
Section 248 Natural Resources Report

VERMONT GAS SYSTEMS, INC.
ADDISON NATURAL GAS PROJECT
Colchester to Middlebury,
Vermont

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1.0 Introduction

At the request of Vermont Gas Systems, Inc. (“VGS”), Vanasse Hangen Brustlin, Inc. (“VHB”) conducted natural resources studies for the proposed VGS Addison Natural Gas Project (“ANGP” or “Project”) which extends from Colchester to Middlebury, Vermont (see the ANGP Index Map in Appendix 1). These studies have been conducted for the primary purpose of providing background natural resource inventories for the Project’s pending petition to the Vermont Public Service Board (“PSB”) for a Certificate of Public Good (“CPG”) under 30 V.S.A. § 248 [Criterion (b)(5)]. In addition, these studies and report will also provide supporting documentation for other permit applications collateral to the CPG petition.

The planned Project is intended to extend natural gas transmission from Colchester southward into Addison County to distribute service for Middlebury and Vergennes, Vermont. The ANGP components under study include areas being considered for “Transmission Mainline”, “Distribution Mainline”, and ancillary components including three gate station, as well as temporary access and staging areas. Although not included in the Project’s petition for a CPG, the likely alignments for the local distribution networks in Vergennes and Middlebury, Vermont have also been included in these studies, as required by other collateral permit applications. Further description of the Project study components are included in Section 2 and 3, below.

Field and database studies have been completed by VHB or its subconsultants for the components of the Project, including several alternative route and design alignments. The studies of various Project alignment options were conducted in order to select the alignment that would avoid or minimize environmental impacts, while at the same time meeting Project objectives. An assessment of alternative conceptual Project alignments was

conducted pursuant to the requirements of the Project’s filing for a Department of the Army permit.

Detailed assessments of various design refinements from the Preliminary Alignment were conducted, as presented herein. The field studies included a vernal pool survey, wetland delineation and assessments, surface waters delineations and assessments, surveys for significant natural communities, rare, threatened or endangered (“RTE”) species, and necessary wildlife habitat (“NWH”). These studies also include database reviews, particularly of publically-available mapping information. This report therefore presents the results of the studies to document natural resources for the Project components and various design alternatives under the following Act 250 criteria, as incorporated into Section 248 review:

- Outstanding Resource Waters (10 V.S.A. § 1424a(d))
- Headwaters (§ 6086(a)(1)(A))
- Floodways (§ 6086(a)(1)(D))
- Streams (§ 6086(a)(1)(E))
- Shorelines (§ 6086(a)(1)(F))
- Wetlands (§ 6086(a)(1)(G))
- Rare or Irreplaceable Natural Areas (“RINA”)(§ 6086(a)(8))
- Necessary Wildlife Habitat and Endangered Species (§ 6086 (a)(8)(A))

This report has been prepared to summarize the methodologies used to conduct the studies, and the results of the natural resources studies along the Project corridor. Where applicable, potential effects on the applicable Section 248 natural resources criteria are included, but overall the report does not evaluate specific Project-related impacts on the natural resources criteria included herein, as such impact analyses will be presented in appropriate collateral

permit applications or other reviews. Notably, this report does not address the following criteria, which are included in the pre-filed direct testimony of Jeffrey A. Nelson:

- Waste Disposal (§ 6086(a)(1)(B));
- Water Conservation (§ 6086(a)(1)(C));
- Water Supply (§ 6086(a)(2) and (3)); and
- Soil Erosion (§ 6086(a)(4)).

2.0 Project Description

ANGP includes the following principal components:

(1) Approximately 43 miles of new 12-inch Transmission Mainline, extending from a new tie-in to be located at Vermont Gas' existing 10-inch mainline north of Severance Road in Colchester (the Colchester Tie-In"), Vermont, to the intersection of U.S. Route 7 and Exchange Street in Middlebury, Vermont;

(2) Approximately 4.8 miles of new six-inch Distribution Mainlines that will extend distribution service to Vergennes (4 miles) and Middlebury (0.8 miles); and

(3) Three new pressure regulation stations ("Stations" or "Gate Stations"), one located near Route 2 in Williston to reinforce the existing distribution system, one on Plank Road in New Haven, and the third just south of the intersection of U.S. Route 7 and Exchange Street in Middlebury, which will provide new distribution service to the Towns of Vergennes and Middlebury.

Additionally, during construction of the Project Transmission Mainline, construction accesses as well as temporary work areas for equipment and material staging areas will be necessary.

The Transmission Mainline is approximately 42.7 miles in length from the point of interconnection in Colchester to the terminus at the new Exchange Street Gate Station in Middlebury. The line will pass through the Towns of Colchester, Essex, Williston, St. George, Hinesburg, Monkton, New Haven, and Middlebury.

The Distribution Mainline to Vergennes will extend from a new Plank Road Gate Station in New Haven, running along Plank Road approximately four (4) miles through the Towns of New Haven, Ferrisburgh, and Waltham, to the intersection of US Route 7 in Waltham, just east of Vergennes. The Middlebury Distribution Mainline will extend from the new Exchange Street Gate Station in Middlebury to the Middlebury industrial park on Exchange Street.

Although not included under Section 248 review, for purposes of meeting the requirements of pertinent collateral permit applications, the natural resources study also includes local distribution network lines in Vergennes (including through a small portion of Ferrisburgh) and Middlebury (including through a small portion of Weybridge).

3.0 Existing Conditions

The proposed VGS ANGP corridor has a north to south alignment that traverses through portions of eleven towns from Chittenden to Addison County, including: Colchester, Essex, Williston, St. George, Hinesburg, Monkton, Ferrisburgh, Vergennes, Waltham, New Haven, and Middlebury. The Final Alignment of the Project is shown on the ANGP Index Map of the Natural Resource Maps, included in Appendix 1.

VHB field-investigated a total of approximately 3,200 acres, which included potential alternative transmission and distribution main alignments and design locations for the Project components (including local distribution networks). The Project would be sited

within the areas studied with the exception of few minor areas. Water resources and wildlife habitat investigations were able to be conducted for all areas, with exception of one potential temporary construction access off Pond Road in Monkton, which from aerial photo interpretation, is an existing roadway and the likelihood of these resources being present is low. The report included in Appendix 6 describes the areas studied, or where field information is unavailable, for rare species and natural communities (off-site corroborative review replaces field information such that Project assessments can be determinative).

All Project components are located in the Champlain Valley biophysical region of the state which is characterized by gentle and rolling topography underlain by Ordovician limestones, dolomites, and shale rocks, often characterized by Northern Hardwood Forest and Valley Clayplain Forest matrix communities when undisturbed, and supports several natural communities that are best expressed or restricted to this region (Thompson and Sorenson 2005). Representative photographs of existing land uses and conditions within the areas studied are included in Appendix 5.

The Preliminary Alignment was selected based on the conceptual alignments identified in the Project alternatives analysis. Following detailed study of the Preliminary Alignment, much of the route has been variously shifted in response to incoming engineering and environmental data, resulting in the Final Alignment presented in the Section 248 petition and collateral permit applications. As this report presents the findings from the overall detailed natural resources study for those applicable criteria (e.g., wetland, streams, wildlife habitat, rare species, natural communities, etc.), the following brief descriptions of major design route alignments investigated in detail and included in data for this report, for Transmission or Distribution Mainline, include:

- Approximately 2-mile land corridor adjacent to portion of the existing VELCO K-22 transmission line (Colchester);

- Approximately 5-mile line alignment from Monkton to Vergennes following Monkton Road from the Old Stage Road intersection in Monkton through Ferrisburgh southwest to U.S. Route 7;
- Approximately 7-mile distribution line alignment from Monkton to New Haven following Old Stage Road, North Street, South Street to River Road;
- Various Winooski River crossing alignments;
- Various portions of the undeveloped Circumferential Highway (“CCCH”) A-B segment, from the Winooski River to Interstate I-89; and
- Various portions of the land corridor within and adjacent to the existing VELCO K-43 and K-63 lines.

Since this report is intended as an inventory of natural resource features, Project alternatives and the design evolution process are not described here. The following sections generally describe existing conditions within the Final Alignment of principal Project components.

Transmission Mainline

The proposed Transmission Mainline alignment traverses the towns of Colchester, Essex, Williston, St. George, Hinesburg, Monkton, New Haven, and Middlebury. This portion of the Project originates in Colchester at the existing “Colchester Tie-In”, located north of Severance Road along the CCCH and extends south generally following portions of the un-built and built CCCH alignment (Vermont Route 289), Redmond Road, Interstate 89, parallel to portions of the VELCO K-27 and K-43 overhead electric transmission lines, portions of Baldwin Road in Hinesburg, and Monkton Road to Old Stage Road in Monkton. The then alignment follows Old Stage Road to Plank Road in New Haven, where it generally follows portions of the VELCO K-43 and K-63 lines to River Road in New Haven, to US Route 7, to the Transmission Mainline termination at Exchange Street in Middlebury. The Transmission Mainline study area is of various widths, but generally ranging from 150

to 300-feet in width. For portions of the proposed pipeline located within the CCCH alignment, the entire CCCH area is studied, including additional 50-feet on either side.

The lands along the proposed Transmission Mainline drains to three major watersheds, the Otter Creek, Upper Lake Champlain, and Winooski River Vermont River Basins (see the ANGP Major Watershed Map in Appendix 1). The named streams in this portion include Alder Brook, Allen Brook, Indian Brook, Lewis Creek, Little Otter Creek, New Haven River, La Platte River, Sucker Brook and the Winooski River. Elevation in this segment of study ranges from approximately 190 to 670 feet above-mean-sea-level (amsl).

The northern component studied includes both un-built and built segments of the CCCH. The unbuilt portion of the CCCH includes historically grazed and mowed fields, northern hardwood forests, and hemlock forests, interspersed with other natural and disturbed vegetative communities. The surrounding area of the CCCH contains existing residential and commercial development. The VELCO K-27, K-43, K-63 and various segments along roadways are mostly located in or adjacent to maintained ROWs, active agricultural lands, and forest patches. The Transmission Mainline component south of Interstate 89 includes more active pastureland and larger agricultural operations with scattered farms and residences. Portions of the Transmission Mainline component are intersected by existing trails, farm roads, access roads and paths.

Distribution Mainline

The two proposed distribution mainlines will provide access to the local distribution networks from the Transmission Mainline. The distribution mainline to the north is proposed to access Vergennes along Plank Road. This study area is approximately four (4) miles long. The Vergennes distribution mainline passes through two Vermont watershed basins, the Otter Creek and the Upper Lake Champlain. The named streams in the Vergennes distribution mainline alignment include Little Otter Creek and Mud Creek.

Elevation in this segment of study ranges from approximately 250 to 370 feet amsl. The majority of the proposed Vergennes distribution mainline includes actively grazed and agricultural fields and hardwood forest patches. The surrounding landscape is predominately farmland and rural residential.

The distribution mainline to Middlebury is approximately 0.8 miles long from US Route 7 and along Exchange Street. The distribution mainline is located in the Otter Creek watershed. There are no major mapped streams in this study component. Elevation in this distribution line ranges from 380 to 450 feet amsl. The majority of the proposed Middlebury Distribution mainline is maintained road edge or commercial business property. The surrounding area is primarily commercially developed including the Bridge School, Cabot Creamery (“Agrimark”), Vermont Coffee, and Optics Limited, among others.

Local Distribution Networks

The areas identified by VGS for proposed local distribution networks are located within the towns of Vergennes and Middlebury and will generally follow existing roadways in order to service individual customers, based on customer demand. The local distribution network studied in the town of Vergennes totals approximately 12.6 miles. The local distribution network studied in the Town of Middlebury totals approximately 26.4 miles. Both are located in the Otter Creek watershed. The major stream crossing for both the Middlebury and Vergennes local distribution networks is Otter Creek. The Town of Middlebury and City of Vergennes are both located in dense residential and commercial areas. The general area studied for each is a 100-foot corridor, centered on existing roadways, when applicable. Within each town, potential alternative Otter Creek crossings were also studied.

4.0 Outstanding Resource Waters (10 V.S.A. § 1424a (d))

The Vermont Natural Resources Board (“NRB”) under 10 V.S.A. Section 1424, designates Outstanding Resource Waters. A list of these waters is maintained on the Water Resources Panel website (WRP 2010). The following waterways have been classified by the NRB as Outstanding Resource Waters:

1. Batten Kill River, Towns of East Dorset and Arlington
2. Pike’s Falls/Ball Mountain, Town of Jamaica
3. Poultney River, Towns of Poultney and Fair Haven
4. Great Falls, Ompompanoosuc River, Town of Thetford

There are no waters in the Project vicinity that have been designated as Outstanding Resource Waters.

5.0 Headwaters (§ 6086(a) (1) (A))

VHB completed water resource field studies and analyzed available information including topographic maps, and state-mapped public water supply source protection areas to determine if the Project is located on lands that meet the criteria of V.S.A § 6086(a)(1)(A), which include:

- i. Headwaters or watersheds characterized by steep slopes and shallow soils; or
- ii. Drainage areas of 20 square miles or less; or
- iii. Above 1,500 feet elevation; or
- iv. Watersheds of public water supplies designated by the ANR; or
- v. Areas supplying significant amounts of recharge water to aquifers.

Within portions of the ANGP, there are discrete areas of steep slopes (typically those greater than 15 percent) and the drainage areas of several of the Vermont-mapped and delineated water features are less than 20 square miles. None of the Project components are located above 1,500 feet elevation. Portions of the Project are located within the watersheds of public water supplies. Since much of Project area meets one or more of the headwaters criteria, the Project, at least in part, meets the definition of a headwaters area and in these areas would be required to conform to applicable regulations to protect water quality pursuant to the 2011 Vermont Water Quality Standards (“VWQS”) (NRB 2011) and most pertinently, Project construction activities would be regulated under the National Pollutant Discharge Elimination System (“NPDES”) Construction Stormwater Discharge program, which is administered by the Vermont Department of Environmental Conservation (“DEC”).

6.0 Floodways (§ 6086(a)(1)(D))

The Act 250 Floodway criterion (10 V.S.A. § 6086(a)(1)(D)), as incorporated into Section 248 review, takes into consideration a project’s effect on both floodways and floodway fringes. The term “floodway” is defined to mean “the channel of a watercourse which is expected to flood on an average of at least once every 100 years and the adjacent land areas which are required to carry and discharge the flood of the watercourse.” (10 V.S.A. § 6001(6)). The term “floodway fringe” is defined as “an area which is outside a floodway and is flooded with an average frequency of once or more in each 100 years.” (*Id.* § 6001(7)). A project’s impacts can be considered with respect to both flood inundation and fluvial erosion hazard (“FEH”), when applicable (ANR 2009). The FEH area is the lateral width of a stream corridor that may be subject to fluvial erosion from stream channel lateral migration over time. The FEH, when applicable is determined by geomorphic assessments of channel bank full width, meander centerline, confining lateral topography, channel type, and current

channel adjustments; then typically defined by a channel-width to belt-width ratio, dependent on stream sensitivity type and adjacent landform (ANR 2009).

VHB reviewed the available Federal Emergency Management Agency (“FEMA”) Flood Insurance Rate Maps and determined the locations of FEMA-mapped floodways within the Project area. These locations are depicted in the ANGP FEH, Floodway, and Floodplain Maps in Appendix 1. From this, there are 29 floodway crossings in the proposed alignment.

The Project team has also coordinated with the DEC Rivers Management program to evaluate locations that the Project would cross designated FEH zones. From this, the Final Alignment would bisect 12 designated FEH zones associated with the 10 rivers/streams. The locations of which are shown on the ANGP FEH, Floodway, and Floodplain Maps in Appendix 1.

7.0 Streams (§ 6086(a)(1)(E))

This Act 250 criterion, as incorporated into Section 248 review, requires that projects will, when feasible, maintain natural stream channel condition, and will not endanger the health safety, or welfare of the public or adjoining landowners (10 V.S.A. § 6086(a)(1)(E)). VHB environmental scientists conducted field delineation and assessment of stream features during the period July to November 2012. Streams are identified according to federal delineation procedures (USACE 2005) and were flagged with orange survey tape. Flagging was coded with the feature identification (“TOS”=Top of Slope, “TB” = top of bank, “SC” = stream center), and stream number, along with the specific flag number (e.g., 2011-TB-CM1-1A). Generally, perennial and intermittent streams (wider channels) are flagged along the stream TB (or TOS), according to guidelines in the *Guidance for Agency Act 250 and Section 248 Comments Regarding Riparian Buffers* (ANR 2005). Narrow features, including most

ephemeral channels, are flagged along the center line. Ditches or constructed ponds are typically not included in the delineation if such features are due to excavation from upland. However, such features were included in the delineation if these features were determined to be modified, naturally occurring streams or wetlands that would meet federal criteria for jurisdiction. Stream flags were located in the field using a Trimble® GPS unit capable of sub-meter accuracy and post-processed using Trimble® Pathfinder software. Stream identification and ordinary high water (“OHW”) width was also assessed, according to methods detailed in the “Regulatory Guidance Letter: Subject – Ordinary High Water Identification” (USACE 2005). The OHW width for each channel segment is determined from an average of measurements of bank-to-bank OHW widths taken at regular intervals along the surveyed portion of the watercourse. During field work, flow regimes are preliminarily classified as perennial, intermittent, or ephemeral and are determined based on qualitative observations of instream hydrology indicators at the time of observation and existing geomorphic characteristics.

Previous stream delineations have been conducted by others as part of the planning and/or permitting for CCCH and other past VELCO projects. VGS obtained the previous delineation mapping for the former CCCH A-B segment, and the segments of the VELCO K-22, K-27, K43, and K63 lines. As previous delineations are of various vintage or stage of completion, with permission, VHB reviewed or conducted new delineations and updated the delineations in the investigation areas where previous delineation information is available. For the CCCH, VHB delineated all streams. Streams previously delineated within the VELCO ROWs were reviewed in the field and spot-flagged if accepted, revised, or extended where necessary based on detailed field review.

VHB conducted stream delineations throughout the study components and identified a variety of perennial, intermittent, and ephemeral streams. These streams range from mapped Vermont Hydrography Dataset (“VHD”) streams and river (Winooski River) to

small streams and channelized/ditched segments within agricultural settings. The major streams within the investigation area include the Winooski River, LaPlatte River, Lewis Creek, Little Otter Creek, and the New Haven River. The alignment also crosses Indian Brook, Alder Brook, Allen Brook, and Sucker Brook. Representative stream photographs within the Project corridor are presented in Appendix 5. VHB analyzed the mapped VHD streams within the Project investigation area to determine watershed sizes in the context of potential review by the DEC Rivers Management Program under the Vermont Stream Alteration regulatory program (WQD 2010). As part of this review, VHB also reviewed the VWQS (2011) to determine the classifications of the streams throughout the ANGP study components. The ANGP Stream Summary spreadsheets provide details on each stream feature or segment, which include ditches that could be considered under federal jurisdiction (see the ANGP Natural Resource Series Maps and the ANGP Watershed Sizes Used as Guidance in Stream Alteration Regulations Map in Appendix 1 and the ANGP Stream Summary Spreadsheets in Appendix 2). The data provided in the ANGP Stream Summary Spreadsheet include:

- VHB Stream ID
- Stream Name (Geographic Names Information System (“GNIS”))
- Town
- Average OHW
- Potential Flow Regime (Perennial, Intermittent, Ephemeral, Ditch)
- Watershed Size > 0.5 mile (yes/no)
- Impaired or Priority Waters

Within the Project area, all delineated streams and rivers are Class B waters as designated pursuant to the 2011 VWQS. The La Platte River, Lewis Creek, Indian Brook, Mud Creek and Otter Creek are listed as Priority Waters. Otter Creek is listed as an impaired water on

the 2012 State of Vermont 303(d) List of Waters or the 2012 State of Vermont List of Waters Outside the Scope of Clean Water Act Section 303(d), Part D Surface Waters with Completed and Approved TMDLs (see Appendix 2 Stream Summary Spreadsheet).

Riparian buffers adjacent to streams and rivers, consistent with the ANR Buffer Guidance (ANR 2005) have been designated for perennial and intermittent streams within the investigation areas. 50-foot buffers from the field mapped stream center or top of bank/top of slope is used, except for the Winooski River, for which a 100-foot buffer has been incorporated (see the ANGP Natural Resource Map in Appendix 1).

The USACE has field reviewed the stream delineations most recently during a site visit in October 2012. VGS is submitting a Department of the Army Section 404 Permit and a Vermont State Section 401 Water Quality Certification application for Project impacts to stream channels. The DEC Stream Alteration program has also reviewed stream crossings.

8.0 Shorelines (§ 6086(a)(1)(F))

Shorelines are defined under Act 250, as incorporated into Section 248, as the land adjacent to the waters of lakes, ponds, reservoirs, and rivers. Shorelines include the land between the mean high water mark and the low water mark of such waters (Argentine 2008). The waterbodies that meet the criterion within the Project area are the Winooski River, LaPlatte River, Lewis Creek, New Haven River, and Otter Creek as indicated on the Natural Resources Maps in Appendix 1.

The Otter Creek and the Winooski River are considered navigable waters under Section 10 of the Rivers and Harbors Act. “Navigable waters of the United States” are “those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used

in the past, or may be susceptible for use to transport interstate or foreign commerce. 33 C.F.R. § 329.4. VGS plans to install the segments of pipe at these crossings by horizontal directional drill (“HDD”), but will be required to obtain USACE approval under Section 10.

9.0 Wetlands (§ 6086(a)(1)(G))

Under Section 248, and the incorporated Act 250 criteria, the Board must give “due consideration” to Act 250 Criterion 1G, which specifies that a proposed project “will not violate” the Vermont Wetland Rules (“VWR”). Act 250 Criterion 1(G) states: “[a] permit will be granted whenever it is demonstrated by the applicant, in addition to other criteria, that the development or subdivision will not violate the rules of the [natural resources] board, as adopted under this chapter, relating to significant wetlands.” 10 V.S.A. § 6086(a)(1)(G). The VWR regulates significant wetlands (Class I and Class II Wetlands) and their buffers (NRB 2010). Class III wetlands are not part of Act 250 Criterion 1(G), but are generally reviewed under Section 248(b) (no undue adverse impacts on the natural environment), and are regulated by the USACE Section 404 permit program as well as the related DEC Section 401 Water Quality Certification review process.

VHB field staff conducted wetland delineation work from July to November 2012. Wetland delineations were made pursuant to the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region Routine Determination Method* (USACE 2012). Wetlands were identified in the field with pink “Wetland Delineation” flagging. Field notes were taken to record information relative to wetland classifications under the 2010 VWR, general characteristics, potential functions and values of the wetland, any unique characteristics observed during the site assessment, along with other considerations relevant to support site findings. Wetlands were also classified in accordance with the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, et al. 1979).

Wetland functions criteria were qualitatively evaluated based on the field notes and observations according to the VWR Section 5 (Functional Criteria for Evaluating a Wetland's Significance) (NRB 2010). Wetland features were located in the field using a Trimble® GPS unit capable of sub-meter accuracy and post processed using Trimble® Pathfinder software for enhanced accuracy.

Previous wetland delineations have been conducted by others as part of the planning and permitting for the CCCH and other past VELCO projects. VGS obtained the previous delineation mapping for the former CCCH A-B segment, and the segments of the VELCO K-22, K-27, K43, and K63 lines. As previous delineations are of various vintage or stage of completion, with permission, VHB conducted new delineations and updated the wetland delineations in the investigation areas where previous wetland delineation information is available. For the CCCH, VHB delineated all wetlands. Wetlands previously delineated within the VELCO ROWs are reviewed in the field and spot-flagged if accepted, revised if conditions had changed, or extended where necessary based on detailed field review.

VHB's delineation included assessments for the presence of all Class I, Class II and Class III wetlands within the investigation areas. There are no Class I Wetlands present. As part of the field studies, VHB delineated all wetland features within the VHB study areas, several of which are not distinct wetlands, but rather components of larger on or off-study area complexes (see the ANGP Natural Resource Map in Appendix 1 and Representative Wetland Photographs in Appendix 5). The Summary of Delineated Wetlands Table in Appendix 2 details wetland characteristics relative to the criteria for classifying significant wetlands under the 2010 VWR, as well as other summary data including:

- VHB Wetland ID
- Town
- Delineation Area (Square Feet)

- Previously Delineated Wetland Feature ID
- Cowardin Classification
- VHB Proposed VWR Classification
- Typical Vegetation

In April 2012, VHB Environmental Scientists also conducted a survey for vernal pool sites according to the definitions of vernal pools provided by the USACE (2007) and Thompson and Sorenson (2005). Additional alignments were investigated during wetland delineation work and potential vernal pool locations were inventoried that were in these new areas that would be subject to Spring 2013 verification. From this, six verified vernal pools and five potential vernal pools were noted within the study components (see the ANGP Natural Resource Series Maps in Appendix 1 and the ANGP Wetland Summary Sheets in Appendix 2). The egg masses found in the vernal pool surveys included wood frog, spotted salamander, blue spotted salamander and hybrid spotted and blue-spotted salamanders. For purposes of Project planning and impact assessments, the potential vernal pools are assumed to viable, and would be included in the necessary permit applications, subject to spring 2013 verification if required by the applicable regulatory programs.

Based on a review of the data associated with each wetland within the investigation area, there are several wetlands that VHB proposes would meet one or more of the VWR Section 4.6 presumptions of significance. As such, these wetlands would be considered Class II. The proposed Class II wetlands predominately meet 4.6 Presumptive Criteria A (size greater than 0.5-acre), B (contain woody vegetation and adjacent to stream), C (contain non-woody vegetation and adjacent to stream), D (contain a vernal pool), and/or G (contains a species that appears in the Vermont Wildlife Diversity Program (“WDP”, formerly “NHIP”) database as rare threatened, endangered or is a natural community that is rare or uncommon). Several of the proposed Class II wetlands are included in the 2010 Vermont Significant Wetland Inventory (“VSWI”) mapping or contiguous on or off-the study area

with VSWI features. The majority of the wetlands VHB preliminarily classified as Class II meet the 4.6 Presumptive Criteria A (size) (see Appendix 2 for VHB's summary of wetlands that meet the Presumptive criteria). The wetland classification have been preliminarily field reviewed on October 4, 2012 by the DEC Wetlands Program, and the results of VHB's delineation and initial classification have been submitted to the DEC for review and comment by letter, dated November 16, 2012, which is included in Appendix 4 (letter only). The USACE has also reviewed representative portions of the Project alignment during a field visit on October 18, 2012.

VHB used the Vermont Wetland Evaluation Forms as guidance to determine which functions are provided by each delineated wetland, which are summarized in the attached summary spreadsheet. The applicable Vermont Wetland Evaluation Forms will be completed as part of the anticipated Individual Vermont Wetland Permit for each wetland complex subject to regulated impact, from which proposed Class II wetlands are found to meet one or more of the VWR Section 5:

- 5.1 Water Storage for Flood Water and Storm Runoff
- 5.2 Surface and Ground Water Protection
- 5.4 Wildlife Habitat
- 5.5 Exemplary Wetland Natural Community
- 5.6 Rare Threatened and Endangered Species Habitat
- 5.10 Erosion Control through Binding and Stabilizing the Soil

USACE Wetland Determination Forms were completed for representative delineated wetlands throughout the VHB investigation area (see Appendix 4 for Wetland Determination Forms). As part of this effort, determination forms were also completed within representative non-wetland areas within the investigation area to document representative boundaries.

Proposed impacts to Class II wetlands or their associated 50-foot buffer zones for uses other than those allowed under the VWR require a Vermont Wetland Permit from the DEC. Class III wetlands are not regulated by the VWR. The placement of fill in any wetland (or water) under USACE jurisdiction requires permit coverage from the USACE under Clean Water Act Sections 404/401.

VGS is applying for a Department of the Army Section 404 Permit, a Vermont Wetland Permit, and Section 401 Water Quality Certification prior to undertaking Project activities with permanent or temporary wetland impacts resulting from fill discharge impacts.

10.0 Rare and Irreplaceable Natural Areas (“RINA”) (10 V.S.A § 6086(a)(8)), and Necessary Wildlife Habitat and Endangered Species (10 V.S.A §6086(a)(8)(A))

Section 248 requires the Board to give “due consideration” to Act 250 Criterion 8 with respect to rare and irreplaceable natural areas (“RINAs”). Act 250 Section 8 requires that a project be shown to have no undue adverse effect on RINAs (10 V.S.A. § 6086(a)(8)). While the statute does not define a RINA, the Act 250 natural resources board has developed a four-part test to determine whether a project satisfies Criterion 8 with respect to RINAs. First, it must determine whether the project is located in a natural area. Second, it determines whether the natural area is rare and irreplaceable. Third, it determines whether the project will have an adverse effect on the rare and irreplaceable natural area. Fourth, it determines whether the adverse effect, if any, would be undue.

Additionally, a project must not destroy or significantly imperil NWH or any Endangered Species (10 V.S.A. § 6086(a)(8)(A)). “Necessary wildlife habitat” is defined as “concentrated habitat which is identifiable and is demonstrated as being decisive to the survival of a

species of wildlife at any period in its life, including breeding and migratory periods” (10 V.S.A. Section 6001(12)).

The Vermont WDP can recommend that significant natural communities be deemed RINA under Act 250 Criterion 8, based on the combination of the natural community rarity and quality ranking. The presence of RTE species and these communities may be used by the WDP to make RINA recommendations. Rare (S1 and S2) natural communities can be considered RINA when quality-ranked A, B, or C. Uncommon (S3) types require a quality rank of A or B to be considered as RINA. Additionally, assemblages of natural communities can be considered RINA. NWH is most often defined as deer wintering habitat, black bear forage habitat (beech mast or wetlands), black bear travel corridors, or in some cases, moose overwintering area. Endangered Species include those that are defined as “threatened” or “endangered” on the Vermont state endangered and threatened species list, and are protected under the Vermont Endangered Species Act (10 V.S.A. Chapter 123).

Rare, Threatened, and Endangered Species

Gilman and Briggs Environmental conducted field surveys, database reviews, and coordination with Vermont Department of Fish and Wildlife (“DFW”) and WDP staff for RTE plants and animals over the overall Project study areas including the Final Alignment. See the Gilman and Briggs RTE and Natural Community report in Appendix 6, which may be summarized in pertinent part here:

- Protected Plants – No federally listed species. No Vermont-protected plants within the Final Alignment. Seven protected plant species within the overall study area;
- Rare Plants – Five species identified within the Final Alignment. Ten species outside the Final Alignment but within the overall study area;
- Protected Animals – Four species with known use ranges overlapping the final Project corridor (one federally listed).

The report included in Appendix 6 provides further details on the study approaches and specific results for RTE plants or animals, as well as recommendations for Project avoidance of impact, and results of coordination with DFW and WDP staff in review. The locations of RTE plants as well as potential bat roost trees identified are included on the Natural Resources Maps in Appendix 1.

RINA

Gilman and Briggs Environmental conducted field surveys, database reviews, and coordination with WDP staff for natural communities, particularly those that would be considered significant natural communities with potential for RINA designation, over the overall Project study areas (including the Final Alignment). See the Gilman and Briggs RTE and Natural Community report in Appendix 6, which may be summarized in pertinent part here:

- Rare Communities (S1 or S2) – Two rare natural community types were identified within the Final Alignment. One type identified outside the Final Alignment, but within the overall study area.
- Uncommon Communities (S3) – Two uncommon natural community types identified within the Final Alignment. Four other uncommon types identified outside the Final Alignment, but within the overall study area.
- RINA – One type within the final Project alignment, the Pine-Oak-Heath Sandplain Forest (S1) identified east of Mill Pond Road generally to Gauthier Drive in Essex, has been reviewed with the WDP and is likely to be considered RINA.

The report included in Appendix 6 provides further details on the study approaches and specific results for natural communities and RINA, as well as recommendations for Project avoidance of impact, and results of coordination with WDP staff in review. The locations of natural communities identified are included on the Natural Resources maps as well as an overall Natural Communities map, both in Appendix 1.

Necessary Wildlife Habitat

VHB reviewed ANR 2011 deer wintering area (“DWA”), black bear mast locations, and black bear travel corridor mapping from the ANR GIS database. Based on a review of the database mapping there are 54 acres of ANR mapped DWA within the Project areas studied (See Appendix 1 for ANGP Natural Resource Series Maps and ANGP Deer Wintering Map). VHB wildlife biologists field-reviewed the Project areas to confirm ANR mapped DWA as well as identified previously un-mapped potential DWA during the summer and fall of 2012. Evidence of winter browsing and trails were used to identify deer winter use.

Approximately 64 acres of DWA were identified by VHB within the Project areas studied. Notably two large DWA complexes occur within the Project areas studied: one is comprised of 26 acres along VT Route 289 (see Appendix 1 ANGP Natural Resource Series, Sheets 6-8) and the other is comprised of 25 acres within the previous proposed CCCH Segments A-B (see Appendix 1, ANGP Natural Resource Series, Sheet 9). In total, DWA represents approximately two percent of the overall area studied. Representative photographs of the field reviewed DWA can be found in Appendix 5.

Vermont FWD wildlife biologist John Gobeille reviewed NWH within the Project on September 25, 2012.

11.0 Summary

On behalf of Vermont Gas Systems, Inc, VHB conducted a natural resources assessment and documentation review of the proposed ANGP, which is located in Colchester, Essex, Williston, St. George, Hinesburg, Monkton, Ferrisburgh, Vergennes, Waltham, New Haven, and Middlebury, Vermont. The assessment was performed in support of the pending

Section 248 petition to the PSB and required collateral permitting efforts for Project construction. The assessment included the evaluation of potential impacts to resources identified as Section 248 criteria including Outstanding Resource Waters (10 V.S.A. § 1424a(d)), Headwaters (§ 6086(a)(1)(A)), Floodways (§ 6086(a)(1)(D)), Streams (§ 6086(a)(1)(E)), Shorelines (§ 6086(a)(1)(F)), Wetlands (§ 6086(a)(1)(G)), Rare or Irreplaceable Natural Areas (“RINA”)(§ 6086(a)(8)), and Necessary Wildlife Habitat and Endangered Species (§ 6086 (a)(8)(A)). Based on the results of these assessments and the contents of this report herein, the following collateral Vermont permits and/or federal authorizations or regulatory program coordination as applicable to this report, will likely be required to mitigate for impacts from Project construction:

- NPDES Construction Stormwater Discharge Permit
- Vermont Rivers Management Coordination
- Vermont Stream Alteration Program Coordination
- Department of the Army Section 404 Permit
- Vermont Section 401 Water Quality Certification
- Department of the Army Rivers and Harbors Act Section 10 Permit
- Vermont Wetland Permit

12.0 References

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