APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): May 7, 2015

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: NAE-2011-0862

C. PROJECT LOCATION AND BACKGROUND INFORMATION: Review Area ONLY Wetlands A, B, C, D, E, F
State: NH County/parish/borough: Rockingham City: Raymond
Center coordinates of site (lat/long in degree decimal format): Lat. 043.02000° N, Long. 071.12000° W.
Universal Transverse Mercator:
Name of nearest waterbody: unnamed tributary to Lamprey River
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: N/A
Name of watershed or Hydrologic Unit Code (HUC): 01060003
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☒ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☒ Office (Desk) Determination. Date: 3/27/2015
☒ Field Determination. Date(s): 5/29/2013

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Pick List**
      Elevation of established OHWM (if known):

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: **Wetlands B, C, D, E, and F were examined to determine if they were jurisdictional waters. Area A was found to be a drained, former wetland and was therefore determined to be non-jurisdictional as there is a lack of hydrology. Wetlands B, C, D, E, and F were all wetland areas created as a result of former sandmining activities on the site. These**

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

scrub-shrub areas had developed wetland characteristics (primarily saturated, with little to no ponding); however, they were determined to be isolated (>240 feet from the nearest tributary system with a 20 foot plus elevation differnce between the stream and wetlands) and having no nexus to interstate commerce, were all determined to be non-jurisdictional.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **Pick List**
Drainage area: **Pick List**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is:
- ☐ Natural
- ☐ Artificial (man-made). Explain: .
- ☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
- Average width: feet
- Average depth: feet
- Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):
- ☐ Silts
- ☐ Sands
- ☐ Concrete
- ☐ Cobbles
- ☐ Gravel
- ☐ Muck
- ☐ Bedrock
- ☐ Vegetation. Type/% cover:
- ☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
- Describe flow regime: .

Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
- ☐ Dye (or other) test performed: .

Tributary has (check all that apply):
- ☐ Bed and banks
- ☐ OHWM[6] (check all indicators that apply):
  - ☐ clear, natural line impressed on the bank
  - ☐ changes in the character of soil
  - ☐ shelving
  - ☐ vegetation matted down, bent, or absent
  - ☐ leaf litter disturbed or washed away
  - ☐ sediment deposition
  - ☐ water staining
  - ☐ other (list):
  - ☐ the presence of litter and debris
  - ☐ destruction of terrestrial vegetation
  - ☐ the presence of wrack line
  - ☐ sediment sorting
  - ☐ scour
  - ☐ multiple observed or predicted flow events
  - ☐ abrupt change in plant community
- ☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):
- ☐ High Tide Line indicated by:
  - ☐ oil or scum line along shore objects
  - ☐ fine shell or debris deposits (foreshore)
  - ☐ physical markings/characteristics
  - ☐ tidal gauges
  - ☐ other (list):
- ☐ Mean High Water Mark indicated by:
  - ☐ survey to available datum;
  - ☐ physical markings;
  - ☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
- Explain: .

Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

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[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☒ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☒ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☒ Wetlands: 1.36 acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: EXISTING CONDITIONS PLAN PREPARED FOR GRANITE MEADOWS, 5/20/2011.
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☒ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☒ Corps navigable waters' study: Lamprey River.
☒ U.S. Geological Survey Hydrologic Atlas: .
☐ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name: Mt. Pawtuckaway, NH 1:24000.
☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date): Google Earth, 2015.
or ☐ Other (Name & Date): .
☐ Previous determination(s). File no. and date of response letter: .
☒ Applicable/supporting case law: SWANCC.
☐ Applicable/supporting scientific literature: .
☒ Other information (please specify): Water Monitoring Well Report Dated Octorber 29th, 2007.

B. ADDITIONAL COMMENTS TO SUPPORT JD: This JD is only for the review area encompassing the areas labeled as Wetlands B, C, D, E, and F. Areas labeled Wetlands G, H, I, and K are being documented in a separate JD. Wetland G does have a culvert connected to it draining water. Due to the elevation of the culvert and wetlands found across the street water only travels from Wetland G out. Water does

not travel from the opposite site of the culvert into Wetland G. The well monitoring report was originally conducted for an adjacent site across the street however in the report well "JB-13" is located within Area A.

SOILS LEGEND

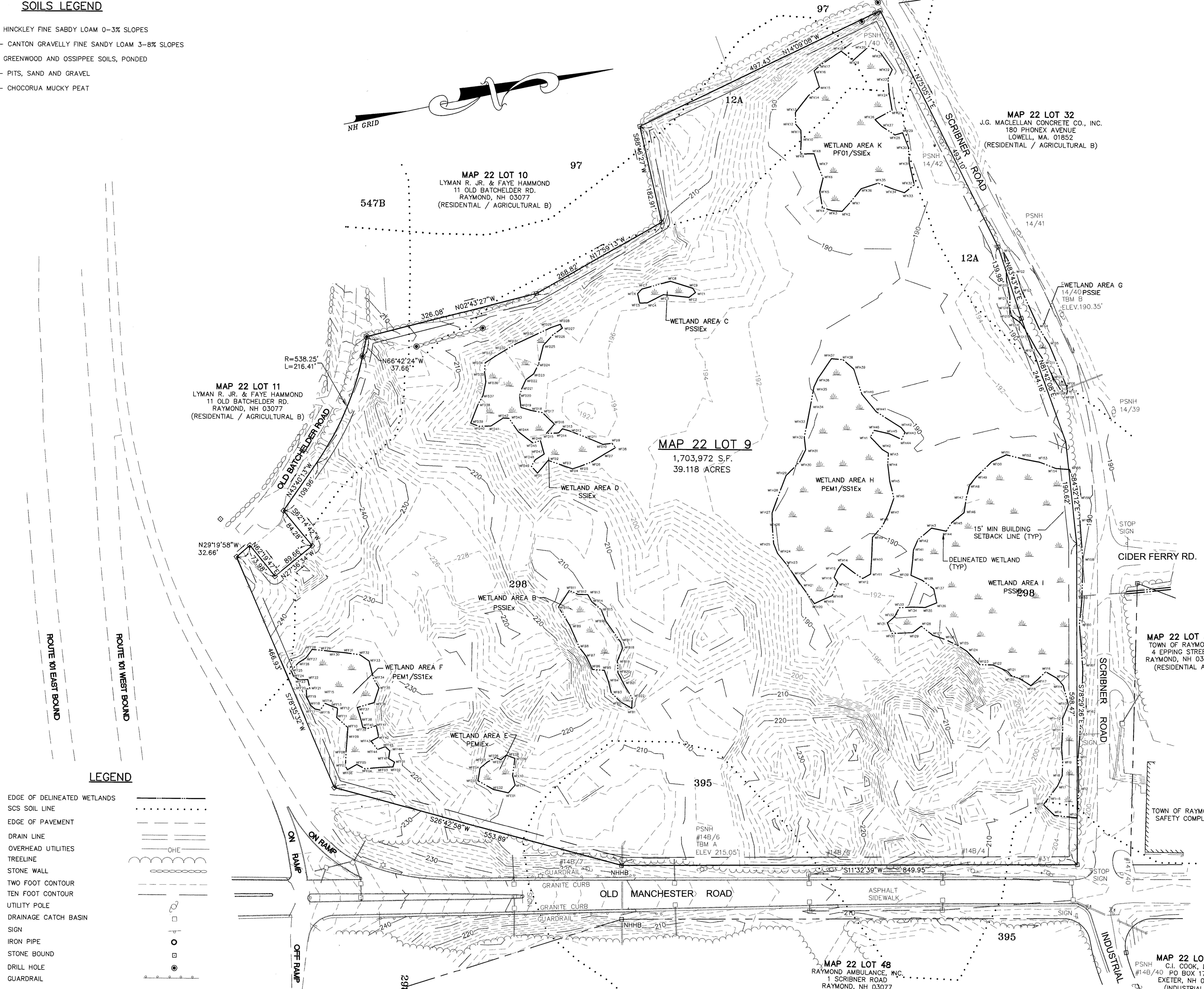
12A– HINCKLEY FINE SABDY LOAM 0–3% SLOPES

43D – CANTON GRAVELLY FINE SANDY LOAM 3–8% SLOPES

97 – GREENWOOD AND OSSIPPEE SOILS, PONDED

298 – PITS, SAND AND GRAVEL

395 – CHOCORUA MUCKY PEAT



LEGEND

EDGE OF DELINEATED WETLANDS

SCS SOIL LINE

EDGE OF PAVEMENT

DRAIN LINE

OVERHEAD UTILITIES

TREELINE

STONE WALL

TWO FOOT CONTOUR

TEN FOOT CONTOUR

UTILITY POLE

DRAINAGE CATCH BASIN

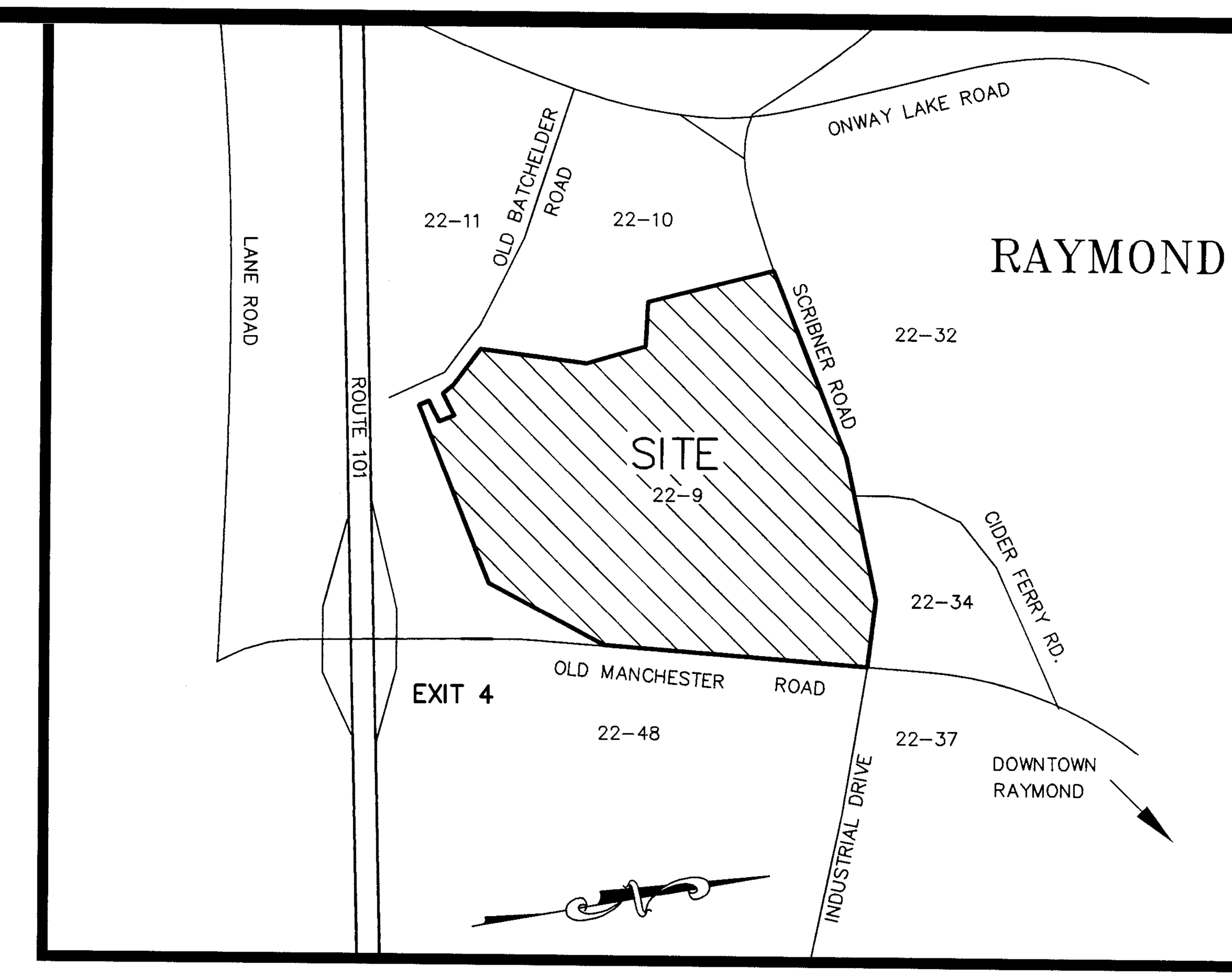
SIGN

IRON PIPE

STONE BOUND

DRILL HOLE

GUARDRAIL



LOCATION PLAN

SCALE: 1" = 400'

PLAN REFERENCES

1. "SUBDIVISION PLAN FOR LAND IN ROCKINGHAM COUNTY, RAYMOND, N.H. KNOWN AS GRANITE MEADOWS LOCATED ON TAX MAP 5, LOT 52A AND OWNED BY: CDFA, 14 DIXON AVE. SUITE 102, CONCORD, NH 03301" DATED JUNE 1998, SCALE: 1"=100' DESIGNED BY: MAGUIRE GROUP; SHEET 2 OF 20 RECORDED R.C.R.D. PLAN NO. D–30451.
2. "A SURVEY & PLAT OF PROPERTY PREPARED FOR PIKE INDUSTRIES, INC. SITUATED IN THE TOWN OF RAYMOND, N.H." PREPARED BY: R.S.L. LAYOUT & DESIGN, INC. DATED: NOVEMBER 30, 1989, SCALE: 1"=100'. RECORDED R.C.R.D. PLAN NO. D–19986.
3. "SHEET 1 OF 2, A SURVEY AND PLAT OF A REVISED SUBDIVISION PREPARED FOR PIKE INDUSTRIES INC. SITUATED IN THE TOWN OF RAYMOND N.H." PREPARED BY R.S.L. LAYOUT & DESIGN INC. DATED: NOV. 17, 1987, SCALE: 1"=100'. RECORDED R.C.R.D. PLAN NO. D–17579.
4. "AS–BUILT PLANS; SHEET NO. 84, 86, 87 & 88 OF 628, R.O.W. PLANS–ROUTE 101, RAYMOND, N.H.", DEPT. OF TRANSPORTATION, PROJECT NO. P–7959–D, FEDERAL AID PROJECT NO. FFD–018–2 (51).

NOTES

1. THE PURPOSE OF THIS PLAN IS TO SHOW EXISTING CONDITIONS AS OF MAY 10, 2006.
2. PARCEL IS IDENTIFIED AS TAX MAP 22 LOT 9 ON THE TOWN OF RAYMOND TAX MAPS.
3. OWNER OF PARCEL IS: GRANITE MEADOWS, LLC
   2 GAYTHORNE ROAD
   METHUEN, MASSACHUSETTS
4. TOTAL AREA OF PARCEL IS 1,703,972 S.F. OR 39.118 ACRES.

CERTIFICATION OF BOUNDARY PRECISION

I HEREBY CERTIFY THAT THIS PLAN IS THE RESULT OF AN ACTUAL FIELD SURVEY MADE ON THE GROUND WITH A MAXIMUM ERROR OF CLOSURE OF 1 PART IN 10,000 ON ALL PROPERTY LINES WITHIN AND BORDERING THE SUBJECT PROPERTY.

WEST ENVIRONMENTAL, INC. PERFORMED THE WETLAND MAPPING SHOWN ACCORDING TO THE TECHNICAL CRITERIA OF THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL (TECHNICAL REPORT Y–87–1, JANUARY 1987)

PROJECT NO. 08–0716–1

REVISIONS

DATE	DESCRIPTION
5/20/2011	REVISED PER NHDES AOT

IN ASSOCIATION:

EARL J. SANDFORD
SURVEYING AND ENGINEERING
TEL (603) 472–2265 FAX (603) 472–6604
597 NEW BOSTON ROAD, BEDFORD, NH 03110
BOUNDARY SURVEYS ~ SUBDIVISIONS ~ SITE PLANS ~ STRUCTURAL ~ SEPTIC DESIGNS

EXISTING CONDITIONS PLAN PREPARED FOR;

GRANITE MEADOWS

TAX MAP 22 LOT 9

OLD MANCHESTER ROAD – RAYMOND, NEW HAMPSHIRE

PREPARED FOR:

PD ASSOCIATES, LLC
15 DARTMOUTH DRIVE, SUITE #201
AUBURN, NH 03032

SCALE: 1"=100' DATE: DECEMBER 5, 2008

100 0 50 100 200 400

SCALE IN FEET

Woodland Design Group Inc.
5 Dartmouth Drive, Suite 301, Auburn, NH 03032
Civil Engineering - Land Planning - Transportation Engineering
Phone 603-641-9500 Fax 603-641-9550

SHEET NO. 1 OF 18

PROJECT TITLE: Exit # 4 TRANSECT: PLOT: Wetld-H (the vernal pool)

DELINEATOR(S): Earle Chasie DATE: 6/12/08

VEGETATION

Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
		Areal coverage	
Trees: absent			
Sapling: absent			
Shrub: Willow (spp.)		15%	yes
Herb: Purple loosestrife		60%	yes
Blue flag		3%	yes
Spikerush		15%	yes
Reed Canary		3%	yes
Rush spp		3%	yes
Beaked sedge		3%	yes

HYDROPHYTES

OBL	FACW	FAC	*OTHER

Hydrophytes Subtotal (A): 7

NON-HYDROPHYTES

FAC-	FACU	UPL

Non-hydrophytes Subtotal (B): ___

PERCENT HYDROPHYTES (100A/A+B): 100%

HYDROLOGY

☐ RECORDED DATA
- Stream, lake, or tidal gage — Identification: ___
- Aerial photography — Identification: ___
- Other — Identification: ___

☐ NO RECORDED DATA

☑ OBSERVATIONS:

Depth to Free Water: at 3" below surface on 6/12/08

Depth to Saturation (including capillary fringe): at surface

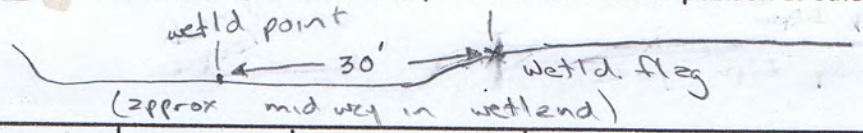
Altered Hydrology (explain): previously excavated to remove gravel

☐ Inundated ☑ Saturated in upper 12" ☑ Water Marks (staining) ☐ Drift Lines ☐ Sediment Deposits ☐ Drainage Patterns within Wetland

☐ OTHER (explain):

Wetld - A (the vernal pool)

SOIL Sketch landscape position of this plot. Indicate relative position of other plot(s) and the wetland flag if not on plan.



DEPTH	HORIZON	MATRIX COLOR	REDOXIMORPHIC FEATURES (color, abundance, size, contrast)	COMMENTS (USDA texture, nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.)
.5" – 0	O	2.5Y 3/2	none	septic; silt loam
0 – 3.0"	B1 (?)	2.5Y 5/5	none	sand
3.0" –	B2 (?)	2.5Y 5/3	none	sand

HYDRIC SOIL INDICATOR(S): REFERENCE(S):

OPTIONAL SOIL DATA

REFERENCE(S):

Taxonomic subgroup:
Soil drainage class: poorly drained
Depth to active water table: 3"
NTCHS hydric soil criterion:

CONCLUSIONS

	YES	NO	REMARKS:
Hydrophytic vegetation criterion met?	☑	☐	
Hydric soils criterion met?	☑	☐	
Wetland hydrology criterion met?	☑	☐	
IS THIS DATAPOINT IN A WETLAND?	☑	☐	

PROJECT TITLE: TRANSECT: PLOT: Vernal pool

PROJECT TITLE: Exit # 4 TRANSECT: PLOT: upld – ~~ld~~ (near vernal pool)

DELINEATOR(S): Ezra Chase DATE: 6/12

VEGETATION	Stratum and Species	Dominance Ratio	Percent ~~Dominance~~ Areal coverage	NWI Status
30' tree	Grey birch		3%	yes
15' sapl:	Grey birch		50%	yes
	White pine		1%	no
	Red maple		1%	yes
15' shrub:	Sweet fern		50%	no
	Choke cherry		15%	no
	Meadowsweet		5%	yes
	Highbush blueberry		1%	yes
	Speckled alder		3%	yes
	Blackberry		1%	no
5' Herb:	Club moss		50%	no
	Bristly dewberry		10%	no
	Cinquefoil (spp.)		10%	no
	Goldenrod (spp.)		5%	(?)
	Yarrow		3%	no

HYDROPHYTES

OBL	FACW	FAC	*OTHER

Hydrophytes Subtotal (A): 6

NON-HYDROPHYTES

FAC-	FACU	UPL

Non-hydrophytes Subtotal (B): 9

PERCENT HYDROPHYTES (100A/A+B): 40%

HYDROLOGY n/a

☐ RECORDED DATA
Stream, lake, or tidal gage Identification:
Aerial photography Identification:
Other Identification:

☐ NO RECORDED DATA

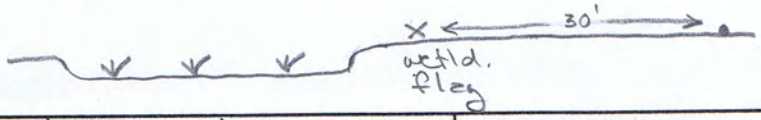
☐ OBSERVATIONS:
Depth to Free Water:
Depth to Saturation (including capillary fringe):
Altered Hydrology (explain):

☐ Inundated ☐ Saturated in upper 12" ☐ Water Marks ☐ Drift Lines ☐ Sediment Deposits ☐ Drainage Patterns within Wetland

☐ OTHER (explain):

Upland #4 (near vernal pool)

SOIL Sketch landscape position of this plot. Indicate relative position of other plot(s) and the wetland flag if not on plan.



DEPTH	HORIZON	MATRIX COLOR	REDOXIMORPHIC FEATURES (color, abundance, size, contrast)	COMMENTS (USDA texture, nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.)
.25" – 0	O	2.5Y 3/3		sandy loam
0 – 18"+	B (?)	5YR 4/4	depletions noted – 2.5Y 6/2	sand

HYDRIC SOIL INDICATOR(S): A12 REFERENCE(S):

OPTIONAL SOIL DATA REFERENCE(S):

Taxonomic subgroup:
Soil drainage class:
Depth to active water table: 18"+
NTCHS hydric soil criterion:

CONCLUSIONS

	YES	NO	REMARKS:
Hydrophytic vegetation criterion met?	☐	☑	
Hydric soils criterion met?	☐	☑	
Wetland hydrology criterion met?	☐	☑	
IS THIS DATAPOINT IN A WETLAND?	☐	☑	

PROJECT TITLE: TRANSECT: PLOT:

PROJECT TITLE: Exit # 4 TRANSECT: PLOT: wetld 6 along road — (only non-disturbed wetld on site)

DELINEATOR(S): Earle Chase DATE: 6/12/08

VEGETATION

	Stratum and Species	Dominance Ratio	Percent Dominance	NWI Status
30' Trees:	Red maple		80%	yes
	Red oak		5%	no
15' Sapling:	Red maple		10%	yes
	White pine		1%	no
15' Shrub:	Winterberry		25%	yes
	Speckled alder		3%	yes
Herbs	C. mayflower		1%	no
	Royal fern		3%	yes
	Jewelweed		15%	yes
	Cinnamon fern		3%	yes
	Marsh fern		1%	yes
	Tall Meadowrue		1%	yes
	Wetld grass (spp.)		25%	yes

HYDROPHYTES

OBL	FACW	FAC	*OTHER

NON-HYDROPHYTES

FAC-	FACU	UPL

Hydrophytes Subtotal (A): 10

Non-hydrophytes Subtotal (B): 3

PERCENT HYDROPHYTES (100A/A+B): 77%

HYDROLOGY

☐ RECORDED DATA
- Stream, lake, or tidal gage — Identification: _____
- Aerial photography — Identification: _____
- Other — Identification: _____

☐ NO RECORDED DATA

☑ OBSERVATIONS:

Depth to Free Water: _____

Depth to Saturation (including capillary fringe): to surface

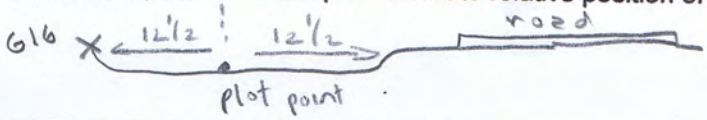
Altered Hydrology (explain): potential road influence (i.e., additional run-off)

☐ Inundated ☑ Saturated in upper 12" ☑ Water Marks (stained leaves) ☐ Drift Lines ☐ Sediment Deposits ☐ Drainage Patterns within Wetland

☐ OTHER (explain):

wetld G (along road

SOIL Sketch landscape position of this plot. Indicate relative position of other plot(s) and the wetland flag if not on plan.



DEPTH	HORIZON	MATRIX COLOR	REDOXIMORPHIC FEATURES (color, abundance, size, contrast)	COMMENTS (USDA texture, nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.)
.5" – 0	O	5Y 2.5/1		fibric; silt loam
0 – 8"	A	5Y 2.5/1	none	sepric; muck
8" – 20"	B_1	2.5Y 4/2		mixed; loamy sand
20 –	B_2	2.5Y 6/2		sand

HYDRIC SOIL INDICATOR(S): REFERENCE(S):

- saturation to the surface
- water within 16 to 18"

OPTIONAL SOIL DATA

REFERENCE(S):

Taxonomic subgroup:
Soil drainage class: Very poorly drained
Depth to active water table: 16 – 18"
NTCHS hydric soil criterion:

CONCLUSIONS

	YES	NO	REMARKS:
Hydrophytic vegetation criterion met?	☑	☐	
Hydric soils criterion met?	☑	☐	
Wetland hydrology criterion met?	☑	☐	
IS THIS DATAPOINT IN A WETLAND?	☑	☐	

PROJECT TITLE: TRANSECT: PLOT:

Upld G (along road)

PROJECT TITLE: TRANSECT: PLOT:

DELINEATOR(S): DATE:

VEGETATION

Stratum and Species		Dominance Ratio	Percent Dominance	NWI Status
trees	Red maple		75%	yes
	White pine		3%	No
Sapling:	Red maple		25%	yes
	Black cherry		5%	no
	White pine		3%	no
Shrub:	Beaked hazelnut		3%	no
	Japanese barberry		10%	no
	Black cherry		5%	no
Herb:	C. mayflower		80%	no
	Starflower		1%	no
	White pine		1%	no
	Black cherry		3%	no
Vine:	Poison Ivy		5%	yes

HYDROPHYTES

OBL	FACW	FAC	*OTHER

Hydrophytes Subtotal (A): 3

NON-HYDROPHYTES

FAC-	FACU	UPL

Non-hydrophytes Subtotal (B): 10

PERCENT HYDROPHYTES (100A/A+B): 23%

HYDROLOGY n/a

☐ RECORDED DATA
- Stream, lake, or tidal gage — Identification: _____
- Aerial photography — Identification: _____
- Other — Identification: _____

☐ NO RECORDED DATA

☐ OBSERVATIONS:

Depth to Free Water: _____

Depth to Saturation (including capillary fringe): _____

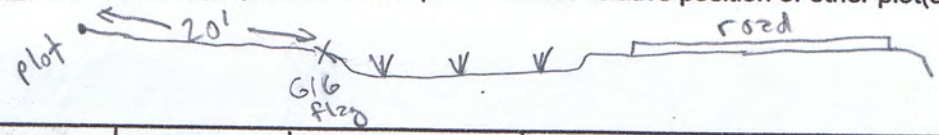
Altered Hydrology (explain): _____

☐ Inundated ☐ Saturated in upper 12" ☐ Water Marks ☐ Drift Lines ☐ Sediment Deposits ☐ Drainage Patterns within Wetland

☐ OTHER (explain):

Upld G (along rd)

SOIL Sketch landscape position of this plot. Indicate relative position of other plot(s) and the wetland flag if not on plan.



DEPTH	HORIZON	MATRIX COLOR	REDOXIMORPHIC FEATURES (color, abundance, size, contrast)	COMMENTS (USDA texture, nodules, concretions, masses, pore linings, restrictive layers, root distribution, soil water, etc.)
.5" - 0	O	2.5Y 3/2	none	sandy loam
0 - 18"	A	5Y 4/4	none	sand

HYDRIC SOIL INDICATOR(S): REFERENCE(S):

OPTIONAL SOIL DATA

REFERENCE(S):

Taxonomic subgroup:
Soil drainage class:
Depth to active water table: 18"+
NTCHS hydric soil criterion:

CONCLUSIONS

	YES	NO	REMARKS:
Hydrophytic vegetation criterion met?	☐	☒	
Hydric soils criterion met?	☐	☒	
Wetland hydrology criterion met?	☐	☒	
IS THIS DATAPOINT IN A WETLAND?	☐	☒	

PROJECT TITLE: TRANSECT: PLOT:

AREA PISCATAQUA RIVER BASIN

WATER BODY	TRIBUTARY TO	TOTAL LENGTH	TIDAL LENGTH	NAVIGABLE LENGTH	DATE OF NAVIGABILITY	REMARKS
BELLAMY RIVER, NH	LITTLE BAY	14.9	4.2	~~14.9~~ 4.2		
BERRYS BROOK, NH	PISCATAQUA RIVER	1	1	1		
CHAUNCEY CREEK, NH	PISCATAQUA RIVER	2.5	2.5	2.5		
COCHECO RIVER NH	PISCATAQUA RIVER	35.7	3.1	~~35.7~~ 3.1		
~~EXETER RIVER, NH~~	~~SQUAMSCOTT RIVER~~	~~35.2~~	~~0~~	~~31.7~~		
~~GREAT WORKS RIVER, ME~~	~~SALMON FALLS RIVER~~	~~27.4~~	~~0~~	~~20.9~~		
~~ISINGLASS RIVER, NH~~	~~COCHECO RIVER~~	~~15.3~~	~~0~~	~~0~~		
LAMPREY RIVER, NH	GREAT BAY	46.3	1.9	~~43.0~~ 1.9		
~~MAD RIVER, NH~~	~~COCHECO RIVER~~	~~4.5~~	~~0~~	~~0~~		
NORTH MILL POND, NH	PISCATAQUA RIVER	1.1	1.1	1.1		
OYSTER RIVER, NH	LITTLE BAY	10.6	3.0	~~8.9~~ 3.0		
PISCATAQUA RIVER	ATLANTIC OCEAN	12.6	12.6	12.6		
SAGAMORE CREEK, NH	PISCATAQUA RIVER	3.2	3.2	3.2		
SALMON FALLS R., ME/NH	PISCATAQUA RIVER	41.9	3.9	~~41.9~~ 3.9		
SPINNEY CREEK NH	PISCATAQUA RIVER	1.3	1.3	1.3		
SPRUCE CREEK, ME	PISCATAQUA RIVER	4.4	2.8	2.8		
SQUAMSCOTT RIVER, NH	GREAT BAY	9	9	9		
WINNICUT RIVER, NH	GREAT BAY	1	1	1		
WITCH CREEK, NH	PISCATAQUA RIVER	1	1	1		

R A Y M O N D

Raymond
(BM 205)

Site Location

Governors Lake

Dead Pond

Loon Pond

Little Rattlesnake Hill

Rattlesnake Hill

Flint Hill

Long Hill

Camp Onway

Lovering Cem.

Prescott Cem.

Lamprey River

Exeter River

Brook

Trailer Park

Gravel Pit

Campground

Sandpit

Substation

Water Tank

High Sch

Lamprey Sch

St. George Chapel

Cem

BM 274

BM 199

BM 215

BM 184

Onway Lake

Long Hill Road

Harriman Hill Road

Old Manchester Road

Onway Road

Onway Rd.

Battle Rd.

Brown Rd.

Prescott Rd.

Boston and Maine R.R.

4 Lane

Jeep Trail

(SANDOWN) 6769 I NW

CHESTER 5 MI.
DERRY 11 MI.

FREMONT 0.9 MI.
KINGSTON 7 MI.

620 000 FEET 12'30" 10'

SCALE 1:24 000

1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

MN GN
16° 284 MILS
1°30' 27 MILS

I GRID AND 1981 MAGNETIC NORTH
ECLINATION AT CENTER OF SHEET

N. H.

QUADRANGLE LOCATION

ROAD

Primary highway, hard surface

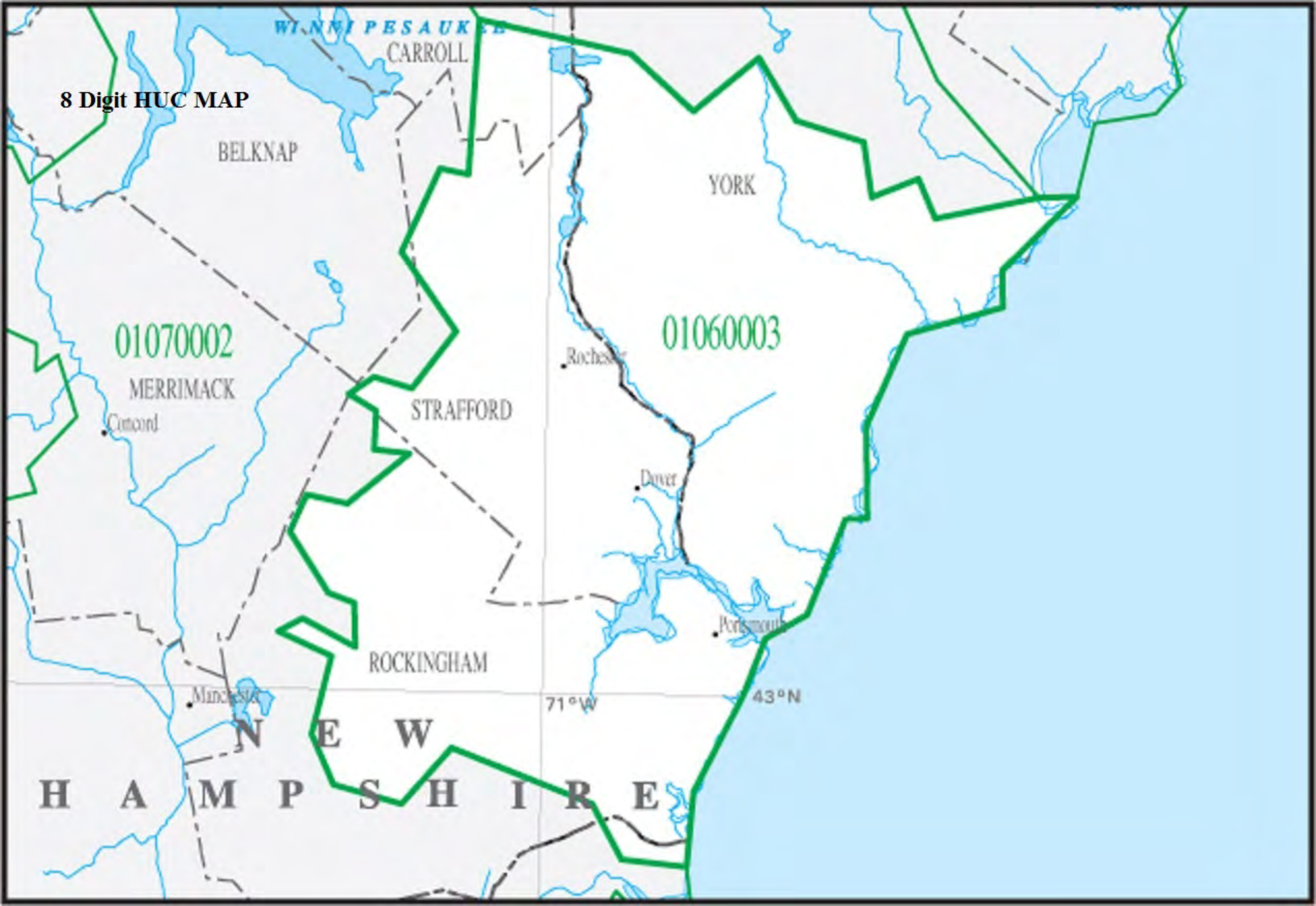
Secondary highway, hard surface

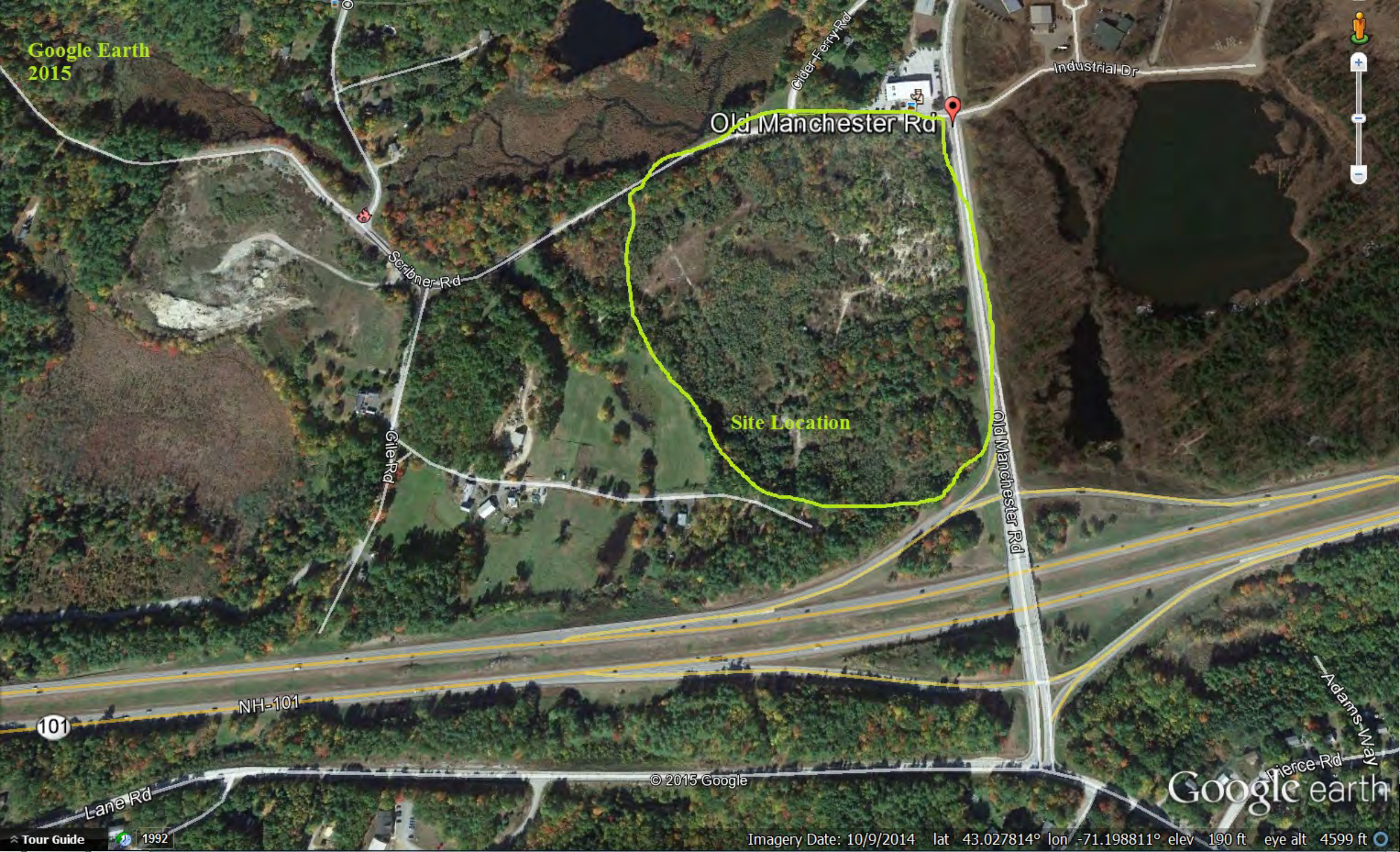
Interstate Route

MT
SW

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

8 Digit HUC MAP




Google Earth
2015
Old Manchester Rd
Cider Ferry Rd
Industrial Dr
Scribner Rd
Gile Rd
Site Location
Old Manchester Rd
NH-101
101
Lane Rd
Pierce Rd
Adams Way
© 2015 Google
Google earth
Tour Guide
1992
Imagery Date: 10/9/2014 lat 43.027814° lon -71.198811° elev 190 ft eye alt 4599 ft

JGI EASTERN, Inc.

SERVICES
- Geotechnical
- Environmental
- Construction Monitoring
- Materials Testing

October 29, 2007

Mr. Elmer Pease II
PD Associates, LLC
5 Dartmouth Drive, Suite 301
Auburn, NH 03032

Advance Copy via Email

Re: Groundwater Evaluation
Exit 4 Retail - Raymond
Raymond, New Hampshire

Project No. J1077231G

Dear Mr. Pease:

JGI EASTERN, Inc. (JGI), a Terracon company, is pleased to submit the following groundwater investigation for the above-referenced site in the town of Raymond, New Hampshire. This assessment was performed in accordance with our February 20, 2007 proposal.

Based on visual observations made by others, it appears the water table at the site has declined over recent years, and delineation of these areas as wetlands may no longer be applicable. It has been reported that a large sand and gravel operation that historically operated in the immediate area may have caused the water table to decline following lowering of the land surface in the vicinity. To evaluate the possibility of the alleged impact on the subject site, JGI used temporary, small-diameter monitoring wells to record the depth to groundwater during the spring months at three distinct areas across the subject site.

SITE DESCRIPTION

The site is located southeast of the intersection of Old Manchester Road and Industrial Drive in the town of Raymond, New Hampshire. A Site Location Map based on the United States Geological Survey Mt. Pawtuckaway, New Hampshire Quadrangle is presented as Figure 1. The site is heavily vegetated with brush and wooded areas, and includes two surface water bodies.

Land use in this area of Raymond has historically been associated with former sand and gravel operations, a portion of which was located on the site. Surface water and groundwater from the site are estimated to flow north toward the Lamprey River, approximately 1,400 feet away.

☑ 77 Sundial Avenue, Suite 401W
Manchester, NH 03103
(603) 647-9700 Fax 647-4432

☐ 114 Woodlawn Road
Berlin, CT 06037-1535
(860) 829-1725 Fax 829-1745

☐ 15 Holly Street, Unit 105
Scarborough, ME 04074
(207) 396-5374 Fax 396-5394

www.jgieastern.com

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Industrial Drive abuts the site to the north, with wooded land and commercial development beyond. The former Old Manchester Road is located to the west, beyond which is wooded land. Route 101 is south of the site, with wetlands and wooded land abutting the site on the east.

HYDROGEOLOGIC SETTING

As shown on Figure 1 and in more detail on Figure 2, the site topography is hummocky with an average elevation of 210 feet above mean sea level. Surface runoff is generally radial, originating in three distinct areas (A, B and C – Figure 2) across the site. Surface water in the southeastern and central portions of the site drain in a northerly direction.

SOIL CONDITIONS

According to the *Soil Survey of Rockingham County, New Hampshire Part* (1994), surficial soils underlying the site consist of Chocorua mucky peat and sand and gravel pits. The Chocorua mucky peat is described as follows: "*This nearly level soil is in hollows, valleys, basins, and drainageways. Areas are irregularly shaped…*" The soil is classified as very poorly drained with a seasonal high water table 1.0 foot above to 0.5 foot below ground surface. The soil survey identifies sand and gravel pits for a portion of the soils below the site and this corresponds to the former use of the site.

One boring was completed in an attempt to determine the maximum depth of the peat material; however, due to the combination of groundwater saturation and the organic nature of the soil, the hand-auger boring could not be completed beyond 10 feet bgs.

MONITORING WELL INSTALLATION

The subsurface exploration program completed for this investigation included advancing 13 test borings and subsequently installing 13 groundwater monitoring wells. Four monitoring wells were installed in each of three distinct topographically elevated areas, and JB-13/MW was installed on the opposite side of former Old Manchester Road west of the site. The monitoring wells were installed in a manner consistent with U.S. Army Corps of Engineers recommendations. The locations of the test borings are shown on Figure 2.

JGI personnel advanced borings/monitoring wells identified as JB-1/MW through JB-12/MW on April 6, 2007, and installed monitoring well JB-13/MW on April 14, 2007. The borings were advancing using hand-augering equipment. Following the completion of the test borings, 1-inch-diameter polyvinyl chloride (PVC) monitoring wells were installed. Each well was constructed with the lowermost section consisting of a 10-slot (0.010-inch) well screen. Each

well was installed such that the depth of the well was approximately 3.5 feet below grade surface (bgs) with approximately 0.5 foot of PVC riser pipe extending above ground surface. Bentonite clay was used at the ground surface to seal the well and prevent surface water from entering the boring. The top of each monitoring well was fitted with a PVC well cap.

GROUNDWATER OBSERVATIONS

Groundwater monitoring measurements occurred generally at weekly intervals between April 6 and June 15, 2007. Groundwater levels were taken using a Solinst Water Level Indicator by measuring the depth to the water level from the top of the PVC riser pipe. The height of the riser pipe above the ground surface was measured and subtracted giving the depth of the groundwater bgs.

Following are descriptions of groundwater observations broken out for the three distinct areas that were investigated.

Area A: Area A, located in the northern portion of the site, along Industrial Drive, is characterized by monitoring wells JB-1/MW through JB-4/MW. The average groundwater level observed in this area during the monitoring period was 1.95 feet bgs. There were no individual depth to water measurements less than 1 foot below ground surface in this area.

As shown on Figure 3, depth to water measurements in the four monitoring wells in Area A were consistent with one another during the period of record. The data also show a gradual increase in depth to the groundwater as the monitoring period and season progressed.

Area B: Located in the southern portion of the site along the former Old Manchester Road, Area B is characterized by monitoring wells JB-5/MW through JB-8/MW. During the monitoring period, the average depth to water for JB-6/MW and JB-7/MW was 0.49 foot bgs. It should be noted that standing water at ground surface was observed on April 20, 2007 at these two wells. The average depth to water for JB-5/MW and JB-8/MW was 1.07 feet bgs. Figure 4 is a graph of the depth to water during the monitoring period at Area B. Water level fluctuations within each well were consistent with one another during the period of monitoring and no noticeable overall trend in the data is evident.

Area C: Located near the intersection of former Old Manchester Road and Industrial Drive, Area C is characterized by monitoring wells JB-9/MW through JB-12/MW. During the monitoring period, the respective average depths to water

in JB-10/MW and JB-11/MW were 2.44 and 2.67 feet bgs. The average groundwater level for JB-12/MW was 0.84 foot bgs and standing water was observed at ground surface during the April 20, 2007 monitoring round.

Groundwater was not encountered during any of the monitoring rounds at JB-9/MW, which was installed to a depth of 3.5 feet bgs.

As shown on Figure 5, the difference in depth to water between JB-12/MW and JB-10/MW and JB-11/MW in Area C is a little over 1.5 feet. In addition, JB-12/MW shows greater depth to water fluctuations than does JB-11/MW. None of the monitoring wells in Area C show noticeable trends in the data over the period of record.

Outlying Monitoring Well:

The outlying monitoring well, JB-13/MW, is located on the west side of the former Old Manchester Road, opposite the site. During the monitoring period, the average depth to groundwater measured at the well was 2.24 feet bgs, with the shallowest groundwater measurement recorded as 1.89 feet bgs. As shown on Figure 6, groundwater levels at JB-13/MW fluctuated more dramatically than any of the other wells on site.

CONCLUSIONS

Based on the data and information gathered for this study, JGI provides the following specific conclusions:

- The depth to groundwater at Area A does not appear to be consistent with that of a wetland environment. During the monitoring period, groundwater was not observed shallower than 1 foot bgs.

- The depth to groundwater at Area B appears consistent with that of a wetland environment. During the monitoring period, groundwater was observed shallower than 1 foot bgs and standing water was observed on one occasion to be 0.33 foot above the ground surface at JB-6/MW and JB-7/MW. Depth to water was measured at less than 1 foot bgs on only two occasions during April at JB-5/MW and JB-8/MW.

- At three of the four monitoring wells in Area C, depth to groundwater observed during the monitoring period did not appear consistent with that of a wetland environment. However, at JB-12/MW, standing water was observed

JGI EASTERN, Inc.
A Terracon COMPANY

at ground surface during the April 20, 2007 water level round. Groundwater levels for the remaining April measurements were greater than 0.5 foot bgs.

Thank you for this opportunity to offer our services, we look forward to working with you. If you have questions or require additional information, please contact us in our NH office.

Very truly yours,
JGI EASTERN, Inc.
A Terracon Company

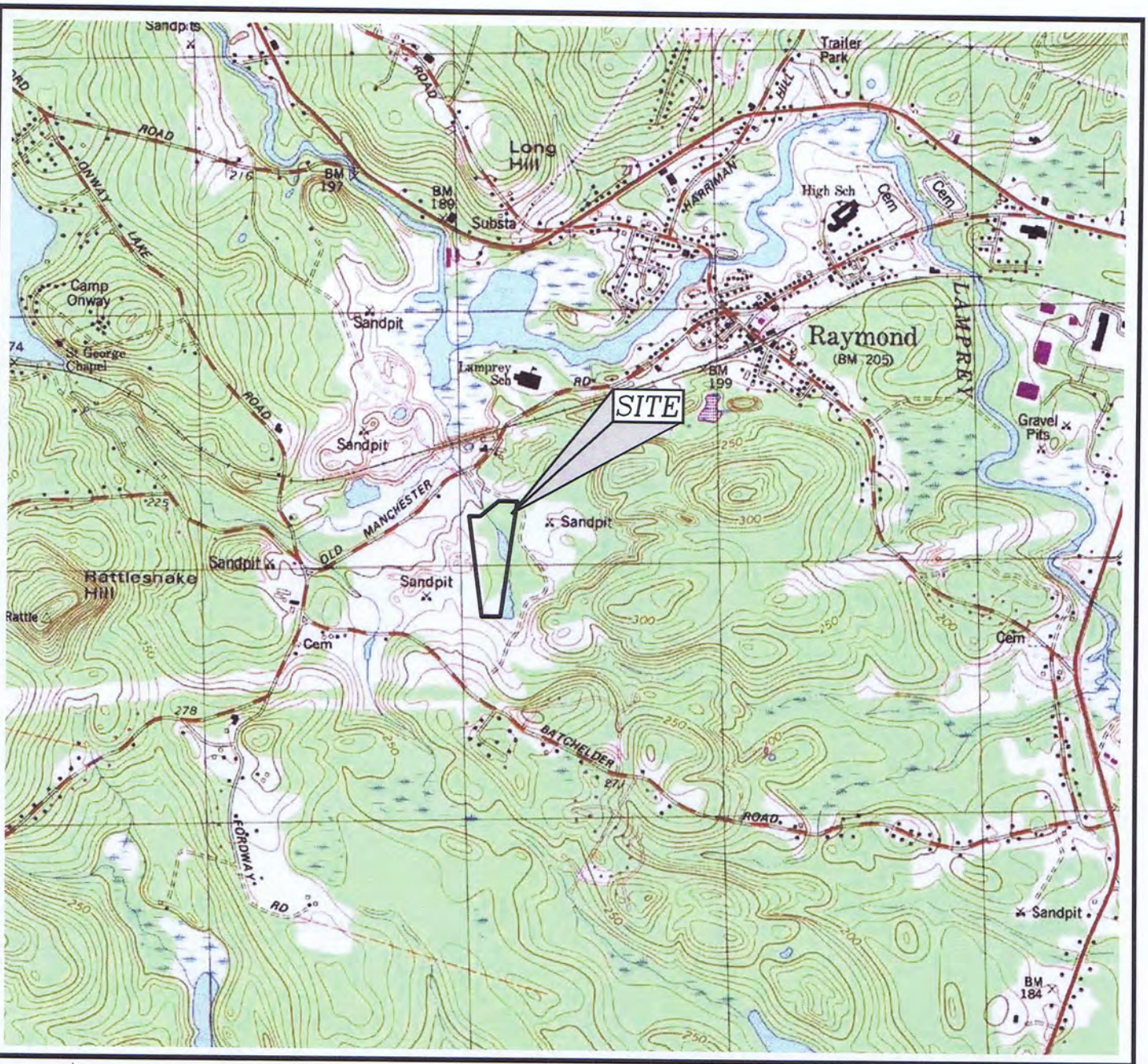
James W. O'Rourke
Project Manager I

Michael R. Burke, PG
Senior Principal

/cjd

Attachments: Figure 1 – Site Location Map
Figure 2 – Subsurface Exploration Location Plan
Figure 3 – Area A: Depth to Groundwater vs. Time
Figure 4 – Area B: Depth to Groundwater vs. Time
Figure 5 – Area C: Depth to Groundwater vs. Time
Figure 6 – JB-13/MW: Depth to Groundwater vs. Time
Table 1 – Groundwater Level Readings

cc: Mr. Matt Peterson, Woodland Design
Mr. Mark West, West Environmental



SCALE: 1:24 000

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

PROJECT: EXIT 4, PROPOSED RETAIL
RAYMOND, NH

PROJECT NO. J1077231G

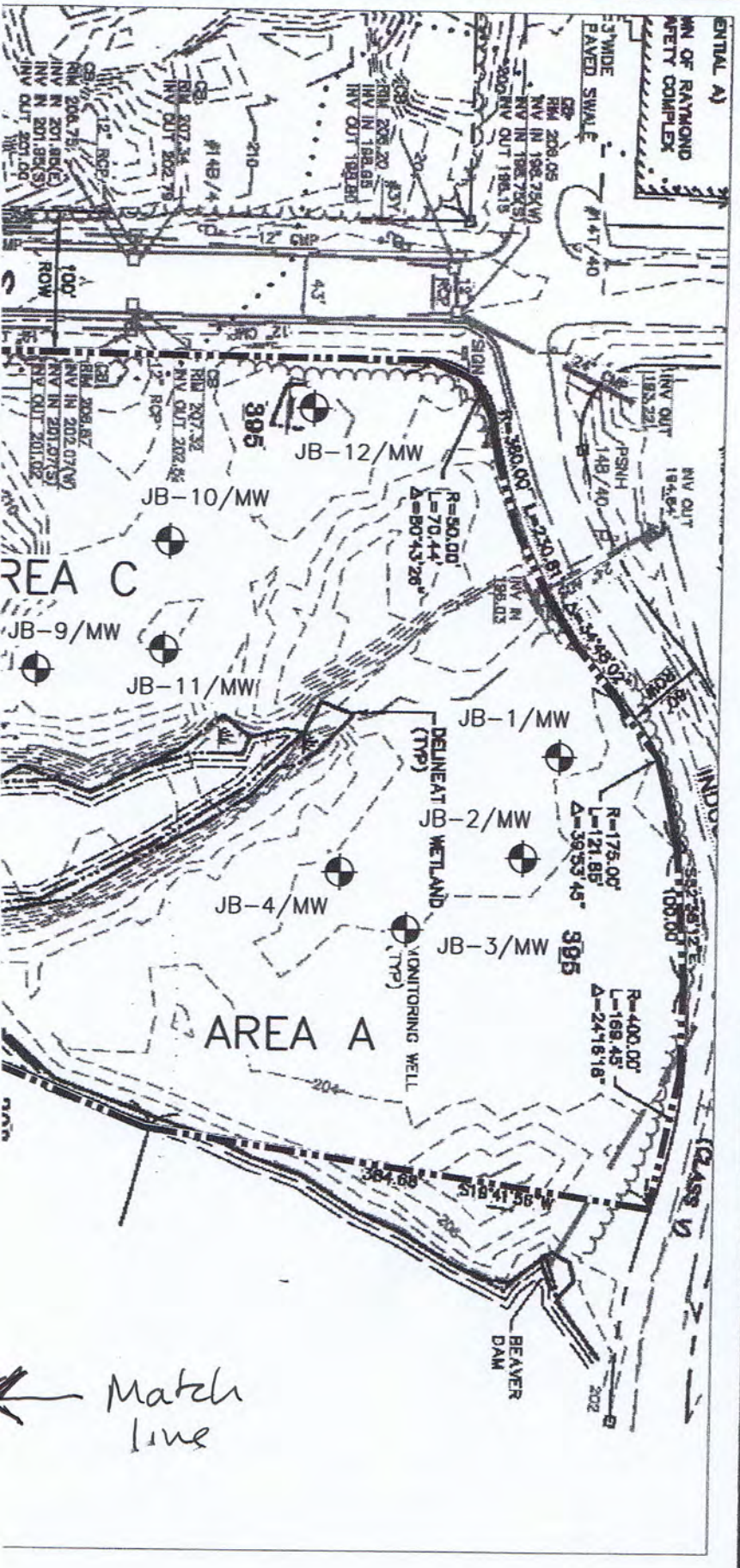
DATE: JULY 2007

SOURCE: USGS MT. PAWTUCKAWAY, NH
1981 REV. 1988

FIGURE 1
SITE LOCATION MAP

JGI EASTERN, Inc.
A Terracon COMPANY
77 Sundial Avenue
Suite 401W
Manchester, N.H. 03103

Wetland A Granite Meadows.
JB-4/13/MW
JB-5/MW
JB-6/MW
JB-7/MW
JB-8/MW
AREA B
OLD MANCHESTER ROAD
GRANITE CURB
GUARDRAIL
MAP 22 LOT 48
573,204 S.F.
13.459 ACRES
MAP 22 LOT 48
BBOC DEVELOPMENT, LLC
84 EXTER ROAD
S. HAMPTON, NH 03827
(INDUSTRIAL D)
UNDEVELOPED
EDGE OF POND
Match Line.



NOTES:

1. THE LOCATIONS OF THE SUBSURFACE EXPLORATIONS WERE SURVEYED BY SANDFORD SURVEYING & ENGINEERING, OF NEW BOSTON, NEW HAMPSHIRE WHO PROVIDED THE PLAN FOR THE BASIS OF THIS FIGURE. THE LOCATIONS SHOULD BE CONSIDERED ACCURATE TO THE DEGREE IMPLIED BY THE METHOD USED.

2. TEST BORINGS SHOWN AS JB-1 THROUGH JB-13 WERE ADVANCED ON 4-6 AND 4-17, 2007, BY JGI.

3. USE OF THIS PLAN IS LIMITED TO THE ILLUSTRATION OF THE APPROXIMATE LOCATION OF THE SUBSURFACE EXPLORATIONS AND OTHER PERTINENT SITE FEATURES. OTHER USE OF THIS PLAN WITHOUT PERMISSION FROM JGI IS PROHIBITED.

LEGEND

JB-1/MW ⊕ MONITORING WELL LOCATION

GRAPHIC SCALE

60 0 60 120 240

(IN FEET)

FIGURE 2
SUBSURFACE EXPLORATION LOCATION PLAN

EXIT 4, PROPOSED RETAIL
RAYMOND, NH

PREPARED FOR:
MR. ELMER PEASE II
PD ASSOCIATES, LLC
5 DARTMOUTH DR. SUITE 301
AUBURN, NH 03032

DATE: OCTOBER 2007
SCALE: 1" = 120'
PROJECT NO: J1077231G

JGI EASTERN, Inc.
A Terracon COMPANY

Geotechnical
Environmental
Construction
& Materials Testing

77 Sundial Avenue, Suite 401W
Manchester, New Hampshire 03103 (603) 647-9700

Figure 6

Exit 4 Retail
Raymond, New Hampshire
Project No. J1077231G

JB-13/MW: Depth to Groundwater vs. Time

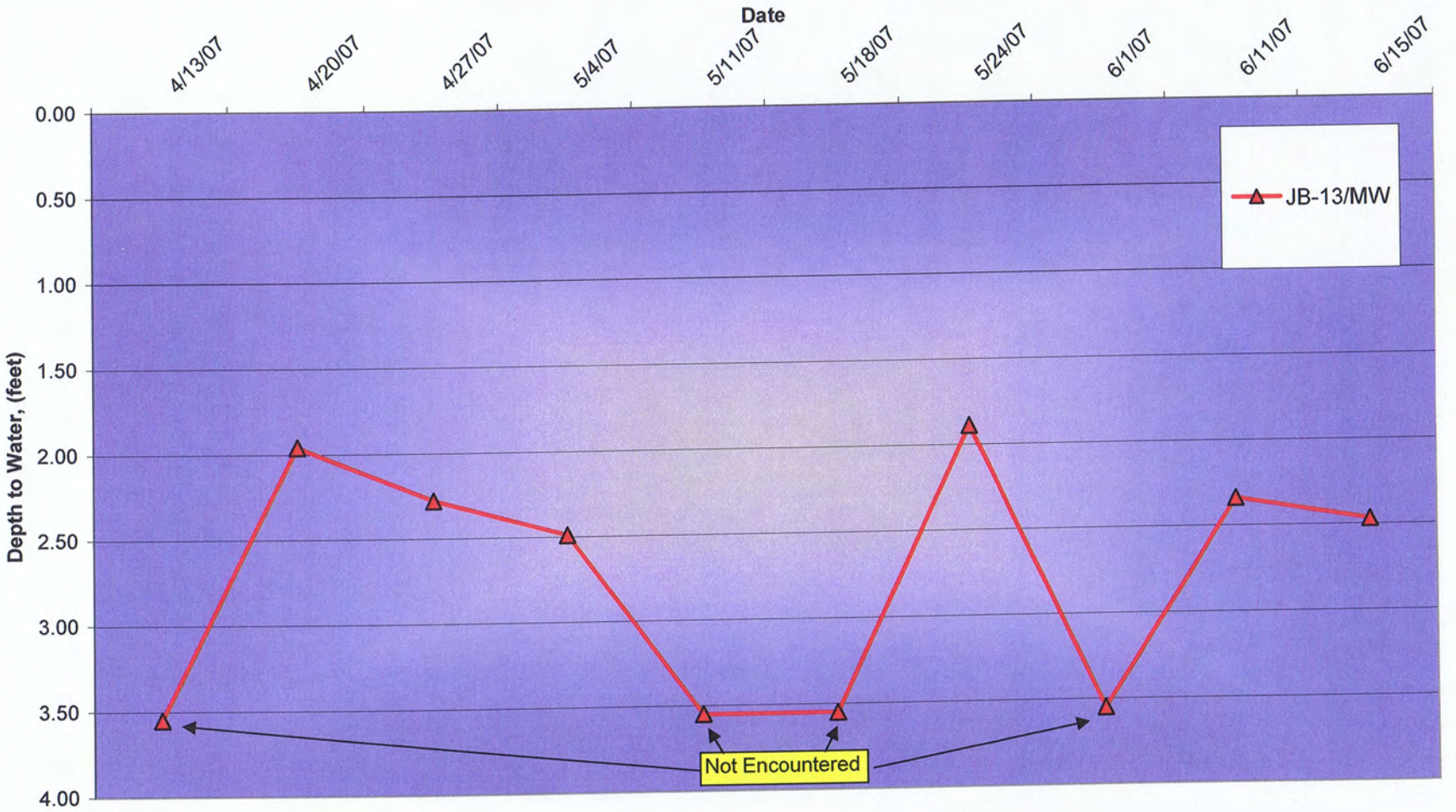


TABLE 1

Exit 4 Retail
Raymond, New Hampshire
Project No. J1077231G

Groundwater Level Readings

Date	Well ID	DTW (ft)	Riser Height (ft)	Water Level Below Grade (ft)	Notes
Outlying Monitoring Well					
4/6/2007	JB-13/MW	NE	--	NE	
4/13/2007	JB-13/MW	NE	--	NE	Well installed 4/13/07
4/20/2007	JB-13/MW	3.21	1.25	1.96	
4/27/2007	JB-13/MW	3.47	1.19	2.28	
5/4/2007	JB-13/MW	3.68	1.19	2.49	
5/11/2007	JB-13/MW	NE	1.19	NE	
5/18/2007	JB-13/MW	NE	1.19	NE	
5/24/2007	JB-13/MW	3.08	1.19	1.89	
6/1/2007	JB-13/MW	NE	1.19	NE	
6/11/2007	JB-13/MW	3.54	1.20	2.34	
6/15/2007	JB-13/MW	3.66	1.19	2.47	
Average depth to water when encountered				**2.24**	

Notes:

ID = Identification.
DTW = Depth to Water.
Ht = Height.
NE = Not Encountered.