAL
- PROPANE TANK
- TEST PIT
- SINGLE SIGN POST
- LANDSCAPED AREA
- LARGE ROCK
- LARGE TREE
- TRANSFORMER
- WALKWAY OR PATIO
- STONE RETAINING WALL
- R010-005-001 TAX MAP & LOT NUMBER

NRCS SOILS LEGEND:

SOURCE:
USDA NRCS WEB SOIL SURVEY

SOIL BOUNDARY

77C	MARLOW FINE SANDY LOAM 3 TO 8% SLOPES, VERY STONY
77D	MARLOW FINE SANDY LOAM 15 TO 35% SLOPES, VERY STONY
79B	PERU FINE SANDY LOAM 0 TO 8% SLOPES, VERY STONY
143B	MONADNOCK FINE SANDY LOAM 0 TO 8% SLOPES, VERY STONY

CERTIFICATION:

"I HEREBY CERTIFY THAT THE EXISTING SITE IMPROVEMENTS FOR THE PORTION OF THE CONSOLIDATED LOT R010-005-100 WITHIN THE LIMITS OF THE TOPOGRAPHY SHOWN ARE THE RESULT OF A FIELD SURVEY PERFORMED BY THIS OFFICE DURING THE MONTH OF APRIL 2020 AND THAT ALL OTHER PLANIMETRICS OUTSIDE THIS AREA WERE DEVELOPED FROM REFERENCE PLAN #1 CITED.

DRAFT

GRAPHIC SCALE

30' 15' 0 30' 60' 900'

IMPERIAL: 1"=30'

REV.	DATE	DESCRIPTION	C/O	DR	CK

WETLAND WORKSHEET

WALDEN ECO VILLAGE

CONSOLIDATED TAX MAP R010 LOT 005-001
(MIDDLE HANCOCK ROAD)
PETERBOROUGH, NEW HAMPSHIRE

PREPARED FOR:
AKHIL GARLAND
P.O. BOX 54, HARRISVILLE, NH 03450

LAND OF:
GARLAND FAMILY REALTY TRUST
P.O. BOX 54, HARRISVILLE, NH 03450

SCALE: 1"=30' OCTOBER 25, 2021

Surveying ⌖ Engineering ⌖ Land Planning ⌖ Permitting ⌖ Septic Designs

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