BLUE BTV – Year 1 Report

Residential Stormwater Incentive Program

Introduction

This report outlines the work completed for the BLUE BTV Residential Stormwater Incentive Program from January 1, 2022, to June 30, 2023. This project is a collaborative effort between the City of Burlington, Fitzgerald Environmental Associates (FEA), Just Water Consulting (JWC), Lake Champlain Sea Grant (LCSG), and the University of Vermont. BLUE BTV aims to incentivize the installation of small-scale green stormwater infrastructure (GSI) treatment and retention systems to reduce phosphorus loading and stormwater runoff from residential properties within the City of Burlington. The secondary goal of the program is to provide outreach and education to residents regarding water quality and the importance of stormwater management. This project aims to increase awareness about stormwater issues by incentivizing proper stormwater management and educating the community about the importance of best management practices.

Methodology

In February 2022, the project team commenced monthly meetings to initiate the program and coordinate team member responsibilities. From late winter to early spring, subgroups created water quality education materials, a site assessment tool, design guidance standards [Basis of Design] for constructed practices, and a process for rebate administration. Some aspects of the program were carried forward from previous versions of the BLUE Stormwater Program and from the BLUE BTV Pilot program that ran from 2017-2020. More information about the decade-long history of the BLUE program can be found here. Lake Champlain Sea Grant, with funding support from the City of Burlington, hired a full-time staff member for the 2022 field season to conduct site assessments.

Outreach to advertise the program to Burlington residents began in May 2022 and assessments started in June. The BLUE BTV Team contracted with Pluck to produce branded digital materials to advertise the program in Google ads for eight weeks. This information was also posted on social media and on Front Porch Forum throughout the City of Burlington. These advertising efforts encouraged interested homeowners to sign up for free stormwater site evaluations of their properties. These efforts, specifically Front Porch Forum, generated interest very quickly.

Residents of Burlington sign up for free BLUE BTV stormwater evaluations via a link on the City of Burlington website. Once a visit is scheduled, BLUE staff conduct a "desktop assessment" to gather information from ANR Natural Resource Atlas and from City of Burlington resources. Examples of these points of interest include the hydrologic soil classification, square footage of impervious surfaces on the property, and identity of the subwatershed, or the sewer and stormwater collection system, where the property is located. Stormwater leaving a property in Burlington either flows into the City's combined sewer systems (CSS) or discharges to a waterway, like Potash Brook or the Winooski River.

During the site evaluation, BLUE BTV staff members meet the resident at their property to discuss and observe stormwater impacts and management specific to their site. BLUE BTV staff ask a set of questions to understand how and where water flows on the property. They walk around the property to assess driveways, walkways, roofs and gutters, and any existing stormwater management features. Additionally, the evaluator asks the resident questions regarding household habits, such as their lawncare practices and disposal of contaminating household materials, to encourage best practices. They use the ESRI Survey123 application to collect this information and capture photos on site. Upon completion of each evaluation, a BLUE report is compiled, which details the assessed property and provides recommendations for where GSI could effectively improve the property's infiltration and stormwater runoff mitigation capacity. Examples of these GSI improvements range from low-complexity solutions, such as downspout disconnection, to complex, engineered practices, including rain gardens and permeable driveways. The recommendations are meant to provide feasible ways for residents to treat as much stormwater as possible on their property and remove it from Burlington's separate and combined stormwater collection systems.

When completed reports are sent to residents, they may decide to move forward with recommended GSI project(s). **Figure 1** shows the project installation and rebate approval process. If the resident opts to implement one or more of the recommended practices, LCSG staff will work with them alongside FEA staff to ensure the project meets the BLUE BTV Design Standards. For infiltration practices, BLUE BTV team members will visit the property to conduct a soil infiltration test to determine suitability and to inform project designs. Residents may decide to self-install a project or hire an outside contractor to complete the work. Staff from FEA and JWC provide construction oversight during project installation. Once the project is completed and inspected, residents can apply to receive a rebate of up to $1,000 from the City for their new installation.

Rebate eligibility:

- The project follows design specifications in the BLUE BTV Basis of Design
- The project directs runoff away from the Burlington right-of-way.
- The project encourages infiltration of stormwater onsite.
- Unique projects outside of the Basis of Design may be approved by the BLUE BTV Team.

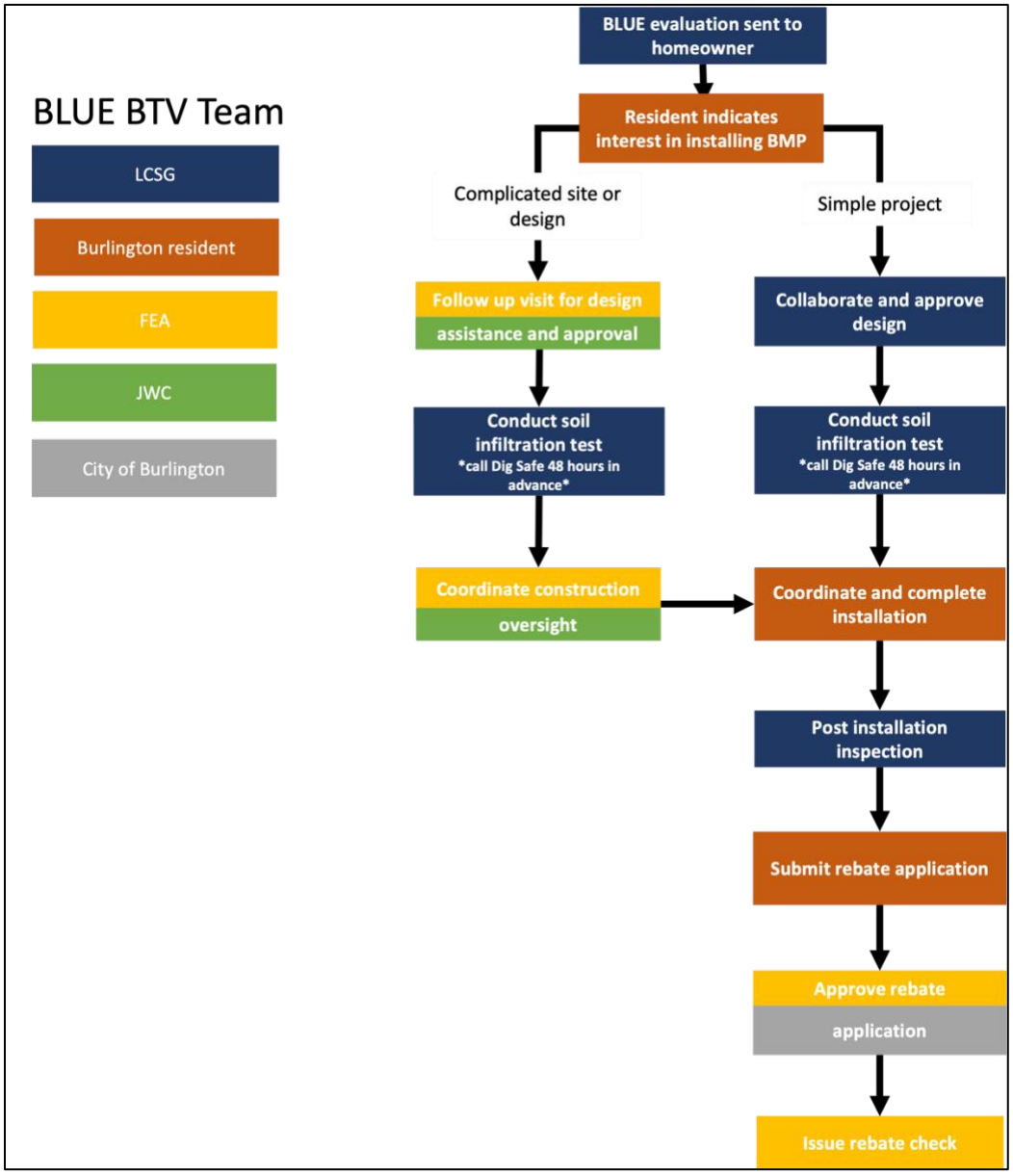

Figure 1: Process flow chart showing roles and responsibilities for the project approval and rebate eligibility process.

Results

BLUE BTV personnel completed a total of 60 residential stormwater evaluations between 1/1/2022 and 6/30/2023. These assessments followed the methods outlined above. The properties

assessed were located across the entire City of Burlington (see **Figure 2**). Stormwater assessors provided homeowners with informational materials about lawn care practices, the economics of water quality, cyanobacteria, driveway maintenance, and combined sewer overflows. These materials, and the conversations with trained assessors, served to inform community members about the water quality issues facing Lake Champlain, and the ways that residents can help.

There was a wide range of preexisting knowledge about stormwater issues among the homeowners who participated in the program. Many homeowners had minimal knowledge about stormwater and its effects on Lake Champlain. These participants primarily signed up for assessments to learn more about stormwater and to explore their options for GSI practices. A few of the homeowners were very knowledgeable, and some had already installed GSI practices on their properties. These individuals often signed up for assessments to receive feedback on the efficacy of their residential stormwater practices, and for recommendations on other practices they could install. Multiple participants from across this range of knowledge expressed interest in implementing new stormwater practices.

The BLUE BTV Team provided interested homeowners with the Basis of Design document to guide the installation of new residential stormwater practices. This document served as sufficient guidance for most installations. The BLUE BTV Team produced site-specific designs for some of the more complex properties to supplement the design guidance. For any stormwater practice that was installed as part of the Blue BTV program, a member of the BLUE BTV Team always inspected the site to ensure proper installation. The homeowners who installed GSI practices that met the standards of the program received rebates to reimburse them for a portion of the cost of the installed practice.

The residential stormwater incentive program provided over $7,000 in rebates to 12 homeowners in this period. During this time, rebates were awarded for the following practices: permeable driveways, gutter replacements, downspout disconnection, infiltration trenches, and rain barrels. Other practices that qualify for rebates through this program are: rain gardens/bioretention, infiltration basins, dry wells, rainwater cisterns, water bars, and vegetated swales (See Basis of Design). There are five projects underway as of June 30, 2022, that will likely qualify for rebates when completed.

Practice Type	Number of Practices Installed
Permeable driveways	**5**
Rooftop disconnection and gutters	**4**
Infiltration trenches	**2**
Rain barrels	**2**

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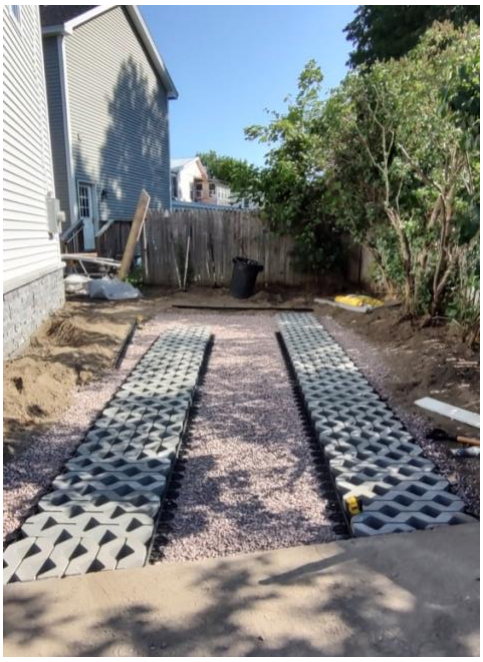
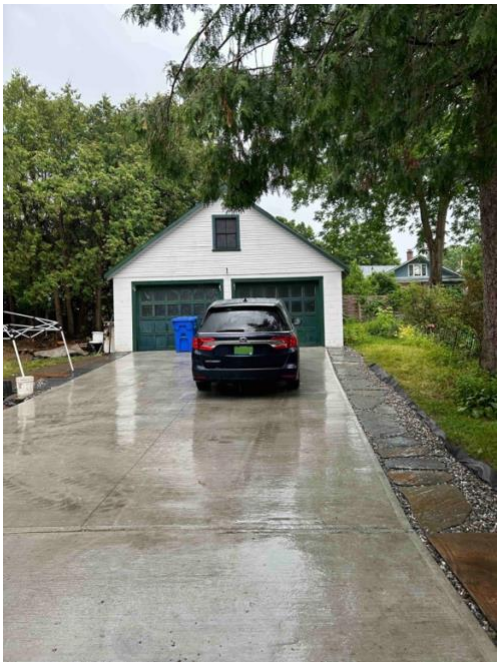
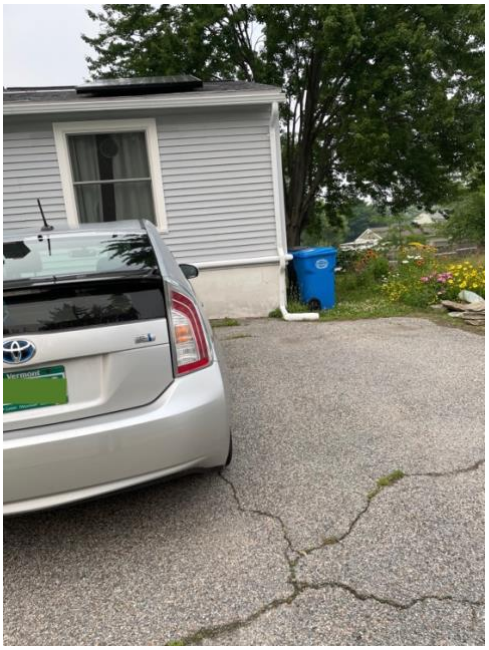
Examples of completed BLUE BTV GSI Projects:





[left] Permeable ribbon strip driveway installation. [Right] Driveway infiltration trench.



[left] Gutter and rain barrel. [right] Rooftop disconnection.

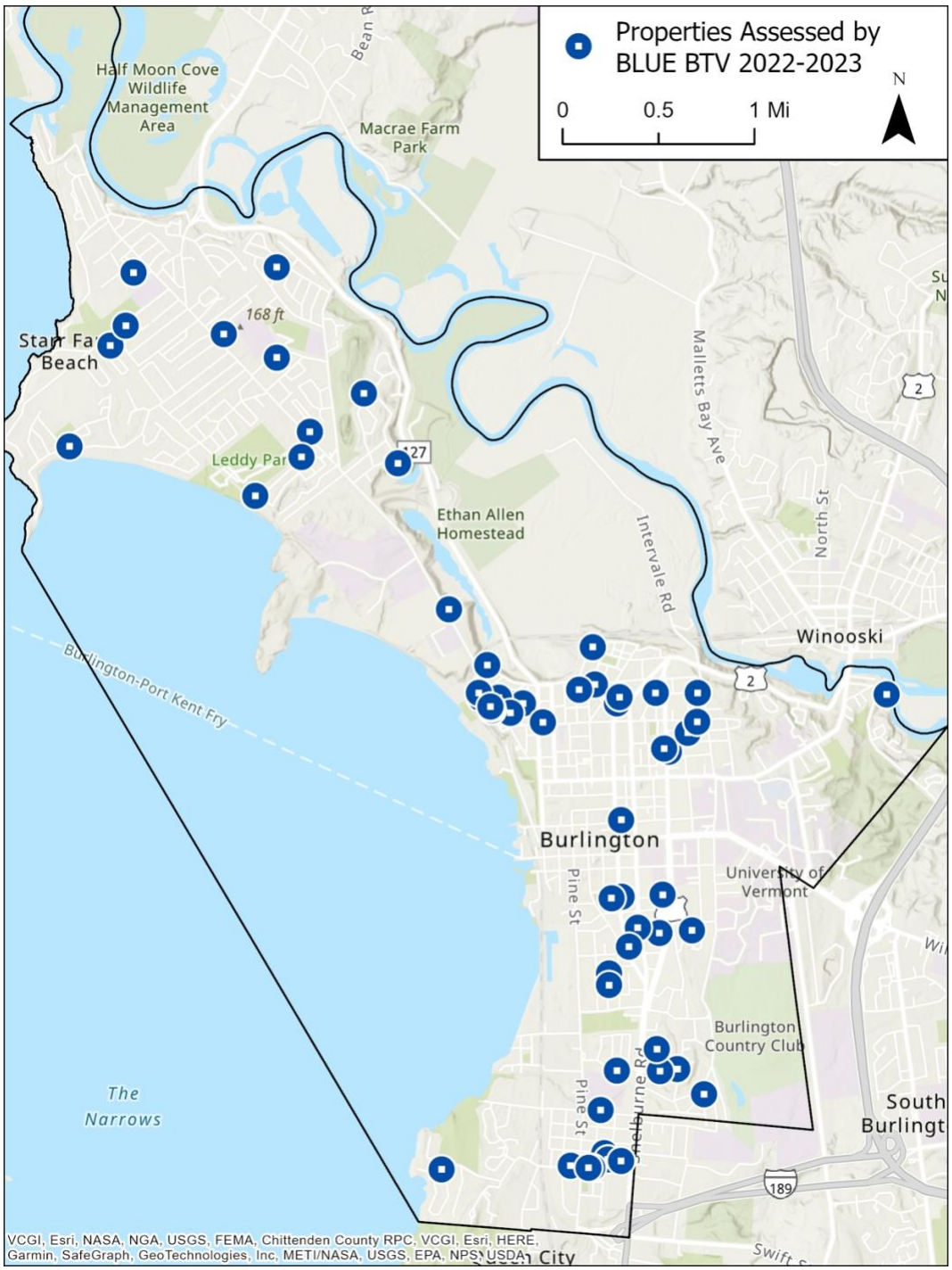


Figure 2: Map of properties assessed through the Residential Stormwater Incentive program between January 2022 and June 2023. * Mapped locations of properties are approximate.

Conclusion

Residential GSI helps mitigate water quality impacts from properties in the City of Burlington. Because this program is non-regulatory and participation is voluntary, landowners can decide for themselves what they want to change about the land use on their properties. Through community outreach and education, residents will gain a better understanding of the importance of stormwater management. They will see their neighbors committing to practices like GSI, raising lawnmower blades, and stormwater retention practices. This will change attitudes surrounding stormwater management on the community scale, leading to a cleaner and healthier lake.

By focusing these efforts in stormwater-impaired watersheds and areas with combined sewer systems, this program can further reduce the impact that private properties have on Lake Champlain. A reduction in the total volume of stormwater that the combined sewer systems receive can help to control the number of overflow events that occur. Residential GSI is also important in areas that drain directly into receiving waters. Treating stormwater removes harmful pollutants and nutrients before the water flows into rivers and lakes. Untreated stormwater runoff contributes to the cyanobacteria blooms that Lake Champlain experiences every year. BLUE BTV assessments are conducted in all areas of the city, including areas that drain directly into waterways and areas that contribute to water treatment facilities (See **Figure 3**).

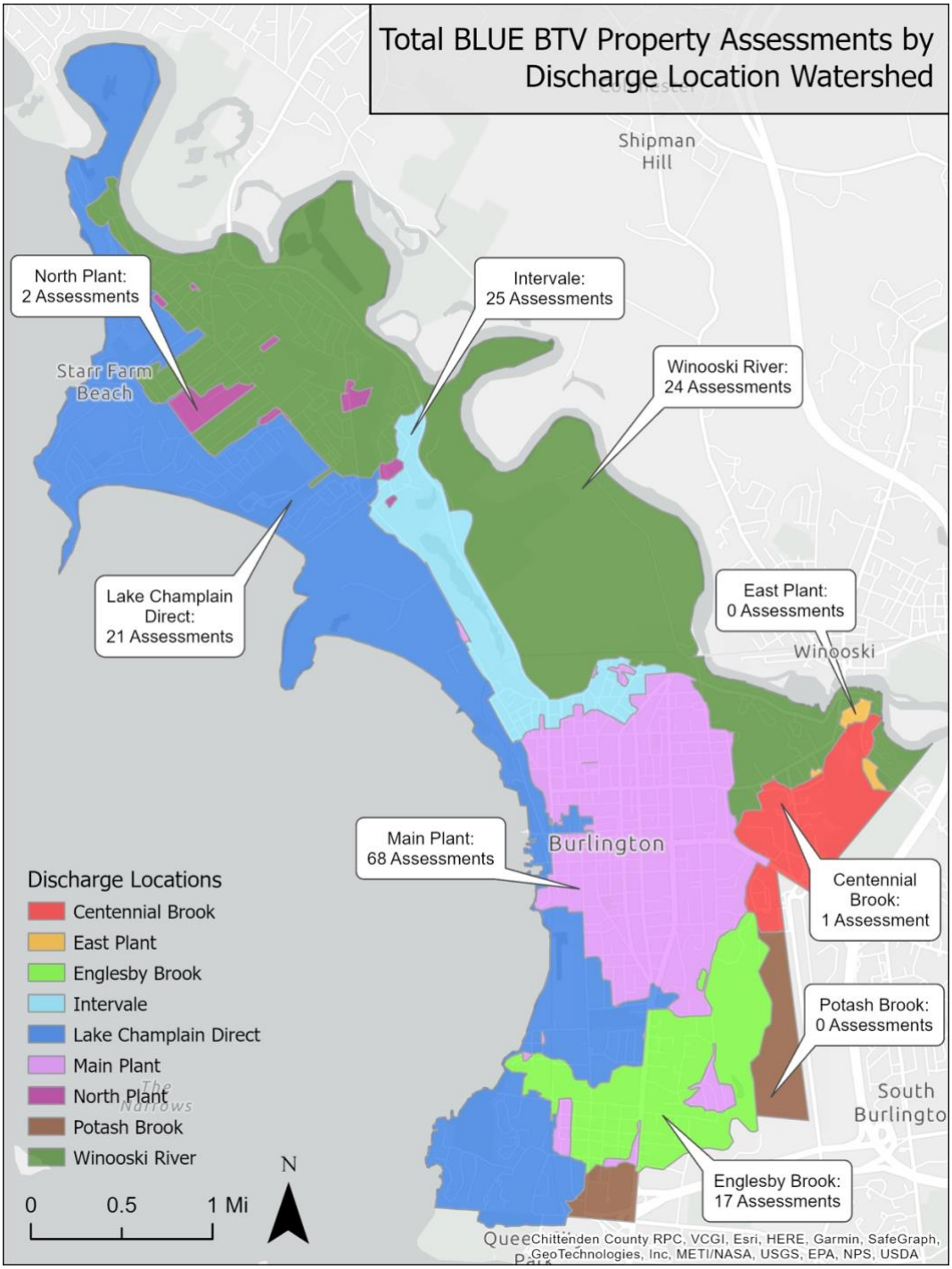


Figure 3: Map of discharges and their contributing stormwater watersheds. Each watershed is tagged with the total number of BLUE BTV assessments conducted since the pilot program in 2017.