STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Case No. _____

Vermont Gas Systems, Inc.'s Petition to Amend Existing Docket No. 7970 Certificate of Public Good Based On Evidence In Case No. 17-3550-INV and Case No. 18-0395-PET	

VERMONT GAS SYSTEMS, INC.'S PETITION TO AMEND THE DOCKET 7970 CERTIFICATE OF PUBLIC GOOD

Vermont Gas Systems, Inc. ("VGS" or "Petitioner") hereby Petitions the Vermont Public Utility Commission ("Commission") pursuant to 30 V.S.A. § 248 and Commission Rule 5.400 to approve five amendments to the Certificate of Public Good ("CPG") issued in Docket No. 7970 authorizing the construction and operation of the Addison Natural Gas Project ("ANGP," "Project," or "the pipeline").

Background

This Petition is being filed in accordance with the Commission's direction in an order issued in Case Nos. 17-3550-INV and 18-0395-PET on June 25, 2024, instructing VGS to issue a 45-day advance notice in accordance with the requirements under current Commission Rule 5.400, followed by the filing of a petition in ePUC "requesting amendments to the CPG granted in Case No. 7970 to reflect the unapproved substantial changes made to the pipeline by Vermont Gas."[1] The extensive investigation conducted in Case Nos. 17-3550-INV and 18-0395-PET demonstrated that the "pipeline is safe and was adequately installed."[2] Furthermore, as set forth

[1] Exhibit Petitioner-001 (Post-Appeal Order Outlining Next Steps) at 4.
[2] Exhibit Petitioner-003 (Proposal for Decision) at 5.

in more detail herein, none of the unapproved changes had any impacts under the relevant Section 248 criteria.

In accordance with the Commission's direction, this Petition "include[s] specific proposed conditions that address each of the five substantial-change violations identified in [the Commission's Final Order, dated April 6, 2023 ("Final Order")] in Case Nos. 17-3550-INV and 18-0395-PET."[3] Additionally, the Petition "accounts for the remedial actions recommended by the expert witnesses in those proceedings" by proposing specific CPG conditions that adopt the expert recommendations, and explains "why those actions will prevent any future instances of undue impacts under the criteria identified as relevant to potential significant impacts in the proposal for decision based on evidence presented and the findings and conclusions in Case Nos. 17-3550-INV and 18-0395-PET."[4] Case Nos. 17-3550-INV and 18-0395-PET are now closed and this Petition initiates a new proceeding to address amendments to the CPG as directed by the Vermont Supreme Court and Commission, as described in greater detail below.

This Petition relies entirely on the evidentiary record developed in Case Nos. 17-3550-INV and 18-0395-PET, which are referred to herein as the "Investigation." The evidence from the Investigation is sufficient to support the proposed CPG amendments because it was developed based on an extensive and thorough review of nearly every aspect of the pipeline's construction. To ensure a comprehensive and independent review of the pipeline's construction, the Commission itself engaged an "internationally recognized engineering expert, William Byrd, who personally conducted documentary and site inspections of the pipeline after it was

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3 Exhibit Petitioner-001 (Post-Appeal Order Outlining Next Steps) at 4.

4 *Id.*

constructed."[5] Following his independent investigation, Mr. Byrd issued a 74-page report that concluded, in part:

> [The pipeline] was thoroughly and competently designed and engineered using modern equipment and technology, and comprehensively inspected during construction by multiple parties. With a few noted exceptions, it was constructed in compliance with applicable rules and commitments, and in many important respects it exceeds the typical requirements. . . . Ongoing inspections and maintenance as well as periodic integrity management assessments and evaluations should identify and resolve any pipeline safety issues that arise in the future and provide assurance of continued safety.[6]

The conclusion that the evidentiary record from the Investigation provides a sufficient basis to amend the CPG is also consistent with the Commission's determination in the Final Order issued in the Investigation. In particular, the Commission found that VGS made five substantial changes during construction and the extensive evidentiary record demonstrated that none of those changes resulted in any harmful impacts under the Section 248 criteria, stating:

> This investigation has been ongoing for almost six years, and there is an extensive and detailed record before us that describes: (1) the unapproved changes Vermont Gas made to the Project during construction; (2) the potential for significant impacts from those changes under the relevant criteria of Section 248; (3) the absence of any actual harm from those changes under those same criteria; and (4) the remedial actions that Vermont Gas must take to ensure that operation of the as-built pipeline will not, in the future, result in any undue impacts under the relevant Section 248 criteria and will remain in the public good."[7]

The Commission's Final Order also explained that the evidence in the Investigation "addressed not only the potential impacts of Vermont Gas's decision to make changes to the pipeline during construction, but also the lack of actual impacts and the recommended steps to ensure the pipeline continues to operate safely and without undue impacts under the substantive criteria of

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5 Exhibit Petitioner-002 (Final Order) at 4.

6 *Id.* at 2, n.4 (quoting Final Report from the Independent Investigation of the Vermont Gas Systems Addison Natural Gas Project, January 8, 2020, by William R. Byrd (the "Byrd Report" or "Exhibit Petitioner-009") at 72).

7 *Id.* at 4.

Section 248."[8] In the Final Order, and based on the evidentiary record, the Commission made Supplemental Findings, which specifically addressed the fact that none of the changes will have an undue adverse impact under the relevant criteria.[9]

Additionally, the Commission's conclusion that the evidentiary record from the Investigation is sufficient to amend the CPG remains valid following an appeal to the Vermont Supreme Court. That appeal addressed the procedural question of whether the Commission could amend a CPG in an investigatory proceeding conducted under 30 V.S.A. § 30. The Court concluded that Commission Rule 5.408 and the Commission's precedent require that a CPG only be amended in a Section 248 proceeding.[10] Based on this holding, the Court remanded the case and the Commission ordered VGS to file a request to amend the CPG in a new ePUC case.[11]

The Court did not overturn the Commission's substantive conclusion, however, that the evidentiary record was sufficient to amend the CPG. Instead, the Court held that it was premature to conclude the substantial changes had no actual impacts under the specific Section 248 criteria because "whether the substantial changes actually affected the pipeline's consistency with the relevant § 248 criteria" must be determined in a Section 248 proceeding.[12] Although the Court vacated the Commission's Supplemental Findings in the Final Order, the extensive evidentiary record from the Investigation continues to support the conclusion that none of the changes had any actual impacts under the relevant Section 248 criteria. Additionally, the

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8 *Id.* at 17.
9 Exhibit Petitioner-002 (Final Order) at 17-20.
10 *In re Vermont Gas Systems., Inc.*, 2024 VT 19, ¶ 56, 316 A.3d 231, 248, *reargument denied* (May 3, 2024) (hereinafter "Final Opinion").
11 Exhibit Petitioner-001 (Post-Appeal Order Outlining Next Steps) at 4.
12 *In re Vermont Gas Systems., Inc.*, 2024 VT 19, ¶ 55.

Commission is now expressly authorized by the Court's Final Opinion to amend a CPG in a Section 248 proceeding.

Accordingly, by this Petition, VGS moves the Commission to amend the existing CPG in this new proceeding based on the evidentiary record from the Investigation and the proposed CPG amendments set forth herein. In support of this request, VGS submits a list of more than 100 evidentiary exhibits that reflect key components of the extensive record developed in the seven-year Investigation. These exhibits include the Commission's Final Order; the Proposal for Decision; the Liability Order; the Byrd Report and all supporting attachments supporting Mr. Byrd's findings and conclusions; evidence presented by VGS, Vermont Electric Power Company, Inc. ("VELCO"), and various pipeline experts; and all other evidentiary documents cited in support of the Commission's and Hearing Officer's findings. A full list of the more than 100 exhibits that support this Petition is provided as Appendix A.

Proposed CPG Amendments

This section of the Petition proposes five CPG amendments and, where applicable, incorporates the related remedial measures recommended by experts in the Investigation. These proposed CPG amendments and conditions are essentially identical to those proposed by VGS and filed in the Investigation on April 27, 2024.[13] The Department of Public Service reviewed these proposed amendments and conditions in the Investigation and supported the Commission's approval of the amendments.[14] While each amendment is recited and proposed in the following discussion, a consolidated list of the proposed CPG amendments is also provided as Appendix B.

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[13] The only revision to the proposed amendments in this Petition is in CPG Amendment #4 regarding compaction and clarifies that the annual independent inspection pertains to open cut road locations where Mr. Byrd identified a potential concern.

[14] Exhibit Petitioner-137 (Department Response to VGS Compliance Filing Regarding Proposed Amendments (May 24, 2023)).

Consistent with Commission's direction, the proposed CPG amendments "include specific proposed conditions that address each of the five substantial-change violations" found in Case Nos. 17-3550-INV and 18-0395-PET, and "account for the remedial actions recommended by the expert witnesses in those proceedings."[15] In each case, VGS requests that the Commission conclude that the change had no actual impacts on the relevant Section 248 criteria and approve the proposed CPG amendments.

With respect to the remedial actions and proposed CPG conditions, each proposed CPG amendment is discussed, including an explanation of "why those actions will prevent any future instances of undue impacts under the criteria identified as relevant to potential significant impacts in the proposal for decision based on evidence presented and the findings and conclusions in Case Nos. 17-3550-INV and 18-0395-PET."[16] This Petition addresses the Section 248 criteria that were identified by the Commission in the Investigation as "relevant to potential significant impacts" because these are the only criteria under which there would be any potential impacts at all. Furthermore, as demonstrated below, the evidence from the Investigation shows that none of the changes resulted in any actual impacts under the relevant criteria.

1. CPG Amendment #1: Trenching Techniques In The Clay Plains Swamp

The first proposed CPG amendment addresses the Commission's determination that the burial method used to install the pipeline in the Clay Plains Swamp was a substantial change. The Commission identified the natural resources criteria of Section 248 as relevant to this change; no other Section 248 criteria were found to be relevant. A more detailed description of

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15 Exhibit Petitioner-001 (Post Appeal Order Outlining Next Steps) at 4.

16 *Id.*

burial methods in the Clay Plains Swamp is set forth in Paragraphs 15–32 of the Hearing Officer's Liability Order.[17]

The evidentiary record from the Investigation demonstrates that the burial methods in the Clay Plains Swamp had no undue adverse impact under the relevant Section 248 criteria:

- The burial methods used in the Clay Plains Swamp did not result in any actual impacts on natural resources. Based on review by the Agency of Natural Resources ("ANR"), the burial method VGS used in the Clay Plains Swamp does not raise any significant concerns with regard to impacts on the natural environment and did not require any ANR permit amendments.[18]

- Expert analysis of the construction process used in the Clay Plains Swamp has shown that the use of the so-called "sink-in-the-swamp" burial method will not have an undue adverse impact on public health and safety.[19]

- The experts that reviewed the burial methods in the Clay Plains Swamp, including ANR and Mr. Byrd, did not recommend any remedial measures regarding natural resources.

- Additionally, while the Commission found that the burial method was a substantial change, Mr. Byrd reviewed the construction techniques used in the Clay Plains Swamp and found them to be consistent with the project plans and specifications and applicable pipeline safety regulations.[20]

The trenching techniques in the Clay Plains Swamp were thoroughly examined by multiple experts in the Investigation and the above portions of the record demonstrate that there are no significant concerns with regard to impacts on the natural environment nor any undue adverse

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17 Exhibit Petitioner-004 (Liability Order) at 17-20.

18 Exhibit Petitioner-118 (2017-06-19 Letter from Donald J. Einhorn, Esq. to PUC Clerk) ("[T]he pipeline burial [in the swamp]… does not change the disturbance footprint and does not raise any significant concern with regard to impacts to the natural environment. In addition, the described work does not require any [ANR] permit amendments."); *see also* Exhibit Petitioner-002 (Final Order) at 17.

19 Exhibit Petitioner-009 (Byrd Report) at 70; *see also* Exhibit Petitioner-002 (Final Order) at 17.

20 Exhibit Petitioner-009 (Byrd Report) at 70.

impacts under the natural resources criteria of Section 248.[21] Accordingly, VGS requests that the Commission amend the CPG to recognize the pipeline as constructed in the following manner:

> *VGS is authorized to install the pipeline as constructed in the Clay Plains Swamp using what is known as the "sink-in-swamp" burial method, provided that it complies with all of the conditions herein.*

This CPG amendment is sufficient to ensure there are no future undue adverse impacts relating to the burial methods used in the Clay Plains Swamp because installation of the pipeline has been completed since 2017. The evidence shows that construction caused no undue adverse impacts with regard to the natural resources criteria because installation did not change the disturbance footprint and did not raise any other concerns under the natural resources criteria.[22] Further, there will be no future impacts because no future construction is expected on the pipeline in the Clay Plains Swamp. This proposed amendment also "accounts for the remedial actions recommended by the expert witnesses" in the Investigation because no remedial actions were recommended in connection with this issue, so there are no related conditions to impose regarding future operation of the pipeline.

2. CPG Amendment #2: Depth of Cover In The Clay Plains Swamp

The second proposed CPG amendment addresses the Commission's determination that the depth of cover in the Clay Plains Swamp was a substantial change. The Commission identified several Section 248 criteria that were relevant to this change, including "public safety under § 248(b)(5)," "meeting future electrical transmission needs under § 248(b)(2) and the

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[21] The Hearing Officer also found that the burial methods led to the failure to achieve four feet of cover in the Clay Plains Swamp, Exhibit Petitioner-004 (Liability Order) at 21, but as discussed in the next section, there are no impacts on public health or safety, or any other Section 248 criteria, associated with the depth of cover in the Clay Plains Swamp.

[22] Exhibit Petitioner-118 (2017-06-19 Letter from Donald J. Einhorn, Esq. to PUC Clerk).

future stability and reliability of the electric transmission system under § 248(b)(3)," and, as a result of these potential impacts, a "potential impact on the economy of the State under § 248(b)(4)."[23] A more detailed description of the depth of cover in the Clay Plains Swamp is set forth on pages 26–29 of the Proposal for Decision, amending and supplementing the initial findings set forth in Paragraphs 33–56 of the Hearing Officer's Liability Order.[24]

The evidentiary record from the Investigation demonstrates that the depth of cover in the Clay Plains Swamp had no undue adverse impact under the relevant Section 248 criteria:

- Verification calculations and sensitivity analyses demonstrate that the pipeline meets the HS-20+15% loading standard with as little as two feet of cover even when assuming low soil strength properties that represent weak soils or an absence of soil compaction.[25]

- Mr. Byrd found that the pipeline was conservatively designed. It was constructed with steel that is nearly twice as strong as normal, with a thickness twice that required by most pipeline safety design codes and will operate at pressures no more than 50% of the theoretical maximum.[26]

- Additionally, burial of the pipeline with less-than-four-foot depth-of-cover in the Clay Plains Swamp will not result in undue adverse impacts under any relevant Section 248 criteria or the public good of the State because, although Mr. Byrd concluded the pipeline as constructed is safe,

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23 Exhibit Petitioner-004 (Liability Order) at 28.

24 *Id.* at 21-24.

25 Exhibit Petitioner-102 (ExhibitVGS-CC-2) at 1 ("[W]e have performed a variety of sensitivity analyses using different methods (provided in Attachment B) for calculating the loading on the ANGP. These analyses, as well as our prior calculations, demonstrate that the ANGP meets the HS-20+15% loading standard with as little as 2 feet of cover even when assuming low soil strength properties that represent weak soils and/or an absence of soil compaction. In our professional judgment, after analyzing the loading calculations based on a variety of sensitivity assessments, the ANGP meets the HS-20+15% loading standard in areas where it is buried at least two feet."); Exhibit Petitioner-109 (2021-07-23 Prefiled Testimony of Kevin Bodenhamer) at 6 ("A depth of soil cover of 4' is not necessary for the pipe to support a HS-20+15% loading, as confirmed in the above-referenced documents utilizing API RP 1102 calculations for this pipeline as installed. As discussed previously, a soil cover anywhere in the range of 2' to 4' is sufficient for this pipeline as installed. In addition, the depth of cover required for this pipeline by PHMSA and Vermont Public Utility Commission regulations is 36 inches."); *see also* Exhibit Petitioner-002 (Final Order) at 18.

26 Exhibit Petitioner-009 (Byrd Report) at 16 ("ANGP was constructed with steel that is about twice as strong as normal, with a thickness twice that which causes concern in most design codes, with twice as many supports during construction and backfilling as might have been necessary, and will operate at pressures no more than 50% of the theoretical maximum."); *see also* Exhibit Petitioner-002 (Final Order) at 18.

> VGS has also agreed to comply with remedial measures recommended by Mr. Byrd that "will provide additional assurance of safety in the future."[27]

The Hearing Officer's findings further demonstrate that burial of the pipeline in the Clay Plains Swamp will have no impact on public safety, VELCO's future use of the right-of-way, or the economy of the State.[28] Accordingly, VGS proposes that the Docket 7970 CPG be amended as follows:

> *VGS is authorized to install the pipeline as constructed in the Clay Plains Swamp with less than four feet of cover in certain locations, provided that it complies with the following conditions:*
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> - *VGS (or VELCO) shall install large warning signs at each end of the ROW in the Clay Plains Swamp with the following (or similar) text "WARNING. SHALLOW HIGH PRESSURE GAS PIPELINE IN THIS AREA. NOTIFY VGS AT (phone number) BEFORE MOVING HEAVY EQUIPMENT INTO THIS AREA."*
> - *VGS shall install additional yellow location markers in the Clay Plains Swamp as recommend by VELCO. See Byrd Report, Attachment 56.*
> - *VGS shall inspect the pipeline in the Clay Plains Swamp on an annual basis for two years (from when the Byrd Report was issued in January 2020) to ensure that settlement of the back-filled material has not occurred, which may reduce the buried depth of the pipeline. See Byrd Report, Attachment 56.*

The above CPG amendment and related conditions are sufficient to ensure the prevention of any future undue impacts under the relevant Section 248 criteria because the depth of cover in the Clay Plains Swamp meets a very conservative loading standard, which has been verified by

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[27] Exhibit Petitioner-009 (Byrd Report) at 73-74; Exhibit Petitioner-065 (Byrd Report, Attachment #56); *see also* Exhibit Petitioner-002 (Final Order) at 18.

[28] Exhibit Petitioner-003 (Proposal for Decision) at 27 (citing Exhibit Petitioner-112 (2021-07-23 Prefiled Testimony of Brian Connaughton) (supporting the conclusion that Vermont Gas provided the 2016 MM Study to VELCO as an engineering study to support Vermont Gas's assertion that the less-than-four-foot burial depth of the gas pipeline would still meet the HS-20+15% loading factor agreed upon in the VELCO MOU and CO&M Agreement)); Exhibit Petitioner-109 (2021-07-23 Prefiled Testimony of Kevin Bodenhamer) (supporting the conclusion that "VELCO's technical review concluded that the pipeline was designed and installed to safely accept HS-20+15% loading at all locations within its right-of-way, including those with less than four feet of ground cover above the pipe"); Exhibit Petitioner-112 (2021-07-23 Prefiled Testimony of Brian Connaughton) (supporting the conclusion that the "pipeline is largely sited along the western edge of the existing electric transmission line right-of-way, with limited areas sited on the eastern side of the right-of-way" which "allows for the future use of the easterly portion of the right-of-way to host a new electric transmission line and reduces the amount of future VELCO uses that could conflict with the pipeline").

multiple pipeline safety experts, including Mr. Byrd;[29] the Department's pipeline safety expert, Mr. Berger;[30] VELCO's safety expert, Kevin Bodenhamer;[31] and VGS's pipeline expert, Carlos Chaves of Mott MacDonald.[32]

The above conditions also ensure there will be no future undue adverse impacts and account for the remedial measures recommended by experts because, as directed by the Commission, the conditions formally adopt the additional assurances of safety proposed by Mr. Byrd. VGS has already complied with Mr. Byrd's recommendation to place signage near the Clay Plains Swamp, which provides added safety by ensuring that people are aware of the pipeline and are directed to communicate with VGS before entering that area with heavy equipment. The above conditions also incorporate VELCO's May 2017 request that VGS: (1) confirm that the loading standard has been met, (2) place additional location markers in the Clay Plains Swamp, and (3) perform additional inspections of the depth of cover. VGS has installed additional line markers as requested by VELCO in the Clay Plains Swamp.[33]

Finally, in addition to the foregoing measures, and consistent with federal regulations regarding pipeline integrity management, VGS conducts constant monitoring of the pipeline, including monthly aerial inspections and quarterly physical on-the-ground patrols and leak surveys to assess potential encroachments, erosion along the pipeline, irregularities along road

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29 Exhibit Petitioner-009 (Byrd Report) at 16; *id*. at 67 ("[T]he HS20+15% loading criteria in the CHA bedding and backfill specification was excessively conservative for a pipeline ROW (i.e. not under a road or other load bearing area) – but it doesn't matter because ANGP can meet that loading standard at any reasonable burial depth or level of compaction.").

30 Exhibit Petitioner-138 (David Berger letter to the Department of Public Service (Jun. 21, 2017)) ("[T]he loading on the pipeline by heavy equipment does not impair the integrity of the pipeline.").

31 Exhibit Petitioner-109 (2021-07-23 Prefiled Testimony of Kevin Bodenhamer) at 6 (testifying that the depth of cover is sufficient to meet the HS-20+15 loading standard).

32 Exhibit Petitioner-100 (2021-09-10 Prefiled Testimony of Carlos J. Chaves) at 3; Exhibit Petitioner-102 (Exhibit VGS-CC-2) at 1 ("These analyses, as well as our prior calculations, demonstrate that the ANGP meets the HS-20+15% loading standard with as little as 2 feet of cover even when assuming low soil strength properties that represent weak soils and/or an absence of soil compaction.").

33 Exhibit Petitioner-083 (2021-09-10 Direct Testimony of John St. Hilaire) at 6.

and stream crossings, and the adequacy of line-of-sight markers.[34] For all of these reasons, the above CPG amendment and related conditions are sufficient to ensure that there will be no future undue adverse impacts relating to the depth of cover in the Clay Plains Swamp.

3. CPG Amendment #3: Trench Bottom & Trench Breakers

The third proposed CPG amendment addresses the Commission's determination that the installation of the pipeline on the trench bottom and installation of trench breakers was a substantial change. The Commission identified "public health and safety" as the relevant criteria.[35] A more detailed description of the installation of the pipeline on the trench bottom and installation of trench breakers is set forth in Paragraphs 57–70 of the Hearing Officer's Liability Order.[36]

The evidence in the Investigation demonstrates that the installation of the pipeline on the trench bottom and installation of trench breakers had no actual impact on public health and safety:

- Laying the pipeline directly on the trench bottom raises a potential corrosion issue caused by differential oxygen corrosion between two different soil types near a buried pipeline. Differential oxygen corrosion only occurs when a pipeline is laid on a trench bottom and the backfill used is non-native backfill. There are no locations where the pipeline was both installed directly on the trench bottom and backfilled with non-native backfill. Therefore, the burial techniques used to install the VGS pipeline, including burial directly on the trench bottom in some locations, had no deleterious effects on corrosion control and did not create a corrosive environment for the pipeline.[37]

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34 *Id.* at 3-5.

35 Exhibit Petitioner-004 (Liability Order) at 31. Although the Commission identified only public health and safety as the relevant criteria, the evidence also demonstrates there is no impact on wetlands and streams associated with trench breaker installation, as discussed below.

36 *Id.* at 28-30.

37 Exhibit Petitioner-009 (Byrd Report) at 65, 66 ("There are no locations where the pipe was BOTH installed directly on the trench bottom AND backfilled on 3 sides with clean sand or non-native backfill. The only areas where ANGP was installed directly on the trench bottom were also areas that used native backfill – which eliminates

- VGS installed bentonite trench breakers to protect wetlands and streams as appropriate. There have been no adverse impacts to wetlands caused by a lack of trench breakers.[38]

- While installation of trench breakers and installation of the pipe on the trench bottom may have been a deviation from written specifications, these changes will have no future undue adverse effects on public health and safety both because they have no actual impacts and because VGS has committed to the relevant remedial measures recommended in the Byrd Report and in the Notice of Proposed Violation filed in Case No. 18-0395-PET.[39]

This evidence demonstrates that installation of the pipeline on the trench bottom and installation of trench breakers had no undue adverse impacts on public health and safety or wetlands. Accordingly, VGS proposes that the Docket 7970 CPG be amended as follows:

> *VGS is authorized to install the pipeline as constructed with respect to burial on the trench bottom and installation of trench breakers, provided that it complies with the following conditions:*
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> - *Vermont Gas shall reduce the maximum time between ILI runs for both metal loss and geometry to once every five years, with a maximum interval of 63 months.*
> - *Within six months of the ILI, Vermont Gas also shall conduct a CIS of the effectiveness of the cathodic protection. Vermont Gas shall integrate the results with the ILI results. All areas of poor cathodic protection should be remedied and mitigated promptly. For purposes of this plan, "Poor cathodic protection" shall mean any area with a reading that does not meet the minus 0.85 VDC standard for both 'on' and 'off'. Furthermore, if metal loss of greater than 20% is noted, the mitigation of the affected pipe shall take place within 12 months of discovery. The Department and*

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the potential for this problem. The potentially corrosive situation described in Bushman's paper simply doesn't exist on ANGP."); Exhibit Petitioner-074 (Byrd Report, Attachment #65); *see also* Exhibit Petitioner-002 (Final Order) at 18.

[38] Exhibit Petitioner-009 (Byrd Report) at 47, 68 (discussing installation of trench breakers); Exhibit Petitioner-079 (Byrd Report, Attachment #70) at 2 (explaining that VHB's assessment of potential impacts concluded that the installation of trench breakers "did not observably or significantly alter the wetland hydrology to the extent that any Class II wetland boundaries or functions were impacted beyond what was permitted. VHB also concludes that bentonite trench breakers were installed at all stream locations as specified"); Exhibit Petitioner-118 (2017-06-19 Letter from Donald J. Einhorn, Esq. to PUC Clerk) at 1; *see also* Exhibit Petitioner-002 (Final Order) at 18.

[39] Exhibit Petitioner-009 (Byrd Report) at 74 and Exhibit Petitioner-076 (Byrd Report, Attachment #67); Exhibit Petitioner-074 (Byrd Report, Attachment #65 (2018-02-13 DPS NOPV Letter sent to VGS)) at 6; *see also* Exhibit Petitioner-002 (Final Order) at 18.

Vermont Gas agree that a 12-month time period for remediating these areas is appropriate and necessary for planning and construction in light of seasonal weather issues that may bear on when mitigation work can occur provided that the pipeline's safety factor remains above 10% of the class location (Class 3 or 50% SMYS) factor during the entire period when taking corrosion rates into account. Corrosion rates will be used as defined in NACE SP0502 (16 mils per year as the default rate) unless the actual rate is known for the exact location or can be calculated per the standard.

- *Within six months of the ILI described above, Vermont Gas also shall conduct a coating survey using either DCVG or ACVG.[40] Vermont Gas will integrate the results of the coating survey with other surveys set forth above. All moderate and severe coating anomalies identified by the integrated data, as those terms are defined in VGS's Transmission IMP Plan (Section 7A), shall be excavated and remediated within 12 months. Furthermore, during the inspection of coating damage, measurements shall be taken to determine if metal loss is present. If over 40% of wall loss is found, the pipe shall be repaired to its original strength.*
- *Within 90 days of the completion of the ILI, Vermont Gas shall have a final report on the ILI findings. The Department and VGS agree that this period provides adequate time for Vermont Gas to require its ILI contractor to provide its findings for review, and for Vermont Gas to complete the final report of the ILI survey.*
- *Within 120 days of the completion of the ILI runs, Vermont Gas shall complete a report integrating and analyzing the ILI results (both geometry and metal loss); the cathodic protection CIS survey results; and the coating survey results. The integrated report shall note all metal loss of 10% or greater; all areas where the cathodic protection does not meet the minus 0.85 VDC standard for either on or off potentials; and all moderate or severe coating anomalies, as those terms are defined in Vermont Gas's Transmission IMP Plan (Section 7A). The Department and Vermont Gas agree that this period provides adequate and appropriate time for the company to integrate the results of all of these inspections, particularly given the amount of data that will be generated over time after the initial round of testing.*
- *Vermont Gas shall provide all of the above final reports to the Department promptly upon completion but no later than 10 business days, and shall make available all raw data, surveys and analyses received or produced regarding these required inspections. Vermont Gas will also document its steps taken to remedy any findings from these inspections that require action as noted.*

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[40] Direct or Alternating Current Voltage Gradient.

The above CPG amendment and related conditions are sufficient to ensure the prevention of any future undue impacts under the relevant Section 248 criteria relating to installation of the pipeline on the trench bottom and installation of trench breakers for the following reasons.

First, the installation of the pipeline on the trench bottom and the installation of trench breakers had no actual impacts on public health and safety because, as discussed above, the evidence demonstrates that initial concerns about differential oxygen corrosion were not warranted because there are no locations where the pipe was installed on the trench bottom and backfilled with non-native soils. Mr. Byrd's investigation specifically concluded that there are no concerns about installation on the trench bottom because there were no locations where the potential for differential oxygen level between native and non-native soils was present.[41] Installation on the trench bottom, therefore, "had no deleterious effect on corrosion control and did not create a corrosive environment for the pipeline."[42] Additionally, investigation of potential impacts has demonstrated that trench breaker installation was adequate to ensure no adverse impacts to wetlands.[43] Thus, even without any further conditions, there will be no undue adverse impacts on the relevant Section 248 criteria.

Second, the above conditions further ensure there will be no impacts because they adopt measures that VGS and the Department agreed upon in the Stipulated Remedial Action Compliance Plan initially filed in Case No. 18-0395-PET.[44] Those remedial measures shorten the federally required timeframe for in-line inspections of the pipeline[45] and require VGS to conduct

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41 Exhibit Petitioner-009 (Byrd Report) at 65-66.

42 *Id.* at 66.

43 Exhibit Petitioner-009 (Byrd Report) at 47, 68; Exhibit Petitioner-079 (Byrd Report, Attachment #70) at 2; Exhibit Petitioner-118 (2017-06-19 Letter from Donald J. Einhorn, Esq. to PUC Clerk).

44 Exhibit Petitioner-076 (Byrd Report, Attachment #67) at 5-8.

45 In this manner, the above CPG conditions adopt pipeline integrity monitoring that is both in excess of federal regulations and that provides robust ongoing remedial actions. While Mr. Byrd did not agree that the ILI period should be reduced to five years from the standard pipeline integrity interval of seven years, VGS has already

Close Interval Surveys ("CIS") and coating surveys using either DCVG or ACVG, which provide targeted assessments of cathodic protection and corrosion control. These measures will ensure there are no undue adverse impacts relating to this CPG amendment going forward. The Department has agreed these amendments will ensure no future impacts under the relevant Section 248 criteria.[46]

Accordingly, since there were no impacts at all relating to trench breakers and installation of the pipeline on the trench bottom, the above CPG amendment and related conditions are sufficient to ensure that there will be no undue adverse impacts under the Section 248 criteria going forward and they "account[] for the remedial actions recommended by the expert witnesses" in the Investigation by imposing the recommended conditions that relate to installation on the trench bottom and installation of trench breakers.

4. CPG Amendment #4: Compaction

The fourth proposed CPG amendment addresses the Commission's determination that failure to comply with compaction requirements was a substantial change. The Commission identified "public health and safety" as the relevant criteria based on the extent to which a potential lack of compaction and compaction testing could have impacts at public road

committed to that inspection interval, and VGS completed the first ILI and related testing in 2018. Exhibit Petitioner-083 (2021-09-10 Direct Testimony of John St. Hilaire) at 4; Exhibit Petitioner-009 (Byrd Report) at 72 ("The in-line-inspection (ILI) of July 9-18, 2018, found no actionable anomalies. The cathodic protection close-interval survey (CIS) and direct current voltage gradient (DCVG) surveys found no problems with the pipe or coating (Attachment A#33)." (citing Exhibit Petitioner-042 (Byrd Report, Attachment #33)).

[46] Exhibit Petitioner-076 (Byrd Report, Attachment #67) at 5-8 (Stipulated Remedial Action Compliance Plan); Exhibit Petitioner-137 (Department Response to VGS Compliance Filing Regarding Proposed Amendments (May 24, 2023)).

crossings.[47] A more detailed description of the compaction issue is set forth in Paragraphs 71–78 of the Hearing Officer's Liability Order.[48]

The evidence in the Investigation demonstrates that there were no actual impacts on public health and safety relating to compaction.

- As recommended by Mr. Byrd, VGS hired a third-party engineer to conduct an independent review of road crossings for any signs of erosion, compaction, or other issues caused by the pipeline construction. That assessment demonstrated that 14 of the 15 locations showed no signs of compromised roadbed performance, erosion, or settlement above the pipeline at all.[49]

- Additionally, appropriate remedial measures, including conducting a similar independent review after each winter season to determine if there is any frost heave at locations where the pipeline is buried beneath roadways, and repairing any damage, will ensure there are no adverse effects on public safety in the future.[50]

Thus, the evidence demonstrates that failure to comply with compaction requirements had no undue adverse impacts on public health and safety. Accordingly, VGS proposes that the Docket 7970 CPG be amended as follows:

> *VGS is authorized to install the pipeline as constructed with regard to compaction requirements, provided that it complies with the following conditions:*
>
> - *VGS shall hire a Vermont-licensed professional civil engineer with expertise in dirt road construction and maintenance to inspect each of the 15 open cut road crossings for evidence of frost heave, settlement, and potholing, at times of the engineer's choosing but at least twice (once during cold weather to look for frost heave and once during warm weather to look for settlement and potholing), and have them develop and certify a remediation plan for any deficiencies that are discovered. VGS should*

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47 Exhibit Petitioner-004 (Liability Order) at 33.

48 *Id.* at 31-32.

49 Exhibit Petitioner-083 (2021-09-10 Direct Testimony of John St. Hilaire) at 5; Exhibit Petitioner-093 (Exhibit VGS-JSH-10); Exhibit Petitioner-009 (Byrd Report) at 66-67 (explaining that compaction has no impact on pipeline integrity); *id.* at 73-74 (recommending review of compaction at 15 road crossings); *see also* Exhibit Petitioner-002 (Final Order) at 19. In only one location, the review found a "small depression" in the edge of the road over the gas line. Exhibit Petitioner-083 (2021-09-10 Direct Testimony of John St. Hilaire) at 5. VGS will continue to monitor all 15 locations during quarterly patrols, *id.*, and the proposed CPG amendment below requires an independent annual review after each winter season.

50 Exhibit Petitioner-002 (Final Order) at 19 (citing Exhibit Petitioner-083 (2021-09-10 Direct Testimony of John St. Hilaire) at 5); Exhibit Petitioner-093 (Exhibit VGS-JSH-10); Exhibit Petitioner-009 (Byrd Report) at 73.

inform the engineer in writing prior to the inspections of any complaints received concerning these crossing locations. VGS should report to the Department and any relevant local agency, municipality, or authority for each crossing within 18 months of Mr. Byrd's report (which issued January 2020) concerning the results of these inspections and any remedial actions taken or planned. VGS should provide periodic updates to these parties until all deficiencies (if any) have been corrected.

- *VGS shall conduct a similar independent review of open cut road crossings after each winter season to determine if there is any frost heave at locations where the pipeline is buried beneath roadways and repair any damage.*

The above CPG amendment and related conditions are sufficient to ensure that there will be no future undue adverse impacts to road crossings or public safety due to compaction. As noted above, VGS has already conducted the road crossing inspection recommended by Mr. Byrd in accordance with the above condition.[51] That inspection demonstrated that fourteen of the fifteen locations showed no signs of compromised roadbed performance, erosion, or settlement.[52] Moreover, VGS will continue to monitor these locations during quarterly physical inspections and conduct "a similar independent review after each winter season" as contemplated by the Commission's Final Order. This will ensure that there will be no future undue adverse impacts relating to compaction.

5. CPG Amendment #5: Design & Engineering

The fifth proposed CPG amendment addresses the Commission's determination that failure to staff the Project with a Vermont-licensed professional engineer to serve as the responsible charge engineer was a substantial change. The Hearing Officer and Commission did not identify any relevant Section 248 criteria, however, the Hearing Officer stated that this issue had the potential to have a significant impact under the Section 248 criteria addressed in other

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[51] Exhibit Petitioner-083 (2021-09-10 Direct Testimony of John St. Hilaire) at 5; Exhibit Petitioner-093 (Exhibit VGS-JSH-10).

[52] *Id.*

substantial changes. A more detailed description of this issue is set forth in Paragraphs 79–95 of the Hearing Officer's Liability Order.[53]

The evidence in the Investigation demonstrated there were no actual impacts on public health and safety or any other Section 248 criteria relating to the licensure of engineers who designed the pipeline:

- In 2012, VGS contracted for engineering services with CHA, a full-service engineering and consulting firm that provided continuous consultation and engineering services for the Project.[54]

- CHA affirmed to VGS that all of its engineering work, including the plans used to construct the pipeline, were "prepared under the supervision of a Vermont-licensed engineer and in accordance with professional standards."[55]

- There is no evidence of any deficiencies in the engineering and design of the Project or any actual safety or integrity issues that arose out of the lack of a seal on the plans.[56]

- Additionally, as noted above, Mr. Byrd concluded: "[The pipeline] was thoroughly and competently designed and engineered using modern equipment and technology, and comprehensively inspected during construction by multiple parties. With a few noted exceptions, it was constructed in compliance with applicable rules and commitments, and in many important respects it significantly exceeds the typical requirements. . . . Ongoing inspections and maintenance as well as periodic integrity management assessments and evaluations should identify and resolve any pipeline safety issues that arise in the future and provide assurance of continued safety."[57]

- VGS has committed to ensuring that any and all future pipeline or related construction projects are overseen by a Vermont-licensed engineer, and therefore there will be no future undue adverse effect on public health and safety associated with engineering requirements. Duties of such an engineer include the approval and signing of construction drawings and

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53 Exhibit Petitioner-004 (Liability Order) at 33-36.
54 Exhibit Petitioner-002 (Final Order) at 19.
55 Exhibit Petitioner-081 (2020-07-10 Prefiled Testimony of John St. Hilaire) at 16; Exhibit Petitioner-087 (Exhibit VGS-JSH-4) at 5; *see also* Exhibit Petitioner-002 (Final Order) at 19.
56 Exhibit Petitioner-081 (2020-07-10 Prefiled Testimony of John St. Hilaire) at 16.
57 Exhibit Petitioner-009 (Byrd Report) 72; *see also* Exhibit Petitioner-002 (Final Order) at 2, n.4.

specifications and any and all changes made to those drawings and specifications.[58]

VGS proposes that the Commission amend VGS's Docket 7970 CPG to address staffing the Project with a Vermont-licensed professional engineer to serve as the responsible charge engineer as follows:

> *VGS is authorized to install the pipeline as constructed with respect to compliance with professional engineering requirements, provided that it complies with the following condition:*
>
> - *Vermont Gas shall continue to ensure that any and all future pipeline or related construction projects are overseen by a Vermont-licensed engineer, the duties of which will include the approval and signing of construction drawings and specifications, and any and all changes made to those drawings and specifications.*

The above CPG amendment and related condition are sufficient to ensure that there will be no future undue adverse impacts regarding professional engineering and pipeline design for the following reasons.

First, VGS has committed to ensuring that all professional engineering on future projects complies with Vermont licensing requirements. The above condition ensures that for any future VGS project, a Vermont-licensed engineer will approve and sign construction drawings and specifications and any and all changes made to those drawings and specifications.

Second, as the Commission discussed in the Final Order, the ANGP was designed and engineered by CHA, a full-service engineering and consulting firm that provided continuous consultation and engineering services for the Project.[59] While the original issued for construction drawings were not initially signed and sealed by a Vermont-licensed engineer, CHA

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[58] Exhibit Petitioner-139 (VGS Compliance Filing Regarding Proposed Amendments to the Docket 7970 Certificate of Public Good (Apr. 27, 2023)); *see also* Exhibit Petitioner-002 (Final Order) at 19 (citing Exhibit Petitioner-119 (Gregory Liebert, Intervenors ("Liebert") pf.) at 3-6; Exhibit Petitioner-120 (Liebert exh. 2) at 1-3, Exhibit Petitioner-121 (Liebert pf. reb.) at 5; 26 V.S.A. § 1161(2)).

[59] Exhibit Petitioner-002 (Final Order) at 19.

subsequently affirmed that all of the plans used to construct the pipeline were "prepared under the supervision of a Vermont-licensed engineer and in accordance with professional standards."[60]

Finally, Mr. Byrd's investigation concluded that there was no evidence that the engineering or design was deficient; not performed by competent engineers; or posed a risk to public health, safety, or welfare.[61] On the contrary, Mr. Byrd concluded that the specifications for the project "provided a comprehensive and technically sound basis for quality assurance during the project,"[62] and that "[e]xtensive specifications of all types were prepared in advance of construction, and extensive inspections were performed by multiple parties to ensure conformance with those specifications."[63]

Accordingly, the above CPG amendment and condition are adequate to ensure that there are no future undue adverse impacts on public health and safety or any other Section 248 criteria relating to the supervision of projects by a Vermont-licensed engineer.

6. Additional Remedial Actions

VGS has committed to undertaking other remedial recommendations that are not related to the above-referenced substantial changes, proposed CPG amendments, or expert remedial action and conditions.[64] These recommendations were provided by Mr. Byrd in his report in 2020, and VGS has been following these recommendations since they were made:

- *The zinc ribbon/SSD system should be routinely inspected and quickly repaired as necessary to ensure that AC interference currents do not cause corrosion of the pipeline. VGS should conduct and document detailed inspections of all SSDs twice a*

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60 Exhibit Petitioner-081 (2020-07-10 Prefiled Testimony of John St. Hilaire) at 16-17; Exhibit Petitioner-087 (Exhibit VGS-JSH-4) at 5.
61 Exhibit Petitioner-009 (Byrd Report) at 64.
62 *Id.*
63 *Id.*
64 *Id.* at 73-74.

year (not to exceed 7.5 months between inspections) and correct any problems within 2 months of discovery.

- *VGS should conduct over-the-line (OTL) surveys every 3 ½ years (not to exceed 48 months between inspections), with the specific types of OTL survey to be determined by a competent corrosion consultant independent of VGS. All indications should be investigated and corrected as necessary within six months of discovery. The surveys should be able to detect AC interference/stray current issues.*
- *VGS should perform a DOC survey in all actively cultivated agricultural areas every 3 years, and address any DOC less than 4' (or landowner agreements – whichever is greater) to ensure agricultural activities will not impact the pipeline. This does not mean that DOC must be maintained at the original installation depth, but that any loss of cover must be managed in cooperation with the landowner/farmer to ensure agricultural activities do not interfere with pipeline safety.*
- *VGS should ensure its line locating procedures, training, and qualification programs address the potential for zinc ribbon interference with line locating equipment. The procedures should require disconnection of the zinc ribbon prior to using an indirect line locator, probing the pipeline location, or hand digging/potholing to ensure the line is located accurately prior to any excavation near a pipe protected by zinc ribbon. These procedures, training programs, and qualification programs should be submitted for Department review within six months of [the Byrd] report.*
- *VGS should modify its pipeline integrity management plan to specifically mention the locations of the 67 Canusa sleeve repairs from the problematic batches. These locations should be called out as a potential integrity concern during all subsequent integrity assessments and evaluations (such as close-interval surveys and in-line inspections). This does not mean that every assessment must be designed specifically to look for external corrosion threats at coating repairs. Rather, that the Canusa sleeve locations be considered when evaluating the results of every assessment (even assessments not designed to look for that threat), because of the potential for interacting threats.*

Conclusion

For the reasons discussed above, VGS requests that the Commission amend VGS's Docket 7970 CPG in the manner described herein with the conditions specified. The above-referenced evidence from the Investigation demonstrates that the five substantial changes found by the Commission did not, in fact, have any actual impacts under the relevant Section 248 criteria. That evidence, coupled with the proposed amendments and conditions that implement

additional remedial measures proposed by experts, will prevent any undue adverse impacts going forward.

DATED at Burlington, Vermont, on this 28th day of October, 2024.

VERMONT GAS SYSTEMS, INC.

By: */s/ Owen J. McClain*

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Appendix A

List of Exhibits from Evidentiary Record in Case No. 17-3550-INV and Case No. 18-0395-PET

PUC Orders	
Exhibit Petitioner-001	Post-Appeal Order Outlining Next Steps (Jun. 25, 2024)
Exhibit Petitioner-002	Final Order (Apr. 6, 2023)
Exhibit Petitioner-003	Proposal for Decision (Oct. 3, 2022)
Exhibit Petitioner-004	Liability Order (Jan. 29, 2021)
Transcripts	
Exhibit Petitioner-005	2020-09-01 Evidentiary Hearing Transcript Day I
Exhibit Petitioner-006	2020-09-02 Evidentiary Hearing Transcript Day II
Exhibit Petitioner-007	2020-09-03 Evidentiary Hearing Transcript Day III
Exhibit Petitioner-008	2021-12-08 Evidentiary Hearing Transcript
Byrd Report & Supporting Attachments	
Exhibit Petitioner-009	Final Report from the Independent Investigation of the Vermont Gas Systems Addison Natural Gas Project, January 8, 2020, by William R. Byrd (the "Byrd Report")
Exhibit Petitioner-010	Byrd Report, Attachment #1 (W R Byrd Statement of Qualifications)
Exhibit Petitioner-011	Byrd Report, Attachment #2 (Partial Index of Files Received)
Exhibit Petitioner-012	Byrd Report, Attachment #3 (Listing of Construction Inspection Reports Reviewed by WRB)
Exhibit Petitioner-013	Byrd Report, Attachment #4 (Mr. Heintz' 2-28-13 PFT)
Exhibit Petitioner-014	Byrd Report, Attachment #5 (PUC Final Order of CPG for ANGP)
Exhibit Petitioner-015	Byrd Report, Attachment #6 (ANGP Organization Charts)
Exhibit Petitioner-016	Byrd Report, Attachment #7 (Intervenors Motion to Broaden Scope of Investigation 3-1-18)
Exhibit Petitioner-017	Byrd Report, Attachment #8 (Intervenors Summary of the Evidence for WRB - annotated 5-21-19)
Exhibit Petitioner-018	Byrd Report, Attachment #9 (WRB Site Visit Summary Findings)
Exhibit Petitioner-019	Byrd Report, Attachment #10 (Selected Images)
Exhibit Petitioner-020	Byrd Report, Attachment #11 (Breezy Valley Dig Report 7-30-19)
Exhibit Petitioner-021	Byrd Report, Attachment #12 (Baldwin Rd Dig Report 7-30-19)
Exhibit Petitioner-022	Byrd Report, Attachment #13 (Chicken Farm Dig Report 7-31-19)
Exhibit Petitioner-023	Byrd Report, Attachment #14 (Route 7 Dig Report 7-31-19)
Exhibit Petitioner-024	Byrd Report, Attachment #15 (PHMSA Civil Penalty Guidance 02-25-2019)
Exhibit Petitioner-025	Byrd Report, Attachment #16 (Bid Specification Index)
Exhibit Petitioner-026	Byrd Report, Attachment #17 (Bid Specification Package, Project Manual May 24 2014)
Exhibit Petitioner-027	Byrd Report, Attachment #18 (CHA Summary of Material Specs and Quality Control Procedures)

Exhibit Petitioner-028	Byrd Report, Attachment #19 (Specification for Application of Pipeline External Coatings)
Exhibit Petitioner-029	Byrd Report, Attachment #20 (IFC Plans 5-13-16 in Modification bulletin Trans-09)
Exhibit Petitioner-030	Byrd Report, Attachment #21 (CHA Specification 312333 TRENCHING, PIPE LAYING AND BACKFILLING dated 4-29-2015)
Exhibit Petitioner-031	Byrd Report, Attachment #22 (CHA Specification 312333 TRENCHING, PIPE LAYING AND BACKFILLING 7-1-2016, in Modification Bulletin Trans-14)
Exhibit Petitioner-032	Byrd Report, Attachment #23 (Design drawing sheet ANGP-T-G-015 as of 6-28-2013)
Exhibit Petitioner-033	Byrd Report, Attachment #24 (Design drawing sheet ANGP T-G-015 as of 6-11-2015)
Exhibit Petitioner-034	Byrd Report, Attachment #25 (Design Drawing ANGP-T-G-015 as of 5-2016 w TB tables)
Exhibit Petitioner-035	Byrd Report, Attachment #26 (Project Directive 2015-006 Backfill Compaction 8-31-15)
Exhibit Petitioner-036	Byrd Report, Attachment #27 (Project Directive 2015-007 General Backfill Materials 8-31-15)
Exhibit Petitioner-037	Byrd Report, Attachment #28 (Project Directive 2015-008 Adhesion Testing 8-31-15)
Exhibit Petitioner-038	Byrd Report, Attachment #29 (ARK CP System Design IFC 5-20-2016)
Exhibit Petitioner-039	Byrd Report, Attachment #30 (ARK Engineering AC Mitigation Design)
Exhibit Petitioner-040	Byrd Report, Attachment #31 (ARK CP Commissioning – first 11 miles)
Exhibit Petitioner-041	Byrd Report, Attachment #32 (ARK CP Commissioning - 30 miles)
Exhibit Petitioner-042	Byrd Report, Attachment #33 (ARK DCVG & CIS Analysis)
Exhibit Petitioner-043	Byrd Report, Attachment #34 (E-mail of 9/4/2019 concerning zinc ribbon in Clay Plains Swamp)
Exhibit Petitioner-044	Byrd Report, Attachment #35 (ANGP Inspection Manual from 2014)
Exhibit Petitioner-045	Byrd Report, Attachment #36 (Eric Curtis Field Notes May 30 - July 26 2014)
Exhibit Petitioner-046	Byrd Report, Attachment #37 (James Haney Field Notes July 27 - Nov. 4, 2015)
Exhibit Petitioner-047	Byrd Report, Attachment #38 (JR Kelch ML Inspection Reports 9-5 and 9-10-14)
Exhibit Petitioner-048	Byrd Report, Attachment #39 (DPS Inspection Report - 2014)
Exhibit Petitioner-049	Byrd Report, Attachment #40 (DPS Inspection Report - 2015)
Exhibit Petitioner-050	Byrd Report, Attachment #41 (DPS Inspection Report - 2016)
Exhibit Petitioner-051	Byrd Report, Attachment #42 (DPS Inspection Report - 2017)
Exhibit Petitioner-052	Byrd Report, Attachment #43 (PHMSA review of VT DPS Inspectors)

Exhibit Petitioner-053	Byrd Report, Attachment #44 (VGS - VELCO MOU of 6-2013)
Exhibit Petitioner-054	Byrd Report, Attachment #45 (VGS - ANR MOU of 9-2013)
Exhibit Petitioner-055	Byrd Report, Attachment #46 (VTrans Permit of 5-27-2014)
Exhibit Petitioner-056	Byrd Report, Attachment #47 (CHA Loading Calculations 11-7-2014)
Exhibit Petitioner-057	Byrd Report, Attachment #48 (Mott MacDonald Loading Calculations 5-25-16)
Exhibit Petitioner-058	Byrd Report, Attachment #49 (CEPA Report 10-16-2009 re Surface Loading)
Exhibit Petitioner-059	Byrd Report, Attachment #50 (Compaction Testing Results and email of 5-24-2016)
Exhibit Petitioner-060	Byrd Report, Attachment #51 (WCE report of 9-27-16 - stripping topsoil)
Exhibit Petitioner-061	Byrd Report, Attachment #52 (WCE Report of 6-23-15 crushing rock for general backfill)
Exhibit Petitioner-062	Byrd Report, Attachment #53 (WCE Report of 9-27-16 - using shaker bucket to sift backfill)
Exhibit Petitioner-063	Byrd Report, Attachment #54 (CPAR of 12-11-15 re TB locations in 2014)
Exhibit Petitioner-064	Byrd Report, Attachment #55 (VELCO email of 9-21-2016 re Clay Plains Swamp)
Exhibit Petitioner-065	Byrd Report, Attachment #56 (VELCO letter of 4-25-2017 re Clay Plains Swamp)
Exhibit Petitioner-066	Byrd Report, Attachment #57 (Wetlands Permit Supporting Narrative)
Exhibit Petitioner-067	Byrd Report, Attachment #58 (Clay Plains Inspection Report Summaries - WRB)
Exhibit Petitioner-068	Byrd Report, Attachment #59 (Summary Memo re Laying Pipe on Trench Bottom 6-6-17)
Exhibit Petitioner-069	Byrd Report, Attachment #60 (VGS 8-4-17 Comments re DOC commitments)
Exhibit Petitioner-070	Byrd Report, Attachment #61 (JAN Affidavit 8-4-17 re Stream Crossings)
Exhibit Petitioner-071	Byrd Report, Attachment #62 (JSH Affidavit 8-11-17 re DOC)
Exhibit Petitioner-072	Byrd Report, Attachment #63 (JSH Affidavit 8-11-17 Exhibit 1 - DOC Table)
Exhibit Petitioner-073	Byrd Report, Attachment #64 (ANR Comments 10-12-17 re DOC for Non-Jurisdictional Streams)
Exhibit Petitioner-074	Byrd Report, Attachment #65 (Bedding / TB NOPV of 2-13-2018)
Exhibit Petitioner-075	Byrd Report, Attachment #66 (VGS Response to DPS Bedding / TB NOPV 2-28-18)
Exhibit Petitioner-076	Byrd Report, Attachment #67 (Stipulated Remedial Action Compliance Plan - DRAFT - to Bedding TB NOPV)
Exhibit Petitioner-077	Byrd Report, Attachment #68 (ANR Comments 3-22-18 re Trench Breakers)

Exhibit Petitioner-078	Byrd Report, Attachment #69 (ANR Comments 5-4-18 re Scope of Investigation)
Exhibit Petitioner-079	Byrd Report, Attachment #70 (VGS email re ANR TB Follow Up Activities 11-12-19)
VGS Prefiled Testimony	
Exhibit Petitioner-080	2020-07-10 Direct Testimony of Donald J. Rendall
Exhibit Petitioner-081	2020-07-10 Direct Testimony of John St. Hilaire
Exhibit Petitioner-082	2020-07-31 Rebuttal Testimony of John St. Hilaire
Exhibit Petitioner-083	2021-09-10 Direct Testimony of John St. Hilaire
Exhibit Petitioner-084	Exhibit VGS-JSH-1
Exhibit Petitioner-085	Exhibit VGS-JSH-2
Exhibit Petitioner-086	Exhibit VGS-JSH-3
Exhibit Petitioner-087	Exhibit VGS-JSH-4
Exhibit Petitioner-088	Exhibit VGS-JSH-5
Exhibit Petitioner-089	Exhibit VGS-JSH-6
Exhibit Petitioner-090	Exhibit VGS-JSH-7
Exhibit Petitioner-091	Exhibit VGS-JSH-8
Exhibit Petitioner-092	Exhibit VGS-JSH-9
Exhibit Petitioner-093	Exhibit VGS-JSH-10
Exhibit Petitioner-094	2020-07-10 Direct Testimony of Jeffrey A. Nelson
Exhibit Petitioner-095	Exhibit VGS-JAN-1
Exhibit Petitioner-096	Exhibit VGS-JAN-2
Exhibit Petitioner-097	Exhibit VGS-JAN-3
Exhibit Petitioner-098	2020-07-31 Rebuttal Testimony of John F. Godfrey
Exhibit Petitioner-099	Exhibit VGS-JFG-1
Exhibit Petitioner-100	2021-09-10 Direct Testimony of Carlos J. Chaves
Exhibit Petitioner-101	Exhibit VGS-CC-1
Exhibit Petitioner-102	Exhibit VGS-CC-2
Exhibit Petitioner-103	2021-11-01 Rebuttal Testimony of Carlos J. Chaves
Exhibit Petitioner-104	Exhibit VGS-CC-3
Exhibit Petitioner-105	Exhibit VGS-CC-4
Exhibit Petitioner-106	Exhibit VGS-CC-5
Exhibit Petitioner-107	Exhibit VGS-CC-6
Exhibit Petitioner-108	Exhibit VGS-CC-7
VELCO Prefiled Testimony	
Exhibit Petitioner-109	2021-07-23 Prefiled Direct Testimony of Kevin Bodenhamer
Exhibit Petitioner-110	2021-11-01 Prefiled Direct Rebuttal Testimony of Kevin Bodenhamer
Exhibit Petitioner-111	Exhibit VELCO-KB-1
Exhibit Petitioner-112	2021-07-23 Prefiled Direct Testimony of Brian Connaughton
Exhibit Petitioner-113	2021-11-01 Prefiled Direct Rebuttal Testimony of Brian Connaughton
Exhibit Petitioner-114	Exhibit VELCO-BC-1
Exhibit Petitioner-115	Exhibit VELCO-BC-2
Exhibit Petitioner-116	Exhibit VELCO-BC-3

Exhibit Petitioner-117	Exhibit VELCO-BC-4
All other evidence cited by the Commission	
Exhibit Petitioner-118	2017-06-19 Letter from Donald J. Einhorn, Esq. to PUC Clerk
Exhibit Petitioner-119	2021-09-10 Prefiled Testimony of Gregory R. Liebert
Exhibit Petitioner-120	Liebert Exh. 2 - Liebert Report September 12, 2019
Exhibit Petitioner-121	2021-10-04 Rebuttal Testimony of Gregory R. Liebert
Exhibit Petitioner-122	Exhibit Pet. JH-13 (Docket 7970)
Exhibit Petitioner-123	2012-12-20 Prefiled Testimony of John Heintz (Docket 7970)
Exhibit Petitioner-124	2017-12-19 Transcript from 30(b)(6) Deposition of Carl Bubolz
Exhibit Petitioner-125	2013-06-11 Prefiled Testimony of Eric Sorenson (Docket 7970)
Exhibit Petitioner-126	2013-02-28 Prefiled Testimony of John Heintz (Docket 7970)
Exhibit Petitioner-127	Exhibit Pet. JH-3 (Docket 7970)
Exhibit Petitioner-128	Exhibit Intervenors Cross 33A
Exhibit Petitioner-129	2020-09-03 (Corrected) Prefiled Testimony of Lawrence Shelton
Exhibit Petitioner-130	Exhibit Int. LS-2 (video)
Exhibit Petitioner-131	Exhibit Int. LS-3 (photographs)
Exhibit Petitioner-132	2014 Construction Manual
Exhibit Petitioner-133	Int. Cross Exhibit 1
Exhibit Petitioner-134	Jane Palmer Exh. 1 (Summary of 2014 Inspection Reports)
Exhibit Petitioner-135	2020-03-27 Transcript from Deposition of Chris LeForce
Exhibit Petitioner-136	Docket 7970 Hearing Transcript 9/17/13
Other Referenced Documents	
Exhibit Petitioner-137	Case Nos. 17-3550-INV & 18-0395-PET, PSD Comments on Compliance Filing (May 24, 2023)
Exhibit Petitioner-138	David Berger Letter to the Department of Public Service (Jun. 21, 2017)
Exhibit Petitioner-139	VGS Compliance Filing Regarding Proposed Amendments to the Docket 7970 Certificate of Public Good (Apr. 27, 2023)

Appendix B

1. CPG Amendment #1: Trenching Techniques In The Clay Plains Swamp

VGS is authorized to install the pipeline as constructed in the Clay Plains Swamp using what is known as the "sink-in-swamp" burial method, provided that it complies with all of the conditions herein.

2. CPG Amendment #2: Depth of Cover In The Clay Plains Swamp

VGS is authorized to install the pipeline as constructed in the Clay Plains Swamp with less than four feet of cover in certain locations, provided that it complies with the following conditions:

- *VGS (or VELCO) shall install large warning signs at each end of the ROW in the Clay Plains Swamp with the following (or similar) text "WARNING. SHALLOW HIGH PRESSURE GAS PIPELINE IN THIS AREA. NOTIFY VGS AT (phone number) BEFORE MOVING HEAVY EQUIPMENT INTO THIS AREA."*
- *VGS shall install additional yellow location markers in the Clay Plains Swamp as recommend by VELCO. See Byrd Report, Attachment 56.*
- *VGS shall inspect the pipeline in the Clay Plains Swamp on an annual basis for two years (from when the Byrd Report was issued in January 2020) to ensure that settlement of the back-filled material has not occurred, which may reduce the buried depth of the pipeline. See Byrd Report, Attachment 56.*

3. CPG Amendment #3: Trench Bottom & Trench Breakers

VGS is authorized to install the pipeline as constructed with respect to burial on the trench bottom and installation of trench breakers, provided that it complies with the following conditions:

- *Vermont Gas shall reduce the maximum time between ILI runs for both metal loss and geometry to once every five years, with a maximum interval of 63 months.*
- *Within six months of the ILI, Vermont Gas also shall conduct a CIS of the effectiveness of the cathodic protection. Vermont Gas shall integrate the results with the ILI results. All areas of poor cathodic protection should be remedied and mitigated promptly. For purposes of this plan, "Poor cathodic protection" shall mean any area with a reading that does not meet the minus 0.85 VDC standard for both 'on' and 'off'. Furthermore, if metal loss of greater than 20% is noted, the mitigation of the affected*

pipe shall take place within 12 months of discovery. The Department and Vermont Gas agree that a 12-month time period for remediating these areas is appropriate and necessary for planning and construction in light of seasonal weather issues that may bear on when mitigation work can occur provided that the pipeline's safety factor remains above 10% of the class location (Class 3 or 50% SMYS) factor during the entire period when taking corrosion rates into account. Corrosion rates will be used as defined in NACE SP0502 (16 mils per year as the default rate) unless the actual rate is known for the exact location or can be calculated per the standard.

- *Within six months of the ILI described above, Vermont Gas also shall conduct a coating survey using either DCVG or ACVG.[65] Vermont Gas will integrate the results of the coating survey with other surveys set forth above. All moderate and severe coating anomalies identified by the integrated data, as those terms are defined in VGS's Transmission IMP Plan (Section 7A), shall be excavated and remediated within 12 months. Furthermore, during the inspection of coating damage, measurements shall be taken to determine if metal loss is present. If over 40% of wall loss is found, the pipe shall be repaired to its original strength.*
- *Within 90 days of the completion of the ILI, Vermont Gas shall have a final report on the ILI findings. The Department and VGS agree that this period provides adequate time for Vermont Gas to require its ILI contractor to provide its findings for review, and for Vermont Gas to complete the final report of the ILI survey.*
- *Within 120 days of the completion of the ILI runs, Vermont Gas shall complete a report integrating and analyzing the ILI results (both geometry and metal loss); the cathodic protection CIS survey results; and the coating survey results. The integrated report shall note all metal loss of 10% or greater; all areas where the cathodic protection does not meet the minus 0.85 VDC standard for either on or off potentials; and all moderate or severe coating anomalies, as those terms are defined in Vermont Gas's Transmission IMP Plan (Section 7A). The Department and Vermont Gas agree that this period provides adequate and appropriate time for the company to integrate the results of all of these inspections, particularly given the amount of data that will be generated over time after the initial round of testing.*
- *Vermont Gas shall provide all of the above final reports to the Department promptly upon completion but no later than 10 business days, and shall make available all raw data, surveys and analyses received or produced regarding these required inspections. Vermont Gas will also document its steps taken to remedy any findings from these inspections that require action as noted.*

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[65] Direct or Alternating Current Voltage Gradient.

4. CPG Amendment #4: Compaction

VGS is authorized to install the pipeline as constructed with regard to compaction requirements, provided that it complies with the following conditions:

- *VGS shall hire a Vermont-licensed professional civil engineer with expertise in dirt road construction and maintenance to inspect each of the 15 open cut road crossings for evidence of frost heave, settlement, and potholing, at times of the engineer's choosing but at least twice (once during cold weather to look for frost heave and once during warm weather to look for settlement and potholing), and have them develop and certify a remediation plan for any deficiencies that are discovered. VGS should inform the engineer in writing prior to the inspections of any complaints received concerning these crossing locations. VGS should report to the Department and any relevant local agency, municipality, or authority for each crossing within 18 months of Mr. Byrd's report (which issued January 2020) concerning the results of these inspections and any remedial actions taken or planned. VGS should provide periodic updates to these parties until all deficiencies (if any) have been corrected.*
- *VGS shall conduct a similar independent review of open cut road crossings after each winter season to determine if there is any frost heave at locations where the pipeline is buried beneath roadways and repair any damage.*

5. CPG Amendment #5: Design & Engineering

VGS is authorized to install the pipeline as constructed with respect to compliance with professional engineering requirements, provided that it complies with the following condition:

- *Vermont Gas shall continue to ensure that any and all future pipeline or related construction projects are overseen by a Vermont-licensed engineer, the duties of which will include the approval and signing of construction drawings and specifications, and any and all changes made to those drawings and specifications.*

6. Additional Remedial Actions

- *The zinc ribbon/SSD system should be routinely inspected and quickly repaired as necessary to ensure that AC interference currents do not cause corrosion of the pipeline. VGS should conduct and document detailed inspections of all SSDs twice a year (not to exceed 7.5 months between inspections) and correct any problems within 2 months of discovery.*
- *VGS should conduct over-the-line (OTL) surveys every 3 ½ years (not to exceed 48 months between inspections), with the specific types of OTL survey to be determined by a competent corrosion consultant independent of VGS. All indications should be*

investigated and corrected as necessary within six months of discovery. The surveys should be able to detect AC interference/stray current issues.

- *VGS should perform a DOC survey in all actively cultivated agricultural areas every 3 years, and address any DOC less than 4' (or landowner agreements – whichever is greater) to ensure agricultural activities will not impact the pipeline. This does not mean that DOC must be maintained at the original installation depth, but that any loss of cover must be managed in cooperation with the landowner/farmer to ensure agricultural activities do not interfere with pipeline safety.*
- *VGS should ensure its line locating procedures, training, and qualification programs address the potential for zinc ribbon interference with line locating equipment. The procedures should require disconnection of the zinc ribbon prior to using an indirect line locator, probing the pipeline location, or hand digging/potholing to ensure the line is located accurately prior to any excavation near a pipe protected by zinc ribbon. These procedures, training programs, and qualification programs should be submitted for Department review within six months of [the Byrd] report.*
- *VGS should modify its pipeline integrity management plan to specifically mention the locations of the 67 Canusa sleeve repairs from the problematic batches. These locations should be called out as a potential integrity concern during all subsequent integrity assessments and evaluations (such as close-interval surveys and in-line inspections). This does not mean that every assessment must be designed specifically to look for external corrosion threats at coating repairs. Rather, that the Canusa sleeve locations be considered when evaluating the results of every assessment (even assessments not designed to look for that threat), because of the potential for interacting threats.*