SURFACE WATER DIVERSION AND TRANSFER STUDY GROUP REPORT

Prepared for the Vermont General Assembly in Accordance with Act No. 173 (2020)

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Members of the Act 173 Surface Water Withdrawal Study Group

Jeff Crocker, Agency of Natural Resources, Chair
Ryan Patch, Agency of Agriculture, Food and Marketing
Senator Christopher Bray, Committee on Natural Resources and Energy
Representative Kari Dolan, Committee on Natural Resources, Fish, and Wildlife
Jeffrey Nelson, Vanasse Hangen Brustlin, Inc.
Jason Shattie, Burlington Country Club
Jon Groveman, Vermont Natural Resources Council
David Deen, Trout Unlimited – Vermont Chapter
Evan Fitzgerald, Fitzgerald Environmental Associates, LLC
Sam Markowski, Vermont Terps / Markowski Excavation, Inc.

Surface Water Diversion and Transfer Study Group Report

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I. Executive Summary

Act 173, an act relating to surface water diversions, required the Secretary of the Agency of Natural Resources to convene a Surface Water Diversion and Transfer Study Group to investigate and make recommendations to the General Assembly regarding the environmental, economic, and recreational impacts of surface water diversions, including the transfer of surface water between watersheds.

The Surface Water Diversion and Transfer Study Group was comprised of individuals representing, agriculture, non-governmental organizations, and commercial sectors. The Study Group met ten times between March and December of 2021 to review current state laws, environmental rules, and regulatory regimes for surface water withdrawals and interbasin transfers to understand where there may be current regulatory gaps. In determining whether and how the Study Group would recommend filling any gaps, the Study Group invited legal experts on water use law, and regulators from other states that administer surface water withdrawal registration and permitting programs. Subsequently, to address Vermont's specific issue regarding the information and regulatory gaps for surface water withdrawals and transfer, the Study Group recommends:

- The Agency of Natural Resources (Agency)be given the authority to review interbasin transfer of water between watersheds with a hydrologic unit code (HUC) of 6 based on U.S. Geological Survey classification system to ensure transfers meet water quality standards.

- The Agency create a surface water registration and reporting program to collect information on surface water use in the State. The registration and reporting program should be implemented by the Agency by January 1, 2023. The recommendation from the Study Group is that all users that withdraw 5,000 gallons or more of water in a 24-hour period register and report their water use to the Agency.

- The Agency develop a permitting program for surface water withdrawals on or before July 1, 2026. The permitting program would use the information collected from the registration and reporting program to develop rules for the program to set water withdrawal thresholds and requirements for permitting.

II. Purpose and Authority

In 2020 the Vermont General Assembly enacted Act 173, an act relating to surface water diversions. The Act required the Secretary of the Agency of Natural Resources to convene a Surface Water Diversion and Transfer Study Group to investigate and make recommendations to the General Assembly regarding the environmental, economic, and recreational impacts of surface water diversions, including the transfer of surface water between watersheds.

The Act designated the composition of the Study Group as the Secretary of Natural Resources or designee, Secretary of Agriculture, Food, and Markets or designee, one member of the Senate Committee on Natural Resources and Energy, one member of the Natural Resources, Fish, and Wildlife, two persons representing businesses or industries reliant on large quantities of surface water, two persons representing nonprofit environmental advocacy groups, one hydrologist, and one person representing an agriculture or forest products business conducted on working lands. The Secretary of Natural Resources or designee serving as the chair of the Study Group. The full list of the Surface Water Diversion and Transfer Study Group and their contact information is in Appendix A.

The duties assigned to the Surface Water Diversion and Transfer Study Group were to develop a baseline inventory of current and project use of surface water for off stream uses, recommend whether surface water transfers between watersheds should occur, identify whether Vermont should develop and implement a permitting program or other regulatory regime for surface water withdrawals and transfers, analyze potentially viable regimes to manage surface water withdrawals, and to propose legislative changes to implement the recommendations of the Study Group, if necessary. Act 173 requires that Study Group to submit a report to the House Committee on Natural Resources, Fish, and Wildlife and the Senate Committee on Natural Resources and Energy providing its findings and recommendations on or before December 15, 2021.

III. Baseline Inventory of current and projected quantity, location, and usage of diversions and transfers of surface water in Vermont.

A. Current uses and transfer of surface water in Vermont

The withdrawal of surface water occurs to provide a water source for a number of off-stream uses in Vermont. These uses include, but are not limited to aquaculture, drinking water, irrigation, commercial/industrial use, and snowmaking. However, the Agency of Natural Resource (Agency) currently has limited information on the number, location, quantity, or usage of surface water being diverted or withdrawn in the State from which to develop a baseline inventory. The absence of information on the number of water withdrawals and quantity of water withdrawn in the State is presently unknown largely due to there being no registration or reporting program. Currently, a person withdrawing water from a surface water in Vermont, in general, is not required to register or report surface water usage to the Agency. The lack of a

registration and reporting program for water withdrawal and usage means a baseline inventory developed based on the Agency data would be an underestimate of the actual number of withdrawals and water usage from surface waters in Vermont. A notable exception is the water withdrawals that are associated with snowmaking at ski areas.

Ski resorts and other facilities that utilize surface water withdrawals for snowmaking are regulated under an environmental protection rule.[1] A requirement of the rule is that a water use report be filed with the Agency on a monthly basis during the snowmaking season, and an annual report at the end season. The snowmaking reports submitted to the Agency provide information on the amount of water withdrawn from each surface water, as well as additional data on streamflow, reservoir water levels, and other information including the amount of water used for snowmaking and operations of the system.

Interbasin transfers[2] currently do not occur very frequently in Vermont with only one known to be operating in the State. The interbasin transfer currently occurring in Vermont connects the Killington Resort and Pico Resort snowmaking systems. The transfer occurs via pipeline conveys water withdrawn from the Killington Resort surface water sources to the Pico Resort reservoirs for snowmaking. The Killington Resort surface water sources are located in the Ottauquechee River watershed which drains to the Connecticut River, and the Pico Resort is located in the Otter Creek watershed draining to Lake Champlain.

Due to the limited information on the current number of surface water withdrawals and the quantity of water withdrawn in the State, the Study Group is recommending that the Agency develop a registration and reporting program for surface water withdrawals. The Study Group's specific recommendations for the surface water use registration and reporting program are in Section VI(A) of this report.

B. Projected uses and transfer of surface water in Vermont

A duty assigned to the Study Group was to project use of water and transfers in Vermont. However, without reliable baseline data on the current use of surface water it is not possible to project how use of surface water will change in the future. Nevertheless, it should be acknowledged that Vermont's climate has changed and will continue to change. Vermont's climate in recent decades has been getting warmer in both the winter and summer. Additionally, average precipitation is likely to increase during the winter and spring, with more rain and less snow. Further under climate change scenarios, Vermont is projected to see extreme variation in precipitation pattern with increase in occurrence of drought and flood.[3] The change in precipitation pattern in Vermont and the increase in prolonged dry-spells and drought could

[1] Agency of Natural Resources, Environmental Protection Rules: Chapter 16 – Water Withdrawal for Snowmaking; adopted pursuant to 10 V.S.A. Chapter 41, Subchapter 3. Water Withdrawal for Snowmaking.
[2] Interbasin Transfers defined as the conveyance of surface water from a basin with a hydrologic unit code of six to another. In Vermont these include the Connecticut River, Hudson River, Lake Champlain and Lake Memphremagog basins.
[3] Clark, M., Crossett, C., 2021. Climate Change in Vermont. In Galford, G.L., Faulkner, J. et al. (Eds), The Vermont Climate Assessment 2021. Burlington, Vermont: Gund Institute for Environment at the University of Vermont.

change how Vermont uses and relies on surface waters for off-stream use, potentially exacerbating low water availability.[4] However, without a better understanding of current use of Vermont's surface water resources it is difficult to project future use with any certainty.

IV. Alternative regimes to address surface water withdrawals in Vermont

A. Existing regulatory regimes to address surface water diversions and withdrawals

Vermont currently has multiple regulatory regimes to address water withdrawals and diversions on a case-by-case basis. These regulatory regimes range from using the State's authority granted under Section 401 of the federal Clean Water Act, Agency environmental rules, other State permitting programs, and recommending conditions as part of the Act 250 land use permitting process. The specific regime used to place regulatory conditions on the operations of a surface water withdrawal largely depends on the use of the water (e.g., water for snowmaking) and the infrastructure needed for the diversion. However, none of the current regulatory regimes are specifically designated to address the activity of water withdrawal itself, and if a proposed water withdrawal does not trigger a jurisdictional threshold for a regulatory regime, no permit would be required. These non-jurisdictional water withdrawals are typical for a surface water withdrawal that proposes to use a pump and hose and does not propose any infrastructure that may trigger a regulatory regime.

i. Environmental Protection Rule – Chapter 16 – Water Withdrawals for Snowmaking

The only water use that is specifically regulated under an environmental protection rule is surface water withdrawals associated with snowmaking. Pursuant to 10 V.S.A. Chapter 41, Subchapter 3, the Agency has the authority to develop rules to regulate water withdrawals for snowmaking and the final rule was adopted in February 1996.[5] The environmental protection rule for water withdrawals associated with snowmaking provides the general regulatory process, conservation flow standards, timelines for Agency determinations, and how the Agency shall manage each case. Additionally, the rule requires that an applicant conduct and submit to the Agency an alternatives analysis to analyze the ski area's water need for snowmaking and water sources and storage options to meet the projected need. The rule outlines how the Agency shall manage cases, which include holding public meetings on proposals to take comments, identify and resolve issues, and determine a schedule for action on an application. The process concludes with the Agency issuing a final flow determination that includes conditions for the operation of the withdrawal including, the conservation flow to be maintained below the withdrawal and water use reporting requirements.

[4] Cook, D., Swanberg, N., 2021. Water Resources. In Galford, G.L., Faulkner, J. et al. (Eds), The Vermont Climate Assessment 2021. Burlington, Vermont: Gund Institute for Environment at the University of Vermont.
[5] Vermont Agency of Natural Resources – Department of Environmental Conservation, 1996, Environmental Protection Rules Chapter 16 Water Withdrawals for Snowmaking Rule, 7p.

However, the flow determination issued by the Agency as part of the review under the snowmaking rule is not a permit. Once the applicant has received the flow determination, they are required to obtain other necessary permits or certifications to construct the snowmaking system. These permits or certifications are dependent upon what regulations are triggered in a given instance, and may include a Section 401 water quality certification, Dam Order, Stream Alteration Permit, and an Act 250 – Land Use Permit. The conditions contained in the Agency flow determination are incorporated into the other permits for the snowmaking system.

ii. Section 401 water quality certification

The Agency has often used its authority granted by Section 401 of the federal Clean Water Act to issue a water quality certification to place conditions on surface water withdrawal, including a requirement to maintain conservation flows to protect aquatic habitat. Section 401 requires any applicant seeking a federal permit or license for an activity that may result in any discharge into the navigable waters to also obtain a water quality certification from the state or authorized tribe with jurisdiction over the project area where a discharge may occur. The issuance of a water quality certification for a project ensures that the proposed activity will not violate the state's water quality standards.

The Vermont water quality standards (Standards) contain policies, criteria, and management objectives to protect waters quality and designated uses at the classification level assigned. Specifically, Vermont's Standards include a hydrology policy and hydrology criteria to help manage streamflow and water level fluctuations, both of which may be affected by water withdrawals. The hydrology policy specifically recognizes the importance of proper management of the state water resources as it relates to water withdrawals stating:

> "The proper management of water resources now and for the future requires careful consideration of the interruption of the natural flow regime and the fluctuation of water levels resulting from the construction of new, and the operation of existing, dams, diversions, and other control structures." (Standards, § 29A-103(f)(1)).

To effectively implement the hydrology policy, the Standards include hydrology criteria which set standards for streamflow protection, water level fluctuation and high flow regime to protect the quality of aquatic habitat and recreation, primarily boating for the different classes of water, A(1), A(2), B(1), and B(2). Most of the waters in Vermont are classified as B(2) for uses and criteria. Additionally, the hydrology criteria require when there are multiple activities affecting flow, such as withdrawals or operation of a dam, that a determination of compliance with these criteria include consideration of the cumulative effects on flow.

Most, if not all, surface water withdrawals that have been reviewed under a Section 401 water quality certification are classified as B(2) waters for aquatic habitat and other uses. The Streamflow Protection section of the Hydrology criteria for Class B(2) states (Section 29A-304(b)):

> "Any change from the natural flow regime shall provide for maintenance of flow characteristics that ensure the full support of uses and comply with the applicable water quality criteria. The preferred method for ensuring compliance with this subsection is a site-specific flow study or studies. In the absences of site specific studies, the Secretary may establish hydrologic standards and impose additional hydrologic constraints, consistent with any applicable Agency of Natural Resources rule or procedure, to ensure compliance with the requirements of this subsection."

The review of water withdrawals applying for a Section 401 water quality certification focuses on establishing a conservation flow at the withdrawal site to protect the aquatic habitat. A conservation flow is the quantity of water that needs to remain in the stream when water is being withdrawn. If streamflow is below the conservation flow value, no water can be withdrawn. In establishing a conservation flow at a water withdrawal, the Agency has typically applied hydrology standards, whether it is using default hydrologic values based on watershed area or using site-specific streamflow data to establish a conservation flow value based on an Agency rule or procedure. The default hydrologic values and other accepted methods the Agency uses to set conservation flow requirements are contained in the Agency flow procedure.[6]

While Section 401 water quality certifications have been an important regulatory tool used by the Agency to regulate water withdrawals, a certification is only required when a project needs to obtain a federal permit or license. In the case of water withdrawals, the federal permit that is most often needed is a Section 404 permit from the Army Corps of Engineers. Without the need for a water withdrawal to obtain federal permit a Section 401 water quality certification cannot be issued for a project.

iii. Act 250 – Land Use Permits (10 V.S.A. Chapter 151)

Vermont's land use and development laws require certain types of development and construction to obtain Act 250 land use permits. Typically, these projects are related to commercial or industrial developments. As part of the permit review process, each application is reviewed for its conformance with ten statutory criteria that focus on the potential impacts of the proposal on several important environmental and cultural resources, including water quality. Most relevant to water withdrawal and diversions is the review conducted under the stream criteria (Criteria 1(E)) which requires "that, in addition all other applicable criteria, the development or subdivision of lands on or adjacent to the banks of a stream will, whenever feasible, maintain the natural condition of the stream, and will not endanger the health, safety, or welfare of the public or of adjoining landowners (10 VSA 6086(a)(1)(E))." The analysis conducted under the stream criteria of natural conditions of a stream includes it volume, depth,

[6] Vermont Agency of Natural Resources – Department of Environmental Conservation, 1993, Procedure for Determining Acceptable Minimum Stream Flows. 6p.

velocity of water flow, physical features, aesthetics values, bank stability, water quality, and habitat for fish and a variety of other life forms.[7]

As part of the Act 250 land use permit review process, the Agency provides comments on the application and recommends conditions to the district environmental commission for the applicable criteria. For comments and recommendations under the stream criteria for water withdrawals related to a snowmaking project, the Agency submits its flow determination, issued as part of the snowmaking rules, which includes proposed conditions for maintaining a minimum conservation flow and reporting requirements. The majority of projects with a proposal to withdraw or divert water needing an Act 250 land use permit are associated with snowmaking, but the Agency has recommended conditions for other water withdrawals associated with other sectors such as golf course irrigation.

iv. Other State Regulatory Programs

The other regulatory regimes used by the Agency to regulate water withdrawals include stream alteration permits and dam orders, however, each of these permitting programs has a threshold that a project must reach before the activity requires a permit. The stream alteration permitting issued pursuant to 10 V.S.A Chapter 41, Subchapter 2, requires a project that is proposing to alter a watercourse by removing or altering 10 cubic yards or greater is required to obtain a permit. Typically, water withdrawals, especially on smaller streams, do not trigger the threshold to require a stream alteration permit as many water withdrawal projects require little to no disturbance of the stream channel or material.

The dam orders issued pursuant to 10 V.S.A Chapter 43, require a person proposing to construct or alter a dam that is or capable of impounding more than 500,000 cubic feet of water or other liquid to obtain authorization from the State agency with jurisdiction. For dams not associated with generation of hydroelectric power, the Agency's Dam Safety Program has jurisdiction. The Agency has used dam orders to put conditions on water withdrawals associated with a dam that requires a dam order to be constructed or altered. These dams are typically used as off stream reservoirs to store water for later use. The construction of a large storage reservoir is often associated with snowmaking or irrigation systems, which require withdrawing water when flows are at a level to permit but the use of water typically occurs later and often under certain meteorological conditions when water may not be accessible whether it be freezing temperatures for snowmaking or a prolonged dry period for irrigation.

Additionally, the Agency authorizes surface water withdrawals for the purpose of providing drinking water. Surface water withdrawals that are used for drinking water are reviewed for

[7] Okemo Mountain, Inc., Application No. 2S0351-12A-EB, 1992 WL 186658, at *1 (Vt. Envtl. Bd. July 23, 1992); In re Appeal of Vermont Natural Resources Council, Nos. 92-02 and 92-05 at *1 (Vt. Water Resources Bd. Feb. 8, 1993). findings of fact, conclusions of law and order.

compliance with the Water Supply Rule[8] to ensure a water system is able to provide clean and safe drinking water to its users. Drinking water systems reviewed under this rule would be issued a Source Water Permit, Construction Permit or Permit to Operate the system by the Agency. As part of the review, an analysis of the quantity of water available, or safe yield analysis, from the surface water source is determined to ensure the source can meet the demand. This analysis includes consideration of including conservation flows being provide below stream withdrawals as required by the Secretary. However, the extent that conservation flows are included in permits and are in compliance with hydrology criteria of the Vermont water quality standards for the surface water withdrawal used for drinking water currently depends on when the permit was issued.

B. Alternatives Examined by the Study Group

The Surface Water Diversion and Transfer Study Group began its work in March 2021, meeting ten times between March and December. The initial work of the Study Group entailed reviewing current state laws, environmental rules, and regulatory regimes for surface water withdrawals and interbasin transfers to understand where there may be current regulatory gaps. In determining whether and how to fill the current regulatory gap regarding surface water withdrawals and interbasin transfers, the Study Group's work started by seeking to understand how Vermont's surface water resources and sectors that may rely on these resources may be affected by climate change. The Study Group then heard from legal experts on water use law and regulators from other states that administer surface water withdrawal registration and permitting programs in their States.

During its work, the Study Group, heard from Joseph Dellapenna and Daniel Turlock, experts in the area of water use law and regulated riparianism, who discussed elements of a regulatory regime for surface water withdrawals the Study Group should consider in developing its recommendations. In their presentation to the Study Group, they emphasized that the first step in the process needs to be development of a registration and reporting program to get an accurate inventory of withdrawal and the quantity of water being withdrawn. They recommended registration and reporting of water use should be required regardless of whether a permit is needed. In addition, they discussed elements the Study Group should consider in developing a permitting program for surface water use which included establishing a withdrawal threshold for permitting and not issuing outright exemptions for sectors, in order to reduce conflicts amongst water users. Further, they emphasized the need for duration limits on permits to ensure the Agency can properly manage surface water resources amongst users and consider the uncertainty with climate change, and that permittees be required to have an alternative plan to meet water needs in the case of a drought situation.

[8] Vermont Agency of Natural Resources – Department of Environmental Conservation, 1992 (revised 2020), Environmental Protection Rule Chapter 21 Water Supply Rule, 239p.

Additionally, the Study Group also invited representatives from two states, Minnesota, and New Hampshire to discuss their water withdrawal regulation programs. Minnesota's water appropriation regulations and permitting program is one of the oldest water management programs in the nation, being established in 1937 when drought conditions effected much of the plains region of North America. The Minnesota program has a regulatory threshold of 10,000 gallons per day and regulates both ground and surface water withdrawals requiring a permit to be obtained and reporting of the water uses with most of its permits being issued for use of groundwater. For surface water withdrawals, the permitting program reviews whether the use is reasonable, potential effects on other water users, and assigns a minimal flow or elevation in which water can be withdrawn. If flow or elevation drops below the minimum level the applicant would need to employ their contingency plan for further water use. Additionally, during times of prolonged drought Minnesota's program set priorities for allocating water to different sectors. While aspects of Minnesota's plan may work for Vermont, there are key differences in how each state manages its water resources, notably that Vermont has already implemented a groundwater withdrawal permitting program which is administered by the Department of Environmental Conservation's Drinking Water and Groundwater Protection Division.[9]

New Hampshire's program focuses specifically on regulation of surface water withdrawals requiring users that meet or exceed its regulatory threshold to register and report water use. Additionally, a water withdrawal that meets this threshold may be required to obtain a water quality certification that the withdrawal will be in compliance with the New Hampshire water quality standards, however, this is not a federal Clean Water Act Section 401 water quality certification. Typically, these certifications can include conditions which may include monitoring of streamflow to determine an allowable withdrawal rate. New Hampshire's program also requires the adoption of a water conservation plan. The elements of the plan include proper metering, water loss reduction be implemented, and outreach to water users to increase awareness. Implementation of the plan occurs during periods of drought when little to no water may be withdrawn from the waterbody. Given the proximity and similarities of how New Hampshire regulates its water resources, there are elements of New Hampshire's program that were considered by the Study Group in developing its recommendations.

V. Recommend whether or not surface water transfers between watershed should occur

In examining the question of whether or not surface water transfers between watershed should occur the Study Group used the Killington-Pico Interconnect as a case study. The Killington-Pico Interconnect transports water from the Killington Resort snowmaking surface water sources to Pico Resort for the purpose of snowmaking. This is the only known interbasin transfer operation in Vermont transporting water from the Ottauquechee River watershed in the

[9] Agency of Natural Resources – Department of Environmental Conservation, 2009, Environmental Protection Rules Chapter 24 Groundwater Withdrawal Reporting and Permitting Rules, 47p.

greater Connecticut River Basin to the Otter Creek watershed in the Lake Champlain Basin. The project was reviewed and issued a Section 401 water quality certification by the Agency in 2019.

As part of the case study, the Study Group reviewed how the Agency applied the Vermont water quality standards to evaluate and condition the water quality certification to ensure the donor and receiving waters and streams for the Killington-Pico project would meet water quality standards. After the review and discussion amongst the Study Group it was determined that the Vermont water quality standards as applied through issuance of a Section 401 water quality certification provides an adequate regulatory criterion and mechanism to evaluate and regulate interbasin transfers in Vermont. Therefore, the Study Group is recommending that interbasin transfer be allowed to occur if they are found to be in compliance with the Vermont water quality standards.

However, Section 401 water quality certification is only triggered when a federal permit is needed for a project, leaving a gap in the Agency's existing authority to regulate and condition interbasin transfer projects that do not trigger Section 401 review. To fill the existing regulatory gap with respect to interbasin transfers, the Study Group recommends the Agency be given the authority to review transfer of water between watersheds with a hydrologic unit code (HUC) of 6 based on U.S. Geological Survey classification system[10] to ensure water quality standards. This review process would be similar to water quality certification process, but differ as it would not be under Section 401 of the federal Clean Water Act. Additionally, the Study Group acknowledged that there may be transfers between small watersheds that may need to be reviewed for compliance with water quality standards, therefore, the Study Group recommends legislative changes to provide the authority to the Agency to review and require conditions for other transfers of water that may not be in compliance with the Vermont water quality standards. Further, the Study Group recommends that this authority be effective upon enactment.

The proposed legislative changes to implement the recommendations of the Study Group to create the authority for a review of interbasin transfers between HUC 6 basins for compliance with the water quality standards are in Appendix B.

VI. Identify whether the State of Vermont should develop and implement a statewide permitting or other regulatory regime for diversions or other transfers of surface water

The work of the Study Group identified information and regulatory gaps in Vermont's existing regulatory regimes for surface water withdrawals. To fill these gaps, the Study Group recommends that Vermont adopt a phased approached. The first phase would be the adoption of a registration and reporting program to be administered by Agency to fill the information gap on the existing water withdrawals and the quantity of surface water being withdrawn in the Vermont. Registration and reporting information would be collected for two years. For the

[10] Seaber, P.R., F.P. Kapinos, and G.L. Knapp, 1987. Hydrologic Unit Maps. U.S. Geological Survey Water-Supply Paper 2294. http://pubs.usgs.gov/wsp/wsp2294/pdf/wsp_2294.pdf.

second phase, the Study Group recommends that the Agency uses the information collected as part of the registration and reporting program to develop a permitting program for surface water withdrawal. This would include establishing thresholds of water use for a water withdrawal to obtain permit. The specific details of the Study Group's recommendations are below.

A. Surface water withdrawal registration and reporting program

As discussed in Section III(A), there is currently limited information about the amount of surface water withdrawn in Vermont. The first phase of the Study Group's recommendation is for the Agency to create a surface water registration and reporting program to collect information on surface water use in the State. The registration and reporting program should be implemented by the Agency by January 1, 2023. The recommendation from the Study Group is that all users that withdraw 5,000 gallons or more of water in a 24-hour period register and report their water use to the Agency of Natural Resources. The Study Group selected the threshold of 5,000 gallons water to capture a wide array of potential water withdrawals while still excluding residents that may withdraw water intermittently to water their gardens or for other domestic uses. Additionally, the threshold was selected based on the fact that most of Vermont's rivers and streams are relatively small and can be negatively affected by excessive water withdrawal.

The Study Group recommends that information collected during the registration include the location of each withdrawal, and name of each effected surface water, the frequency of use of the withdrawal, the rate of withdrawal, and the capacity of the system to be used for withdrawing water. Additionally, the registration should describe how the water withdrawn will be used along with a schedule for the withdrawal of water, which will provide information of the potential seasonality of the use of the surface water source. Further, a person with a registered surface water withdrawal shall file an annual report with the Agency by January 15. The recommendation is that report include, at a minimum, the total amount of water withdrawn in each month for each surface water withdrawal, the daily maximum withdrawal for each month, and the date of daily maximum withdrawal occurred. For withdrawals between 5,000 and 50,000 gallons of surface water in a 24-hour period can either provide an estimate of the total volume or provide meter data of the withdrawals, whereas withdrawals of more than 50,000 gallons in a 24-hour period should provide meter data for their annual water use report.

The intent of the registration and reporting program is to collect baseline information on surface water withdrawal that are not currently regulated or reporting water use the Agency. As described above, there are sectors, such as water used for snowmaking and public water supply, that are currently reporting their water use to the State. Therefore, the Study Group recommends that sectors already reporting be given an exception from the registration and reporting program. These include surface water withdrawals for snowmaking that are required to report under 10 V.S.A. Chapter 41, Subchapter 3, surface water withdrawals approved pursuant to 10 V.S.A. Chapter 56, public water supply, or any other surface water withdrawal reporting similar information and data to the Agency. Additionally, the Study Group recommends that surface

water withdrawals needed for fire suppression or other public emergency response purposes not be required to register or report.

The proposed legislative changes to implement the recommendations of the development of a registration and reporting program for surface water withdrawals are included in Appendix B.

B. Surface water withdrawal permitting program

The second phase of the Study Group's recommendation directs the Agency to develop a permitting program for surface water withdrawals on or before July 1, 2026. The permitting program would use the information from the registration and reporting program to develop rules for the program that would set water withdrawal thresholds and requirements that would require a permit. Additionally, the rules for the permitting program would establish requirements as it relates to efficient use and conservation of surface water, ensure that withdrawals comply with the Vermont water quality standards, and establish limitations on withdrawals based on low flow or drought conditions and development for alternatives to meet water needs in such cases.

In evaluating a proposed water withdrawal under the program, the Study Group recommends that the application process include an alternatives analysis to the proposed water withdrawal that may have less of an impact on surface water quality or quantity. The preferred alternative would be the one that is reasonable and feasible, with reasonable and feasible being defined as available and capable of being implemented after consideration of cost, existing technology, logistics in light of the overall project purpose, environmental impact, and ability to obtain all necessary approvals for implementation. The use of an alternatives analysis approach is similar to the process used by the Agency to approve water withdrawals for snowmaking under 10 V.S.A. Chapter 41, Subchapter 3 which has been effective from the Agency's experience in reviewing such water withdrawal proposals.

In addition to an alternatives analysis, it is recommended that an application also include the following:

- the location of each withdrawal, including the identification and type of each impacted surface water;
- a description of the use or uses of the water to be withdrawn;
- a description of the proposed method of water withdrawal;
- the frequency and rate of the withdrawal;
- an estimated schedule for the withdrawal;
- the capacity of the system to be used for the withdrawal;
- the location of the proposed return flow of the withdrawn water, and whether the withdrawal is an interbasin transfer;
- an estimate of the volume of water needed for the proposed use or uses;

During the Study Group's work, we heard from legal experts on regulated riparianism that permits issued for water withdrawals should have a set duration of time and a requirement for re-application to continue the withdrawal of water. The importance of a duration limit on permits is

it provides a point to assess surface water withdrawals and whether they are still actively being used, allowing the Agency to better manage surface water resources. For example, if a permittee is no longer using the surface water withdrawal or using less water than they initially believe was needed, having a duration limit to reassess the use of the surface water withdrawal may provide additional opportunities to other users of surface water in the same watershed. Further, considering Vermont's changing climate having a duration limit on permits may provide a means for the Agency or surface water users to adapt in how we use or manage our surface water resources.

In recommending that the Agency develop a permitting program for surface water withdrawals, it is important to the Study Group that those operating an existing withdrawal be given time to come into compliance before requiring a permit. Therefore, the Study Group recommends that existing water withdrawals not be required to obtain a permit until July 1, 2030, with an existing water withdrawal being defined as one that does not increase its withdrawal rate or capacity of the system after January 1, 2023. Existing systems would still be required to register the water withdrawal and file annual water use reports with the Agency as part of the registration and reporting program. If a system increases, its withdrawal rate or capacity of the system during this period it would require a permit.

Further, the Study Group acknowledged that some sectors that rely on water withdrawal already have an extensive review process as required by an existing environmental rule. Most notable of these is water withdrawals used for snowmaking. It is not the intent of the Study Group to create another level of review for these proposals, but it is recommended that proposals that are being reviewed as part of the environmental rule for water withdrawals for snowmaking be able to obtain a permit under the surface water withdrawal permitting program. This approach would limit redundancy and create a more efficient process for the regulated community and Agency staff.

While developing a permitting program for water withdrawals is an important step in ensuring the Agency can properly manage the use of surface water in Vermont, it is also important that the Agency have the proper authority to seek compliance or require a user to obtain a permit, if the water withdrawal is deemed to be having a deleterious effect on the surface water resource and is not meeting Vermont water quality standards. Therefore, the Study Group recommends that the Agency be given the authority to require a person to obtain a surface water withdrawal permit when it is determined that a water withdrawal or transfers that are not meeting Vermont water quality standards.

Lastly, the Study Group recommends that the Agency go through the rulemaking process to implement the surface water withdrawal permitting program. This is a necessary step as the permitting program requirements and water withdrawal threshold will be developed using the information and data collected as part of the registration and reporting program. Further the

rulemaking process will ensure that sectors represented by the Study Group members and others will have input in the development of the program.

APPENDIX A

Surface Water Diversion and Transfer Study Group Members

Jeff Crocker, Supervising River Ecologist
Vermont Agency of Natural Resources
Department of Environmental Conservation
Watershed Management Division
One National Life Drive, Davis 3
Montpelier, VT 05620-3522
Jeff.Crocker@vermont.gov

Ryan Patch, Deputy Director
Vermont Agency of Agriculture, Food and Markets
Water Quality Section
116 State Street
Montpelier, VT 05620-2901
Ryan.Patch@vermont.gov

Senator Christopher Bray
Senate Natural Resources and Energy Committee, Chair
115 State Street
Montpelier, VT 05633
cbray@leg.state.vt.us

Representative Kari Dolan
House Committee on Natural Resources, Fish, and Wildlife, Clerk
115 State Street
Montpelier, VT 05633-5301
kdolan@leg.state.vt.us

Jeffrey Nelson, Strategic Advisor
VHB
40 IDX Drive
Building 100, Suite 200
South Burlington, VT 05403-7771
jnelson@vhb.com

Jason Shattie, General Manager
Burlington Country Club
568 South Prospect Street
Burlington VT 05401
Jason.Shattie@burlingtoncountryclub.org

Jon Groveman, Policy and Water Program Director
Vermont Natural Resource Council
11 Baldwin Street
Montpelier, VT 05602
jgroveman@vnrc.org

David Deen, President
Trout Unlimited, Connecticut River Valley Chapter
5607 Westminster West Road
Westminster, VT 05346
strictlytrout@@vermontel.net

Evan Fitzgerald, Hydrologist
Fitzgerald Environmental Associates, LLC.
18 Severance Green, Suite 203
Colchester, VT 05446
Evan@fitzgeraldenvironmental.com

Sam Markowski
Vermont Terps / Markowski Excavating, Inc
2704 West Creek Road
Florence, VT
sam@markowskiex.com

APPENDIX B

Proposed legislative changes to implement the recommendations of the Study Group

Outline of Proposed Changes to Title 10 V.S.A. chapter 41
(Regulation of Stream Flow):

- Section 1 – Adds new surface water withdrawal/interbasin transfer definitions to section 1002.
- Section 2 – Adds new Subchapter 4:
    - Subchapter 4 (Surface Water Withdrawals and Interbasin Transfers)
        - 1041. Policy
        - 1042. Registration and Reporting; Exceptions
        - 1043. Permit Requirement; Program Development
        - 1044. Interbasin Transfers of Surface Waters
        - 1045. Rulemaking
- Section 3 - Amends 1253(h)(1) to include interbasin transfers

Sec. 1. 10 V.S.A. § 1002 is amended to read:

§ 1002. DEFINITIONS

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(12) ~~"Berm means a linear fill of earthen material on or adjacent to the bank of a watercourse that constrains waters from entering a flood hazard area or river corridor, as those terms are defined in subdivisions 752(3) and (11) of this title.~~"Basin" means the third-level, 6-digit unit of the hydrologic unit hierarchy as defined by the United States Geological Survey (USGS), Federal Standards and Procedures for the National Watershed Boundary Dataset, Chapter 3 of Section A, Book 11. "Basin" is also referred to as "Hydrologic Unit Code 6" or "HUC-6".

(13) "Berm means a linear fill of earthen material on or adjacent to the bank of a watercourse that constrains waters from entering a flood hazard area or river corridor, as those terms are defined in subdivisions 752(3) and (11) of this title.

(14) ~~"Large woody debris" means any piece of wood within a watercourse with a diameter of 10 or more inches and a length of 10 or more feet that is detached from the soil where it~~

~~grew.~~"Capacity" means the maximum volume of water capable of being withdrawn by the water withdrawal system.

(15) "Existing surface withdrawal" means a surface water withdrawal that exists prior to January 1, 2023.

(16) "Frequency" means how often water will be withdrawn from a surface water over a period of time.

(17) "Interbasin transfer" means the conveyance of surface water withdrawn from a basin for use in another basin.

(18) "Large woody debris" means any piece of wood within a watercourse with a diameter of 10 or more inches and a length of 10 of more feet that is detached from the soil where it grew.

(19) "Rate of withdrawal" means the volume of surface water that is withdrawn over a period of time, as reported in gallons per minute.

(20) "Reasonable and feasible" means available and capable of being implemented after consideration of cost, existing technology, logistics in light of the overall project purpose, environmental impact, and ability to obtain all necessary approvals for implementation.

(21) "Surface water" means all rivers, streams, creeks, brooks, reservoir, ponds, lakes, and springs and all bodies of surface waters, that is contained within, flows through, or borders upon the State or any portion of it. "Surface water" shall not include the following:

(A) groundwater as defined in 10 V.S.A. § 1391;

(B) artificial waterbodies as defined under section 29A-101(d) of the Vermont Water Quality Standards;

(C) waste treatment systems, including waste management systems constructed as part of Best Management Practices under 6 V.S.A. Chapter 215;

(D) treatment ponds, lagoons, or wetlands created solely to meet the requirements of a permit issued for a discharge; and

(E) constructed ponds or other impoundments that are used for irrigation or watering of livestock and that are not subject to the Vermont Water Quality Standards.

(22) "Vermont Water Quality Standards" means the standards adopted pursuant to chapter 47 and subdivision 6025(d)(3) of this title.

(23) "Withdrawal" means the intentional diversion from a surface water by pumping, gravity, or other method for the purpose of being used for irrigation, industrial uses, snowmaking, livestock watering, water supply, aquaculture, or other off-stream uses." "Withdrawal" shall not include hydroelectric projects that are regulated by the Federal Energy Regulatory Commission or the Public Utility Commission. "Withdrawal" shall not include direct consumption of surface water by livestock.

(24) "Watershed" means a region containing waters that drain into a particular brook, stream, river, or other body of water.

Sec. 2. 10 V.S.A. chapter 41, Subchapter 4, is added to read:

Subchapter 4: Surface Water Withdrawals and Interbasin Transfers

§ 1041. POLICY ON SURFACE WATER WITHDRAWALS FOR OFF-STREAM USES OTHER THAN SNOWMAKING

(a) This subchapter is intended to establish policy and standards for surface water withdrawals that are consistent with 10 V.S.A. § 1001 and 10 V.S.A Chapter 47, including the Vermont Water Quality Standards.

(b) The policy established under this subchapter is to:

(1) assure the protection, maintenance, and restoration of the chemical, physical, and biological water quality, including water quantity, necessary to sustain aquatic communities and stream function;

(2) help to provide for and enhance the viability of those sectors and industries, which rely on the use of surface waters and are important to Vermont's economy;

(3) permit surface water withdrawals and the construction of appurtenant facilities and related systems for uses other than snowmaking, based on an analysis of the need for water and the consideration of alternatives, and consistent with this and related policies and other applicable laws and rules; and

(4) recognize that existing users of the State's waters for off-stream uses, which may have an adverse effect on water quality, should have time and opportunity to improve water quality.

§ 1042. REGISTRATION AND REPORTING; EXCEPTIONS

(a) Registration. Effective January 1, 2023, any person withdrawing 5,000 gallons or more of surface water within a 24-hour period shall register with the Secretary. Registration shall be made on a form provided by the Secretary, and shall include the following information:

(1) the location of each withdrawal, including each impacted surface water;

(2) the frequency and rate of each withdrawal;

(3) a description of the use or uses of the water to be withdrawn;

(4) the capacity of the system to be used for the withdrawal; and

(5) a schedule for the withdrawal.

(b) Report. Effective January 1, 2023, a person that is required to register a surface water withdrawal pursuant to subsection (a) of this section shall file an annual report with the Secretary in accordance with this subsection. Reports shall be filed annually by January 15 of the following year.

(1) Contents. The report shall be made on a form provided by the Secretary, and shall include the following information:

(A) the total amount of water withdrawn each month;

(B) the location of each withdrawal, including each impacted surface water;

(C) the daily maximum withdrawal for each month;

(D) the date of daily maximum withdrawal; and

(E) any other information required by the Secretary.

(2) Methods of estimating withdrawals. The following methods shall be used to report the amounts of withdrawn surface water required to be reported:

(A) Withdrawals of between 5,000 and 50,000 gallons of surface water in a 24-hour period shall either provide an estimate of total volume or provide meter data. The report shall describe how any estimate was calculated.

(B) Withdrawals of more than 50,000 gallons of surface water in a 24-hour period shall provide meter data.

(c) Exceptions. The following withdrawals shall not be subject to the requirements of subsections (a) (registration) and (b) (reporting) of this section:

(1) Surface water withdrawals for fire suppression or other public emergency response purposes.

(2) Surface water withdrawals required to report under Subchapter 3 of this title for snowmaking uses.

(3) Surface water withdrawals approved pursuant to 10 V.S.A. chapter 56 (public water supply) and the rules adopted thereunder for use as a public drinking water supply.

(4) A surface water withdrawal reported to the Agency under any project that requires the reporting of substantially similar data.

§ 1043. PERMIT REQUIREMENT; PROGRAM DEVELOPMENT

(a) Program development. On or before July 1, 2026, the Secretary shall implement a surface water withdrawal permitting program that is consistent with section 1041 of this subchapter. The program shall be developed to:

(1) require a permit or other authorization for surface water withdrawals based on potential impacts to surface waters or other factors, and establish conditions of operation necessary to protect surface waters and the Vermont Water Quality Standards;

(2) consider surface water withdrawal registration and reporting information submitted pursuant to section 1042 of this chapter in the establishment of permitting thresholds and other permitting requirements;

(3) require efficient use and conservation of surface water;

(4) ensure that withdrawals comply with the Vermont water quality standards;

(5) establish limitations on withdrawals based on low flow or drought conditions and the development of potential alternatives to meet surface water withdrawal needs in such cases;

(6) require assessment of any reasonable and feasible alternatives to proposed withdrawals that may have less of an impact on surface water quality.

(b) Application. Application for a permit to withdraw surface water under the program established under subsection (a) of this section shall be made on a form provided by the Secretary, and shall include the following information:

(1) the location of each withdrawal, including the identification and type of each impacted surface water;

(2) a description of the use or uses of the water to be withdrawn;

(3) a description of the proposed method of water withdrawal;

(4) the frequency and rate of the withdrawal;

(5) an estimated schedule for the withdrawal;

(6) the capacity of the system to be used for the withdrawal;

(7) the location of the proposed return flow of the withdrawn water, and whether the withdrawal is an interbasin transfer;

(8) an estimate of the volume of water needed for the proposed use or uses;

(9) a description of the alternative means considered for the proposed uses of water that will have less of an impact on surface water quality; and

(10) any other information required by the Secretary.

(c) Permits. The Secretary may issue a general permit to authorize certain withdrawal activities. A permit issued under this subchapter shall be for a period of no longer than 10 years from the date of issuance.

(d) Exceptions. A permit required under this subchapter shall not be required for surface water withdrawals for fire suppression or other public emergency response purposes.

(e) Existing surface water withdrawals.

(1) Snowmaking withdrawals. Existing withdrawals approved pursuant to subchapter 3 of this chapter (water withdrawals for snowmaking) shall be reviewed pursuant to subdivision (f)(1) of this section.

(2) Non-snowmaking withdrawals.

(A) A permit required under this subchapter shall not be required until July 1, 2030 for an existing surface water withdrawal for non-snowmaking purposes, provided:

(i) the existing surface water withdrawal is both registered and reported to the Secretary pursuant to section 1042 of this section on an annual basis; and

(ii) no expansion of the existing surface water withdrawal occurs on or after January 1, 2023. For purposes of this subdivision, an expansion includes an increase in reported surface water withdrawal rate or volume or increase in reported capacity of the system.

(f) Surface water withdrawals for snowmaking.

(1) Existing withdrawals. Existing surface water withdrawals for snowmaking purposes that have been reviewed and approved pursuant to subchapter 3 of this chapter (water withdrawals for snowmaking) shall not require additional technical review by the Secretary under this subchapter provided that the approved snowmaking activity is operated in compliance with the terms and conditions of the Secretary's approval. For such activities, the Secretary may issue a permit under the rules adopted pursuant to this subchapter.

(2) New withdrawals. Proposed surface water withdrawals for new snowmaking activities that require review pursuant to subchapter 3 of this chapter shall be reviewed by the Secretary in accordance with the rules adopted pursuant to § 1032. If the Secretary determines

that the proposed activity is consistent with those rules, the Secretary shall issue a permit required by § 1045 of this section for that activity.

(g) Enforcement.

(1) The Secretary may require a person to obtain a permit under this subchapter when the Secretary, in her or his discretion, determines that a withdrawal or other action circumvents the requirements of this subchapter.

(2) If the Secretary finds that a withdrawal subject to this subchapter results in the construction, installation, operation, or maintenance of any facility or condition that results in or can reasonably be expected to result in a violation of the Vermont Water Quality Standards, the Secretary may issue an order establishing reasonable and proper methods and procedures for the control of that activity in order to reduce or eliminate the violation.

(h) Reservation. Nothing in this subchapter shall be interpreted to supersede, limit, or otherwise effect the Secretary's authority to take action pursuant to 10 V.S.A. § 1272, this chapter, or other applicable provision of law or rule.

§ 1044. INTERBASIN TRANSFERS OF SURFACE WATERS

(a) Review of HUC 6 interbasin transfers. The Secretary shall review any interbasin transfer as that term is defined in § 1002 of this subchapter pursuant to the Vermont Water Quality Standards and other requirements of State law listed in 10 V.S.A. § 1253(h)(1). This review shall be in addition to any applicable standards and permitting requirements adopted pursuant to subsection 1043(a) of this section.

(b) Review of other transfers likely to violate Vermont Water Quality Standards. The Secretary may review any other surface water withdrawal that includes the transfer of surface water from one watershed to another watershed under the requirements of subsection (a) of this section if the

Secretary determines that the activity is likely to result in a violation of the Vermont Water Quality Standards. The Secretary shall make a determination under this section based on a review of information set forth under subsection 1043(b) of this section that is readily available to the Secretary.

§ 1045. RULEMAKING.

(g) Rulemaking. The Secretary shall adopt rules to implement this Subchapter.

Sec. 3. 10 V.S.A. § 1253(h)(1) is amended to read:

§ 1253(h)(1) The Secretary shall administer a Clean Water Act Section 401 certification program to review activities that require federal license or permit, or activities that are subject to regulation under chapter 41, subchapter 4 (interbasin transfers of surface water) of this title, to ensure that a proposed activity complies with the Vermont Water Quality Standards, as well as with any other appropriate requirement of State law, including:

(A) 10 V.S.A. chapter 37 (wetlands protection and water resources management);

(B) 10 V.S.A. chapter 41 (regulation of stream flow);

(C) 10 V.S.A. § 1264 (stormwater management);

(D) 29 V.S.A. chapter 11 (management of lakes and ponds); and

(E) the Agency of Natural Resources Rules for Water Withdrawals for Snowmaking.

APPENDIX C

Statements from the Committee Members

11/30/2021

VTGCSA Comments to Act 173 Surface Water Diversion and Transfer Study Group

Re: Draft Bill (version dated 11/16/2021)

Golf course superintendents in Vermont are educated and highly trained individuals who manage golf course properties with an emphasis on environmental stewardship. The Vermont Golf Course Superintendent Association (VTGCSA) prides itself on responsible land management; we are dedicated to the preservation and proper management of lands where the game of golf is enjoyed. Golf courses are long-standing operators in their communities. VTGCSA's sister organization, the Vermont Golf Association, was established in 1902. Today, over 60 golf clubs currently operate in Vermont, either as part of a greater resort or as standalone properties.

Golf course superintendents work closely and transparently with their regulators to ensure compliance with state oversight. Golf courses are regulated by the Vermont Agency of Agriculture and must have Integrated Pest Management (IPM) and Nutrient Management plans. As part of the IPM plan they submit an irrigation plan to the Agency of Agriculture to ensure protection of surface waters and wetlands. In short, golf courses are subject to substantial oversight. In addition, in 2020, the VTGCSA, along with academic stakeholders including the University of Massachusetts and University of Connecticut, published a Best Management Practices manual for golf course operations. These BMPs contain an extensive set of recommendations including water budgeting, drought planning and water conservation planning.

In terms of surface water usage, we are undertaking a survey to determine the extent to which the proposed draft bill language will be applicable to the golf industry. Our understanding is that one of the main driving factors is trying to get a handle on currently unregulated withdrawals

24 BOWMAN RD VERGENNES VT 05491
VTGCSA@GMAIL.COM - WWW.VTGCSA.COM

and uses. Although our survey is just beginning, we wanted to flag a number of considerations for the working group that we can discuss further when we have more complete information:

- We believe a number of golf courses are already under varying degrees of state oversight with regard to surface water usage. For example, a number of golf courses have been permitted through Act 250 and have water usage conditions in them.
- Some golf courses irrigate using water held in snowmaking ponds and water usage is analyzed as part of that separate regulatory process.
- We are also aware of golf courses whose surface water withdrawals from streams are already regulated and are based on instream staff gauge readings agreed upon with the state.
- Other golf courses utilize water for irrigation from artificial ponds, which are replenished by runoff and/or groundwater inflows, and do not involve a surface water withdrawal.

In summary, we want to make sure the working group understands the full extent of how golf course water usage is already regulated as a long-standing practice and are not part of the largely unknown universe of other water withdrawals that the working group is trying to get a better understanding of with the creation of a new program.

With that being said, the VTGCSA does not oppose the establishment of a registry as proposed in the draft bill, and we understand that this could be useful in cataloging the various withdrawals occurring from surface waters throughout the state. To the extent that this information is already available from other programs, we hope that information will be useful. As for the creation of a new permitting program, at the appropriate time, the VTGCSA would like to discuss whether or not such a program is needed for golf courses generally, or golf courses where other state oversight is already in place.